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CCL 08/12/2020 - ENDORSEMENT OF PLANNING PROPOSAL TO AMEND NEWCASTLE LOCAL ENVIRONMENTAL PLAN 2012 - 505 MINMI ROAD FLETCHER

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ITEM-105 **Attachment A:** Planning Proposal – 505 Minmi Road, Fletcher

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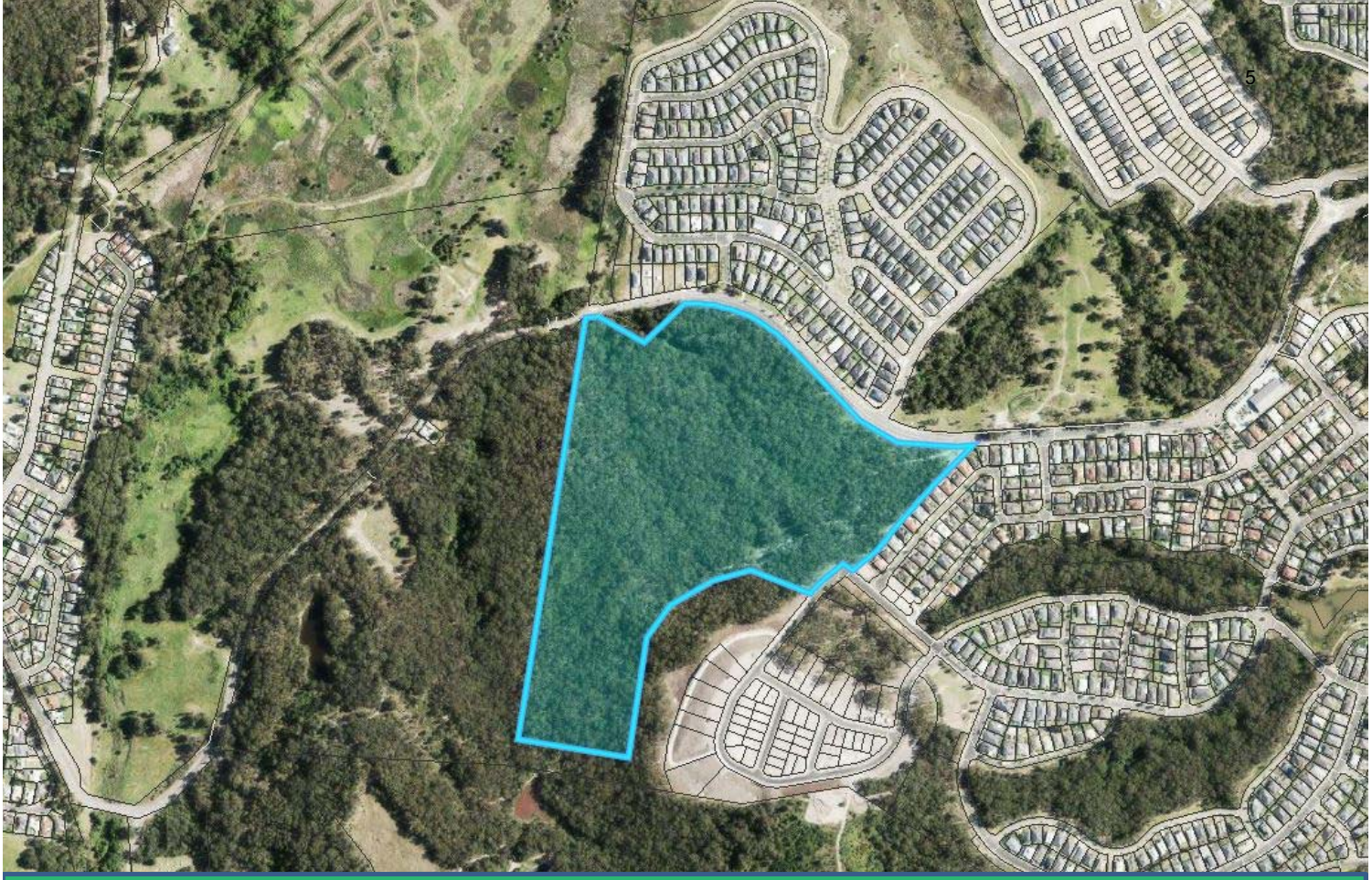

PLANNING PROPOSAL

Lot 23 DP 1244350 at 505 Minmi Road, Fletcher

Version 1.0 - Council Endorsement

3 November 2020

For enquiries please call 4974 2000

For more information:
www.newcastle.nsw.gov.au

City of Newcastle

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Appendices

Appendix 6 Biodiversity Inventory Report (prepared by MJD Environmental, Ref: 19082; Version V2 dated 7/1/2020)

Appendix 7 Traffic Impact Assessment report (prepared by Barker, Ryan, Stewart; Project: CC190151, Rev 3, dated 20/12/2019)

Appendix 8 Visual Impact Assessment (prepared by Barr Property and Planning; Ref: 16NEW0091, dated 17/1/2020)

Appendix 9: Aboriginal Cultural Heritage Assessment (prepared by ERM; Ref 0203956; dated October 2013)

505 Minmi Road, Fletcher

Introduction

This Planning Proposal (PP) has been prepared in accordance with Section 3.33 of the *Environmental Planning and Assessment Act 1979* (NSW). It explains the intended effect of a proposed local environmental plan (LEP) and sets out the justification for making the plan. *'A guide to preparing planning proposals'* has been used to guide and inform the preparation of this planning proposal.

The planning proposal may evolve over time due to various reasons, such as feedback during exhibition, the findings and recommendations of studies or the requirements of public authorities. It will be updated at key stages in the plan making process, as required.

Summary of proposal

Proposal	Rezone 505 Minmi Road, Fletcher from E4 Environmental Living to part R2 Low Density Residential and part E2 Environmental Conservation to allow development of up to 150 dwellings
Property Details	Lot 23 DP 1244350
Applicant Details	Barr Property and Planning Pty Ltd on behalf of Kingston Minmi Road Pty Ltd

Background

Council has received a request to amend Newcastle LEP 2012 principally to rezone the land from E4 Environmental Living to part E2 Environmental Conservation (10.8 hectares) and Part R2 Low Density Residential (15.4 hectares).

This is the fourth PP/ 'rezoning' application which has been lodged by the proponent in respect of the subject lands.

The first (submitted in 2009) progressed through Gateway, was publicly exhibited, and in 2015 the Council Officer's report supported the PP, however the elected Council resolved that the proposal should not proceed and was formally refused by Council in 2016.

The second PP was submitted in 2017, however the Council of the City of Newcastle ('CN') did not support the proposal on the basis that it was too similar to the first (refused) proposal. The PP was referred to the Hunter Region Joint Regional Planning Panel (HRJRPP) which considered the PP material, information provided at meetings and a site inspection, and on 2 November 2017 determined that the Proposal "*should not be submitted for a Gateway determination because the proposal…does not have site specific merit, and therefore should not proceed to Gateway.*" Reasons for the decision were provided (discussed later in this report).

A further (third) Planning Proposal was lodged with Council on 17 November 2017. In May 2018 TCG Planning was engaged by CN to undertake an independent assessment of the PP, commencing with a review of the justification provided by the applicant and a review of the technical studies and supporting information. Following this, TCG Planning provided correspondence to CN (dated 25 May 2018) that identified numerous matters that were unresolved and/or unsatisfactory that needed to be addressed (by Council and the proponent) prior to completing a report and making a recommendation in relation to the PP.

Current Planning Proposal: Key Dates

The following lists the key milestones since the lodgement of this fourth Planning Proposal, which is outlines in Parts 1 and 2 of this report.

1 May 2020	Council formally accepted lodgement of an updated PP for the site, which Council address(ed) most of the items identified in correspondence prepared by TCG Planning dated 25 May 2018. This PP represents a new application. Key new documents comprised: Updated Planning Proposal report which addresses matters within TCG Planning letter; and inclusion of Biodiversity Inventory Report, Traffic Impact Statement, and Visual Impact Assessment as Appendices).
26 June 2020	A 'LEP Panel Meeting' was held with the proponent and CN Senior Planning and relevant specialist staff, who had reviewed the amended documents lodged in May 2020. Minutes of this meeting were prepared and this forum constituted the internal specialist staff review of and commentary on the proposal.
17 July 2020	CN issued a letter requesting additional information from the applicant in relation to key matters to be addressed pre and post-Gateway.
23 September 2020	Updated planning proposal documents lodged addressing the Pre-Gateway matters identified in the letter of 17 July 2020. This is limited to minor wording edits/updates to PP report, and inclusion of a new Strategic Bushfire Study within the Appendix B.
October 2020	CN re-engaged former TCG Planning staff (now 'merged' with Cardno) to prepare an assessment report on the merits of the PP having regard to the additional information submitted (principally the Strategic Bushfire Study, Biodiversity Inventory Report), and assess the PP within the context of recent Strategic Planning documents, noting other matters were reviewed via the LEP Panel Meeting process).

Supporting documentation

The following appendices are attached in support of the Planning Proposal and referenced throughout.

Appendix 1	Planning Proposal Information Checklist
Appendix 2	NSW Subsidence Advisory correspondence (Ref: FN00---318N0 dated 12 June 2014)
Appendix 3	Strategic Bushfire Study (prepared by MJD Environmental, Ref: 19082; Version V2 dated 18/9/2020)
Appendix 4	Report on Preliminary Contamination Assessment (Prepared by Cardno Geotech Solutions; Ref: CGS1706; dated 24 March 2014)
Appendix 5	Stage 1 and 2 Ecology Briefs (prepared by Barr Property and Planning) and relevant correspondence by Office of Environment and Heritage (17/1/2019) and Department of Planning, Industry and Environment (10/09/2019)
Appendix 6	Biodiversity Inventory Report (prepared by MJD Environmental, Ref: 19082; Version V2 dated 7/1/2020)
Appendix 7	Traffic Impact Assessment report (prepared by Barker, Ryan, Stewart; Project: CC190151, Rev 3, dated 20/12/2019)
Appendix 8	Visual Impact Assessment (prepared by Barr Property and Planning; Ref: 16NEW0091, dated 17/1/2020)
Appendix 9:	Aboriginal Cultural Heritage Assessment (prepared by ERM; Ref 0203956; dated October 2013).

Site

The subject land is known as No. 505 Minmi Road, Fletcher (Lot 23 DP 1244350) and is approximately 26.2 hectares in area. The site is vacant and contains extensive vegetation across the whole site, comprising a varied quality of native bushland. The site also contains some unsealed tracks (used by motorcycles, bicycles) and some minor waste dumping adjacent to these disturbed areas.

The highest point of the subject land is at the eastern boundary at 53m ASL. The land falls steeply from the East (~20m ASL) until it reaches a watercourse (28m ASL) and elevates again towards the west to 38m ASL. The site is bounded to the north by Minmi Road.

To the north of the site (Minmi Road) is a recently developed low density residential estate (The Outlook). The remaining site boundaries also adjoin vegetated land. The southern portion is zoned E2 Environmental Conservation and forms a vegetated corridor with the remaining surrounding land zoned for urban residential development (R2 Low Density), which is yet to be developed, except for the land to the south-east of the site which is a new subdivision (Waterside Drive), which is the first stage of a wider approved Part 3A State Significant Staged Concept Plan (Minmi Link Road, North and South Redevelopment, approved in 2013). To the immediate west of the subject site is a further approved development stage of this staged concept approval. It is understood that development consent for the subdivision of the adjoining land has been issued (DA 2015/10393) and a Construction Certificate was issued for the works approximately one year ago, however works have not yet commenced.

Refer to **Figure 1** Aerial photo of the site and **Figure 2** Local Context of the site

Figure 1 - Aerial photo of the site (*Source: Nearmap*)

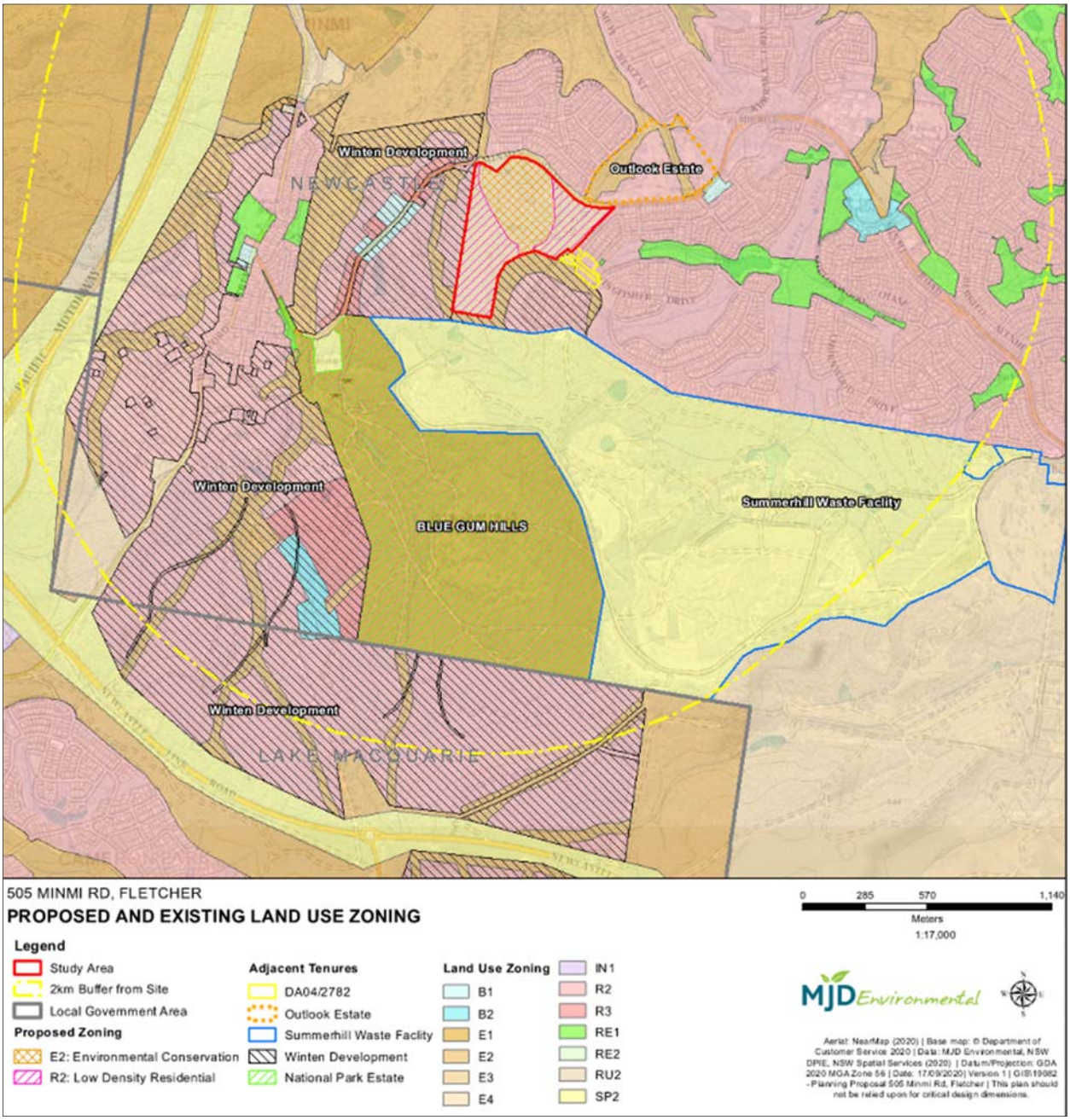

Figure 2 - Local context of the site (Source: Extract of Landscape Assessment Map, page 22 of Strategic Bushfire Study, prepared by MJD Environmental)

Part 1 - Objectives or intended outcomes

To amend the Newcastle Local Environmental Plan 2012 to facilitate the future delivery of the land for low density residential development and environmental conservation purposes.

Part 2 - Explanation of provisions

The proposed outcome will be achieved by amending Newcastle LEP 2020, as follows:

- Land Zoning (LZN) Map to reflect a change of zone from E4 Environmental Living to part E2 Environmental Conservation and part R2 Low Density Residential zone. Refer to Figure 3.

- Height of Building (HOB) Map to adopt a maximum 8.5m building height within the proposed R2 Low Density Zones (currently no maximum building height applies). Refer to Figure 4.

- Minimum Lot Size (LSZ) Map to adopt a new minimum lot size from 40 hectares across the entire site to:
    - part 300m^2 and part 1000m^2 (R2 Low Density Residential Zone portion); and
    - retaining 40ha minimum (E2 Environmental Conservation portion). Refer to Figure 5.

- Urban Release Area (URA) Map to be include the proposed R2 Low Density Residential zone on the land. Refer to Figure 6.

The proposed changes to the Land Zoning, Minimum Lot Size, Height of Buildings and Urban Release Area maps of NLEP 2012 are shown in **Figures 3 to 6** on the following pages.

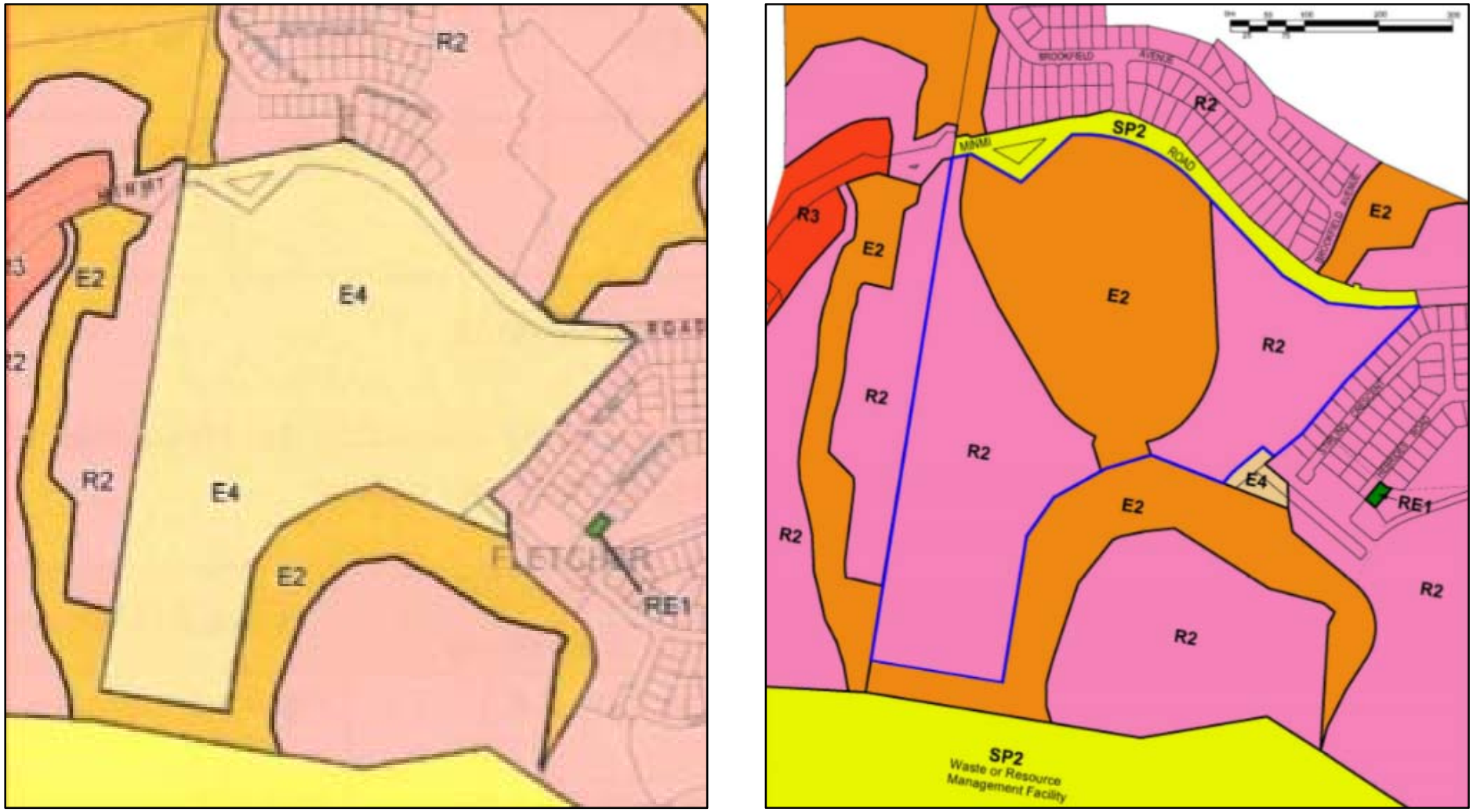

Figure 3: Left: current NLEP 2012 Land Zoning Map (left) and proposed changes to site (right)

Figure 4: Current Height of Buildings Map (left) and Proposed changes to site (right)

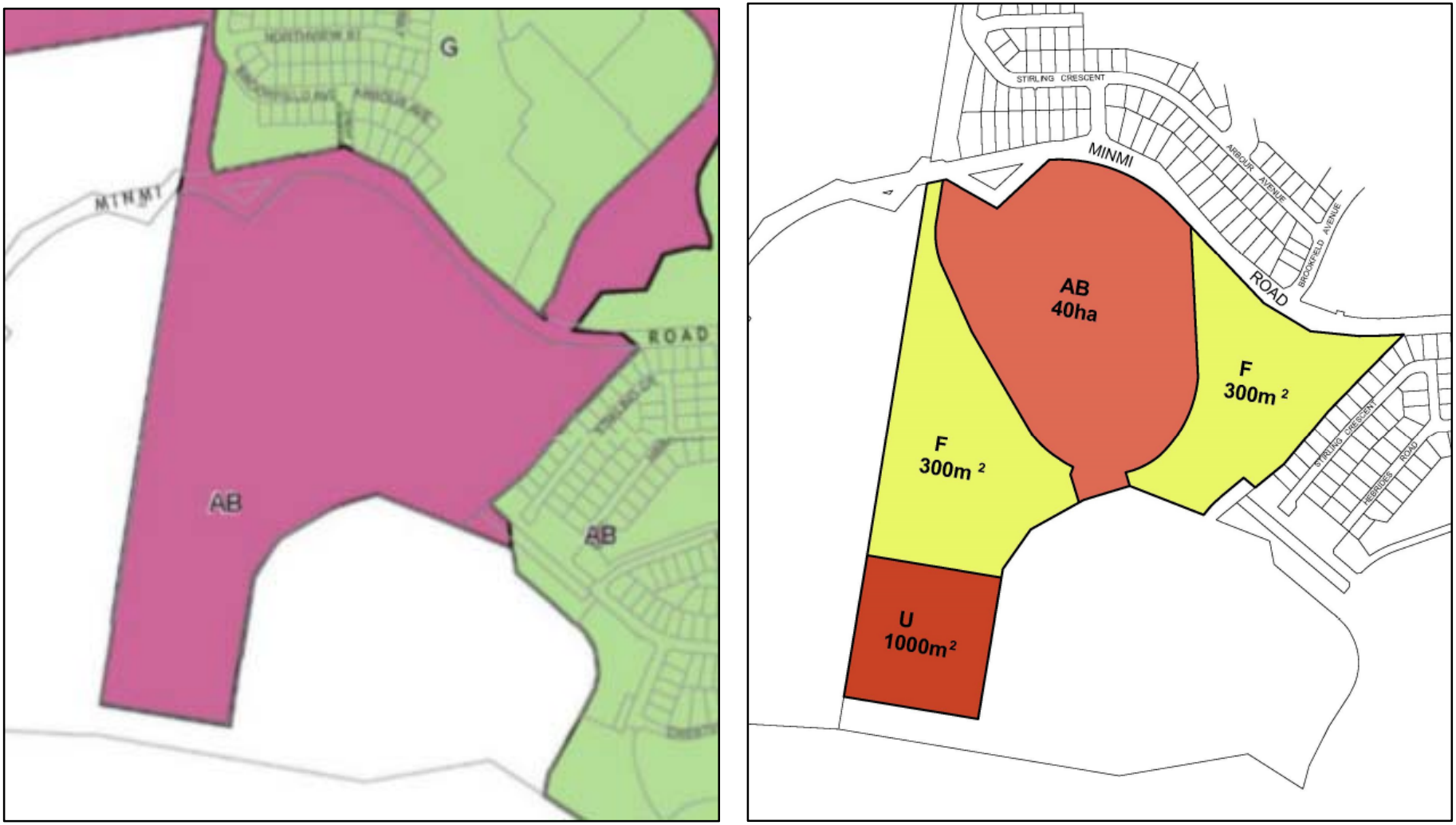

Figure 5: Current Minimum Lot Size Map (left) and Proposed changes to site (right)

Figure 6: Current Urban Release Area Map (left) and Proposed changes to site (right)

Part 3 - Justification

Section A - Need for the planning proposal

1. Is the planning proposal a result of any strategic study or report?

Yes. The subject site is identified as a potential area for residential growth and is consistent with the several strategic studies and reports, including the Hunter Regional Plan 2036, Greater Newcastle Metropolitan Plan 2036 and the more recently adopted Newcastle Local Strategic Planning Statement. The consistency of the Proposal with these strategic documents is provided in Section B.

2. Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Yes, amending the Newcastle LEP 2012 is considered the best means of achieving the objectives of the planning proposal. While dwellings are permitted with development consent under the Land Use Table of the current E4 Environmental Living zone, the current Minimum Lot Size Map for the site is 40 hectares which precludes the residential development of the land. Subject to outcomes of more detailed environmental studies, consultation and design, the proposed R2 Low Density Residential Zone and E2 Environmental Conservation zones and proposed building height and lot size maps are the best means to facilitate the future delivery of the land for low density residential development and environmental conservation purposes.

Section B - Relationship to strategic planning framework

3. Is the planning proposal consistent with the objectives and actions of the applicable regional, sub-regional or district plan or strategy (including any exhibited draft plans or strategies)?

Hunter Regional Plan 2036

The Hunter Regional Plan 2036 (HRP) is the NSW governments plan to guide land use planning and infrastructure priorities and decisions over the next 20 years. The plan identifies regionally important natural resources, transport networks and social infrastructure and provides a framework to guide more detailed land use plans, development proposals and infrastructure funding decisions. The HRP includes overarching directions, goals and actions as well as specific priorities for each local government area in the Hunter region.

The planning proposal is consistent with the following provisions of the HRP:

- *Figure 4: Greater Newcastle 2036 (p13): mapped as within a 'Growth Area'*
- *Figure 11: Greater Newcastle Settlement Pattern (p52): within or adjacent to a Current Urban Release Area' and ''Existing Residential Land'.*
- *Local Government Narratives: Priorities for the Newcastle LGA (p68-69): Projected dwelling increase of 16,800 with an action to monitor residential development activity to assist with planning for 6,000 new dwellings.*
- *Direction 14: Protect and connect natural areas. Related Actions:*
    - *14.1 Identify terrestrial and aquatic biodiversity values and protect areas of high environmental value to sustain the lifestyle, economic success and environmental health of the region*
    - *14.2 Identify and strengthen biodiversity corridors as places for priority biodiversity offsets*
    - *14.4 Protect biodiversity by maintaining and, where possible, enhancing the existing protection of high environmental value areas; implementing appropriate measures to conserve validated high environmental value areas; developing local strategies to avoid and minimise the impacts of development on areas of high environmental value and biodiversity corridors; and identifying offsets or other mitigation measures for unavoidable impacts.*
- *Direction 21: Create a compact settlement. Related Actions:*
    - *21.1 Promote development that respects the landscape attributes and the character of the metropolitan areas, towns and villages*
    - *21.2 Focus development to create compact settlements in locations with Lake Macquarie Western Corridor growth area.*
    - *21.4 Create a well-planned, functional and compact settlement pattern that responds to settlement planning principles and does not encroach on sensitive land uses, including land subject to hazards, on drinking water catchments or on areas with high environmental values.*
    - *21.7 Promote new housing opportunities in urban areas to maximise the use of existing infrastructure.*
- *Direction 23: Growth centres and renewal*
    - *23.4 Investigate locations for new and expanded centres, including within the Newcastle-Lake Macquarie Western Corridor.*

- *Direction 25: Monitor housing and employment supply and demand.*
    - *25.3 Sequence new greenfield urban development that makes efficient use of infrastructure network capacity.*
- *Direction 26: Deliver infrastructure to support growth and communities*
    - *26.1 Align land use and infrastructure planning to maximise the use and capacity of existing infrastructure and the efficiency of new infrastructure.*
    - *26.5 Ensure growth is serviced by enabling and supporting infrastructure.*

Greater Newcastle Metropolitan Plan 2036

The Greater Newcastle Metropolitan Plan (GNMP) 2036 published by the Department of Planning and Environment in 2018 aligns with the vision and goals of the Hunter Regional Plan 2036 and will guide local planning across the five Greater Newcastle Council areas. Specific Strategies and Actions within this Plan of relevance to the PP are listed below:

Strategy 12 'Enhance the Blue and Green Grid and the urban tree canopy' aims for Greater Newcastle's Blue and Green Grid to creates the connections and networks linking open spaces and waterways urban parks and the like. The site is located within a broad 'Biodiversity Corridor' across the Region, and adjacent to a location for the improvement of Blue and Green Grid connections. The nearby Blue Gum Regional Park is a nominated feature of this Blue-Green network.

Action 12.1: Greater Newcastle councils with support from the Department of Planning and Environment, will:

- *improve access to open space, recreation areas and waterways so that 90% of houses are within a 10-minute walk of open space*
- *enhance Greater Newcastle's Blue and Green Grid by implementing the Green Infrastructure Outcomes of the Greener Places policy to integrate water sensitive urban design principles in local plans*

The planning proposal is consistent with this Strategy and Action as a large portion of the site is proposed to be conserved in its natural state, which will have strong connectivity to open space corridors external to the site. Every proposed residential lot on the site will be within a 10-minute walk to the proposed conservation land within the site, which may also be capable of supporting passive recreational usage. While over half of the vegetation on the site will be retained and conserved, this is intended via a private community-title status, and the removal of the remainder of vegetation and introduction of new roads will both enhance resident access, and impact on the fauna linkages to wider green corridors.

Figure 8: 'Housing Opportunities': due to the small scale and lack of detail, it appears that the subject site is not mapped as either 'existing urban area', or 'housing release area', however is surrounded by these lands. Strategy: 16 of the GNMP 2036 is to "Prioritise the delivery of infill Housing opportunities within existing urban areas." Given the land's current zoning and surrounding status, the land should be considered as an existing urban area and hence Strategy 16 should be applicable. The site is an isolated vacant lot surrounded by established residential areas and areas zoned, development applications approved and currently under construction or proposed for construction presently and in the immediate future and hence is consistent with this Strategy.

Strategy 17- Unlock housing supply through infrastructure coordination and delivery: Public utility services including telecommunications, gas, electricity, sewer and water will be available to serve any development on the subject land. While the previously provided (2012) approval for water and sewer provision from Hunter Water has expired, the site appears to have capacity to be serviced (subject to confirmation from service authorities) in particular having regard to adjacent approved development within the catchment.

Action 17.4 The Department of Planning and Environment will pursue biodiversity certification of housing release areas in Greater Newcastle: the PP will include an offset strategy (yet to be determined) for the impacts of the removal of vegetation on the site to allow for residential development. Part of this will include the retention and conservation of some vegetation within the site.

4. Is the planning proposal consistent with a council's local strategy or other local strategic plan?

Newcastle 2030 Community Strategic Plan

The Newcastle 2030 Community Strategic Plan (CSP) is "based on the aspirations, knowledge and values of (the Newcastle) community. Extensive community consultation was undertaken in 2018 and the plan was adopted. A 'check in' review report was prepared in June 2020 and is due to be updated in 2020.

The CSP is a "shared community vision to inform actions over the next 10 years" (p5), with four Guiding Principles underpinning the more focussed Strategic Directions and Community Objectives. The planning proposal primarily aligns with the strategic direction 'Open and Collaborative Leadership' identified within the CSP. Compliance with the LEP amendment process, in particular section 3.33 – community consultation of the *EP&A Act 1979*, will assist in achieving the strategic objective to "Consider decision-making based on collaborative, transparent and accountable leadership" and the identified strategy 7.2b to "Provide opportunities for genuine and representative community engagement in local decision making".

The following table (Table 1) lists the key relevant Strategic Directions and Community Objectives within the CSP that are generally considered to be consistent with the Planning Proposal.

Table 1: Newcastle 2030 Community Strategic Plan 2018-2028 and Consistency with PP	
Relevant Strategic Direction/ Community Objectives	**Justification of Consistency**
Integrated and Accessible Transport *1.1 Effective and integrated public transport* *1.2 Linked networks of cycle and pedestrian paths* *1.3 Safe, reliable and efficient road and parking networks* *Protected Environment* *2.1 Greater efficiency in the use of resources* *2.2 Our unique natural environment is maintained, enhanced and connected* *2.3 Environment and climate change risks and impacts are understood and managed* *Vibrant, Safe and Active Public Places* *3.1 Public places that provide for diverse activity and strengthen our social connections* *Inclusive Community* *4.1 A welcoming community that cares and looks after each other* *4.2 Active and healthy communities with physical, mental and spiritual wellbeing* *Liveable Built Environment* *5.1 A built environment that maintains and enhances our sense of identity* *5.2 Mixed-use urban villages supported by integrated transport networks* *5.3 Greater diversity of quality housing for current and future community needs* *5.4 Sustainable infrastructure to support a liveable environment* *Smart and Innovative* *Open and Collaborative Leadership* *7.2 Considered decision making based on collaborative, transparent and accountable leadership*	This Planning Proposal seeks to: • Provide an opportunity for future bus routes through the site with connectivity to adjacent developments and beyond. • Maximise opportunities for walking and cycling within the site and provide a linkage to adjacent residential and natural areas by creating an east-west connection through the site, with potential for footpaths and on-road cycle ways for wider community interaction. • Retire biodiversity credits through one or a mix of the three alternatives provided in the Biodiversity Offset Scheme. • Directly contribute to the creation of open space within the site that promotes active and passive recreation and community interaction. • Require the payment of s.7.11 contributions for the provision of social and traffic/transport infrastructure to be provided in the western urban release area corridor for use of future residents of the site and for those in the wider Fletcher community. • Provide new housing in an identified urban growth corridor, while conserving approximately 10.8ha or 41% of the site for conservation/ open space purposes which provides connectivity to adjoining conservation areas and linkages through the site for traffic, cyclists and pedestrian and the like. The PP will be publicly exhibited for community engagement and comment.

Local Strategic Planning Statement

The Local Strategic Planning Statement was adopted by Council in May 2020. It complements the Newcastle 2030 Community Strategic Plan.

The LSPS is a 20-year land use vision prepared to guide future growth and development in Newcastle. It informs changes to the Newcastle Local Environmental Plan 2012, Newcastle Development Control Plan 2012 and other land use strategies.

The subject land is one of two sites mapped in the Urban Structure Plan (p17) within the LSPS as a “Housing Release Area” (Refer to Figure 7).

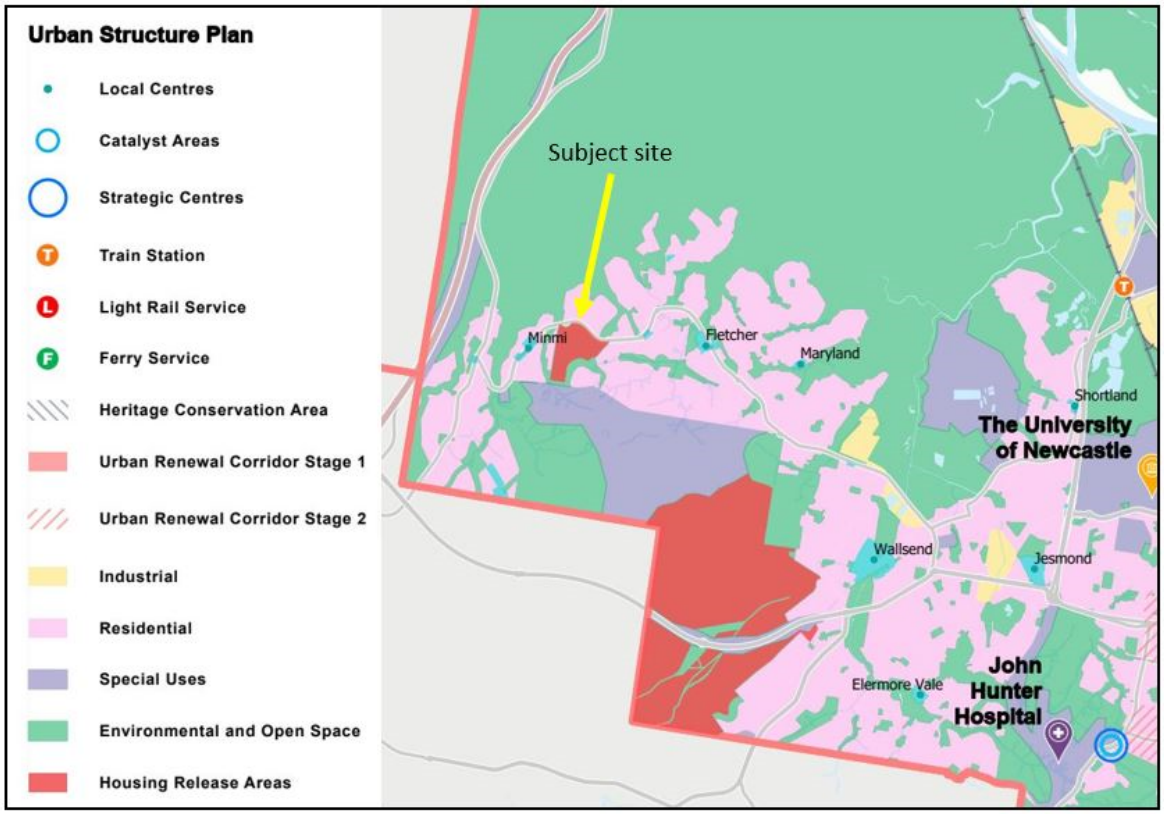

Figure 7: Excerpt from Newcastle LSPS Structure Plan (p17)

Planning Priority 8 "Plan for growth and change in Catalyst Areas, Strategic Centres, Urban Renewal Corridors and Housing Release Areas" is therefore directly relevant to the PP, in particular Action 8.1, to "Work with stakeholders to plan and prioritise infrastructure delivery with future development of …Housing Release Areas". The subject site at Fletcher will facilitate the development of housing in alignment with this Action.

The following table lists this and other relevant Planning Priorities and related Principles within the LSPS. Table 2 below also provides commentary on the proposal's consistency with each of the Planning Priorities.

Table 2: Newcastle LSPS: Relevant Planning Priorities and Consistency with Planning Proposal

Planning Priority/Principle	**Consistency**
2. Support emerging transport opportunities and public transport improvements with continued integration of land use and transport planning *Where intensification of land use is proposed comprehensive traffic and transport planning is undertaken to ensure the required infrastructure, initiatives and funding mechanisms are achievable.*	A Traffic Impact Assessment (Appendix 7) confirmed capacity exists within the local road network to cater to the proposal. Depending of the eventual subdivision design, the proposal may facilitate local bus routes through the site.
3. Green our neighbourhoods *Additional public green spaces and the provision of natural and built shade are included in planning for the mixed-use Catalyst Areas, Strategic Centres, Urban Renewal Corridors and Housing Release Areas*	The proposal will include the long-term conservation and management of at least 10.8Ha of land that will read as public green space. Proposed residential land would, when subdivided, incorporate suitable street trees to provide shade.
5. Protect and enhance our bushland, waterways and wetlands	The proposal will include the long-term conservation and management of at least

Table 2: Newcastle LSPS: Relevant Planning Priorities and Consistency with Planning Proposal	
Planning Priority/Principle	**Consistency**
The blue and green grids are improved.	10.8Ha of vegetated land, including the riparian zone of a first-order watercourse.
6. Reduce carbon emissions and resource consumption *Proposals in Housing Release Areas will incorporate mechanisms to achieve excellence in sustainable and urban building design.*	It is envisaged that the proposed residential areas will facilitate a range of lot sizes capable of accommodating sustainably-designed housing. Dwellings will be required to meet BASIX sustainability measures.
7. Plan for climate change and build resilience *Urban growth and change responds to environment and climate change risks and impacts. Infrastructure and asset planning incorporates emergency management principles and disaster risk reduction. Carbon emissions are minimised or offset*	The proposal will ensure compliance with Planning for Bushfire Protection 2019. New infrastructure and assets to support the proposed residential zoning can incorporate emergency management principles.
8. Plan for growth and change in Catalyst Areas, Strategic Centres, Urban Renewal Corridors and Housing Release Areas *Work with stakeholders to plan and prioritise infrastructure delivery with future development of …Housing Release Areas*	The proposal is within a nominated Housing Release Area and its progress is the way to facilitate the development of part of the land for new housing growth.
9. Sustainable, healthy and inclusive streets, neighbourhoods and local centres *Streets are the primary public spaces for access and exchange between people, and should be safe, friendly, healthy, attractive and efficient*	The proposal will facilitate new housing directly adjacent to existing established housing. The site is walking distance to shops and capable of being serviced by public transport.
10. Development responds to the desired local character of our communities *Design contributes to achieving the envisaged character of neighbourhoods and local centres. The liveability of different neighbourhoods is enhanced through sustainable growth that reflects desired local character. Ensure known and potential heritage places and values are conserved and contribute to local character and sense of place.*	The proposal will facilitate residential subdivision incorporating a range of lot sizes and will build on the local character of Fletcher as a greenfield estate.
11. Protect and celebrate our heritage *The City's identity is maintained by protecting and enhancing heritage buildings, streetscapes, views and key features.*	A comprehensive Aboriginal Cultural Heritage Assessment (Appendix 9) has been carried out for the site which includes recommendations for the recording and preservation of items of Aboriginal cultural heritage.
12. Sustainable, affordable and inclusive housing *At appropriate densities located for integrated public transport. Providing a greater diversity of quality housing. Enhancing the quality and liveability of housing. Proposals in Housing Release Areas will incorporate affordable housing, adaptable housing and mechanisms to achieve excellence in sustainable building design.*	The proposal will facilitate residential subdivision incorporating a range of lot sizes down to 300m^2 in order to provide housing diversity and affordability.

Draft Local Housing Strategy

CN is preparing a Local Housing Strategy 2020 (LHS), which sets a framework for the provision of housing across the City of Newcastle over the next 20 years. The LHS is accompanied by an Implementation Plan, which aims to translate the findings of the LHS into actions. The Draft LHS (dLHS) and Implementation Strategy were exhibited in August and September 2020. The public submissions are being assessed, which will then be reported to Council.

The dLHS is relevant to inform the current and future housing needs of CN. The subject site is specifically identified as a 'Housing Release Area' (p30), and the key issues for future development are as follows:

"Two remaining greenfield sites located in the western part of the LGA are identified as Housing Release Areas. These areas are anticipated to undergo significant change in the future to accommodate housing and associated services. Land use and infrastructure planning is required for these areas to identify challenges and opportunities and to enable sustainable growth. Some of the key issues to be addressed in planning for these areas include:

- *conserving, protecting and managing significant habitats and areas of high biodiversity value (including riparian zones)*
- *traffic impacts on existing roads and intersections*
- *providing infrastructure and services including new road networks, public recreation, open space, and other community infrastructure*
- *remediating areas of contamination*
- *expanding and improving the Blue and Green Grids*
- *providing affordable rental housing."*

Consistent with the above, the dLHS identified that the conservation of environmental values and management of natural hazards (bushfire, flooding, mine subsidence etc) are important considerations for new housing release areas which "will be subject to comprehensive environmental assessment to ensure that existing biodiversity is protected appropriately in accordance with State legislation" (p34).

The following is a list of the dLHS's Housing Priorities:

- *Maintain and encourage housing supply in the right locations (subject to consideration of environmental vulnerability and natural hazards)*
- *Diversify housing type and tenure across the LGA to provide for a range of housing needs Housing Priority*
- *Increase the availability of accessible and adaptable housing*
- *Increase the supply of affordable rental housing*
- *Ensure new housing and changes to exiting housing reflect the desired future local character*
- *Homes are designed to be ecologically sustainable and to reduce resource requirements through the life cycle of the dwelling.*

The Planning Proposal aims to facilitate for additional housing supply and the site has the potential to cater to the demand for both low and medium density housing forms (approximately 150 dwellings). Primarily detached housing on the subject land will be consistent with the character of the growing suburb of Fletcher. Vacant land provides the most economical opportunity to deliver accessible, sustainable, and adaptable housing.

With respect to the Population and Housing Projections (p37-38) and Housing Supply, the dLHS indicates that "it is estimated that an additional 19,450 new dwellings will be required by 2041 to accommodate the 18,250 new households." But also notes that there is enough land in the pipeline (already approved dwellings and zoned land) to deliver the housing needs in the near to medium term. The dLHS also clearly outlines the need for rigorous environmental studies to be undertaken for the release areas to ensure the inherent constraints and hazards are addressed.

5. Is the planning proposal consistent with applicable State Environmental Planning Policies?

An assessment of the planning proposal against the relevant SEPPs is provided in the table below.

Table 3 - Relevant State Environmental Planning Policies	
Relevant SEPPs	**Consistency and Implications**
SEPP 19 (Bushland in Urban Areas)	N/A
SEPP 21 (Caravan Parks)	N/A
SEPP 33 (Hazardous and Offensive Development)	N/A
SEPP 36 (Manufactured Home Estates)	N/A
SEPP 50 (Canal Estate Development)	N/A
SEPP 55 (Remediation of Land)	Consistent. Refer to Part 8 of this report which details the outcome of a preliminary contamination report.
SEPP 64 (Advertising and Signage)	N/A
SEPP 65 (Design Quality of Residential Flat Development)	N/A
SEPP (Coastal Management) 2018	N/A
SEPP (Affordable Rental Housing) 2009	N/A
SEPP (Building Sustainability Index: BASIX) 2004	N/A
SEPP (Educational Establishments and Child Care Facilities) 2017	N/A
SEPP (Exempt and Complying Development Codes) 2008	N/A
SEPP (Housing for Seniors or People with a Disability) 2004	N/A
SEPP (Infrastructure) 2007	N/A
SEPP (Integration and Repeals) 2016	N/A
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	N/A The site has been mapped by the SEPP as a future residential growth area, pursuant to sheet RGA_034. This illustrates that the Government has recognised the site for an intended purpose for future residential development. Notwithstanding, the SEPP prohibits the carrying out of coal seam gas development within land within a residential zone and future residential growth area.
SEPP (Primary Production and Rural Development) 2019	N/A
SEPP (State and Regional Development) 2011	N/A
SEPP (State Significant Precincts) 2005	N/A
SEPP (Three Ports) 2013	N/A
SEPP (Urban Renewal) 2010	N/A
SEPP (Vegetation in Non-Rural Areas) 2017	Likely to be consistent - Further study required. The accompanying 'Biodiversity Inventory Report' identified that the proposed clearing for the R2 Residential zone exceeds the biodiversity offsets threshold and a biodiversity offset scheme will be required. Should the PP proceed to Gateway, it is intended that a Stage 2 detailed Biodiversity Assessment will be prepared, which will address the relevant criteria and consult with required Agencies.
SEPP (Koala Habitat Protection) 2019	Likely to be consistent - Further study required.

Table 3 - Relevant State Environmental Planning Policies	
Relevant SEPPs	**Consistency and Implications**
	The accompanying 'Biodiversity Inventory Report' (Appendix 6), in considering the previous SEPP 44 – Koala Habitat Protection, indicated that "the study area does not meet requirements for it to be considered as 'potential koala habitat'." Should the PP proceed to Gateway, it is intended that a Stage 2 detailed Biodiversity Assessment, which will consider the recently updated SEPP Koala Habitat Protection (2019) and koala habitat potential in that context.

6. Is the planning proposal consistent with applicable Ministerial Directions (s.117 directions)?

An assessment of the planning proposal against the relevant Ministerial Directions is provided in the table below.

Table 4 - relevant Ministerial Directions (Section 9.1 directions)	
Relevant Section 9.1 Directions	**Consistency and implications**
1. Employment and Resources	
1.1 Business and Industrial Zones	N/A
1.2 Rural Zones	N/A
1.3 Mining, Petroleum Production and Extractive Industries	Likely to be consistent as, pursuant to SEPP (Mining, Petroleum Production and Extractive Industries) 2007 a buffer of 2km applies to future residential growth area. To be confirmed in PP process via referral to the Department of Primary Industries.
1.4 Oyster Aquaculture	N/A
1.5 Rural Lands	N/A
2. Environment and Heritage	
2.1 Environment Protection Zones	Inconsistent. In accordance with 2.1(6), the PP seeks to satisfy the Director-General of the Department of Planning, Industry and Environment (or delegate) that the inconsistent provisions are: justified by a strategy/ study; and is in accordance with the Regional Strategy. The LSPS identifies the land for a housing release area so has broad strategic consistency. Should the PP proceed to Gateway, further investigations and justification will be required to address this Direction.
2.2 Coastal Protection	N/A
2.3 Heritage Conservation	N/A
2.4 Recreational Vehicle Areas	N/A
2.6 Remediation of Contaminated Land	Consistent. Refer to Part 8 of this report which details the outcome of a preliminary contamination report.
3. Housing, Infrastructure and Urban Development	
3.1 Residential Zones	Consistent. The proposed development of the site is consistent with the relevant strategic planning documents, conforms with the objectives of the Direction and provisions and is able to be provided with all required infrastructure and services.

Table 4 - relevant Ministerial Directions (Section 9.1 directions)	
Relevant Section 9.1 Directions	**Consistency and implications**
3.2 Caravan Parks and Manufactured Home Estates	N/A
3.3 Home Occupations	N/A
3.4 Integrating Land Use and Transport	Consistent. The proposed development of the site is consistent with the relevant strategic planning documents, conforms with the objectives of the Direction and will be accessible to existing transport routes and services.
3.6 Shooting Ranges	N/A
3.7 Reduction in non-hosted short term rental accommodation period	N/A
4. Hazard and Risk	
4.1 Acid Sulfate Soils	Consistent. Can be appropriately addressed in standard development practices.
4.2 Mine Subsidence and Unstable Land	Consistent. Should the PP proceed to Gateway, further investigations and consultation will be required to address this Direction and is likely to be addressed via standard development processes.
4.3 Flood Prone Land	N/A
4.4 Planning for Bushfire Protection	Consistent. A Strategic Bushfire Study (Appendix 3) accompanies the PP which addresses the PBP Guidelines 2019, to inform the zone boundaries and indicative subdivision plan. Should the PP proceed to Gateway, further investigations and consultation with the RFS will be required to address this Direction.
5. Regional Planning	
5.1 Implementation of Regional Strategies	N/A
5.10 Implementation of Regional Plans	The site is located within a Growth Area and is consistent with Hunter Regional Plan 2036.
5.11 Development of Aboriginal Land Council land	
6. Local Plan Making	
6.1 Approval and Referral Requirements	Consistent
6.2 Reserving Land for Public Purposes	N/A
6.3 Site Specific Provisions	N/A

Section C - Environmental, social and economic impact

7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

Having regard to the extent of native vegetation removal to accommodate the R2 zone (14.7 hectares), a Biodiversity Inventory Report (MJD Environmental, January 2020) (Appendix 6) has been prepared in support of the Planning Proposal. The following extracts outline the approach to the assessment of the biodiversity issues associated with the proposal (pii-iii).

"In agreement with Council and DPIE, a current biodiversity report was to be developed to inform the planning proposal and a more extensive body of works was required given the site history. As such this BIR has been produced in a manner which is consistent with the Biodiversity Assessment Methodology (BAM) in order to satisfy later stages of the biodiversity planning process, post gateway. The BAM was used as the assessment method, to establish impacts on threatened species and threatened ecological communities in the locality under the Biodiversity Conservation Act 2016.

In addition, preliminary assessment was also undertaken having regard to those threatened entities listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The proposed subject site is zoned as E4 Environmental Living and is currently a vacant bush lot containing unsealed roads, fences, rubbish and native vegetation. The land has undergone historic clearing most likely for pit props and grazing evident by the young age cohorts of trees, fences, weed invasion and disturbed vegetation. The overall native woody vegetation is in moderate condition comprising good species composition and structure.

Field surveys carried out as part of the biodiversity assessment identified three Plant Community Types (PCT): Refer **Figure 8.**

- *1589 – Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast*
- *1590 – Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest commensurate with the BC Act listed Endangered Ecological Community (EEC) Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions*
- *1619 – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands*

Impact Analysis: The proposal will result in the following impacts and required offsets as calculated using the BAM-C Calculator:

- *2.05 ha of PCT 1589 requiring 78 ecosystem credits; and*
- *11.77 ha of PCT 1590 requiring 406 ecosystem credits; and*
- *0.94 ha of PCT 1619 requiring 24 credits.*

The current method to retire credits for the proposal has not been determined and will be dependent on the availability of credits on the open market, viability of establishing a stewardship site in the locality or retirement of credits via payment into the Biodiversity Conservation Fund (BCF). It is likely that credit retirement will incorporate one or a combination of these options if the proposal was granted approval.

A preliminary assessment under the EPBC Act determined the proposed action is unlikely to have an impact to MNES based on the assessment criteria set out in relevant Commonwealth policies and advices as at the time of this assessment.

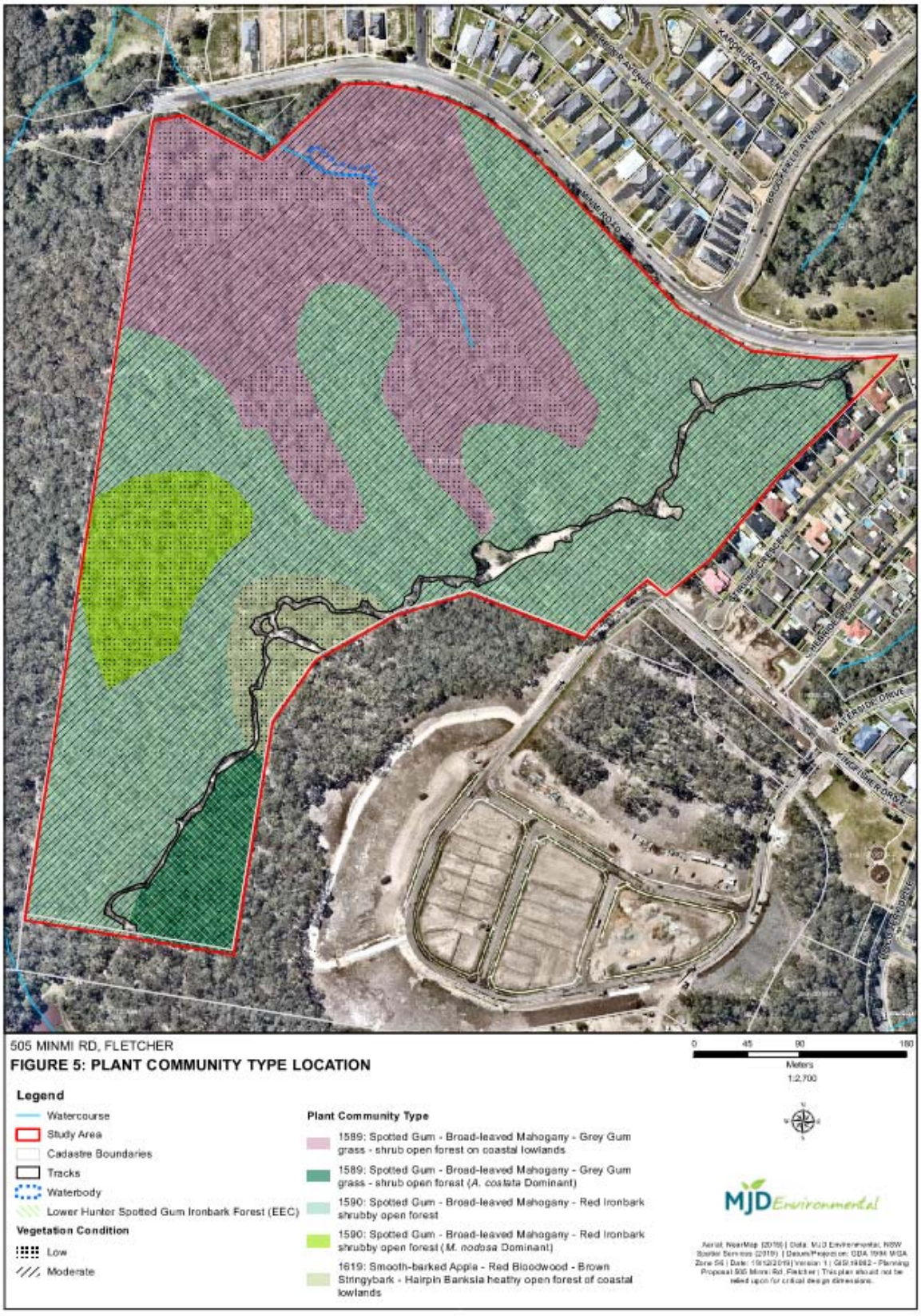

Figure 8: Plan Community Type Location (Source: Figure 5 of Biodiversity Inventory Report, MJD Environmental, p24)

As part of the avoidance and minimisation strategy for the Planning Proposal, it is intended that the central area of the landholding will be rezoned as E2 – Environmental Conservation to conserve biodiversity in the locality and provide connectivity in a north-south direction via the Study Area. The connection to lands in the north is currently limited to highly mobile species that can navigate across the Minmi Road corridor and the fragmented nature of native vegetation to the north of the study area. The connection will facilitate movement to E2 lands in the south, which will require the crossing of the link road between both sides of the proposed lands to be rezoned to R2 lands."

The method of retiring biodiversity credits through the Biodiversity Offset Scheme has not yet been determined and is likely to be a combination of the options outlined by MJD Environmental above.

Should the PP proceed post-Gateway, a Stage 2 Biodiversity Impact Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with the 'Biodiversity Assessment Method Operational Manual – Stage 2' (NSW DPIE, 2019). This is also to:

- Investigate opportunities to provide biodiversity offsets within the Newcastle LGA.
- Protect Threatened Ecological Communities identified on site by locating such communities within the proposed E2 Environmental Conservation zone, with appropriate buffers to development.
- Consider the implications of the Community Title scheme regarding the ongoing management, conservation and potential open space use of the proposed E2 Environmental Conservation land. At this stage, it is unclear if or how the method of retiring biodiversity credits will be integrated with the proposed community title scheme for the ownership of the E2 zoned portion of the land, and whether this is an appropriate future management solution/mechanism for this land. Advice from the Biodiversity Conservation Division in relation to this should be sought as part of these investigations.

8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

Traffic and Transport Considerations

Transport, Traffic and Access

A Traffic Impact Assessment Report prepared by Barker Ryan Stewart (December 2019), at Appendix 7, is provided in support of the Planning Proposal. The purpose of this report is to assess, and address traffic and access impacts generated by the proposed development. In summary, the report concludes that "the development of the subject site will have acceptable impacts on the operation of the Minmi Road / Britannia Boulevard intersection. Minmi Road will also operate well within its mid-block capacity with the additional traffic generated by the development. The surrounding road network will thus not require any upgrade works as a result of the proposed rezoning and development."

Together with the submitted indicative subdivision layout, the following matters will need to be further addressed should the PP proceed post-Gateway:

- Integration with the neighbouring Winten development along the western edge intersection as it is a left-in left-out intersection only, and consulting with Winten regarding access between the sites.
- Extending Kingfisher Drive through to Minmi Road (opposite Brookfield Avenue East) which has a planned four-leg roundabout and will allow for an extension of the existing bus route.

Environmental Considerations

Bushfire hazard

The subject land is bushfire prone. A Strategic Bushfire Study (MJD Environmental, Sept 2020) at Appendix 3 of the PP addresses the considerations of the Planning for Bushfire Protection Guidelines 2019. This report has not been referred to Council's specialist environmental staff or the RFS. Part 5 of the Study 'Conclusion and Recommendations' provides the following (excerpts provided, p31).

> *In summary, this strategic assessment has determined that the proposed development is able to comply with PBP (2019) as;*
>
> - *the land is suitable for development in the context of bushfire risk*
> - *new development on BFPL will comply with PBP 2019*
> - *reliance on performance-based solutions is minimised*
> - *infrastructure associated with emergency evacuation and firefighting operations is adequate.*
> - *Ongoing land management practices are appropriate*
>
> *In summary, the following key recommendations have been generated to enable the proposal to comply with PBP (2019).*
>
> - *Direct access will be provided to each lot in the proposed developments*
> - *Services are to be provided and connected to the site in accordance with PBP (2019).*
> - *Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.*
> - *APZ's will be required, additionally each future residential lot is to be managed as an IPA in perpetuity.* (NB: Specific distances to the east and west are provided, not reproduced here. It is noted that an APZ of 36m from the Forest hazard to the West (pending development: If this development does not proceed, an easement within the site will be required (which will impact on the lot yield).
> - *Assessment has demonstrated that a future residential dwelling on each lot within the proposed subdivision, can be established with a BAL exposure of no greater than BAL-29.*
> - *Services are to be provided and connected to the site in accordance with PBP (2019) as summarised and assessed in Chapter 3, Section 3.4 of this report.*
> - *Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.*

In response to the previous sentence, the eventual subdivision layout will indeed need to be amended, noting the APZs mapped on the submitted indicative subdivision plan show that many of the proposed allotments are impacted by the recommended APZ, which would preclude creation of these allotments (refer to **Figure 9** below which is the 'Preliminary Asset Protection Zone Assessment' Map extracted from the Strategic Bushfire Study, p15). The footprint of proposed R2-zoned land available for development is therefore reduced. Only a coordinated and comprehensive assessment of all required studies will resolve an eventual development area.

Hence, should the PP proceed post-Gateway, an updated Strategic Bush Fire Study is to be prepared by a suitably qualified and experienced consultant in accordance with 'Planning for Bush Fire Protection' (NSW RFS, 2019) that reflects any study outcomes and site planning.

Figure 9: Preliminary Asset Protection Zone Assessment Map (extracted from the Strategic Bushfire Study, MJD Environmental, p15)

Noise, Odour and Air Quality

The site is located within a newly developing residential area, and north of the Summerhill Waste Management Facility, a solid waste landfill.

Given the distance of the site to the Summerhill Waste Management Centre (SWMC) and the high-level environmental management of the facility, the potential impacts of the SWMC on the subject site by way of noise or odour are considered to be minimal. As such, a specific assessment of noise and odour from the centre has not been carried out.

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 identifies the site within a Future Residential Growth Area, around which, a buffer zone of 2km applies to any coal seam gas development. A specific assessment of the impact of odour

and air quality from adjoining development including potential coal mining and coal-bed methane extraction on the subject land has not been carried out given the buffer in place.

The report also notes that an odour and air quality assessment was not a specific consideration of the rezoning and subsequent development approval of the Winten Precinct 1 and 1A located to the south east and west of the site.

Should the PP proceed post-Gateway, the interface with the SWMC regarding noise and odour impacts on future residents should be factored into the proposed lot layout following the completion of updated studies.

Flora and / or fauna

Refer to Question 7 (page 18) of this Planning Proposal for relevant commentary.

Mine subsidence

The site is located within the Newcastle Mine Subsidence District. A Preliminary Mine Subsidence Assessment prepared by Cardno Geotech Solutions dated 5 July 2013 (ref: 1706-001/0) was submitted for a previous Planning Proposal and correspondence was obtained from the Mine Subsidence Board (MSB) which commented on that report (dated 12 June 2014, at Appendix 2). The MSB letter, which forms Appendix 2 of the current PP report concurs with the findings of the Cardno report and confirms that the site is partially undermined and will need to be remediated. A thorough investigation and report from a geotechnical engineer will be therefore be required.

Should the PP proceed post-Gateway, further investigations will need to be conducted to confirm the nature and extent of the subsidence in the south eastern fringe of the site. The scope for a detailed Geotechnical and Mine Subsidence Report is to be in accordance with Subsidence Advisory NSW requirements.

Flooding, Hydrology and Water Management and Quality

The land is not affected by flooding. The existing central creek line (north west corner) will be retained/preserved within the proposed E2 Environmental Conservation zone. Should the PP proceed post-Gateway:

i. the indicative subdivision layout will be required to address 'Water Sensitive Urban Design Solutions for Catchments above Wetlands' (HCC REMS, 2007); and
ii. an assessment of the water quality, groundwater and riparian corridors will need to be included as part of the Stage 2 Biodiversity Assessment.

Detailed stormwater management planning and design will occur at later stages of the development process, should the land be rezoned.

Land/site contamination (SEPP55)

The PP is accompanied by a Report on Preliminary Contamination Assessment (Cardno Geotech Solutions, March 2014), at Appendix 4. The report also accompanied two previous PP applications. This report concluded "the PCA was undertaken to determine the current site status in relation to potential contamination to support the proposed rezoning DA" and "it is considered that the site would be suitable for residential development from a contamination perspective, subject to further assessment, as summarised in Section 8.3 of the report being conducted".

The land remains vacant and no development has occurred since this assessment was undertaken. It is not anticipated that there is any change to the previous situation with respect to land contamination.

Should the PP proceed post-Gateway, a supplementary letter providing updated details for the Preliminary Contamination Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with 'Managing Land Contamination Planning Guidelines, SEPP 55 – Remediation of Land' (NSW EPA, 1998).

Site Layout and Urban Design Considerations

Indicative Subdivision Layout and Development Yield

An indicative subdivision layout has been prepared (refer **Figure 10**) and is likely to be subject to change based on the finding of additional studies to be commenced post-Gateway. The following factors have been taken into consideration in determining the indicative subdivision design:

- Residential zone: Land within the site of slope 15% and less (4% to 10%). Flatter areas have been identified and utilised for smaller lot sizes. Designed to provide adequate setbacks for potential building envelopes to provide for suitable APZs;
- Road access points: Peripheral roads utilised in determining the internal road network (extension of Kingfisher Drive on the site's eastern side and the preferred potential link with the proposed road system within the Winten Precinct 1A on the site's north western side).
- E2 Conservation zone: Centrally located 'pocket' of land which extends diagonally across the entire from south to north. Aims to conserve environmental sensitive land within the site including bushland, riparian and habitat corridors and provide physical connectivity to adjoining and adjacent, similarly zoned lands, in the north west corner of the site (p74). Contains 31 of the 45 identified hollow bearing trees.

Visual Impact

A Visual Impact Assessment (VIA) at Appendix 8 has been prepared by Barr Property and Planning which accompanies the Planning Proposal. The VIA was undertaken to ascertain the potential landscape and visual impacts of the proposed development of the site may have on surrounding areas and ascertain the significance of these impacts. While the removal of vegetation will alter the landscape significantly, this is consistent with development in the adjacent approved residential expansion areas to the west and south west (Winten development).

The following conclusion of the VIA (p29) states: "*the combination of landscape and visual sensitivity impacts will be of minor significance. The direct significance of impacts for development is minimal, in comparison to the already cumulative impacts of existing and proposed development in the broader area. The visual impact of this development is mitigated by the fact that it is an isolated site amongst existing residential developments and has a significant amount of bushland being retained on the site*."

Figure 10: Indicative Subdivision Layout (Source: Figure 21 Barr Property and Planning, p 82)

Social and Cultural Considerations

Aboriginal archaeology

An Aboriginal Archaeological Assessment (ERM, 2003) at Appendix 9 was submitted for a previous PP and was reviewed by the then Office of Environment and Heritage in 2015. The Assessment noted that Aboriginal sites have been recorded on the site, but their significance is considered to be low. A grinding groove was located in the creek line to the west of the site and an isolated single artefact was recorded within the site. The following recommendations were included as part of the report prepared by ERM:

- The three PAD areas of relatively undisturbed ground within the study area that have been identified (refer **Figure 11** below) as having moderate potential to reveal Aboriginal cultural heritage, should undergo a subsurface testing program before ground disturbing elements of the proposed housing development proceeds. Most appropriately this would occur as part of documentation for a development application;
- During works, all known and recorded sites should be clearly marked and avoided;
- No archaeological constraints exist for sections within the study area identified as existing outside of the areas of archaeological significance, identified in Figure 11;
- Areas outside of the study area identified in the Archaeological Assessment as holding Aboriginal significance require protective measures to be undertaken before ground disturbing elements of the proposed residential development can proceed;
- It is recommended that regular meetings are established with the local Aboriginal community to discuss the progress of the proposed works;
- Where possible, and in consultation with Aboriginal stakeholders, conservation areas could be established where artefacts may be relocated, and interpretive strategies be established for the past use of the landscape by Aboriginal people; and
- A copy of the Archaeological report should be provided to each of the Aboriginal groups who expressed an interest in the original rezoning proposal.

The Archaeological Assessment was supplied to the OEH, who… (reviewed and supported)… the report and provided comment on 30 October 2015. In part this review by OEH stated:
"The Planning Proposal must include provisions to facilitate the conservation of Aboriginal cultural heritage values. Such provisions may include:

- *appropriate land use zoning (e.g. E2 conservation)*
- *redesign of future development to avoid harm*
- *incorporating areas into passive open space*
- *recommendations for a development control plan.*

OEH supports the recommendations made within the report (ERM) and takes this opportunity to remind Council that if any registered sites present within the property are to be impacted at the development stage an Aboriginal Heritage Impact Permit will be required".

The ERM report also stated in part "Aboriginal sites have been recorded within the region surrounding the site, although the overall site significance is considered to be low". Whilst the ERM report is dated, the OEH comment is current. The recommendations in the ERM report will be implemented as supported by OEH and the single artefact and grinding grooves will be documented in preparing a future development application for development of the site.

While there is not anticipated to be any change to the previously reported situation, Council, in its letter dated 17 July 2020 requested that a new AHIMS search should be completed and also recommended early consultation be undertaken with the Local Aboriginal Land Council. A basic AHIMS Report was conducted in September 2020 which found no known Aboriginal places and one known Aboriginal site.

Should the PP proceed post-Gateway, an updated Aboriginal Cultural Assessment is to be prepared by a suitably qualified and experienced Aboriginal cultural heritage consultant in

accordance with the 'Aboriginal cultural heritage consultation requirements for proponents 2010' (NSW OEH, 2010). The updated report is to include a new comprehensive AHIMS search and additional consultation with the Awabakal Local Aboriginal Land Council.

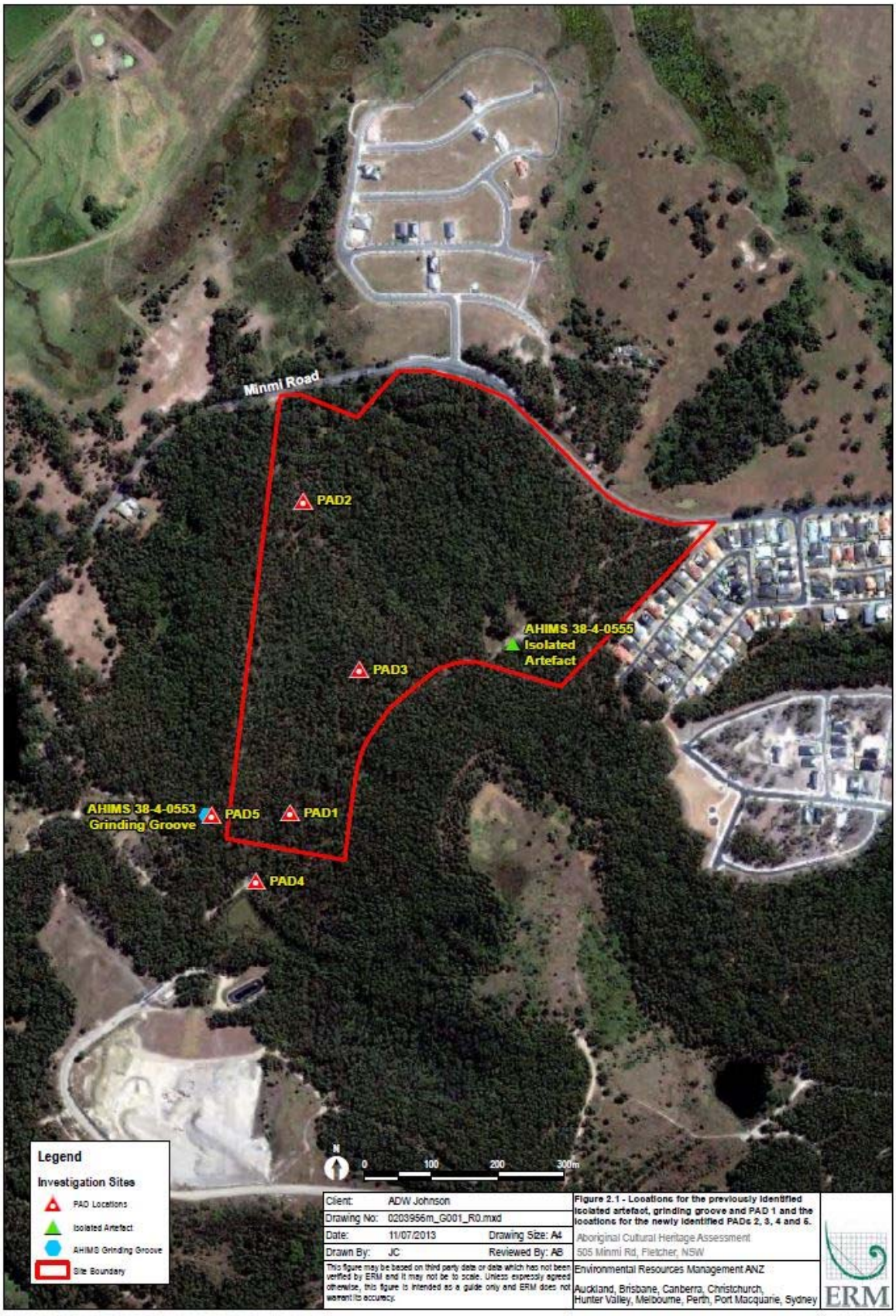

Figure 11: Location of Existing Artefacts and Discovered PADs (ERM 2003, p68)

European archaeology

No items of European cultural heritage have been identified on the site or immediate surrounds.

9. Has the planning proposal adequately addressed any social and economic effects?

Other Social Considerations

The anticipated social impacts of the proposed rezoning of land are as follows:

- There will be no undue load on social infrastructure (shops, sports fields, pedestrian and cycle networks) as the development of the land is anticipated in strategic plans;
- The Section 7.11 Western Corridor Local Infrastructure Contributions Plan 2013 identifies the provision of social infrastructure in line with the proposed future residential development of the land;
- Passive recreational opportunities at the nearby Blue Gum Hills Regional Park;
- Increase in housing choice (range of lot sizes);
- Mitigation and harm prevention strategies will be adopted for three potential archaeological deposits within the sites;
- Open space and cycle network within the site;
- The proposed rezoning is expected to facilitate in the order of 150 dwellings. Based on an analysis of 2016 census data, the future development of the subject land could house in the order of 145 school-aged children, or roughly 75 primary students and 70 secondary students. Local primary schools include Minmi Public, Glendore Public and Maryland Public. These schools feed into Callaghan College Wallsend. Additionally, Bishop Tyrell Anglican College (an independent K-12 school) is located just 1.3km from the site. The NSW Department of Education is responsible for ensuring capacity is available within schools to cater for population growth.

Should the PP proceed post-Gateway, the NSW Department of Education should be consulted to discuss the potential impact of the proposal on local schools and future State planning for additional school capacity.

Economic Considerations

The anticipated economic impacts of the proposed rezoning of land include the following:

- Construction industry jobs (material and labour) associated with the subdivision and dwelling construction;
- Benefits of additional resident population (demand for local retail services and employment);
- Monetary contribution to Section 7.11 Western Corridor Local Infrastructure Contributions Plan 2013 funding additional infrastructure;
- Provision of infrastructure to the site (telecommunications, gas, water, sewer etc) will be costs borne by the developer;
- No negative economic impacts from: (i) road infrastructure as existing network has capacity; and (ii) compensation for vegetation clearing will be offset for on-site conservation.

Summary

The LEP can be completed within a reasonable timeframe and identified potential impacts can be addressed.

Section D - State and Commonwealth interests

10. Is there adequate public infrastructure for the planning proposal?

The proponent has advised that public utility services including telecommunications, gas, electricity, sewer and water will be available to service the development of the site, noting that the adjacent Winten development (within the same catchment) has received subdivision approval by Hunter Water.

Further consultation with service providers will be conducted as the proposal moves forward in the planning process. It is noted that Hunter Water previously (2012) granted conditional approval to the Minmi Road Fletcher Sewer Servicing Strategy, subject to certain matters being addressed. The five-year approval period has since lapsed and the proponent will be required to reapply. Council has considered this matter and advised the proponent that, should the PP proceed post-Gateway that options for the proposed Sewer Servicing Strategy should be investigated and discussed with Hunter Water.

11. What are the views of state and Commonwealth public authorities consulted in accordance with the Gateway determination?

With the exception of those listed below, no state and Commonwealth public authorities have been consulted at this stage. While the agencies' previous advice may still be relevant, given the lapsing of time, re-consultation will need to occur. Public authorities will be consulted with in accordance with the requirements of the Gateway determination (refer to Part 5 of this PP).

- Department of Planning, Industry and Environment [in 2019 who recommended that the biodiversity assessment is in the form of a Biodiversity Development Assessment Report consistent with Stages 1 and 2 of the biodiversity Assessment Method (BAM)];
- NSW Rural Fire Service (in July 2013 who raised no concerns to the rezoning of the subject land. The land is bushfire prone land and a Bushfire Safety Authority will be required to be consulted pursuant to the Rural Fires Act);
- NSW Subsidence Advisory (in June 2014 who concurred with the findings and recommendations provided by the geotechnical consultant and suggested methodologies to eliminate the risk of potential mine subsidence); and
- Hunter Water Corporation (in January 2012 granted conditional approval to the Minmi Road Fletcher Sewer Servicing Strategy, lapsed after 5 years).

Summary

The LEP can be completed within a reasonable timeframe and identified potential impacts can be addressed.

Part 4 - Mapping

The planning proposal seeks to amend the following maps within Newcastle LEP 2012:

- Land Zoning Map
- Height of Buildings Map
- Minimum Lot Size Map
- Urban Release Area Map.

The Matrix below indicates (with an "X"), which map sheets (of Newcastle LEP 2012) are to be amended as a result of this planning proposal:

	FSR	LAP	LZN	WRA	ASS	HOB	LSZ	LRA	CL1	HER	URA
001											
001A											
001B			X			X	X				X
001C											
001D											
002											
002A			X			X	X				X
002B											
002C											
002D											
002E											
002F											
002G											
002H											
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004E											
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004FA											
004G											
004H											
004I											
004J											
004K											

Map Codes:

	FSR	=	Floor Space Ratio map
	LAP	=	Land Application Map
	LZN	=	Land Zoning Map
	WRA	=	Wickham Redevelopment Area Map
	ASS	=	Acid Sulfate Soils Map
	HOB	=	Height of Buildings Map
	LSZ	=	Lot Size Map
	LRA	=	Land Reservation Acquisition Map
	CL1	=	Key Sites Map & Newcastle City Centre Map
	HER	=	Heritage Map
	URA	=	Urban Release Area Map

Part 5 - Community consultation

The planning proposal will be exhibited in accordance with the Department of Planning, Industry and Environment's guidelines, 'A guide to preparing planning proposals'. It is envisaged that the planning proposal will be publicly exhibited for 28 days.

Pre-exhibition consultation is recommended with the following:

- Roads and Maritime Services (RMS);
- Subsidence Advisory NSW;
- Department of Planning, Industry and Environment;
- NSW Rural Fire Service (RFS);
- Awabakal Local Aboriginal Land Council; and
- NSW Biodiversity Conservation Division.

Any other relevant authorities will be consulted in accordance with the requirements of the Gateway Determination.

Part 6 - Project timeline

The plan making process is shown in the timeline below. It will be undertaken in accordance with the Gateway determination.

Task	Planning Proposal Timeline											
	Jan 21	Feb-Jul 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22
Anticipated commencement date (date of Gateway determination)	■											
Anticipated timeframe for the completion of required studies (6 months)		■										
Timeframe for government agency consultation		■										
Commencement and completion dates for public exhibition period			■									
Timeframe for consideration of submissions				■	■							
Timeframe for the consideration of a proposal post exhibition				■	■	■						
Anticipated date RPA* will make the plan (if delegated)							■					
Anticipated date RPA* will forward to the Department for notification (if delegated) or for finalisation (if not delegated)								■	■	■	■	■

*RPA Relevant Planning Authority

Appendix 1 – Planning Proposal Checklist

STEP 1: REQUIRED FOR ALL PROPOSALS
(under s3.33(2)(a-e) of the EP&A Act)

- Objectives and intended outcome
- Mapping (including current and proposed zones)
- Community consultation (agencies to be consulted)
- Explanation of provisions
- Justification and process for implementation (including compliance assessment against relevant section 9.1 direction/s)

STEP 2: MATTERS – CONSIDERED ON A CASE BY CASE BASIS
(Depending on complexity of planning proposal and nature of issues)

Planning Matters or Issues	to be considered	N/A
Strategic Planning Context		
Consistent with the relevant regional, district or corridor/precinct plans applying to the site, including any draft regional/district or corridor/precinct plans released or public comment; or	☑	☐
Consistent with a relevant local council strategy that has been endorsed by the Department; or	☑	☐
Responding to a change in circumstances, such as the investment in new infrastructure or changing demographic trends that have not been recognised by existing planning controls; or	☑	☐
Seeking to update the current planning controls if they have not been amended in the last 5 years	☐	☑
Site Description / Context		
Aerial photographs	☑	☐
Site photos / photomontage	☑	☐
Traffic and Transport Considerations		
Local traffic and transport	☑	☐
TMAP	☑	☐
Public transport	☑	☐
Cycle and pedestrian movement	☑	☐
Environmental Considerations		
Bushfire Hazard	☑	☐
Acid sulphate Soil	☑	☐
Noise impact	☑	☐
Flora and/or fauna	☑	☐
Soil stability, erosion, sediment, landslip assessment and subsidence	☑	☐
Water quality	☑	☐
Stormwater management	☑	☐

	to be considered	N/A
Environmental Considerations		
Flooding	☑	☐
Land/site contamination (SEPP55)	☑	☐
Resources (including drinking water, minerals, oysters, agricultural lands, fisheries, mining)	☑	☐
Sea level rise	☐	☑
Urban design Considerations		
Existing site plan (buildings, vegetation , roads, etc)	☑	☐
Building mass/block diagram study (changes in building height and FSR)	☐	☑
Lighting impact	☐	☑
Development yield analysis (potential yield of lots, houses, employment generation)	☑	☐
Economic Considerations		
Economic impact assessment	☑	☐
Retail centres hierarchy	☐	☑
Employment land	☐	☑
Social and Cultural Considerations		
Heritage impact	☐	☑
Aboriginal archaeology	☑	☐
Open space management	☐	☑
European archaeology	☐	☑
Social and cultural impacts	☑	☐
Stakeholder engagement	☑	☐
Infrastructure Considerations		
Infrastructure servicing and potential funding arrangements	☑	☐
Miscellaneous / Additional Considerations		
List any additional studies that should be undertaken post Gateway determination	☑	☐

Refer Section 7.1 of Cardno report dated 31/10/2020

Appendix 2 – Mine Subsidence Board Correspondence

7 Next Steps – Further Required Studies and Information

7.1 Recommended Additional Studies

Should the planning proposal be forwarded to the Department of Planning, Industry and Environment for a Gateway Determination (as recommended by this report), and the proposal proceed to a Gateway Determination, the following additional information/studies are recommended to be undertaken. All studies must be integrated/consistent in terms of recommendations. The following matters may be subject to change following detailed assessment of the PP and any requirements identified by State agencies.

Environmental

- A Stage 2 Biodiversity Impact Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with the 'Biodiversity Assessment Method Operational Manual – Stage 2' (NSW DPIE, 2019) and include all updated legislation, including SEPP (Koala Habitat Protection) 2019.
- Threatened Ecological Communities identified on site should be protected by locating them within the proposed E2 Environmental Conservation zone with appropriate buffers to development.
- Investigate opportunities to provide biodiversity offsets within the Newcastle LGA.
- Include an assessment of the water quality, groundwater, and riparian corridors as part of the Stage 2 Biodiversity Assessment.
- Consider the implications of the Community Title scheme regarding the ongoing management, conservation, and potential open space use of the proposed E2 Environmental Conservation land.

Contamination: A supplementary letter providing updated details for the Preliminary Contamination Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with 'Managing Land Contamination Planning Guidelines, SEPP 55 – Remediation of Land' (NSW EPA, 1998).

Bushfire: A Strategic Bush Fire Study is to be prepared by a suitably qualified and experienced consultant in accordance with 'Planning for Bush Fire Protection' (NSW RFS, 2019) that reflect any updated indicative subdivision and consistent with other studies.

Heritage: An updated Aboriginal Cultural Assessment is to be prepared by a suitably qualified and experienced Aboriginal cultural heritage consultant in accordance with the 'Aboriginal cultural heritage consultation requirements for proponents 2010' (NSW OEH, 2010). The updated report is to include a new AHIMS search and additional consultation with the Awabakal Local Aboriginal Land Council.

Subdivision Layout: The indicative subdivision layout is to be amended in response to the recommendations of the updated supporting studies and the following:

- 'Water Sensitive Urban Design Solutions for Catchments above Wetlands' (HCC REMS, 2007).
- Integrating with the neighbouring Winten development along the western edge intersection as it is a left-in left-out intersection only. Consult with the owners of the neighbouring Winten development regarding access between the sites.
- Extending Kingfisher Drive through to Minmi Road (opposite Brookfield Avenue East) which has a planned four-leg roundabout, and which will allow for an extension of the existing bus route.

Site-specific Development Control Plan (DCP): A site-specific DCP is to be prepared in accordance with Clause 8.3 of the NLEP 2012 and the recommendations of the updated supporting studies.

Mine Subsidence: Confirm the nature and extent of the subsidence in the south eastern fringe of the site and scope for a detailed Geotechnical and Mine Subsidence Report in accordance with Subsidence Advisory NSW requirements.

Servicing: Options for the proposed Sewer Servicing Strategy should be investigated and discussed with Hunter Water.

Odour and Noise Impacts: The interface with the Summer Hill Waste Facility regarding noise and odour impacts on future residents should be factored into the proposed lot layout following the completion of updated studies.

Social Impact (Schools): Consult with the NSW Department of Education to discuss the potential impact of the proposal on local schools and future State planning for additional school capacity.

MINE SUBSIDENCE BOARD

In reply please send to: Newcastle District Office

Our reference: FN00-00318N0

Your reference: PP-2013-NEWCA-001-00

Contact: Richard Pickles (02) 4908 4352

NEWCASTLE CITY COUNCIL
ATT – SHANNON TURKINGTON
PO BOX 489
NEWCASTLE NSW 2300

12 June 2014

Dear Shannon

ENQUIRY NO. TENQ14-11496N1
PLANNING PROPOSAL TO AMEND NECASTLE LEP 2012 – 505 MINMI ROAD FLETCHER
LOT 1 DP 844711 MINMI ROAD FLETCHER

Thank you for your invitation to comment on the Planning Proposal to amend Newcastle LEP 2012 – 505 Minmi Road Fletcher.

The above lot lies within the Newcastle Mine Subsidence District and the Boards approval is required for subdivision of the land and any surface development.

The Board has considered the attached Preliminary Mine Subsidence Assessment carried out by Cardno Geotech Solutions and concurs with its initial findings and suggested methodologies to eliminate the risk of mine subsidence.

The site is partially undermined in the south eastern fringe of the property with very shallow mine workings. The depth of the mining ranges from 0 to 20 metres. Due to the high risk of subsidence the workings will need to be remediated to totally eliminate the risk of mine subsidence.

A thorough investigation and report from a geotech engineer will be required to determine the extent of the mine workings and the proposed methodology to eliminate the risk of mine subsidence. The report is to be to the satisfaction of the Mine Subsidence Board. On completion of the rehabilitation to the site the Board would require certification that the risk of mine subsidence has been eliminated.

Standard (Auto) Enquiries

NEWCASTLE
Ground Floor
NSW Government Offices
117 Bull Street
Newcastle West 2302
PO Box 488G Newcastle 2300
Telephone: (02) 4908 4300
Facsimile: (02) 4929 1032
DX 4322 Newcastle West

PICTON
100 Argyle Street
Picton 2571
PO Box 40 Picton 2571
Telephone: (02) 4677 1967
Facsimile: (02) 4677 2040
DX 26053 Picton

SINGLETON
The Central Business Centre
Unit 6, 1 Pitt Street
Singleton 2330
PO Box 524 Singleton 2330
Telephone: (02) 6572 4344
Facsimile: (02) 6572 4504

WYONG
Suite 3 Feldwin Court
30 Hely Street
Wyong 2259
PO Box 157 Wyong 2259
Telephone: (02) 4352 1646
Facsimile: (02) 4352 1757
DX 7317 Wyong

HEAD OFFICE
PO Box 488G
Newcastle 2300
Telephone: (02) 4908 4395
Facsimile: (02) 4929 1032

Email
mail@minesub.nsw.gov.au

Web
www.minesub.nsw.gov.au

24 Hour Emergency Service
Free Call 1800 248 083

Once the rehabilitation is carried out the provisions of the Mine Subsidence Compensation Act cover any improvements erected on this land.

Please don't hesitate to contact me should you require any further information.

Yours faithfully

R. Pickles

Richard Pickles
Acting District Manager

Appendix 3 – Strategic Bushfire Study

Strategic Bush Fire Study

Lot 23 DP1244350, 505 Minmi Road, Fletcher

Prepared for
Barr Property & Planning

V2 Final / September 2020

0416 208 684
matt.doherty@mjdenvironmental.com.au
PO Box 360 Waratah NSW 2298
MJDenvironmental.com.au

DOCUMENT STATUS

Project Particulars			
Project Name	Strategic Bush Fire Study: Lot 23 DP1244350, 505 Minmi Road, Fletcher		
Job Number	19082		
Client	Barr Property and Planning		
Status	Final		
Version	**Date**	**Prepared by**	**Details**
V1	27-8-2020	SF/MD	Draft for client review
V2	18-09-2020	SF/MD	Final for submission

Approval for use:

Matt Doherty - Director

18-9-2020

This report has been prepared in accordance with Planning for Bushfire Protection 2019 and certifies the development conforms to the specifications and requirements of S4.14 of the Environmental Planning and Assessment Act 1979.

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APPENDICES

GLOSSARY OF TERMS AND ABBREVIATIONS

Term/ Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419-2005	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BAR	Bushfire Assessment Report
BCA	Building Code of Australia
BC Act	Biodiversity Conservation Act 2016
BMP	Bush Fire Management Plan
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL	Bush Fire Prone Land
BPLM	Bush Fire Prone Land Map
BPM	Bush Fire Protection Measures
DoE	Commonwealth Department of the Environment
DPI Water	NSW Department of Primary Industries – Water
EPA Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
LLS Act	Local Land Services Act 2013
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PBP or PBP (2019)	Planning for Bushfire Protection 2019
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
TSC Act	NSW Threatened Species Conservation Act 1995 (as repealed)

1 Introduction

MJD Environmental has been engaged by Barr Property & Planning to prepare a Strategic Bushfire Study (SBFS) to accompany a Planning Proposal application for the rezoning of a 26.2 hectare parcel of land at Lot 23 in DP 1244350, 505 Minmi Rd, Fletcher, hereafter referred to as the 'site' (**Figure 1**).

The assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the proposal, and to outline the minimum mitigative measures which would be required in accordance with *Planning for Bush Fire Protection 2019* (PBP), as adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2020*.

In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adheres to the methodology and procedures outlined in PBP (2019) via assessment of acceptable solutions as outlined in Chapter 4 and Chapter 5 of PBP (2019).

This assessment has been made based on the bushfire hazards in and around the site at the time of site inspection and report production.

1.1 Description of Proposal

The objective of the Planning Proposal is to amend the Newcastle Local Environmental Plan 2012 to facilitate the future delivery of the site for low density residential subdivision development and environmental conservation purposes. The rezoning seeks to zone the 26.2ha parcel into the following areas:

- R2 - Low Density Residential 15.4ha
- E2 - Environmental Conservation 10.8ha

Refer to **Appendix A** for plans of the proposal.

1.2 Aims & Objectives

PBP (2019) states in Chapter 4, the study of bushfire context ensures that future land uses are in appropriate locations to minimise the risk to life and property from bush fire attack. Services and infrastructure that facilitate effective suppression of bushfires also need to be provided for at the earliest stages of planning.

The bushfire risk is considered at the macro-scale, looking at fire runs, steep slopes and any areas of isolation. The amount of proposed development interfacing vegetation will also be considered. Firefighting access and evacuation potential must be considered as well as an assessment of traffic volumes and evacuation routes. The study will highlight areas with a significant fire history and any known fire paths

The broad principles which apply to this analysis are:

- ensuring land is suitable for development in the context of bush fire risk;
- ensuring new development on BFPL will comply with PBP;
- minimising reliance on performance-based solutions;
- providing adequate infrastructure associated with emergency evacuation and firefighting operations; and
- facilitating appropriate ongoing land management practices.

Strategic planning should provide for the exclusion of inappropriate development in bush fire prone areas in the following circumstances:

- the development area is exposed to a high bush fire risk and should be avoided;
- the development is likely to be difficult to evacuate during a bushfire due to its siting in the landscape, access limitations, fire history and/or size and scale;
- the development will adversely affect other bushfire protection strategies or place existing development at increased risk;
- the development is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants; and
- the development has environmental constraints to the area which cannot be overcome.

1.3 Site Particulars

Locality	The site is located in Fletcher
Land Title	Lot 23 DP 1244350
LGA	City of Newcastle Council
Area	26.2ha (approx.)
Zoning	The site is currently zoned E4 – Environmental Living (DPE 2020).
Boundaries	T The Study Area is situated in the recently established residential precinct of the Fletcher village with residential lots under construction adjoining the Study Area to the East and North, vacant land zoned as R2 - Low Density Residential to the West and to the South by E2 – Environmental Conservation zoned lands. The Study Area is bound by frontage (North) to Minmi Road.
Current Land Use	The lot is currently a vacant bush block, comprising native vegetation, unsealed roads, fences, rubbish dumps and motorcycle/bicycle tracks.
Topography	The highest point of Study Area is located on the Eastern boundary at 53m ASL. The land falls steeply from the East (~20m ASL) until it reaches a creekline (28m ASL) and elevates again towards the west to 38m ASL.
Climate / Fire History	The site lies within a geographical area with a Fire Danger Index (FDI) rating of 100. The site is classified as being affected by Category 1 Vegetation and Vegetation Buffers from Category 1 Vegetation on the Bushfire Prone Land Map (DPE 2020). Refer to **Figure 2**.
Environment & Cultural Significance	The planning proposal has been informed by an Aboriginal Cultural Heritage Assessment and Environmental Assessment.

505 MINMI RD, FLETCHER

SLOPE AND VEGETATION CLASSIFICATION

0 60 120 240

Meters

1:3,600

N

W E

S

Legend

- Watercourse
- Subject Site
- Slope Classification Buffer (100m)
- Vegetation Classification Buffer (140m)
- Cadastral Boundaries

MJD Environmental

Aerial: NearMap (2019) | Data: MJD Environmental, NSW Spatial Services (2019) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 27/08/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

505 MINMI RD, FLETCHER

FIGURE 2: BUSHFIRE PRONE LAND

148/ /840897
3/ /1230960
1/ /270583
4/ /286707
3/ /286707
5/ /286707
6/ /286707
7/ /286707
8/ /286707
9/ /286707
1/ /270583
1006/ /1228...
21/ /286154
3/ /286154
4/ /286154
5/ /286154
6/ /286154
7/ /286154
43/ /286502
44/ /286502
45/ /286502
46/ /286502
47/ /286502
48/ /286502
49/ /286502
1/ /270583
10/ /270583
7/ /1115428
23/ /1244350
241/ /1041266
2/ /1230960
116/ /270578
80/ /270578
149/ /270578
1/ /270578
149/ /270578
69/ /270578
24/ /1244350
118/ /270578
108/ /270578
109/ /270578
1/ /270578
260/ /270578
2/ /1208481
1230/ /1149923

Legend

- Proposed Layout
- Subject Site
- Study Area
- Slope Classification Buffer (100m)
- Vegetation Classification Buffer (140m)
- Cadastral Boundaries

Bush Fire Prone Vegetation

- Category 1
- Category 2
- Category 3
- BFPV Buffer

N
W E
S

0 65 130 260

Meters

1:4,000

MJD Environmental

Aerial: NearMap (2020) | Data: MJD Environmental, NSW RFS, NSW Spatial Services (2020) | Datum/Projection: GDA 2020 MGA Zone 56 | Date: 10/09/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

2 Bushfire Hazard Analysis

2.1 Vegetation Assessment

Methodology

The vegetation in and around the site, to a distance of 140m, has been assessed in accordance with PBP 2019. This assessment has been made via a combination of:

- aerial photo interpretation;
- on-site vegetation classification aided by GPS; and
- reference to regional community vegetation mapping (including Greater Hunter and Keith).

These vegetation communities have been classified for bushfire purposes into structure and formation using the system adopted by Keith (2004) and using Figure A1.2 of PBP (2019) with due regard to Appendix 1 of PBP (2019).

Vegetation Classification

Vegetation classification for the site has been presented in **Table 1** below and **Figure 3**. Vegetation classification has been separated in to the Eastern and Western portion of the site where a proposed R2 zoning would be established.

Table 1 Vegetation Classification

Direction	Description	Vegetation Classification
Eastern		
North-west	Minmi Road followed by established residential subdivision	Managed - No Hazard
North-east	Minmi Road followed by grassland area transitioning to riparian corridor. This area is the subject of a proposed development (MP06_0031) and fuel load will be managed in the future	Grassland/ Forest
East	Residential subdivision	Managed - No Hazard
South-east	The area is currently managed to APZ standards and is subject to a proposed development (DA04/2782) and part of the Newcastle Link Road residential subdivision (MP10_0090)	Managed - No Hazard
South-west	Forested corridor approximately 100m wide zoned E2 (Environmental Conservation), backed onto a residential subdivision development in progress (Newcastle Link Rd MP10_0090, DA 2015/10360)	Forest
West	Forested area proposed for conservation, approximately 10.8ha in size. The complex topology has 4 distinct gullies forming a 1st order stream and feeds into a small natural waterbody	Forest
Western		
North-west	Minmi Road followed by grassland with small patches of forest	Grassland/ Forest
North-east	Minmi Road followed by established residential subdivision	Managed - No Hazard
East	Forested area proposed for conservation, approximately 10.8ha in size. The complex topology has 4 distinct gullies forming a 1st order stream and feeds into a small natural waterbody	Forest
South	Forest across a large area. Summerhill Waste Facility tenure lies approximately 50m south of the	Forest

	development. A dam, approximately 0.4ha, sits just inside the Summerhill property	
South-east	Forested corridor approximately 100m wide zoned E2 (Environmental Conservation), backed onto a residential subdivision development in progress (Newcastle Link Rd MP10_0090, DA 2015/10360)	Forest
West	Currently the land is forested but is approved to be developed as a residential subdivision (Newcastle Link Rd MP10_0090, DA 2015/10393)	Currently Forest, will become Managed – No Hazard following future development of approved subdivision.

2.2 Slope Assessment

Methodology

In accordance with PBP (2019), an assessment of the slope was conducted throughout the site (where a hazard is present) and for a distance of 100m around the site in the hazard direction. Both the average slope and maximum slopes were considered to determine the level of gradient which will most significantly influence fire behaviour on the site. The slope transect was categorised within the slope classification under PBP Appendix A1.4.

Slope assessment was assisted by:

- Preparation of elevation model based on state LiDAR data; and
- Preparation of slope assessment based on 1m contours

Effective Slope

The slope class under the bushfire hazard within 100m is presented in **Table 2** below and **Figure 3**.

Table 2 Slope Class

Direction	Vegetation Classification	Slope Class
Eastern		
North-east	Grassland/ Forest	10-15° Downslope
South-west	Forest	Upslope
West	Forest	5-10° Downslope / 10-15° Downslope
Western		
North-west	Grassland/ Forest	Upslope
East	Forest	Upslope / 0-5° Downslope
South	Forest	0-5° Downslope
West	Managed – following subdivision construction per development approval NCC DA 2015/10393	5-10° Downslope

505 MINMI RD, FLETCHER

SLOPE AND VEGETATION CLASSIFICATION

0 60 120 240

Meters

1:3,600

Legend

- Elevation
- Transects
- Watercourse
- Contours (1m)
- Subject Site
- Slope Classification Buffer (100m)
- Vegetation Classification Buffer (140m)
- Cadastral Boundaries

Vegetation (Keith 2004)

- Forest
- Grassland
- Managed Land
- Managed as APZ
- Waterbody
- Development Footprint

MJD Environmental

Aerial: NearMap (2019) | Data: MJD Environmental, NSW Spatial Services (2019) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 27/08/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

3 Bushfire Protection Measures

PBP sets out a suite of BPMs and criteria that require consideration and assessment for applicable proposals on bushfire prone land in order to provide an adequate level of protection to new developments.

The measures required to be assessed are listed below and discussed throughout this chapter:

- Asset Protection Zones (APZ)
- Bushfire Attack Levels (BAL) set out in PBP 2019
- Landscaping and Fuel Management

Measures pertaining to the items listed below are addressed in Chapter 4 of this report as it relates to the Strategic Bush Fire Study:

- Access
- Services – Water supply, Gas and Electricity
- Emergency Management

3.1 Asset Protection Zone

An APZ is a buffer zone between the hazard and buildings that is progressively managed to minimise bushfire hazard (fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack) PBP (2019), in order to mitigate risk to life and asset. Where a forest or woodland vegetation classification has been determined, an APZ can consist of two areas being:

1) Inner Protection Area (IPA) – The IPA extends from the edge of the development/ buildings to the OPA. The IPA aims to provide defendable space and reduce potential for direct or spontaneous ignition by providing a heavily reduced or fuel free zone.
2) Outer Protection Area (OPA) – The OPA is located adjacent to the hazard. Within the OPA any trees and shrubs should be maintained in a manner such that the vegetation is not continuous in order to reduce flame length and fire intensity. A properly managed OPA can aid in ember attack by filtering embers and slowing the fires rate of spread.

An APZ can include the following:

- Lawns;
- discontinuous gardens;
- swimming pools;
- driveways;
- detached garages;
- open space / parkland;
- car parking; and
- cycleway and formed walkways.

3.1.1 Determining APZs

The subject site lies within the City of Newcastle LGA and therefore is assessed under an FDI (Fire Danger Index) rating of 100. Table 5.3a and Table A1.12.2 within PBP (2019), the acceptable solution setbacks have been calculated based on the bushfire hazard analysis presented in Chapter 2. Notably, as the planning proposal is for future residential subdivision, performance criteria for APZs is satisfied if radiant heat levels 29kW/m^2 or less are experienced at the building or in this case suitable area exists to establish a dwelling at BAL-29 or lower exposure. Refer to **Table 3** below and **Figure 4** for the required APZ.

Table 3 Required APZ (PBP 2019)

Direction	Vegetation Classification	Slope Class	Required APZ
Eastern			
North-east	Grassland/ Forest	10-15° Downslope	45m
South-west	Forest	Upslope	24m
West	Forest	5-10° Downslope / 10-15° Downslope	36m / 45m
Western			
North-west	Grassland/ Forest	Upslope	24m
East	Forest	Upslope / 0-5° Downslope	24m / 29m
South	Forest	0-5° Downslope	29m
West	Currently Forest, Managed – following subdivision construction per development approval NCC DA 2015/10393	5-10° Downslope	36m as temporary APZ until such time that development occurs to the west.

3.1.2 Determining BAL

Acceptable solution BAL has been set out in Appendix 1 Table A1.12.5 of PBP (2019). The APZ determined in **Section 3.1.1** achieves the RFS objective for a maximum BAL exposure of BAL-29 to any new lot in a residential subdivision. Future subdivision design should be guided by the required APZ and ensure that all future building envelopes on lots to be created will not be exposed to BAL greater than BAL-29.

On the basis of the APZ mapping provided it is considered at this early stage in the site planning process that the site is readily capable of complying with PBP 2019 BAL requirements.

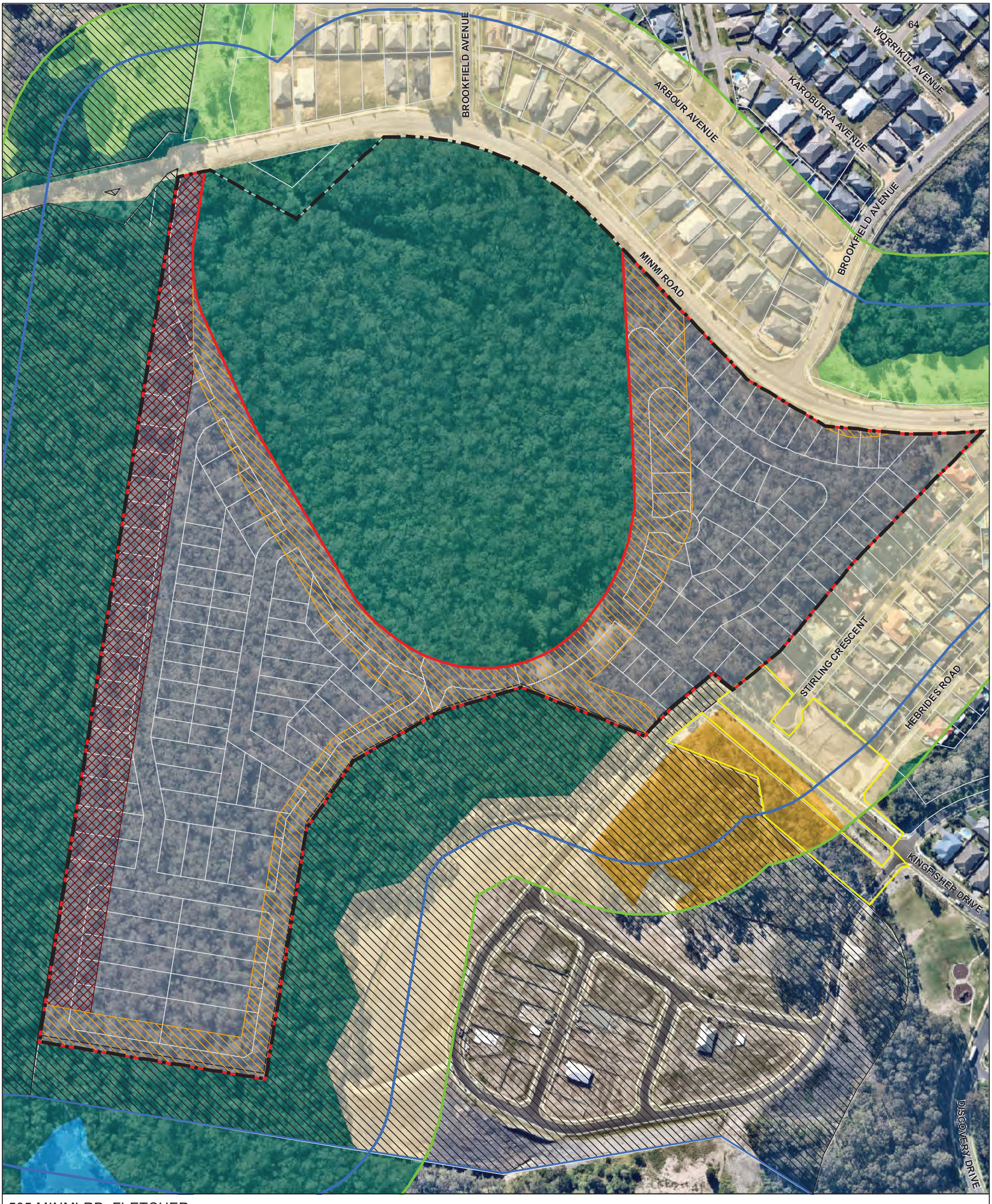
3.2 Landscaping & Fuel Management

All future landscaping on the site should be designed and managed to minimise impact of bushfire based on the principles set out in PBP (2019) being:

- Prevent flame contact / direct ignition on the dwelling;
- Provide a defendable space for property protection;
- Reduce fire spread;
- Deflect and filter embers;
- Provide shelter from radiant heat; and
- Reduce wind speed.

In this manner, consideration should be given to species selection, planting location, flammability and size at maturity to ensure discontinuous canopy/ structure both vertically and horizontally to ensure the above principles are met.

Ongoing fuel management across the residential zoned site area as part of the maintenance regime should give due consideration to Appendix 4 Asset Protection Zone Requirements of PBP (2019) which provides guidance on maintenance activities to assist in achieving the landscape principles.



505 MINMI RD, FLETCHER

PRELIMINARY ASSET PROTECTION ZONE ASSESSMENT

Legend

- Proposed & Existing Lots
- Subject Site
- Study Area
- Slope Classification Buffer (100m)
- Vegetation Classification Buffer (140m)
- Required APZ
- Temporary APZ

Adjacent Tenures

- DA04/2782
- Summerhill Waste Faclity
- Winten Development

Vegetation (Keith 2004)

- Forest
- Grassland
- Managed Land
- Managed as APZ
- Waterbody
- Development Footprint

0 45 90 180

Meters

1:2,700

MJD Environmental

N W E S

Aerial: NearMap (2020) | Data: MJD Environmental, RAP Surveying, NSW Spatial Services (2020), , EPI (2019) | Datum/Projection: GDA 2020 MGA Zone 56 | Date: 4/09/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

4 Bush Fire Strategic Study

4.1 Bush Fire Landscape Assessment

The following criteria are set out in Chapter 4 Table 4.2.1 of PBP (2019) and require consideration for the Planning Proposal:

This bushfire landscape assessment considers the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.

- *The Bushfire hazard in the surrounding area, including:*
  - *Vegetation*
  - *Topography*
  - *Weather*
- *The potential fire behaviour that might be generated based on the above*
- *Any history of bush fire in the area;*
- *Potential fire runs into the site and the intensity of such fire runs; and*
- *The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.*

A landscape analysis relating to bushfire has been undertaken within a 2 kilometre buffer of the site. This analysis has considered:

- Topography (**Figure 5**)
- Mean annual rain fall (**Figure 6**)
- Mean annual temperatures (**Figure 7**)
- Wildfire History (**Figure 8**)
- Current Landuse including approved developments yet to physically commence over Keith (2004) vegetation (**Figure 9**)
- Current / proposed landuse over zoning (**Figure 10**)

The bushfire hazard surrounding the site is generally represented by topography consisting of foothills that slope toward floodplains. Vegetation is fragmented by the urban fabric and road network. Additionally, a large concept approved (refer to **Appendix B**) development (former Coal and Allied now owned by Winten Property Group) will remove large portions of vegetation that currently represent a local hazard to the west and south. In doing so there will be a much larger urban setting in the locality with a reduced bushland area limited to riparian connections and Blue Gum Hills Regional Park and the Summer Hill Waste Facility. To the north-east the final stage of The Outlook will increase the urban footprint. Vegetation in the locality is characterised by Keith (2004) as Dry Sclerophyll Forest on the foothills and Freshwater Wetlands, Forested Wetlands on the floodplain. Riparian corridors have an association with wet sclerophyll forests.

The temperate climate as evidenced by the mean precipitation and temperatures is characteristic of the coastal zone with warm to hot summers at peak and cool winter periods. Rainfall patterns generally make for a dryer period in the peak of summer.

On the basis of the local climate coupled with vegetation and topography, history of severe fire behaviour in the area is well documented, however as neighbouring subdivision Development Applications are approved (Winten) the vegetation connectivity in the immediate vicinity shall be significantly reduced, thus the potential for severe fires to develop within the site will also be diminished.

NSW NPWS fire history records several recent wildfires that occurred in close proximity to the site as follows:

- To the south, fires centred on the *Blue Gums Hills Regional Park* burned closest to the site, coming within 500m of the site's Southern Boundary - fires recorded: 2001-02, 2002-03, 2006-07, 2011-12.
- To the west, fires in the recent past have burnt up to the M1 Pacific Freeway, coming within 1.5km West of the site - fires recorded: 2001-02, 2010-11, 2013-14.
- To the east, fires in the recent past have burned the freshwater wetlands, twice burning to the edge of the established suburb of Maryland, 2.5kms to the East - fires recorded: 2005-06, 2009-10, 2013-14.

A table has been provided in **Appendix C** lists all fires larger than 1Ha that occurred within 10km of the site (NPWS fire history data-20200817). These fires occurred within the Newcastle, Lake Macquarie and Cessnock LGAs.

Potential fire runs into the site and the intensity of such fire runs

Potential fire runs into the site are most likely from a South/South-Westerly direction, as a riparian corridor West of the site would allow a fire from *Blue Gums Hills Regional Park* to run uphill towards the site's Southern or Western site boundary to the proposed developments. The fact that a first-order branch of "Back Creek" runs diagonally across the Southern boundary of the site mitigates this threat somewhat, allowing greater soil moisture and vegetation greenness in the area, decreasing vegetation flammability lowering potential fire rate of spread.

Likewise, the *Summerhill waste treatment facility* located to the South & South-East of the site is the only other substantial area of dense vegetation proximate to the site. As the waste treatment facility contains an elevated area higher than the site, any fire run to the site would be downhill- greatly reducing the rate of spread of any fire towards the site. The primary bushfire threat from the *Summerhill waste treatment facility*& *Blue Gums Hills Regional Park* is in the form of ember attack igniting spot fires in the vicinity.

Ember attack from the West is more likely, as prevailing winds during the bushfire season often come from a North-Westerly direction. West of the site at the M1 motorway and into the Sugarloaf Range is the largest area of vegetation, potential fuel for spotting to occur. Notwithstanding the Winten development occupies the immediate western landscape and spans to the M1 Motorway.

The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.

The planning proposal and indicative layout incorporates a central ring road that, with Minmi Road, encircles the steeper central area of the denser hazard vegetation. This design element aids emergency services in the access to and suppression of any fire that occurs within this vegetated central area. Perimeter roads also bound the site's southern boundaries, allowing greatly improved access to the 150m wide strip of hazard vegetation between the site and Waterside Drive – of the neighbouring approved suburban development (NCC DA 2015/10393)

To a large extent the ability of emergency services to access and suppress a fire depends on access to and within the nearby bushfire hazards. NPWS fire history records and current development plans indicate that the only substantial tract of bushfire-prone land to remain nearby the site is the *Summerhill waste treatment facility* and *Blue Gums Hills Regional Park*. The inclusion of a perimeter road surrounding the 10 lots in the southernmost protrusion of the proposed development serve to greatly enhance the ability of emergency responders to defend properties from a bushfire, and also to access these adjacent sites from the North- which are currently only accessible from the South via *Summerhill waste treatment facility* or West via *Blue Gums Hills RP*. Furthermore the continuity of nearby bushfire hazards is low, and fragmentation of landscape fuels in the vicinity is high – these factors as well as the moderate complexity of the terrain, do not serve to increase the level of threat to emergency responders.

The findings of this bushfire landscape assessment are that the site does not exhibit any significant features that would make it more likely to experience a bushfire of undue severity or intensity. The potential impact on life and property of the site is not worsened by the context of the broader surrounding landscape in which it is situated.

505 MINMI RD, FLETCHER

DIGITAL ELEVATION MODEL

CESSNOCK
NEWCASTLE
LAKE MACQUARIE
PAMBALONG
HUNTER WETLANDS
Summerhill Waste Facility
BLUE GUM HILLS
Winten Development
JACOBS LANE
DOG HOLE ROAD
CEDAR HILL DRIVE
LENAGHANS DRIVE
PACIFIC MOTORWAY
RAIL TRAIL
MITTI STREET
AWABAKAL DRIVE
KURRABUNG DRIVE
KYAMBA CRESCENT
MARYLAND DRIVE
MINMI ROAD
HARDES AVENUE
WATERSIDE DRIVE
DISCOVERY DRIVE
CHURNWOOD DRIVE
JOHN T BELL DRIVE
AJAX AVENUE
SEAHAMPTON ROAD
HUNTER EXPRESSWAY
WOODFORD STREET
LOOP ROAD
BLUE GUM HILLS ROAD
FIFTH STREET
CAMERON PARK DRIVE
AYES AVENUE
MANLIUS DRIVE
CARRINGTON STREET
POLARIS AVENUE
WIGEON CHASE
CONSTITUTION DRIVE
NEWCASTLE LINK ROAD
BOUNDARY ROAD
HOPE STREET
FLETCHER STREET
MACQUARIE STREET
BOUNDARY STREET
COWPER STREET
GUNAMBI STREET
THOMAS STREET

Legend

- Watercourse
- Study Area
- 2km Buffer from Site
- Local Government Area

Adjacent Tenures

- DA04/2782
- Outlook Estate
- Summerhill Waste Facliity
- Winten Development
- National Park Estate

Elevation (m)

- 210
- 160
- 100
- 50
- -5

N
W E
S

0 410 820 1,640

Meters

1:25,000

MJD Environmental

505 MINMI RD, FLETCHER
MEAN ANNUAL PRECIPITATION

CESSNOCK
NEWCASTLE
LAKE MACQUARIE
PAMBALONG
BLUE GUM HILLS
Summerhill Waste Facility
Winten Development
HUNTER WETLANDS
JACOBS LANE
DOG HOLE ROAD
CEDAR HILL DRIVE
LENAGHANS DRIVE
RAIL TRAIL
PACIFIC MOTORWAY
SEAHAMPTON ROAD
HUNTER EXPRESSWAY
FIFTH STREET
CAMERON PARK DRIVE
CARRINGTON STREET
MANLIUS DRIVE
AYES AVENUE
POLARIS AVENUE
WIGEON CHASE
CONSTITUTION DRIVE
NEWCASTLE LINK ROAD
WOODFORD STREET
LOOP ROAD
BLUE GUM HILLS ROAD
WATERSIDE DRIVE
DISCOVERY DRIVE
MITTI STREET
AWABAKAL DRIVE
KURRABUNG DRIVE
MINMI ROAD
MARYLAND DRIVE
KYAMBA CRESCENT
HARDES AVENUE
CHURNWOOD DRIVE
JOHN T BELL DRIVE
AJAX AVENUE
BOUNDARY ROAD
HOPE STREET
FLETCHER STREET
MACQUARIE STREET
BOUNDARY STREET
GUNAMBI STREET
COWPER STREET
THOMAS STREET

Legend

- Watercourse
- Study Area
- 2km Buffer from Site
- Local Government Area

Adjacent Tenures

- DA04/2782
- Outlook Estate
- Summerhill Waste Facility
- Winten Development
- National Park Estate

Mean Annual Precipitation (mm)

- 981 - 1,000
- 1,001 - 1,020
- 1,021 - 1,040
- 1,041 - 1,060
- 1,061 - 1,080
- 1,081 - 1,100

N
W E
S

0 410 820 1,640
Meters
1:25,000

MJD Environmental

505 MINMI RD, FLETCHER

MEAN ANNUAL TEMPERATURE

CESSNOCK
PAMBALONG
NEWCASTLE
LAKE MACQUARIE
HUNTER WETLANDS
Summerhill Waste Facility
Winten Development
BLUE GUM HILLS

CEDAR HILL DRIVE
LENAGHANS DRIVE
RAIL TRAIL
JACOBS LANE
DOG HOLE ROAD
PACIFIC MOTORWAY
SEAHAMPTON ROAD
MITTI STREET
AWABAKAL DRIVE
KYAMBA CRESCENT
KURRABUNG DRIVE
MARYLAND DRIVE
MINMI ROAD
HARDES AVENUE
WATERSIDE DRIVE
DISCOVERY DRIVE
JOHN T BELL DRIVE
AJAX AVENUE
CHURNWOOD DRIVE
WOODFORD STREET
LOOP ROAD
BLUE GUM HILLS ROAD
HUNTER EXPRESSWAY
FIFTH STREET
CAMERON PARK DRIVE
AYES AVENUE
MANLIUS DRIVE
CARRINGTON STREET
POLARIS AVENUE
WIGEON CHASE
CONSTITUTION DRIVE
NEWCASTLE LINK ROAD
BOUNDARY ROAD
HOPE STREET
FLETCHER STREET
MACQUARIE STREET
BOUNDARY STREET
GUNAMBI STREET
COWPER STREET
THOMAS STREET

Legend

- Watercourse
- Study Area
- 2km Buffer from Site
- Local Government Area

Adjacent Tenures

- DA04/2782
- Outlook Estate
- Summerhill Waste Facility
- Winten Development
- National Park Estate

Mean Annual Temperature (C°)

- 16.3 - 16.6
- 16.7 - 16.9
- 17 - 17.2
- 17.3 - 17.4
- 17.5 - 17.6
- 17.7 - 17.9

N W E S

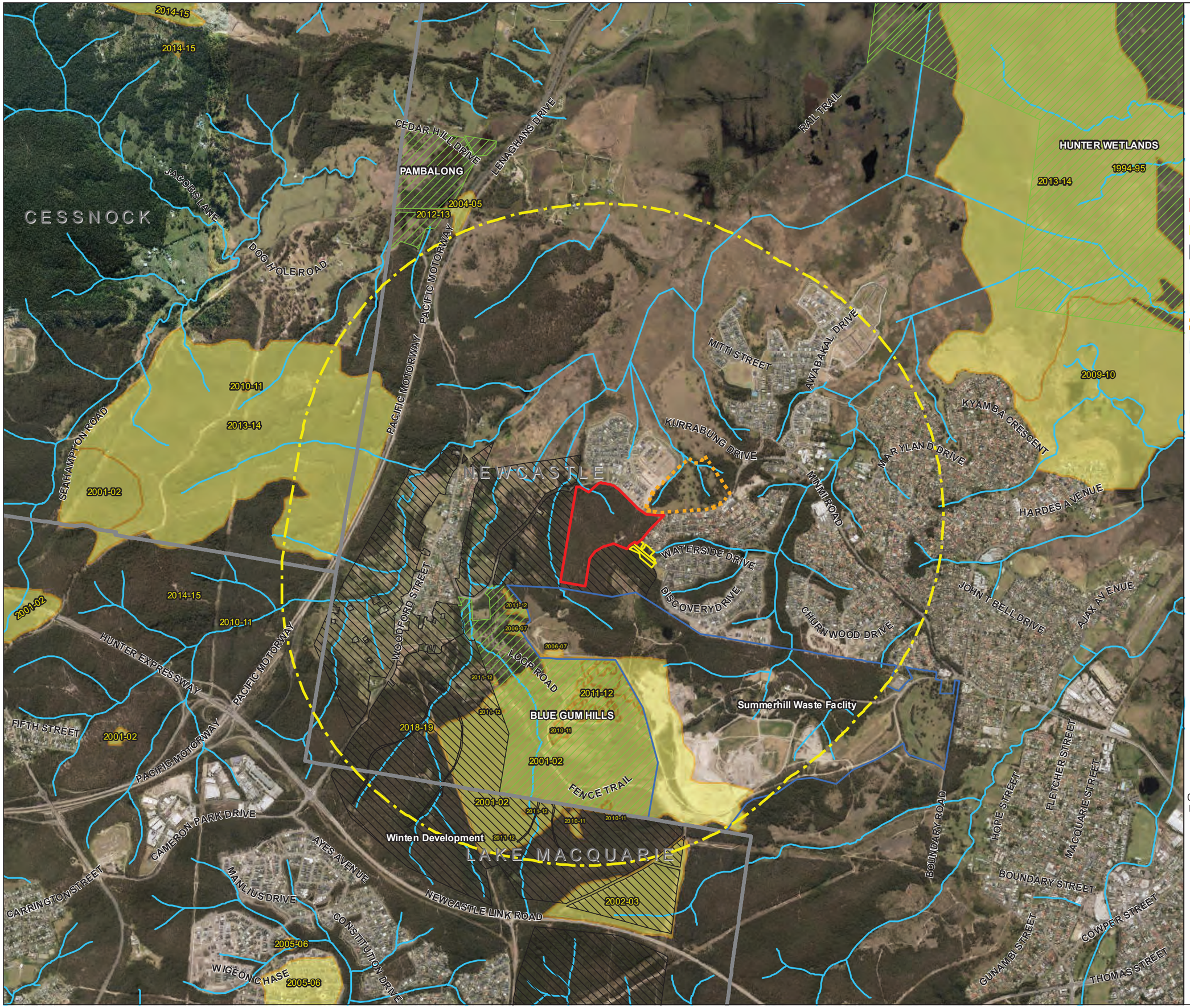
0 410 820 1,640

Meters

1:25,000

MJD Environmental

505 MINMI RD, FLETCHER
WILDFIRE HISTORY



Legend

- Watercourse
- Study
- 2km Buffer from Site
- Local Government

Adjacent Tenures

- DA04/2782
- Outlook Estate
- Summerhill Waste Faclity
- Winten Development
- National Park Estate
- Historical Wildfires

N
W E
S

0 410 820 1,640

Meters

1:25,000

MJD Environmental

4.2 Land Use Assessment

The following criteria are set out in Chapter 4 Table 4.2.1 of PBP (2019) and require consideration for the Planning Proposal:

The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses

- *The risk profile of different areas of the development layout based on the above landscape study;*
- *The proposed land use zones and permitted uses;*
- *The most appropriate siting of different land uses based on risk profiles within the site (i.e. not locating development on ridge tops, SFPP development to be located in lower risk areas of the site); and*
- *The impact of the siting of these uses on APZ provision.*

The steep central area of the proposed development designated for low-density housing may have the higher risk profile as the exposed slope faces North-West, however riparian corridors flowing North from the area also increases the greenness of vegetation and so decrease the susceptibility to fire propagating in this area.

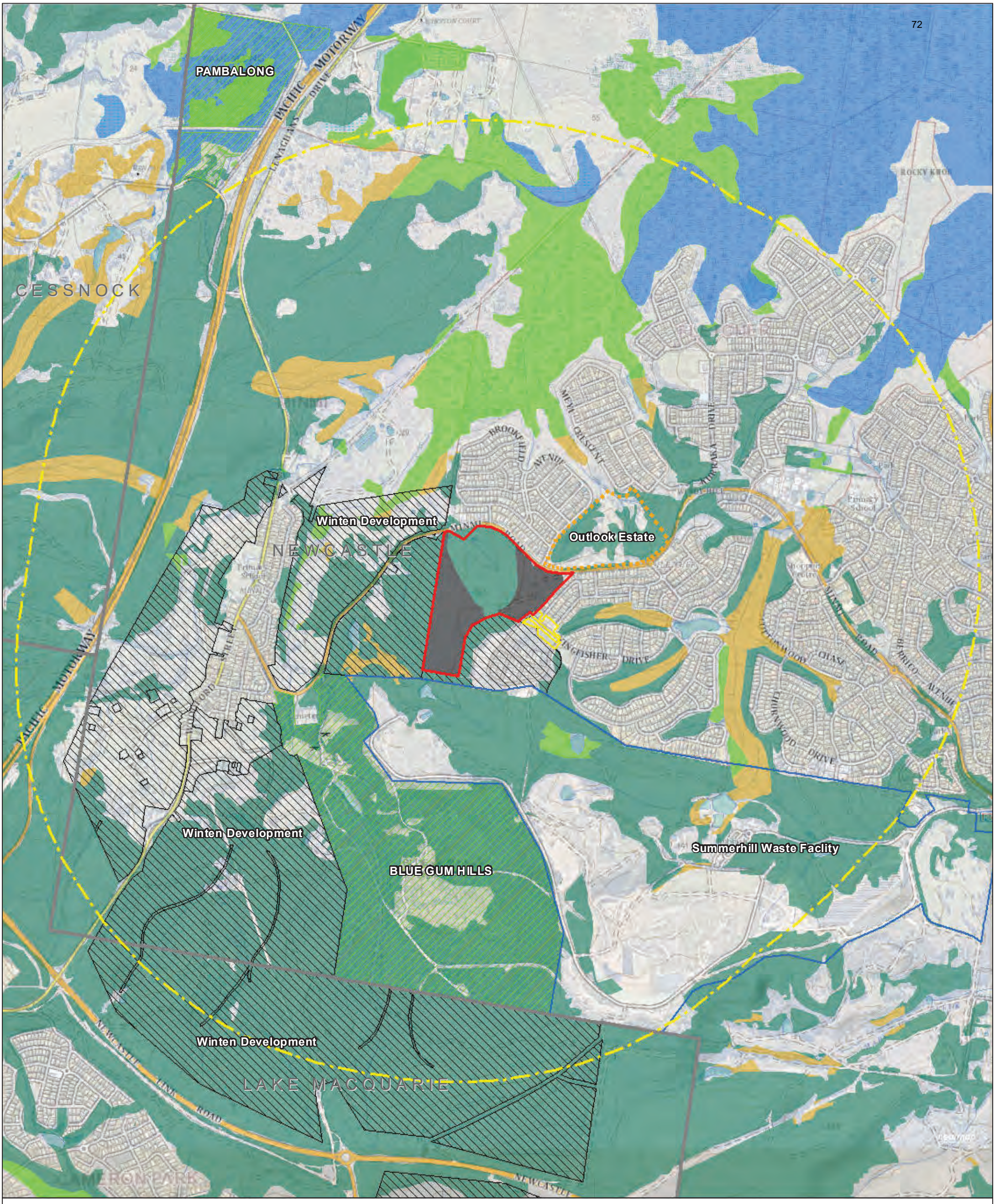
The North-Eastern portion of the proposed development exhibits the lowest risk profile as it has a lower slope gradient. This area has emergency egress to the South-East, away from the direction of downslope hazard vegetation. However, this area is the closest to downslope hazard vegetation, as on the North side of Minmi Road is an unnamed tributary of Fishery Creek which is densely vegetated and allows a potential fire run towards this portion of the site.

The Western portion of the proposed development has the second-lowest risk profile, as although the connectivity to Minmi Road is adequate, the aspect being downslope facing the West/ North-West is the direction of greatest risk from ember attack, and spot fires developing at the base of the slope may threaten houses further up the slope. As the land to the West is also a part of the Winten development (NCC DA 2015/10393), the current hazard vegetation will be replaced by managed land, greatly reducing the risk profile of this portion of the proposed development.

The current land use zone of the site is E4 – Environmental living, wherein home occupations are permitted without consent. The proposed land zoning aims to maintain the central area containing riparian corridors as E2- Environmental Conservation, while the higher, flatter areas on either side are proposed to become R2 – Low Density Residential.

The proposal to apply E2 - Environmental Conservation land zoning within the centre of the site is an appropriate land use for the risk profile of the site due to its steeper topography and North-West facing aspect. Although some hazard vegetation occurs downslope North of Minmi Road within the riparian zone of an unnamed tributary of Back Creek, the majority of nearby hazard vegetation in this direction is grassland within the freshwater wetland. The next nearest tract of forest vegetation, (aside from the previously mentioned *Blue gum hills RP* & *Summerhill waste treatment facility)* is >700m NW of the site, North of Minmi Creek – in the vicinity of the M1 Pacific Freeway and the Fire & Rescue NSW Minmi Fire Station on Lenaghans Drive/Woodford St, Minmi.

The proposed R2 - Low Density Residential zoning on the remainder of the site is an appropriate land use for the siting as the risk profile shows adequate access/egress to Minmi Road, and a lack of adjacent bushfire hazard vegetation due to concurrent suburban developments (Winten - NCC DA 2015/10393).



505 MINMI RD, FLETCHER

LANDSCAPE ASSESSMENT

0 285 570 1,140

Meters

1:17,000

Legend

- Study Area
- 2km Buffer from Site
- Local Government Area

Adjacent Tenures

- DA04/2782
- Outlook Estate
- Summerhill Waste Faclity
- Winten Development
- National Park Estate

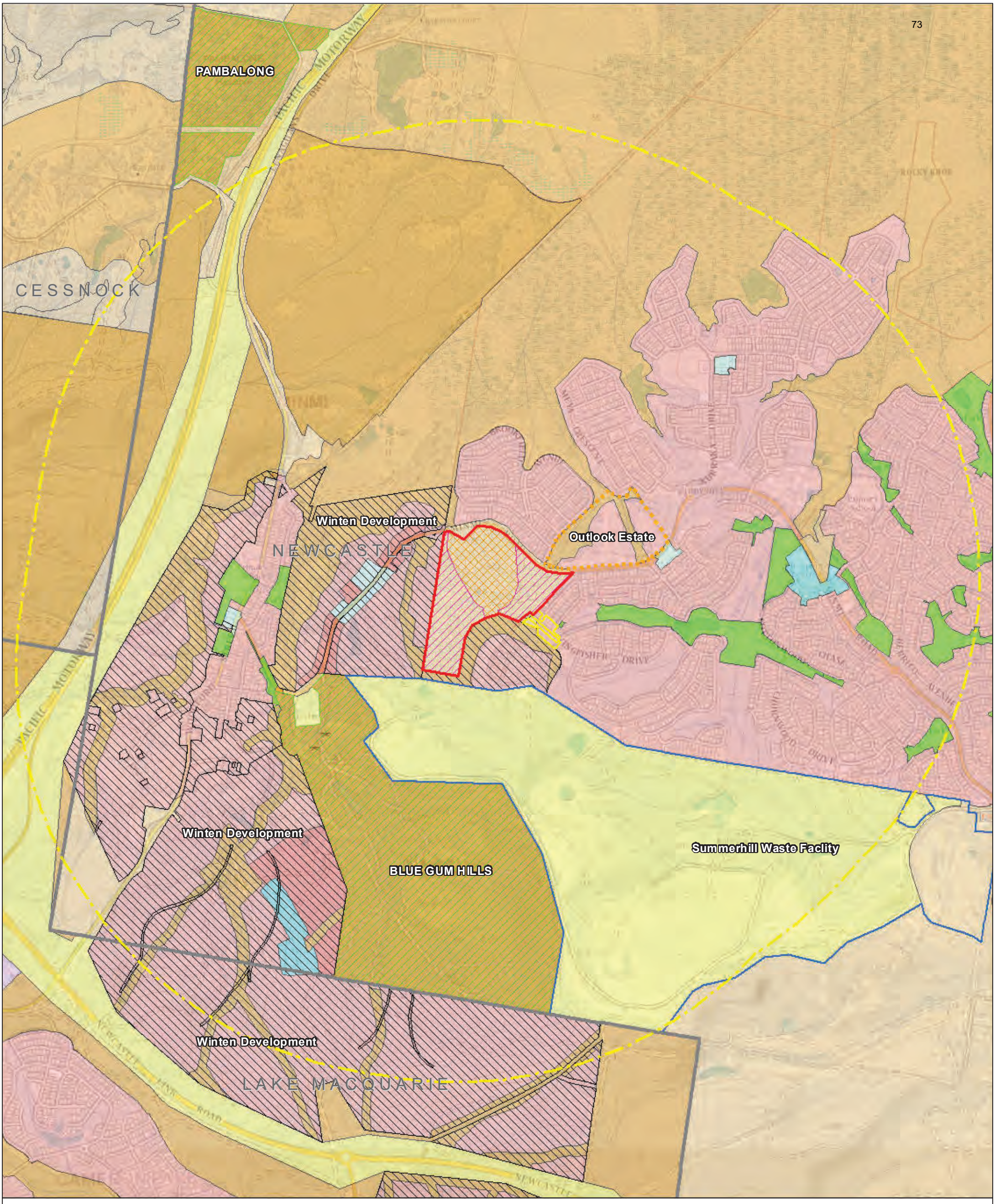
Vegetation (Keith 2004)

- Dry Sclerophyll Forests
- Forested Wetlands
- Freshwater Wetlands
- Wet Sclerophyll Forests
- Proposed Development

MJD Environmental

N W E S

Aerial: NearMap (2020) | Base map: © Department of Customer Service 2020 | Data: MJD Environmental, NSW DPIE, NSW Spatial Services (2020) | Datum/Projection: GDA 2020 MGA Zone 56 | Date: 17/09/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.



505 MINMI RD, FLETCHER

PROPOSED AND EXISTING LAND USE ZONING

Legend

- Study Area
- 2km Buffer from Site
- Local Government Area

Proposed Zoning

- E2: Environmental Conservation
- R2: Low Density Residential

Adjacent Tenures

- DA04/2782
- Outlook Estate
- Summerhill Waste Facility
- Winten Development
- National Park Estate

Land Use Zoning

- B1
- B2
- E1
- E2
- E3
- E4
- IN1
- R2
- R3
- RE1
- RE2
- RU2
- SP2

0 285 570 1,140

Meters

1:17,000

MJD Environmental

N W E S

Aerial: NearMap (2020) | Base map: © Department of Customer Service 2020 | Data: MJD Environmental, NSW DPIE, NSW Spatial Services (2020) | Datum/Projection: GDA 2020 MGA Zone 56 | Date: 17/09/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

4.3 Access and Egress

The following criteria are set out in Chapter 4 Table 4.2.1 of PBP (2019) and require consideration for the Planning Proposal:

A study of the existing and proposed road networks both within and external to the masterplan area or site layout

- *The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile;*
- *The location of key access routes and direction of travel; and*
- *The potential for development to be isolated in the event of a bush fire.*

In the event of a serious bushfire threat to the proposed development, it will be essential to ensure that adequate ingress/ egress and the provision of defendable space are afforded in the residential development design with due regard to the requirements of Table 5.3b, and Appendix 3 of PBP (2019). Construction driveways will provide all-weather access and maximum grades for sealed roads that do not exceed 15 degrees and not more than 10 degrees for unsealed roads.

Direct access to the site will continue to occur from Minmi Road in the North and Kingfisher Drive to the east. A bushfire hazard does not occur to the site's immediate North and therefore all egress in the case of a bushfire will be away from the hazard. As outlined in the Traffic Impact Assessment Report by BRS, dated 20 December 2019 (chapter **3.2)** *"Winten Precinct 1A residential subdivision (DA 2015/10393) is located immediately west of the subject site. Construction has not commenced on this subdivision that has been approved for 305 lots that will be constructed over 5 stages. The study team has advised that this subdivision will provide several direct connections to Minmi Road, including a left in / left out arrangement immediately west of the western boundary of 505 Minmi Road, the site of the current planning proposal."*

SIDRA modelling has been conducted by Barker Ryan Stewart for Barr Property & Planning to study the existing and proposed road networks both within and external to the masterplan area or site layout. The modelling was produced to accompany the planning proposal for a residential subdivision of 150 lots at 505 Minmi Road, Fletcher. The modelling found that intersection counts at Minmi Road indicated 100-1200 vehicles per hour in the AM & PM peak periods. (Data from traffic study; **2.3)** 56% of movements were eastbound in the AM peak, while 63% were westbound in the PM peak, indicating typical commuter travel to & from locations of employment & education. This traffic Impact Assessment concluded that the Minmi Rd/ Britannia Boulevard intersection has sufficient spare capacity for additional traffic and that the existing road network has the capacity to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile.

The potential for the proposed development to be isolated in the event of a bushfire is low, as access to Minmi Road is provided by two separate routes; a direct access road in the North-Western corner of the Site, and indirectly via Kingfisher drive in the South / South-East of the Site, which connects to Minmi Road via Britannia Boulevard & Highland Way.

Refer to **Figure 11** below for Plan showing Key Access Routes.

505 MINMI RD, FLETCHER

KEY ACCESS ROUTES

1:2,500

1:3,000

Legend

- Traffic Access
- Proposed Layout
- Study Area
- Cadastral Boundaries

N W E S

0 65 130 260

Meters

1:4,000

MJD Environmental

Aerial: NearMap (2020) | Data: MJD Environmental, RAP Surveying, NSW Spatial Services (2020) | Datum/Projection: GDA 2020 MGA Zone 56 | Date: 17/09/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

4.4 Emergency Services

The following criteria are set out in Chapter 4 Table 4.2.1 of PBP (2019) and require consideration for the Planning Proposal:

An assessment of the future impact of new development on emergency services.

- *Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/brigades; and*
- *Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.*

Consultation has been undertaken with the RFS who referred the matter to the local Fire+Rescue NSW (FRNSW) zone office. In response FRNSW issued the following advice:

The area as indicated previously, is within Fire & Rescue NSW (FRNSW) Fire District. (The RFS are still responsible for advice and approvals required under the Planning for Bushfire provisions).

It would be primarily serviced by the nearest two fire stations at Minmi (Woodford St) and Wallsend (Summerhill Dr). At present, these stations are staffed by Retained (on-call) firefighters, and each have a Class 2 Urban Pumper as their primary response vehicle.

Further response to the area would be provided by the network of surrounding stations, including Holmesville, Cardiff and Lambton, which are all staffed by full-time firefighters with Class 3 Urban Pumpers. Holmesville and Cardiff are also equipped with a Class 1 Tanker appliance, which is specifically designed for bush firefighting. These FRNSW resources would be supplemented by RFS resources from the Lake Macquarie area (Cameron Park in particular) if required.

There are no additional needs that would be expected, in terms of new stations or brigades, as a result of development in this area.

From this advice it is evident that the proposed suburban development will not significantly impact on the ability of emergency services to carry out fire suppression in a bush fire emergency, nor would it place an undue demand on the resources of existing emergency services in the area.

4.5 Infrastructure

The following criteria are set out in Chapter 4 Table 4.2.1 of PBP (2019) and require consideration for the Planning Proposal:

An assessment of the issues associated with infrastructure and utilities.

- *The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants;*
- *Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.*

In addition, any future residential subdivision over the site will need to comply with the acceptable solution criteria for services outlined in Chapter 5 of PBP (2019) as summarised in **Table 4** below.

Table 4 Acceptable solutions for services (PBP 2019)

Performance Criteria	Acceptable Solutions
The intent may be achieved where:	
Reticulated water supplies ▪ water supplies are easily accessible, reliable and located at regular intervals. ▪ flows and pressure are appropriate ▪ the integrity of the water supply is maintained	▪ reticulated water is to be provided to the development, where available ▪ a static water supply is to be provided where no reticulated water is available

<table>
<tr><th>Performance Criteria</th><th>Acceptable Solutions</th></tr>
<tr><td>If reticulated water supplies are considered inadequate or shall not be connected as part of the proposal, the PBP (2019) performance criteria for ‘non-reticulated’ water supply shall apply as detailed below.</td><td>▪ reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads
▪ fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005.
▪ hydrants are not located within any road carriageway
▪ all above ground water and gas service pipes external to the building are metal, including and up to any taps</td></tr>
<tr><td>Non-reticulated water supply areas
for rural-residential and rural developments (or settlements) in bush fire prone areas, a water supply reserve dedicated to firefighting purposes is provided and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the subdivision (community titled subdivisions), or held individually on each lot.

<table><tr><th>Development Type</th><th>Water Requirements</th></tr><tr><td>Residential lots (<1000m²)</td><td>5,000L/lot</td></tr><tr><td>Rural-residential lots (1000-10,000m²)</td><td>10,000L/lot</td></tr><tr><td>Large rural/lifestyle lots (>10,000m²)</td><td>20,000L/lot</td></tr><tr><td>Multi-dwelling housing (including dual occupancies)</td><td>5,000L/dwelling</td></tr></table>Table 5.3d PBP 2019</td><td>▪ the minimum dedicated water supply required for firefighting purposes for each occupied building excluding drenching systems, is provided in accordance with Table 5.3d (refer to insert on left)
▪ there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available
▪ static water supply is not required to be solely dedicated for firefighting purposes and can include water holding structures such as tanks, pools, and dams
▪ static water supply must be accessible, reliable, adequate, and available for the life time of the development
▪ the provision of appropriate connections as detailed above for reticulated water supplies must be considered if a static water supply is to be suitable
▪ a ‘SWS’ (Static Water Supply) sign in a visible location should be installed</td></tr>
<tr><td>Electricity Services
▪ location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings</td><td>▪ where practicable, electrical transmission lines are underground.
▪ where overhead electrical transmission lines are proposed:
○ lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and
○ no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.</td></tr>
</table>

Performance Criteria	Acceptable Solutions
Gas services ▪ location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	▪ reticulated or bottled gas is installed and maintained in accordance with AS/NZ 1596:2014 – *The storage and handling of LP Gas*, and the requirements of relevant authorities. Metal piping is to be used. ▪ all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. ▪ Above-ground gas service pipes are metal, including and up to any outlets. ▪ Connections to and from gas cylinders are metal. ▪ polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

The planning proposal is considered to be able to satisfy the requirements of Chapter 4 and Chapter 5 of PBP (2019) given:

- A reticulated water supply is available from the local authority, Hunter Water. During previous rezoning investigations over the site Hunter Water granted conditional approval to the Minmi Road Fletcher Sewer Servicing Strategy, subject to the issues raised being addressed in the final strategy document. The approval was valid for 5 years. As this period has expired Hunter Water will require the strategy to be reviewed by the developer and approved by Hunter Water prior to proceeding with the works related to water, wastewater or recycled water supply.

  In the interim period the Winten lands each side of the site have been granted subdivision development approval by NCC. Subdivision construction is completed for the Winten Precinct 1 land, adjoining the south eastern side of the site, with lots pending release to the market. Winten Precinct 1A land, adjoining the western side of the site, comprises a staged development with construction of the first stage programmed for commencement early in 2020. The site is within the same catchment area as the Winten Precinct 1A development and it has been previously been identified as a potential development site by both Hunter Water and NCC. Based on the above, development of the site should not be constrained and by going through the processes previously defined by Hunter Water the site should be capable of being fully serviced for water and sewer.

  Establishment of hydrants associated with the mains network throughout the site are to be provided in accordance with the relevant clauses of AS 2419.1:2005 - *Fire hydrant installations System design, installation and commissioning.*

- Power is available to be augmented as required to service a future subdivision over the site. It is anticipated that all power services will be underground rather than overhead poles and wires. As such this greatly reduces the life safety risks associated with overhead power in bushfire situations. Furthermore, there are no significant power infrastructure, towers or lines traversing the site.
- Gas supply where available and augmented throughout a future subdivision over the site will be installed underground. All future residential connections are considered able to comply with PBP (2019) requirements.

4.6 Adjoining Land

The following criteria are set out in Chapter 4 Table 4.2.1 of PBP (2019) and require consideration for the Planning Proposal:

The impact of new development on adjoining landowners and their ability to undertake bush fire management.

- *Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.*

Rezoning and future residential subdivision of the site will not have implications on neighbouring property owners or managers that should necessitate them to modify of change their bushfire management. Site development will reduce the bushfire hazard on site and in the immediate locality, decreasing pressure on adjacent land BPMs by reducing the proximity and prevalence of hazardous vegetation.

Assessment of the site set out in **Chapter 2** and **Chapter 3** of this report has determined that an APZ can be established from hazards to remain within the site (to be zoned E2 Environmental Conservation) and on the site boundaries without a reliance on adjacent land owners. Future development of the approved subdivision on adjacent land to the West over the approved Winten Development (NCC DA 2015/10393) will provide co-benefits for each development in the context of hazard removal and management for the life of development.

5 Conclusion & Recommendations

MJD Environmental has been engaged by Barr Property & Planning to prepare a Strategic Bushfire Study (SBFS) to accompany a Planning Proposal application for the rezoning of a 26.2 hectare parcel of land at Lot 23 in DP 1244350, 505 Minmi Rd, Fletcher.

The assessment considers and assesses the bushfire hazard and associated potential threats relevant to the proposal, and to outline the minimum mitigative measures which would be required in accordance with *Planning for Bush Fire Protection 2019* (PBP), as adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2020*.

In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adhered to the methodology and procedures outlined in PBP (2019) via assessment of acceptable solutions as outlined in Chapter 4 and Chapter 5 of PBP (2019).

This assessment has been made based on the bushfire hazards in and around the site at the time of site inspection and report production.

PBP (2019) states in Chapter 4, the study of bushfire context ensures that future land uses are in appropriate locations to minimise the risk to life and property from bush fire attack. Services and infrastructure that facilitate effective suppression of bushfires also need to be provided for at the earliest stages of planning.

The bushfire risk is considered at the macro-scale, looking at fire runs, steep slopes and any areas of isolation. The amount of proposed development interfacing vegetation was also considered. Firefighting access and evacuation potential was considered as well as an assessment of traffic volumes and evacuation routes. The study highlighted areas with a significant fire history and any known fire paths

The broad principles which apply to this analysis are:

- ensuring land is suitable for development in the context of bush fire risk;
- ensuring new development on BFPL will comply with PBP;
- minimising reliance on performance-based solutions;
- providing adequate infrastructure associated with emergency evacuation and firefighting operations; and
- facilitating appropriate ongoing land management practices.

Strategic planning should provide for the exclusion of inappropriate development in bush fire prone areas in the following circumstances:

- the development area is exposed to a high bush fire risk and should be avoided;
- the development is likely to be difficult to evacuate during a bushfire due to its siting in the landscape, access limitations, fire history and/or size and scale;
- the development will adversely affect other bushfire protection strategies or place existing development at increased risk;
- the development is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants; and
- the development has environmental constraints to the area which cannot be overcome.

A strategic assessment across the local landscape and local site assessment presented in this report has determined that the site does not exhibit any significant features that would make it more likely to experience a bushfire of undue severity or intensity. The potential impact on life and property of the site is not worsened by the context of the broader surrounding landscape in which it is situated.

The proposed land use being low density residential development is appropriate to the site and surrounding landscape.

In summary, this strategic assessment has determined that the proposed development is able to comply with PBP (2019) as;

- the land is suitable for development in the context of bushfire risk
- new development on BFPL will comply with PBP 2019
- reliance on performance-based solutions is minimised
- infrastructure associated with emergency evacuation and firefighting operations is adequate.
- Ongoing land management practices are appropriate

Furthermore, the development is not deemed inappropriate from a bushfire risk perspective due to the following factors;

- The area is not exposed to a high bushfire risk
- The development is not likely to be difficult to evacuate during a bushfire due to its siting in the landscape, access limitations, fire history &/or size and scale.
- The development will not adversely effect other bushfire protection strategies or place existing development at increased risk.
- The development is not within an area of high bushfire risk where density of exiting development may cause evacuation issues for both existing and new occupants;
- The development does not have environmental constrains which cannot be overcome.

In summary, the following key recommendations have been generated to enable the proposal to comply with PBP (2019).

- Direct access will be provided to each lot in the proposed developments
- Services are to be provided and connected to the site in accordance with PBP (2019).
- Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.
- The following APZ will be required, additionally each future residential lot is to be managed as an IPA in perpetuity:
  - Eastern;
    - 45m from the Forest hazard to the North-east;
    - 24m from the Forest hazard to the South-west;
    - 36/45m from the Forest hazard to the West
  - Western;
    - 24m from the Forest hazard to the North-west
    - 24m/29m from the Forest hazard to the East
    - 29m from the Forest hazard to the South
    - 36m from the Forest hazard to the West (pending development)
- Assessment has demonstrated that a future residential dwelling on each lot within the proposed subdivision, can be established with a BAL exposure of no greater than BAL-29.
- Services are to be provided and connected to the site in accordance with PBP (2019) as summarised and assessed in Chapter 3, Section 3.4 of this report.
- Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.

6 Bibliography

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Appendix A Plan of Proposal

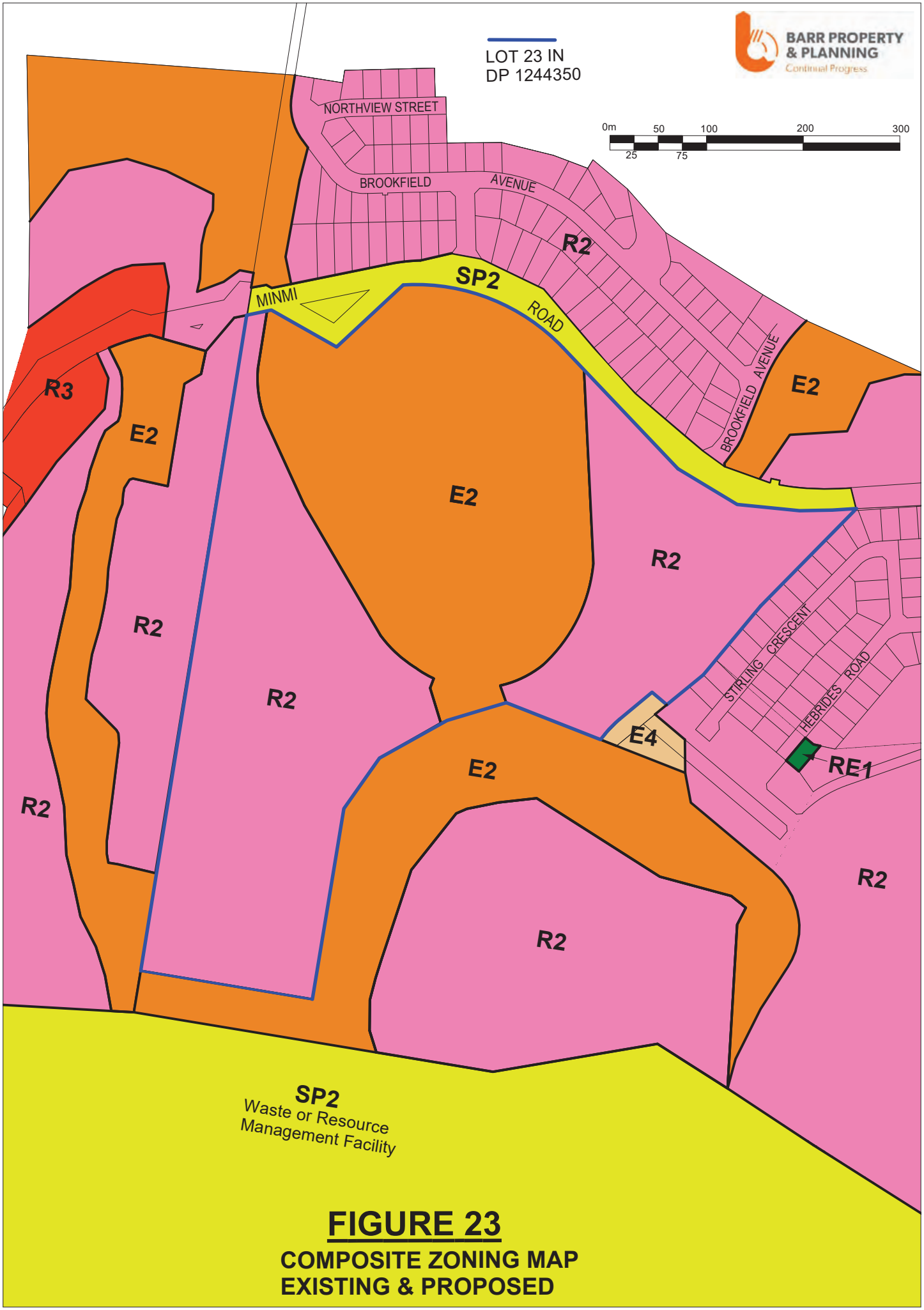


FIGURE 23

COMPOSITE ZONING MAP EXISTING & PROPOSED

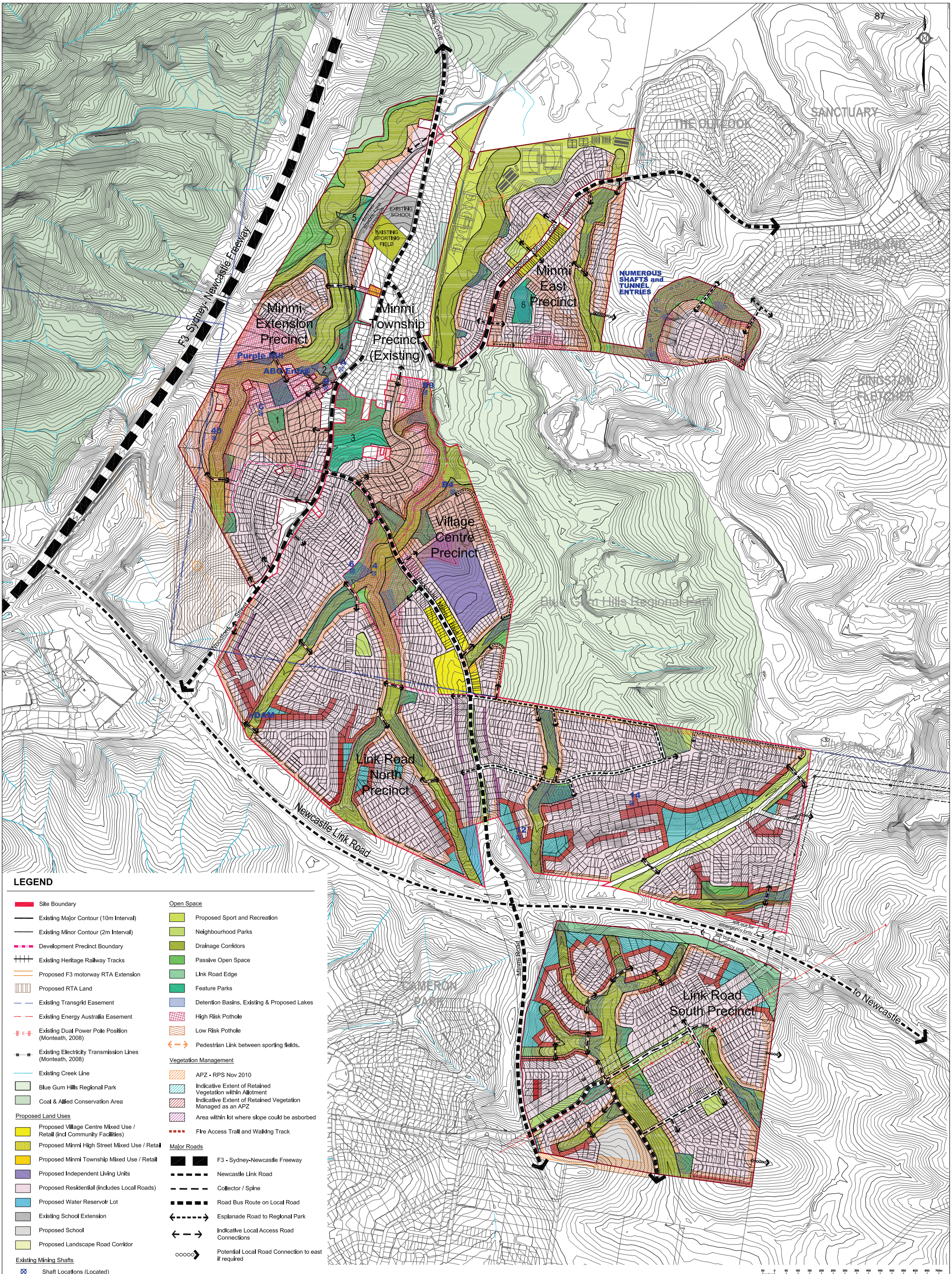
On the basis of the argument put forward above no linkage should be required from the site to this conservation corridor on the northern side of the road, with the stronger conservation linkage favoured to the site's north west.

FIGURE 22

INDICATIVE SUBDIVISION LAYOUT

Figure 22 Indicative subdivision layout

Appendix B Winten Concept Approval Plan



LEGEND

- Site Boundary
- Existing Major Contour (10m Interval)
- Existing Minor Contour (2m Interval)
- Development Precinct Boundary
- Existing Heritage Railway Tracks
- Proposed F3 motorway RTA Extension
- Proposed RTA Land
- Existing Transgrid Easement
- Existing Energy Australia Easement
- Existing Dual Power Pole Position (Monteath, 2008)
- Existing Electricity Transmission Lines (Monteath, 2008)
- Existing Creek Line
- Blue Gum Hills Regional Park
- Coal & Allied Conservation Area

Proposed Land Uses

- Proposed Village Centre Mixed Use / Retail (incl Community Facilities)
- Proposed Minmi High Street Mixed Use / Retail
- Proposed Minmi Township Mixed Use / Retail
- Proposed Independent Living Units
- Proposed Residential (includes Local Roads)
- Proposed Water Reservoir Lot
- Existing School Extension
- Proposed School
- Proposed Landscape Road Corridor

Existing Mining Shafts

- Shaft Locations (Located)
- Wallsend Borehole Colliery (WBC) Entry Location
- Shaft Locations (Uncertain)

Open Space

- Proposed Sport and Recreation
- Neighbourhood Parks
- Drainage Corridors
- Passive Open Space
- Link Road Edge
- Feature Parks
- Detention Basins, Existing & Proposed Lakes
- High Risk Pothole
- Low Risk Pothole
- Pedestrian Link between sporting fields.

Vegetation Management

- APZ - RPS Nov 2010
- Indicative Extent of Retained Vegetation within Allotment
- Indicative Extent of Retained Vegetation Managed as an APZ
- Area within lot where slope could be asborbed
- Fire Access Trail and Walking Track

Major Roads

- F3 - Sydney-Newcastle Freeway
- Newcastle Link Road
- Collector / Spine
- Road Bus Route on Local Road
- Esplanade Road to Regional Park
- Indicative Local Access Road Connections
- Potential Local Road Connection to east if required

Note

All dimensions and areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

The boundaries shown on this plan should not be used for final detailed engineers design.

REVISION
C: 25/11/2010 Add small section of residential to site
D: 28/01/2011 Adjust size of village centre parcels

Level Datum	
Origin	
Scale	1:5000
Sheet	A0
Date	28-01-2011
Comp By.	JLS/CWC
DWG Name.	24311-15L.dwg
Local Authority	NEWCASTLE/LAKE MACQUARIE
Locality	MINMI
Job Reference	24311

CLIENT
COAL & ALLIED

INDICATIVE LAYOUT PLAN

PROJECT
PROPOSED SUBDIVISION

Plan Ref **24311-35** Rev **D**

RPS
RPS Australia East Pty Ltd
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ABN 44 140 292 762
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Fortitude Valley QLD 4006
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Appendix C List of recorded fires over 1Ha within 10km of site

Fire Name	Fire number	Label	Start Date	End Date	Area (Ha)
Unnamed		1990-91 Wildfire			17.43216801
Unnamed		1990-91 Wildfire			29.69440685
Unnamed		1990-91 Wildfire			42.8254737
Unnamed		1990-91 Wildfire			136.8578319
Unnamed		1992-93 Wildfire			86.17313727
Unnamed		1993-94 Wildfire			12.98931724
Unnamed		1994-95 Wildfire			2.77354641
Unnamed		1996-97 Wildfire			89.5890337
Unnamed	TM512	1997-98 Wildfire	10/26/1997	10/26/1997	34.19378569
Unnamed	TM516	1997-98 Wildfire	11/1/1997	4/2/1998	1117.858203
Unnamed	H541	1997-98 Wildfire	12/26/1997	12/29/1997	3.05600993
Unnamed	HM00/007	1999-00 Wildfire	1/3/2000	1/4/2000	2.80973883
Unnamed	HM00/018	1999-00 Wildfire	2/20/2000	2/20/2000	5.66109545
Unnamed	HM00/020	1999-00 Wildfire	2/24/2000	2/25/2000	1.44392536
Unnamed		2000-01 Prescribed Burn	4/18/2001		813.3684367
Unnamed	HM01/037	2000-01 Wildfire	10/20/2000	10/20/2000	2.23245012
Unnamed	HM01/042	2000-01 Wildfire	11/9/2000	11/10/2000	3.63431463
Unnamed	HM01/049	2000-01 Wildfire	1/5/2001	1/5/2001	3.59210386
Unnamed		2001-02 Wildfire	8/7/2001		25.11050676
Unnamed		2001-02 Wildfire	8/22/2001		15.05654484
Unnamed		2001-02 Wildfire	9/23/2001		19.99202221
Unnamed		2001-02 Wildfire	9/24/2001		10.12697578
Unnamed		2001-02 Wildfire	10/22/2001		50.07034078
Unnamed		2001-02 Wildfire	3/10/2002		1.21934881
George Booth Drive		2001-02 Wildfire		1/3/2002	1.16012265
Buttai Fire		2001-02 Wildfire		12/27/2001	2.02967312
Unnamed		2001-02 Wildfire			22.26574129
Unnamed		2001-02 Wildfire			170.5670383
Unnamed		2002-03 Wildfire			34.44542283
Killingsworth		2002-03 Wildfire			3910.671399
Pambalong Fire	HUN04003	2004-05 Wildfire	7/6/2004	7/6/2004	3.0427703
Hexham Swamp Fire	HUN05011	2005-06 Wildfire	10/4/2005	10/5/2005	23.13792646
Northlakes - Lake Macq		2005-06 Wildfire	1/7/2006		22.05472751
Sheppards Drive	6082218072	2006-07 Wildfire	8/22/2006	8/23/2006	27.21734263
Tlp	HUN nil	2006-07 Wildfire	11/26/2006	11/26/2006	1.08816267
Ash Island Fire	HUN06021	2006-07 Wildfire	6/5/2007	6/6/2006	18.39826394
Hexham Swamp NR	9	2008-09 Wildfire	12/1/2008	12/1/2008	18.87362224
Hexham Swamp	HN011	2009-10 Wildfire	9/6/2009	9/9/2009	216.7482379
Sugarloaf Range	9091326854	2009-10 Wildfire	9/12/2009	9/16/2009	19.92256719
Orica		2009-10 Wildfire	11/21/2009	11/23/2009	9.85111101
Orica Fire		2009-10 Wildfire	12/8/2009	12/9/2009	14.60234437

Coal & Allied		2010-11 Wildfire	9/19/2010	9/19/2010	1.38455048
Millams Rd	11031034926	2010-11 Wildfire	3/9/2011	3/11/2011	2.7644376
Blue Gum Hills 2		2011-12 Wildfire	8/2/2011	8/3/2011	1.4616096
Blue Gum Hills 3		2011-12 Wildfire	9/6/2011	9/7/2011	8.79237761
Grass Fire Ash Island	12012244387	2011-12 Wildfire	1/22/2012	1/24/2012	25.29330154
Grass Fire Ash Island	12120760452	2012-13 Wildfire	12/7/2012	12/7/2012	8.85098396
Maryland Grass Fire	13081575038	2013-14 Wildfire	8/15/2013	8/18/2013	490.496045
Browns Road Blackhill		2013-14 Wildfire	9/10/2013	9/11/2013	7.31603751
O'Donnelltown Road	13092979164	2013-14 Wildfire	9/29/2013	10/4/2013	162.1882758
Stockrington Fire	13102381224	2013-14 Wildfire	10/23/2013	10/27/2013	267.1765411
Sugarloaf Range Rd 1		2013-14 Wildfire	12/8/2013	12/8/2013	1.36078735
Lings Road		2013-14 Wildfire	2/3/2014	2/8/2014	43.9868318
Ash Island	14022354957	2013-14 Wildfire	2/23/2014	3/3/2014	2.55561808
Millham Road, Kooragang	14031856700	2013-14 Wildfire	3/18/2014	3/18/2014	1.83714115
Wagtail Way, Kooragang	14041558406	2013-14 Wildfire	4/15/2014	4/15/2014	1.5336127
Teal Road		2013-14 Wildfire	6/26/2014	6/26/2014	8.82032495
(Pacific Mwy), Black Hill		2014-15 Wildfire	9/30/2014	10/2/2014	13.08245097
Ramsar Road	14100773808	2014-15 Wildfire	10/7/2014	10/9/2014	7.40260688
Hunter Exp, Buchanan		2014-15 Wildfire	10/13/2014	10/13/2014	25.3511198
LHUN_Treetop PB_HR	HR12032157939	2015-16 Prescribed Burn	2/29/2016	3/1/2016	7.38523488
LHUN_Chitter Dump_HR	HR11090854330	2015-16 Prescribed Burn	3/1/2016	3/5/2016	55.37715658
George Booth Fire	15073198503	2015-16 Wildfire	7/31/2015	8/1/2015	4.29108101
LHUN_Mount Sugarloaf_HR	HR16060977020	2016-17 Prescribed Burn	10/19/2016	10/21/2016	16.05902128
Killingworth Rd	17011850660	2016-17 Wildfire	1/18/2017	1/20/2017	59.66923066
George Booth Dr	17022555442	2016-17 Wildfire	2/25/2017	2/25/2017	1.74222757
Ash Island. Millams Rd, Hexham	17091574447	2017-18 Wildfire	9/15/2017	9/17/2017	15.86301272
Maitland Rd, Hexham	18021491153	2017-18 Wildfire	2/14/2018	2/20/2018	62.1999752
Maitland Rd, Hexham	18021491153	2017-18 Wildfire	2/14/2018	2/20/2018	62.1999752
Haul road, Stockrington	18110217187	2018-19 Wildfire	11/2/2018	11/5/2018	15.16183084
Ash Island	19010523379	2018-19 Wildfire	1/4/2019	1/9/2019	44.81879924
Ash Island	19010523379	2018-19 Wildfire	1/4/2019	1/9/2019	56.98676973
Ramsar Rd, Kooragang	19012625696	2018-19 Wildfire	1/25/2019	1/31/2019	2.42679913

Appendix 4 – Preliminary Contamination Assessment

Report on Preliminary Contamination Assessment

Proposed Residential Subdivision: 505 Minmi Road, Fletcher

CGS1706

Prepared for
ADW Johnson Pty Ltd

24 March 2014

Cardno Geotech Solutions
Shaping the Future

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Project Name	Proposed Residential Subdivision: 505 Minmi Road, Fletcher
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Date	24 March 2014

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0	24/03/14	First issue to client	ZO		IGP	

Version	Reason for Issue	Approved for Release By	Approved (Signature)	Approved Release Date
0	First issue to client	IGP		24/03/14

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Appendices

Tables

1 Introduction

This report presents the results of a Phase 1 Preliminary Contamination Assessment (PCA) undertaken by Cardno Geotech Solutions (CGS) on the proposed residential development located at Lot 1 DP 844711, 505 Minmi Road, Fletcher. The proposed development comprises creation of over 100 residential allotments over two precincts (west and east) and approximately 2.8 km of internal road pavement.

A PCA was requested by the City of Newcastle (CoN) to accompany a rezoning Development Application (DA) following identification of possible filling on site. The assessment comprised of a desktop review, site inspection and targeted intrusive sampling. The sampling and laboratory testing was conducted as part of previous waste classification assessment by CGS as detailed in a report on Excavated Natural Material Assessment, reference CGS1706-003/1, dated 12 July 2013 [1].

The work was conducted for ADW Johnson Pty Ltd (ADWJ) who are the project managers acting on behalf of the site owner and developer. For the purpose of this assessment, a concept site plan was provided by ADWJ (reference 11813, Sheet 1 of 1, Version J, dated 8/06/2013).

2 Site Identification

The site is defined as the proposed development within Lot 1 DP 844711, 505 Minmi Road, Fletcher, excluding the western portion ('Development Subject to MP.08/0125) as shown on Drawing 1 attached in Appendix A. The site is bounded by Minmi Road to the north, existing residential development to the east, and undeveloped land to the south and west.

3 Site History

To aid in assessing site history, a discussion was held with personnel familiar with the site history, along with a review of available information and including:

> Selected available historical aerial photographs for the area.

> CoN records including Section 149 Certificates.

> Title Deeds.

> Public records maintained by the NSW Environment Protection Authority (EPA) regarding notices made under the Contaminated Land Management Act 1997 and licenses issued under the Protection of the Environment (Operations) Act 1997.

3.1 Discussion with Previous Site Operator

A discussion was held with Mr Warwick Denshire who is understood to have had operations at the site prior to 2005, and is familiar with the site works and history. The supplied information is summarised as follows.

> The site was predominately undeveloped and undisturbed with the exception of some dumping of domestic waste and stockpiles of soil and rock, of which is assumed to have been predominately won from excavations on site associated with mine workings; however the exact origin is unknown.

> Several mine subsidence depressions and possible mine adits or ventilation shafts were filled with site stockpiled material.

> Some of the stockpiled material on site was levelled to create a goat paddock in the central portion of the site, which is still currently evident. The area was subsequently used as a compound area for the adjacent residential developments, with temporarily storage of a shipping container and machinery.

> The site was used for grazing (goats) and no herbicide or pesticides were used in conjunction with the grazing activities.

3.2 Historical Aerial Photographs

A review of a range of available aerial photography indicated that site was predominately undeveloped. The ability to discern site features was limited due to the relatively small scale and poor resolution of some of the photographs. A summary of observed site features detailed in the reviewed aerial photography is detailed in Table 3-1, however the Aerial photographic review was limited to available photographs and there is a potential for previous site activity prior to 1954.

Table 3-1 Aerial Photography Review

Date	Reference	Comments
22 July 1954	Newcastle NSW 252-5050 Run 4 Black & White	On Site: The site comprises of undeveloped bushland. Some minor access tracks appear evident (possible remnant from previous site activity). Off Site: General surrounds are predominately undeveloped bushland to the south and east, cleared land to the north, Minmi Road to the north (alignment since altered), possible mine works to the west to southwest, along with a small structure and associated cleared land to the west.
22 August 1965	Northumberland Project NSW 1403-5175 Run 9 Black & White	On Site: Generally consistent with the 1954 photograph. Some of the access tracks appear more established. Off Site: Generally consistent with the 1954 photograph.
27 May 1975	Newcastle NSW 2314-131 Run 7 Black & White	On Site: Generally consistent with the 1965 photograph. Additional structure to the north of Minmi Road. Off Site: Generally consistent with the 1965 photograph, with some vegetation re-growth in previous disturbance areas to the southwest of the site.
27 April 1984	Newcastle NSW 3384-115 Run 7 Scale: 1:40000 Black & White	On Site: Generally consistent with the 1975 photograph. Off Site: Large areas of disturbance to the south of the site, possibly associated with mine activity. Some minor disturbance (possible filling) to the north of the site. Further vegetation re-growth to the southwest of the site.
25 February 1993	Newcastle NSW 4116 Run 10 Scale: 1:25000 Colour	On Site: Generally consistent with the 1984 photograph. Off Site: Minor alignment change to Minmi Road (curve straighten). Further disturbance and dam construction to the area southwest of the site, in areas of previous works and subsequent vegetation re-growth. Works to the south of the site appear to have ceased, and the area of previous large disturbances is grassed, with a dam also evident.
4 October 2004	Newcastle NSW 4875 (M2448) Run 10 Scale: 1:25000 Colour	On Site: Generally consistent with the 1993 photograph but with an area of disturbance and possible filling in the central portion of the site. A small structure (possible shipping container) is also evident. Some access tracks appear to be more established. Off Site: Further re-growth of vegetation in previously disturbed areas to the south and southwest. Construction of a residential subdivision to the east of the site.
30 January 2014	PhotoMap aerial image (Nearmap.com)	On Site: Generally consistent with the 2004 photograph but with some re-growth in the disturbed/filled the area in the central portion of the site. The structure (possible shipping contained) does not appear to remain. Off Site: Further re-growth of vegetation in previously disturbed areas to the south and southwest. Earthworks associated with subdivision development to the north of Minmi Road, and further residential subdivision construction to the east of the site.

The aerial photographs reviewed as part of the preliminary assessment are retained and copies are attached in Appendix B.

3.3 Office of Environment & Heritage Notices

A search of Department of Environment & Climate Change (DECC) records revealed no notices have been issued for the site under the Contaminated Land Management Act (1997). Under Section 308 of the Protection of the Environment Operations Act (POEO) a public register is required to list licenses,

applications, or notices issued by the DECC. A search of the public register for the site did not reveal any licenses, applications, or notices.

3.4 City of Newcastle Records (Section 149 Certificates)

A review of the Section 149 certificates obtained from the CoN, which are attached in Appendix C, indicates the following.

> The site is zoned as E4 Environmental Living.

> The site is subject to Clause 3.1 and 3.2 of the Newcastle Local Environment Plan 2012.

> The land is within a proclaimed Mine Subsidence District under the Mine Subsidence Compensation Act 1961.

> The site has the potential to contain acid sulfate soils and works carried out on the land must be undertaken in accordance with the Newcastle Local Environment Plan 2012.

> The property may be affected by land contamination.

> The site is not located within flood prone land.

> The site is not affected by a current notice or order (excluding those issued under the Environmental Planning and Assessment Act 1979 or the Local Government Act 1993).

3.5 Title Deeds

Services First Registration Pty Ltd was engaged by CGS to undertake a title deed search of the lots which make up the site over a nominal 100 year period.

The search results are contained in Appendix C and are broadly summarised in Table 3-2 below.

Table 3-2 Title Deed Search

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
25.09.1917 (1917 to 1923)	William Charles Wentworth Francis William Hixson (No occupations noted)	Vol 1905 Fol 10
01.11.1923 (1923 to 1939)	George Alexander Peattie (Contractor) Sidney Ernest Cramp (Contractor)	Vol 1905 Fol 10 Now Vol 3628 Fol's 74 & 75
21.12.1939 (1939 to 1940)	Sidney Ernest Cramp (Contractor) Herbert Searles (Dairy Farmer)	Vol 3628 Fol's 74 & 75
19.08.1940 (1940 to 1940)	Sidney Ernest Cramp (Railway Employee) Herbert Searles (Dairy Farmer) (Transmission Application not investigated)	Vol 3628 Fol's 74 & 75
19.08.1940 (1940 to 1944)	Herbert Searles (Dairy Farmer)	Vol 3628 Fol's 74 & 75 Now Vol 5168 Fol 237
23.06.1944 (1944 to 1956)	Frank Cornelius Searles (Farmer) Hilda May Sketchley (Married Woman) Muriel Joyce Searles (Spinster) (Transmission Application not investigated)	Vol 5168 Fol 237
29.04.1956 (1956 to 1971)	Hilda May Sketchley (Married Woman)	Vol 5168 Fol 237
15.12.1971 (1971 to 2005)	Brian Hardie (Medical Practitioner)	Vol 5168 Fol 237 Now 1/844711
07.04.2005 (2005 to date)	Kingston Minmi Road Pty Ltd (Current Registered Proprietors)	1/844711

Leases:

Nil

Easements:

> 01.11.1923 B17280 Right of Way and Easement 66 feet wide.

> 11.08.1932 C 136521 Right of Way 66 feet wide.

> 28.05.2008 D.P. 1108608 Right of Carriageway 15 metres wide.

4 Investigation Methodology

4.1 Fieldwork

4.1.1 Site Inspection

A site inspection was undertaken by Principal Technical Officer from CGS on 21 and 22 February 2014 in order to map salient features of the site and the surrounding area. The inspection comprised of a walkover assessment and no restrictions on site accessibility was encountered.

4.1.2 Sampling

The fieldwork component conducted as part of previous assessment [1] comprised environmental soil sampling undertaken to identify potential Areas of Environment Concern (AEC) associated with the filling identified on site. The sampling was conducted on 29 May 2013 and comprised drilling shallow boreholes using an excavator and auger attachment at nine locations (ES001 to ES009). Four environmental soil samples were obtained from the boreholes and sampled in accordance with the procedure detailed in Section 4.2 below.

All fieldwork was carried out by a geotechnical engineer from CGS. Samples were located by reference to existing site features and based on the size of the fill area. The indicative locations are shown on Drawing 1, attached in Appendix A and should be considered as approximate only.

4.2 Sampling and Contamination Procedures

Environmental sampling was performed according to CGS standard environmental soil sampling procedures including the following.

> The use and changing of disposable gloves for each sampling event to prevent cross contamination.

> Decontamination of all sampling equipment using a 3% solution of phosphate free detergent (Decon 90) and tap water prior to each borehole.

> Soil sample storage for all sampling events was via appropriate containers supplied by ALS laboratories.

> Samples storage in chilled insulated containers prior to and during transport to the laboratory.

> Sample storage less than 72 hours.

4.3 Laboratory Assessment

The analytes selected for testing were conducted for the purpose classification of the filling in accordance with the Excavated Natural Material Exemption 2012 (ENM) [2] and comprised of the following, the results of which were reviewed as part of this assessment.

> Heavy metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc)

> Total Recoverable Hydrocarbons (TRH).

> Monocyclic Aromatic Hydrocarbons: Benzene, Toluene, Ethyl-benzene, Xylenes (BTEX).

> Polycyclic Aromatic Hydrocarbons (PAH).

> Electrical Conductivity (EC) and pH: for previous assessment [1] but not required for this assessment.

The results and quality assurance are summarised in Section 7 and reports (Certificate of Analysis) are attached in Appendix D.

5 Site Inspection

Topographically the site spans three north westerly tending gullies running off a north-east trending ridgeline with proposed development area on both east and west facing slopes either side of the combined gullies. Site slopes are generally gentle to moderate, but steeper in the vicinity of site boundaries and locally in drainage lines and gullies which cross the site falling to the west to north-west. Surface drainage follows the natural surfaces and existing drainage lines falling ultimately to Minmi Creek, to the north of the site.

The site was predominately relatively heavily vegetated at the time of fieldwork, with the exception of a small clearing in the area of filling, and where tracks have been established.

At the time of fieldwork, the site contained several access tracks which appeared to be used for a variety of purposes associated with previous site activity. The site has been subject to some minor disturbance and illegal dumping of predominately domestic waste materials and rubble, generally adjacent to the access tracks, as shown on Drawing 1. The anthropogenic materials included domestic waste, bricks, an abandoned vehicle, plastic pipe, timber, scrap metal, large concrete fragments, and fibrous cement fragments. It is noted that the fibrous cement could possibly contain bonded asbestos although it should be appreciate that the materials were only identified in two small areas with observed material spread over an area in the order of $2m^2$. Photographs of areas of potential contamination and anthropogenic materials are shown in Appendix E.

6 Criteria for Contamination Assessment

6.1 General

It should be appreciated that the testing conducted as part of this assessment was preliminary in nature with a limited scope. The sampling and testing is not deemed a necessity for the purpose of PCA but was conducted for previous ENM classification [1] and the results have been reviewed as part of this assessment to supplement the findings of the desktop study and site inspection. The purpose of the current assessment was to identify potential areas for further assessment.

6.1.1 National Environment Protection (Assessment of Site Contamination) Measure

The assessment criteria used to evaluate soil analytical results are based on the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) [3]. Schedule B1 of the NEPM [3]: Guidelines on Investigation Levels for Soil and Groundwater provides limits on investigation concentrations based on human health and ecological risks associated with the presence of site contamination.

The proposed site use is residential and therefore the “Residential A” Health-based Investigation Levels (HIL A) has been adopted for the assessment. HIL A refers to residential use with garden or accessible soil with home grown produce less than 10% fruit and vegetable intake (no poultry), and also includes childcare centres, preschools and primary schools.

Ecological investigation levels (EIL) for urban residential and public open space have also been considered where suitable.

6.1.2 NSW EPA Service Station Criteria

The assessment criteria adopted for TRH (C6-C36) and BTEX were based on the NSW Environment Protection Authority (EPA) Contaminated Sites: Guidelines for Assessing Service Station Sites (GASSS) [4]. These guidelines provide assessment criteria for soil and water on service station sites and are applicable for sites where fuel oil or grease may have been utilised.

6.2 Potential Areas of Environmental Concern

The desktop review and site inspection has identified possible site contamination associated with the following.

> Potential minor hydrocarbon contamination associated with the abandoned and wrecked motor vehicle.

> Potential contamination associated with the isolated dumping of household items, along with building rubble such as bricks, concrete and fibrous cement fragments which are potentially asbestos containing material (ACM).

> Possible hydrocarbon spillage associated with the use of the filled area in the central portion of the site as site compound and machinery storage area.

> Possible component of imported filling associated with the fill area, of which based on anecdotal evidence was constructed used site fill assumed to be predominately site won.

> Potential contamination associated with the fill material utilised to fill mine subsidence depressions and possible mine adits or ventilation shafts.

7 Laboratory Testing

7.1 Testing Results

Laboratory testing was carried out on selected soil samples and was conducted by ALS Laboratories, which holds current accreditation with the National Association of Testing Authorities, Australia (NATA). All testing was undertaken within the terms of their accreditation. The laboratory testing reports (Certificate of Analysis) are attached in Appendix D.

The results of laboratory analysis for inorganic and organic contaminants in the soil samples are summarised in the following tables.

> Table 7-1: Results of Laboratory Analysis for Heavy Metals.

> Table 7-2: Results of Laboratory Analysis for TPH/BTEX.

> Table 7-3: Results of Laboratory Analysis for Polycyclic Aromatic Hydrocarbons (PAHs).

Table 7-1 Results of laboratory soils analysis: metals

Analyte (1)	PQL (2)	Guideline (3)	ES001	ES003	ES004	ES005
Arsenic	4	100	<4	12	9	8
Cadmium	0.4	20	<0.4	<0.4	<0.4	<0.4
Chromium	1	100	2	9	9	9
Copper	1	6000	3	48	26	24
Lead	1	300	19	70	31	29
Mercury	0.1	40	<0.1	<0.1	<0.1	<0.1
Nickel	1	400	2	7	7	5
Zinc	1	7400	19	390 (4)	210	140

Notes to table:

(1) Results in mg/kg.
(2) PQL: Practical Quantitation Limit.
(3) Schedule B1 of the NEPM [3]: Guidelines on Investigation Levels for Soil and Groundwater.
(4) Indicates an exceedance where the Cation Exchange Capacity (CEC) of the soil is less than 10 $cmole_c/kg$.

Table 7-2 Results of laboratory soils analysis: TPH/BTEX

Analyte (1)	PQL (2)	Guideline (3)	ES001	ES003	ES004	ES005
Total Recoverable Hydrocarbons (TPH)						
C6-C9	25	65	<25	<25	<25	<25
C10-C14	50	1000	<50	<50	<50	<50
C15-C28	100		<100	<100	<100	<100
C29-C36	100		<100	<100	<100	<100
Monocyclic Aromatic Hydrocarbons (BTEX)						
Benzene	0.2	1	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	1.4	<0.5	<0.5	<0.5	<0.5
Ethyl Benzene	1	3.1	<1	<1	<1	<1
Total Xylene	2	14	<3	<3	<3	<3

Notes to table:
(1) Results in mg/kg.
(2) PQL: Practical Quantitation Limit.
(3) EPA Contaminated Sites: Guidelines for Assessing Service Station Sites [4].

Table 7-3 Results of laboratory soils analysis: PAH

Analyte (1)	PQL (2)	Guideline (3)	ES001	ES003	ES004	ES005
Naphthalene	0.1	–	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	0.1	–	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	–	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	–	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	–	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	–	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	–	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	–	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	–	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	–	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	0.2	–	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.05	–	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	0.1	–	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	–	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	–	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ (4)	0.5	3	<0.5	<0.5	<0.5	<0.5
Total PAH	–	300	<2	<2	<2	<2

Notes to table:
(1) Results in mg/kg.
(2) PQL: Practical Quantitation Limit.
(3) Schedule B1 of the NEPM [3]: Guidelines on Investigation Levels for Soil and Groundwater. Criteria for 'Total PAH' and 'Benzo(a)pyrene TEQ' only.

(4) Carcinogenic PAH HIL is based on the eight carcinogenic PAH and the Toxicity Equivalence Factor (TEF) relative to benzo(a)pyrene. The benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is calculated as the sum of the products of the concentration of each carcinogenic PAH and the applicable TEF.

7.2 Quality Assurance

Given the preliminary nature of the assessment, no specific duplicate testing was conducted as part of the field sampling.

ALS Laboratories have undertaken internal quality assurance (QA) testing which also involves a review of the QA results and interpretation. Results are contained within the laboratory Certificate of Analysis in Appendix D.

The review of internal QA indicates that sufficient internal QA was undertaken for most analytes and that, Recovery of Surrogates, Recovery of Spikes, Relative Percentage Differences for Duplicates, Laboratory Blank results and Holding times where within acceptance criteria as defined by ALS.

The data obtained from this testing is considered accurate and the results can be relied on to the for the purpose of the preliminary assessment.

8 Comments and Discussions

8.1 Analysis of Contamination Results

8.1.1 Heavy Metals

Appraisal of the results indicated that the levels of metals within the samples tested were below the Residential HIL A threshold limits as defined by the NEPM [3].

The levels of metals are generally below EIL threshold limits for urban residential and public open space as defined by the NEPM Schedule B1 Guidelines on Investigation Levels for Soil and Groundwater [3]. A slightly elevated zinc level in sample ES003 was recorded. Comparison with the current EIL would necessitate further testing to confirm the Cation Exchange Capacity (CEC) of the soil. It is noted that the assessment of CEC is a requirement of the new NEPM [3] which postdates the previous testing. It should be appreciated that the recorded level is generally consistent with typical background levels for the area and as such does not present an issue from a health based assessment.

8.1.2 TRH

Appraisal of the results indicated TRH and BTEX levels were below the threshold limits as detailed GASSS [4].

8.1.3 PAH

Appraisal of the results indicated that the levels of PAH, including total PAH and Carcinogenic PAH were below the Residential HIL A threshold limits as defined by the NEPM [3].

8.2 Potential Contamination

The desktop review and site inspection has identified possible contamination associated with the following.

> Minor potential hydrocarbon contamination associated with the abandoned and wrecked motor vehicle.

> Low potential contamination associated with isolated dumping of household items, building rubble such as bricks, concrete and possible ACM associated with fibrous sheeting fragments.

> Low potential for hydrocarbon spillage associated with the use of the filled area in the central portion of the site as site compound and machinery storage area.

> Several minor areas of possible imported filling that may have potential for contamination depending on the origin source.

Based on the findings of the PCA and comparison of the analytical testing undertaken to threshold limits, no indication of gross contamination has been identified on the site. The majority of the dumped materials comprise materials of domestic original and are typical of illegal dumping in bushland areas. The materials are generally inert and as such could be readily removed and disposed as general solid waste to a licensed waste facility during development. No specific validation would be required apart from visual confirmation of removal. The two small areas where potential asbestos containing materials were noted could be also be readily addressed during construction. Some limited additional testing would be recommended, as detailed in Secton 8.3, with the results determining the need for further validation upon removal of the material.

While numerous areas of minor filling were observed the majority are stockpiled material and are consistent with site won soils excluded a stockpile of concrete fragments. It is understood that the proposed development configuration has been targeted to reduce the impact of former underground mining. It is noted that the majority of the areas impacted by fill are on the boundary or outside the developable area.

The limited intrusive sampling and testing regime associated with one identified filled area undertaken by CGS [1] did not indicated any exceedance of the HIL threshold limits NEPM [3] and GASSS[4].

8.3 Further Assessment

The issue of minor areas of uncontrolled filling could readily be dealt with during construction. The majority of the filled material would need to be removed during development to address the uncontrolled geotechnical state of the material where the material is located within the development area. As the majority of the observed fill is generally consistent with the site won material the likelihood of gross contamination of these materials is low. It is recommended that where the material is proposed for beneficial reuse within development it should be assessed against the ENM [2] exemption at the start of construction. Similarly, any indications during removal of fill material such odours or staining would be the basis for separation of suspect material to discreet stockpiles to allow additional assessment.

Further assessment would be recommended during construction as it would be done in conjunction with removal of dumped materials and/or fill and would include the following.

> Validation testing beneath the location of the dumped abandoned vehicle upon removal.

> Sampling and testing of any of the site fill proposed for reuse within the development against the ENM [2] exemption. It may be prudent to remove and stockpile the fill material separate prior to testing.

> Confirmation of whether the fibrous sheeting fragments observed at the surface in two locations are ACM, and where confirmed, further assessment shall be conducted to determine the presence of asbestos fibres or asbestos fines in the soil in the vicinity of the where the fragments were observed.

9 Conclusions

The PCA was undertaken to determine the current site status in relation to potential contamination to support the proposed rezoning DA.

Based on the findings of the PCA and the limited previous analytical testing undertaken, no indication of gross contamination has been identified on the site. It is considered that the site would be suitable for residential development from a contamination perspective, subject to further assessment as summarised in Section 8.3 of this report being conducted.

10 Limitations

Cardno Geotech Solutions (CGS) have performed investigation and consulting services for this project in general accordance with current professional and industry standards. The extent of testing was limited to discrete test locations and variations in ground conditions can occur between test locations that cannot be inferred or predicted.

A geotechnical consultant or qualified engineer should provide inspections during construction to confirm assumed conditions in this assessment. If subsurface conditions encountered during construction differ from those given in this report, further advice should be sought without delay.

Cardno Geotech Solutions, or any other reputable consultant, cannot provide unqualified warranties nor does it assume any liability for the site conditions not observed or accessible during the investigations. Site conditions may also change subsequent to the investigations and assessment due to ongoing use.

This report and associated documentation was undertaken for the specific purpose described in the report and should not be relied on for other purposes. This report was prepared solely for the use by ADW Johnson Pty Ltd, The City of Newcastle and the Department of Planning, and any reliance assumed by other parties on this report shall be at such parties own risk.

11 References

[1] CGS1706-003/1, "Excavated Natural Material Assessment," Cardno Geotech Solutions, 12 July 2013.

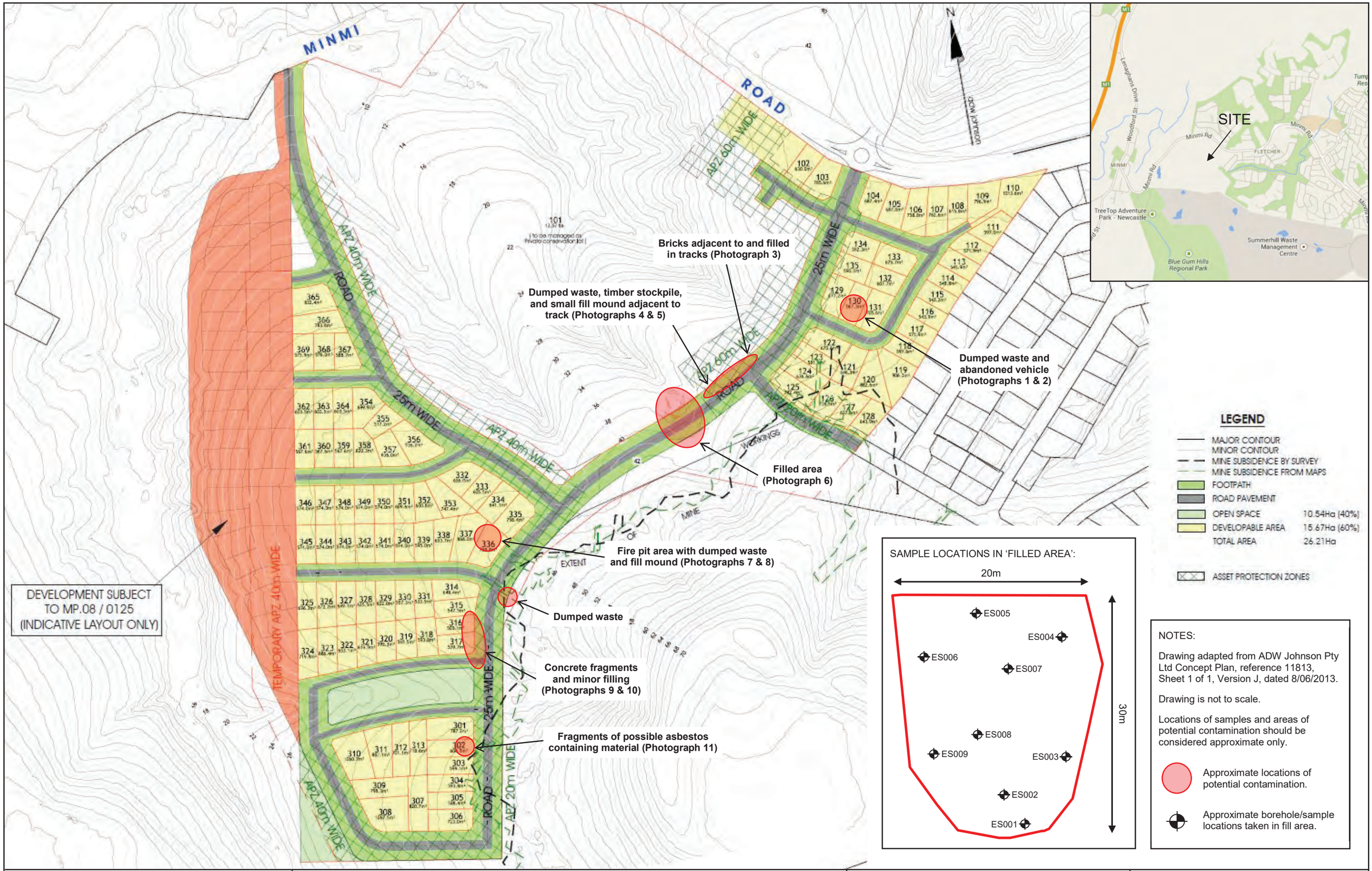
[2] Protection of the Environment Operations (Waste) Regulation 2005 - General Exemption Under Part 6, Clause 51 and 51A, "The excavated natural material exemption 2012," Department of Environment and Climate Change NSW, October 2012.

[3] National Environment Protection (Assessment of Site Contamination) Measure 1999, "Schedule B1 Guidelines on Investigation Levels For Soil and Groundwater," National Environment Protection Council, 16 May 2013.

[4] EPA Contaminated Sites, "Guidelines for Assessing Service Station Sites," NSW Environment Protection Authority, December 1994.

APPENDIX A
DRAWING

Cardno Geotech Solutions
Shaping the Future



Cardno Geotech Solutions
Shaping the Future

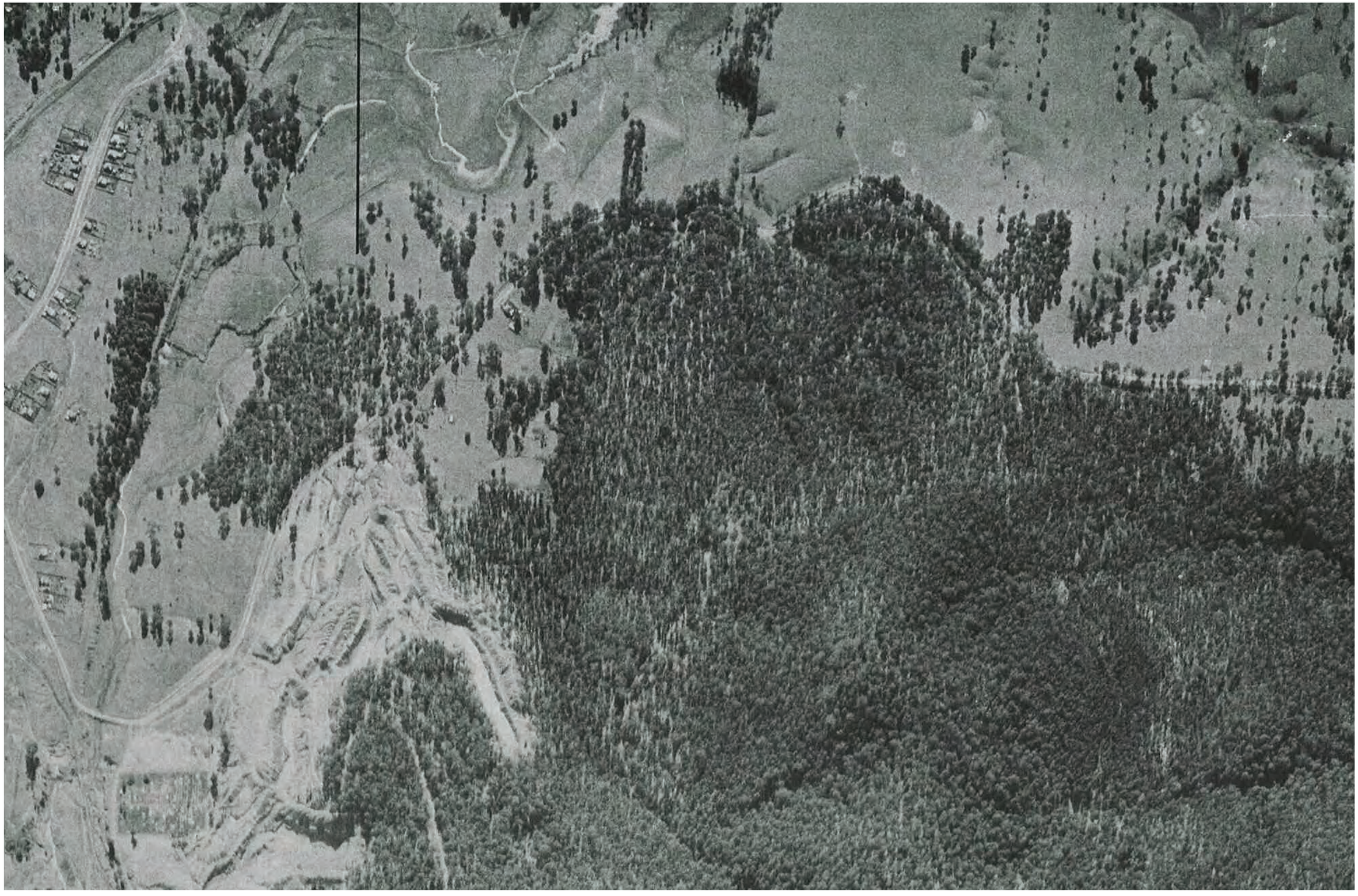
DRAWING TITLE:	AREAS OF POTENTIAL CONTAMINATION
PROJECT NAME:	PROPOSED RESIDENTIAL SUBDIVISION
SITE LOCATION:	505 MINMI ROAD, FLETCHER

CLIENT:	ADW Johnson Pty Ltd
PROJECT NO:	CGS1706
DRAWING NO:	1
FILE REF:	CGS1706-004-d1

DRAWN BY: ZO CHECKED BY:
OFFICE: 4/5 Arunga Drive, Beresfield NSW 2322
DATE: 4 March 2014

APPENDIX B
AERIAL PHOTOGRAPHY

Cardno Geotech Solutions
Shaping the Future



Aerial photograph 1: 22 July 1954 (Newcastle NSW 252-5050, Run 4)

Aerial photograph 2: 22 August 1965 (Northumberland Project NSW 1403-5175, Run 9)

Aerial photograph 3: 27 May 1975 (Newcastle NSW 2314-131, Run 7)

Aerial photograph 4: 27 April 1984 (Newcastle NSW 3384-115, Run 7)

Aerial photograph 5: 25 February 1993 (Newcastle NSW 4116, Run 10)

Aerial photograph 6: 4 October 2004 (Newcastle, NSW 4875 (M2448), Run 10)

Aerial photograph 7: 30 January 2014 (PhotoMap aerial image - Nearmap.com)

APPENDIX C
COUNCIL RECORDS & TITLE DEEDS

Cardno Geotech Solutions
Shaping the Future

PLANNING CERTIFICATE

The City of Newcastle

Section 149, Environmental Planning and Assessment Act 1979

To: Cardno Geotech Solutions
PO Box 4224
EDGEWORTH NSW 2285

Certificate No: 173800
Fees Paid: $133.00
Receipt No(s): 4010760

Your Reference:

Date of Issue: 27/02/2014

The Land: LOT: 1 DP: 844711
505 MINMI ROAD FLETCHER 2287

Advice provided on this Certificate:

Advice under section 149(2): see items 1 – 18
Additional advice under section 149 (5): see Items 19 – 28

IMPORTANT: Please read this certificate carefully

This certificate contains important information about the land.

Please check for any item which could be inconsistent with the proposed use or development of the land. If there is anything you do not understand, phone Council's **Customer Enquiry Centre** on (02) 4974 2000, or come in and see us.

The information provided in this certificate relates only to the land described above. If you need information about adjoining or nearby land, or about the Council's development policies for the general area, contact Council's **Customer Enquiry Centre**.

All information provided is correct as at 27/02/2014. However, it's possible for changes to occur within a short time. We recommend that you only rely upon a very recent certificate.

The City of Newcastle

PO Box 489
NEWCASTLE 2300

Phone: (02) 4974 2000
Facsimile: (02) 4974 2222

Customer Enquiry Centre
Ground floor,
282 King Street
Newcastle NSW 2300

Office hours:
Mondays to Fridays 8.30 am to 5.00 pm

PART 1:

ADVICE PROVIDED UNDER SECTION 149(2)

ATTENTION: The explanatory notes appearing in italic print within Part 1 are provided to assist understanding, but do not form part of the advice provided under section 149(2). These notes shall be taken as being advice provided under section 149(5).

1. Names of relevant planning instruments and DCPs

The following environmental planning instruments, proposed environmental planning instruments and development control plans apply to the land, either in full or in part.

State Environmental Planning Policy No. 21 - Caravan Parks

State Environmental Planning Policy No. 30 - Intensive Agriculture

State Environmental Planning Policy No. 36 - Manufactured Home Estates

State Environmental Planning Policy No. 44 - Koala Habitat Protection

State Environmental Planning Policy No. 50 - Canal Estate Development

State Environmental Planning Policy No. 55 - Remediation of Land

State Environmental Planning Policy No. 62 - Sustainable Aquaculture

State Environmental Planning Policy No. 64 - Advertising and Signage

State Environmental Planning Policy (Building Sustainability Index:BASIX) 2004

State Environmental Planning Policy (Major Development) 2005

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy (Temporary Structures) 2007

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

State Environmental Planning Policy (Affordable Rental Housing) 2009

State Environmental Planning Policy (State and Regional Development) 2011

Newcastle Local Environmental Plan 2012

Newcastle Development Control Plan 2012

2. Zoning and land use under relevant LEPs

Newcastle Local Environmental Plan 2012

Zoning: The Newcastle Local Environmental Plan 2012 identifies the land as being within the following zone(s):

Zone E4 Environmental Living

Note: Refer to www.newcastle.nsw.gov.au or www.legislation.nsw.gov.au web site for LEP instrument and zoning maps.

The following is an extract from the zoning provisions contained in Newcastle Local Environmental Plan 2012:

Zone E4 Environmental Living

- **Objectives of zone**
  - To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values.
  - To ensure that residential development does not have an adverse effect on those values.
  - To conserve the rural or bushland character and the biodiversity or other conservation values of the land.
  - To provide for the development of land for purposes that will not, or will be unlikely to, prejudice its possible future development for urban purposes or its environmental conservation.
- **Permitted without consent**

  Environmental protection works; Home occupations
- **Permitted with consent**

  Agriculture; Animal boarding or training establishments; Bed and breakfast accommodation; Camping grounds; Caravan parks; Child care centres; Community facilities; Dwelling houses; Emergency services facilities; Environmental facilities; Farm buildings; Flood mitigation works; Home-based child care; Home businesses; Information and education facilities; Landscaping material supplies; Neighbourhood shops; Passenger transport facilities; Plant nurseries; Recreation areas; Research stations; Respite day care centres; Roads; Roadside stalls; Secondary dwellings
- **Prohibited**

  Aquaculture; Industries; Intensive livestock agriculture; Service stations; Warehouse or distribution centres; Any other development not specified in, permitted without consent or permitted with consent

Minimum land dimensions for erection of a dwelling-house: The Newcastle Local Environmental Plan 2012 contains development standards relating to minimum land dimensions for the erection of a dwelling house. Refer to clause 4.1 Minimum subdivision lot size and Part 4 Principle development standards of the Newcastle LEP 2012 for provisions relating to minimum lot sizes for residential development.

Critical habitat: The Newcastle Local Environmental Plan 2012 does not identify the land as including or comprising critical habitat.

Heritage conservation area: The land is not within a heritage conservation area under the Newcastle Local Environmental Plan 2012.

Heritage items: There are no heritage items listed in the Newcastle Local Environmental Plan 2012 situated on the land.

3. Complying development

Note Other requirements: *The advice below for all Complying Development Codes, is limited to identifying whether or not the* ***land****, the subject of the certificate, is land on which complying development may be carried out because of Clauses 1.17A(1)(c) to (e), (2), (3) & (4) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (the Codes SEPP).*

General Housing Code

Complying development under the General Housing Code MAY be carried out on this land.

Rural Housing Code

Complying development under the Rural Housing Code MAY be carried out on this land.

Housing Alterations Code

Complying development under the Housing Alterations Code MAY be carried out on this land.

General Development Code

Complying development under the General Development Code MAY be carried out on this land.

Commercial and Industrial Alterations Code

Complying development under the Commercial and Industrial Alterations Code MAY be carried out on this land.

Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Additions) Code MAY be carried out on this land.

Subdivision Code

Complying development under the Subdivision Code MAY be carried out on this land.

Demolition Code

Complying development under the Demolition Code MAY be carried out on this land.

Fire Safety Code

Complying development under the Fire Safety Code MAY be carried out on this land.

4. Coastal Protection Act 1979

The land IS NOT AFFECTED by the operation of sections 38 or 39 of the Coastal Protection Act 1979.

4A. Certain information relating to beaches and coasts

The land IS NOT AFFECTED by an order under Part 4D of the Coastal Protection Act 1979 in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with.

The Council HAS NOT been notified under section 55X of the Coastal Protection Act 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land).

4B. Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

The land IS NOT subject to an agreement for annual charges under section 496B of the Local Government Act 1993 for coastal protection services (within the meaning of section 553B of that Act).

5. Mine Subsidence Compensation Act 1961

The land IS within a proclaimed Mine Subsidence District under the Mine Subsidence Compensation Act 1961. The approval of the Mine Subsidence Board is required for all subdivision and building, except for certain minor structures. Surface development controls are in place to prevent damage from old, current or future mining. It is strongly recommended prospective purchasers consult with the Mine Subsidence Board regarding mine subsidence and any surface development guidelines. The Board can assist with information about mine subsidence and advise whether existing structures comply with the requirements of the Act.

NOTE: Plans of existing and abandoned mine workings are available for viewing at the Mine Subsidence Board's offices. For further clarification and details, contact the Mine Subsidence Board, 117 Bull Street, Newcastle West. Ph (02) 49084300.

6. Road widening or realignment

NOTE: The Roads and Maritime Services (RMS) may have proposals that are not referred to in this item. For advice about affectation by RMS proposals, contact the Roads and Maritime Services, Locked Mail Bag 30 Newcastle 2300. Ph: 131 782.

The land IS NOT AFFECTED by any road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993.

The land IS NOT AFFECTED by any road widening or road realignment under an environmental planning instrument.

The land IS NOT AFFECTED by any road widening or road realignment under a resolution of the Council.

7. Policies on hazard risk restrictions

Except as stated below, the land is not affected by a policy referred to in Item 7 of Schedule 4 of the Environmental Planning and Assessment Regulation 2000 that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

Potential acid sulfate soils: Works carried out on the land must be undertaken in accordance with Clause 6.1 Acid sulfate soils of the Newcastle Local Environmental Plan 2012.

Bush fire: Under clause 5.11 Bush fire hazard reduction of the Newcastle LEP 2012, bush fire hazard reduction work authorised by the Rural Fires Act 1997 may be carried out on any land without development consent.

NOTE: The Rural Fires Act 1997 also makes provision relating to the carrying out of development on bush fire prone land.

Land Contamination: Council's information currently indicates that the property may be affected by land contamination. Council has adopted a policy of restricting development or imposing conditions on properties affected by land contamination. Refer to Section 5.02 Land Contamination of Newcastle Development Control Plan 2012, which may be inspected or purchased at Council's Customer Enquiry Centre.

NOTE: The absence of a policy to restrict development of the land because of the likelihood of a particular risk does not imply that the land is free from that risk. The Council considers the likelihood of natural and man-made risks when determining development applications under section 79C of the Environmental Planning and Assessment Act 1979. Detailed investigation carried out in conjunction with the preparation or assessment of a development application may result in the Council either refusing development consent or imposing conditions of consent on the basis of risks that are not identified above.

7A. Flood related development controls information

Council's current information indicates the property is not flood prone land as defined in the Floodplain Development Manual: the management of flood liable land, April 2005 published by the NSW Government.

8. Land reserved for acquisition

The land is not identified for acquisition by a public authority (as referred to in section 27 of the Act) by any environmental planning instrument or proposed environmental planning instrument applying to the land.

9. Contributions plans

The following contribution plan/s apply to the land.

Development Contributions Plan No.1, 2005:

The Plan specifies section 94 contributions that may be imposed as a condition of development consent.

NOTE: Contributions plans are available on Council's website or may be inspected or purchased at Council's Customer Enquiry Centre.

Development Contributions Plan No.4, 2006 (Transport Facilities in Blue Gum Hills):

The Plan specifies section 94 contributions that may be imposed as a condition of development consent.

NOTE: Contributions plans are available on Council's website or may be inspected or purchased at Council's Customer Enquiry Centre.

Western Corridor Section 94 Contributions Plan 2013:

The Plan specifies section 94 contributions that may be imposed as a condition of development consent.

NOTE: Contributions plans are available on Council's website or may be inspected or purchased at Council's Customer Enquiry Centre.

9A. Biodiversity certified land

The land IS NOT biodiversity certified land within the meaning of Part 7AA of the Threatened Species Conservation Act 1995.

10. Biobanking agreements

The land IS NOT land to which a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995 relates.

11. Bush fire prone land

The land, either in whole or in part IS bush fire prone land for the purposes of the Environmental Planning and Assessment Act 1979.

12. Property vegetation plans

Not applicable. The Native Vegetation Act 2003 does not apply to the Newcastle local government area.

13. Orders under Trees (Disputes Between Neighbours) Act 2006

Council HAS NOT been notified that an order has been made under the Trees (Disputes between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

14. Directions under Part 3A

The land IS NOT AFFECTED by a direction by the Minister in force under section 75P (2) (c1) of the Act.

15. Site compatibility certificates and conditions for seniors housing

(a) The land IS NOT AFFECTED by a current site compatibility certificate (of which the Council is aware) issued under the State Environmental Planning Policy (Housing for Seniors and People with a Disability) 2004.

(b) The land IS NOT AFFECTED by any terms of kind referred to in clause 18(2) of the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004, that have been imposed as a condition of consent to a development application granted after 11 October, 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

The land IS NOT AFFECTED by a valid site compatibility certificate (of which the Council is aware) issued under the State Environmental Planning Policy (Infrastructure) 2007.

17. Site compatibility certificates and conditions for affordable rental housing

The land IS NOT AFFECTED by a valid site compatibility certificate (of which the Council is aware) issued under the State Environmental Planning Policy (Affordable Rental Housing) 2009.

18. Paper subdivision information

The land is NOT AFFECTED by any development plan that applies to the land or that is proposed to be subject to a consent ballot.

Note: *There are no matters prescribed by section 59(2) of the Contaminated Land Management Act 1997 to be disclosed, however if other contamination information is held by the Council this may be provided under a section 149(5) certificate.*

PART 2:

ADVICE PROVIDED UNDER SECTION 149(5)

ATTENTION: Section 149(6) of the Act states that a Council shall not incur any liability in respect of advice provided in good faith pursuant to sub-section 149(5).

19. Outstanding Notices and Orders issued by Council.

Council records indicate that this premise IS NOT AFFECTED by a current notice or order (excluding the notices or orders mentioned in the note below).

NOTE: The Council has not inspected the premises immediately prior to the issue of this certificate. It is possible that the premises are affected by matters of which the Council is unaware.

NOTE: This Certificate does not include any advice regarding outstanding notices or orders issued under the Environmental Planning and Assessment Act 1979 or the Local Government Act 1993. To obtain advice regarding these matters, you should lodge an application for a Certificate as to Outstanding Notices and Orders (accompanied by the appropriate fee). For further information, please contact the Customer Enquiry Centre on (02) 4974 2000.

20. Further consent requirements under the Newcastle Local Environmental Plan 2012.

The following provisions of the Newcastle Local Environmental Plan 2012 affect the carrying out of development on the land. These provisions are in addition to those required to be disclosed at Item 2 of this Certificate.

Refer to clause 3.1 Exempt Development of the Newcastle Local Environmental Plan 2012

Refer to clause 3.2 Complying Development of the Newcastle Local Environmental Plan 2012

Note: The Newcastle Local Environmental 2012 may have additional provisions that affect the carry out of development. Refer to the Newcastle Local Environmental 2012 for the full affect it may have on the land or obtain profession advice for more information.

21. Suspension of covenants.

Refer to 1.9A Suspension of covenants, agreements and instruments of the Newcastle Local Environmental Plan 2012.

22. Unexhibited proposed environmental planning instruments.

The land IS NOT AFFECTED by a resolution of the Council to endorse a planning proposal which has yet to have a gateway determination pursuant to section 56(2) of the Act.

23. Draft development control plans.

A draft development control plan DOES NOT APPLY to the land. The draft plans are exhibited pursuant to Part 3 of the Environmental Planning and Assessment Regulation 2000.

24. Heritage Act 1977.

The land IS NOT AFFECTED by a listing on the State Heritage Register or an Interim Heritage Order that is in force under the Heritage Act 1977.

NOTE: The above advice is provided to the extent that Council has been notified by the Heritage Council of NSW. For up-to-date details, contact the Office of Environment and Heritage, PO Box A290, South Sydney NSW 1232 Ph: (02) 9995 5000.

25. Listing by National Trust of Australia.

The land IS NOT AFFECTED by a listing of the National Trust of Australia (NSW).

NOTE: The above advice is provided to the extent that Council has been notified by the National Trust of Australia (NSW). For up-to-date details, contact the National Trust.

26. Australian Heritage Database.

The land IS NOT AFFECTED by a listing on the Australian Heritage Database.

NOTE: The above advice is provided to the extent that Council has been notified by the Department of the Environment, Heritage, Water and the Arts. For up-to-date details, contact the Department of the Environment, Heritage, Water and the Arts, King Edward Terrace, Parkes ACT 2600. Ph (02) 6274 1111.

27. Environment Protection & Biodiversity Conservation Act 1999 (Cth)

Under the (Commonwealth) Environment Protection and Biodiversity Conservation Act 1999, actions which have, may have or are likely to have, a significant impact on a matter of national environmental significance may be taken only with the approval of the Commonwealth Minister for the Environment.

Approval is also required for actions that have a significant effect on the environment of Commonwealth land. These actions may be on Commonwealth land or other land.

This approval is in addition to any approvals under the (NSW) Environmental Planning and Assessment Act 1979 or other NSW legislation.

Matters of national environmental significance are:

- declared World Heritage areas
- declared Ramsar wetlands
- listed threatened species and ecological communities
- listed migratory species
- nuclear actions
- the environment of Commonwealth marine areas.

Locations within the City of Newcastle that are a declared Ramsar wetland include Kooragang Nature Reserve and Shortland Wetlands. Listed threatened species and listed migratory species are known to occur within the City of Newcastle.

28. Other matters

The land is affected by the following:

Newcastle earthquake

Earthquakes occurred in the vicinity of Newcastle on 28th December 1989 and 6 August 1994. Buildings on the land may have suffered damage as a consequence of the earthquakes. Prospective purchasers are advised to make their own enquiries as to whether the property is affected by any damage.

Newcastle Urban Strategy (Updated 2009)

The Newcastle Urban Strategy was adopted by the Council on 11 March 1998 and updated on 15 December 2009. The contents of the Strategy will be taken into account when the Council assesses development applications and amendments to the Newcastle Local Environmental Plan 2012.

Note: Refer to Council's website to view the document. www.newcastle.nsw.gov.au

Lower Hunter Regional Strategy (2006 - 2031)

The Lower Hunter Regional Strategy has been prepared by the Department of Planning and Infrastructure. The contents of the strategy will be taken into account when Council assesses development applications and amendments to the Newcastle Local Environmental Plan 2012.

Note: Refer to Council's website to view the document. www.newcastle.nsw.gov.au

Newcastle City-Wide Floodplain Risk Management Study and Plan (2012)

The Newcastle City-wide Floodplain Risk Management Study and Plan addresses flood management for the City of Newcastle. The Study and Plan will be taken into account when Council assesses development applications and amendments to the Newcastle Local Environmental Plan 2012.

Note: Refer to Council's website to view the document. www.newcastle.nsw.gov.au

Contaminated land information

Council is in possession of contaminated land information relating to this property. Appendix A contains a list of this information. You can contact Council's Compliance Services Unit on 02 4974 2525 to arrange to view any documents listed.

Issued without alterations or additions, 27/02/14

for:
KEN GOULDTHORP
GENERAL MANAGER

Contaminated Land Information **ECM Number**

Council is in possession of the following contaminated land document(s) which relate to the land. Persons relying on the certificate are advised to examine and consider the contents of each document:

1. Report: Excavated Natural Material (ENM) Assessment Proposed Subdivision Lot 1 D.P. 844711 Minmi Road Fletcher — DW 4604541

Persons relying on the certificate are advised to make their own investigations as to whether the land is affected by elevated concentrations of soil or groundwater contaminants in relation to proposed purchase or use of land.

Land & Property Information

Cadastral Records Enquiry Report

Ref : 29

Requested Parcel : Lot 1 DP 844711

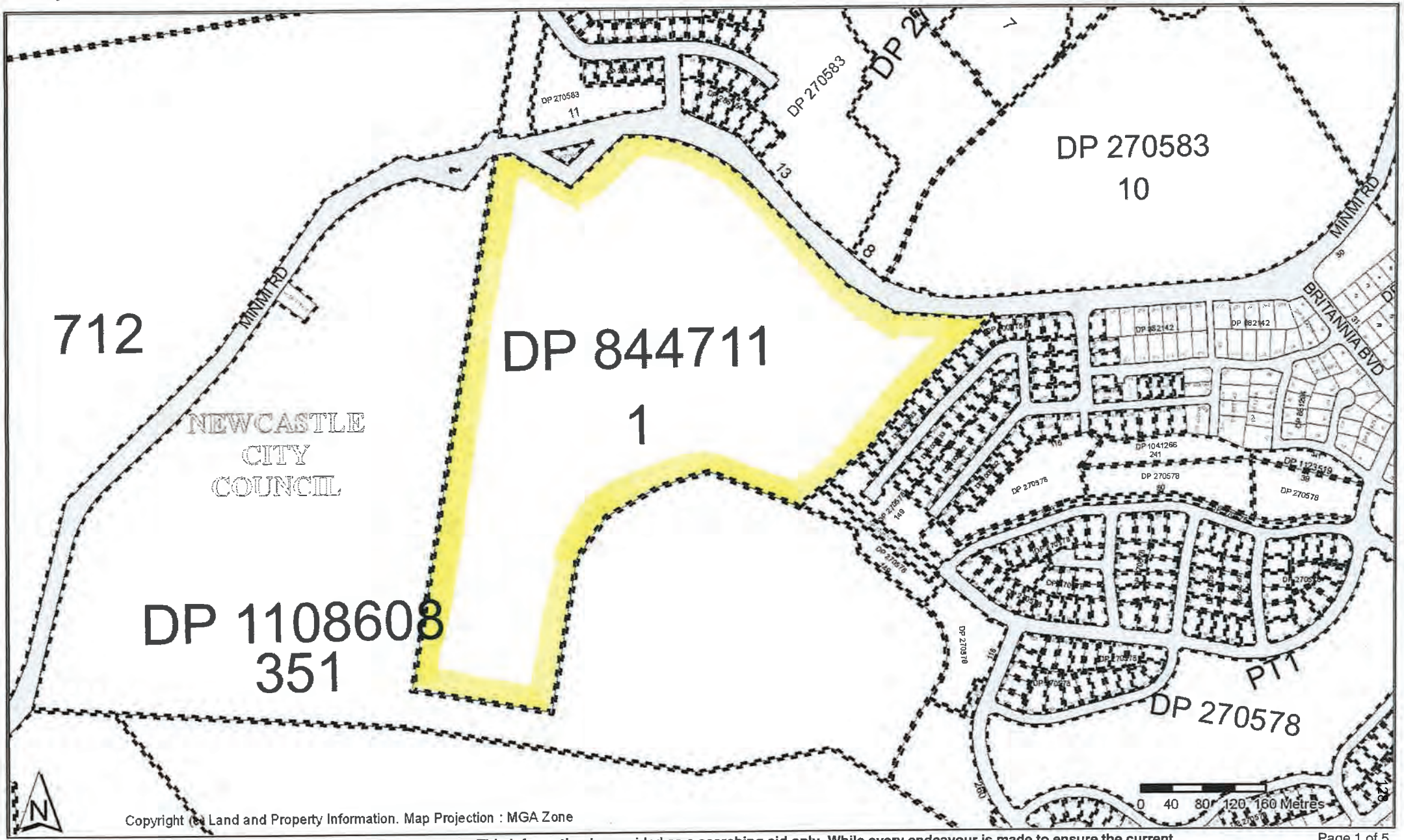
Identified Parcel : Lot 1 DP 844711

Locality : FLETCHER

LGA : NEWCASTLE

Parish : HEXHAM

County : NORTHUMBERLAND



Copyright © Land and Property Information. Map Projection : MGA Zone

Report Generated 10:54:12 AM, 21 February, 2014

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

PLAN FORM 2 — Plan Drawing only to appear in this space — *OFFICE USE ONLY (E)

SIGNATURE AND SEALS ONLY

Ewan Smart

SHORT LINE TABLE				
LINE	BEARING	DISTANCE	RADIUS	ARC
1	79° 22' 55"	26.035		
2	122° 04' 55"	71.49		
3	96° 46' 05"	64.94		
4	89° 59' 35"	34.02		
5	254° 16' 55"	64.005		
6	216° 09' 45"	64.005		
7	41° 10' 40"	45.695		
8	33° 38' 50"	45.695		
9	19° 31' 40"	74.64		
10	91° 08' 25"	47.475		
11	101° 09' 25"	90.445	260.0	90.91
12	111° 10' 45"	49.30		
13	128° 17' 35"	85.105		
14	332° 03' 00"	7.00		
15	87° 10' 30"	25.00		

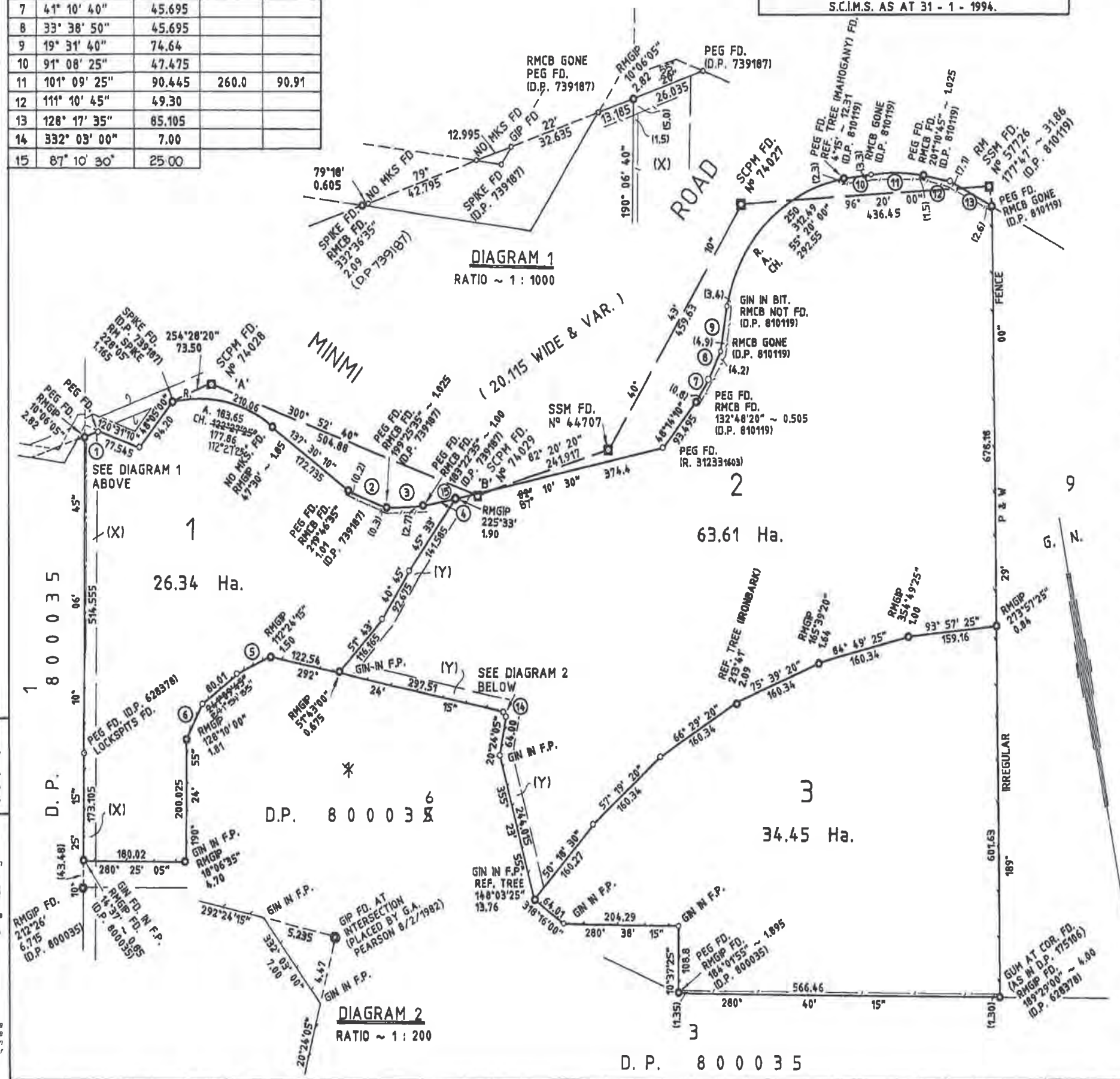
(X) RIGHT OF CARRIAGEWAY AND EASEMENT 20.115 WIDE (CREATED BY TRANSFER Nº C. 136521 AND B. 17280)

(Y) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 20 WIDE

SURVEY PRACTICE REGULATION 1990 : CLAUSE 32(2)

MARK	I.S.G. CO-ORDINATES EASTING	I.S.G. CO-ORDINATES NORTHING	ZONE	ACC.
PM 74027	359847.347	1361139.031	56/1	2
PM 74028	358874.456	1361017.542	56/1	2
PM 74029	359307.775	1360758.438	56/1	2
SSM 44707	359547.520	1360790.683	56/1	2
SSM 57726	360281.106	1361090.903	56/1	2

SOURCE : I.S.G. CO-ORDINATES ADOPTED FROM S.C.I.M.S. AS AT 31 - 1 - 1994.



Crown Lands Office Approval

PLAN APPROVED .....
Authorised Officer
Land District .....
Paper No. .....
Field Book ..... pages .....

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of section 36B of the ~~Metropolitan Water, Sewerage and Drainage Act, 1924, as amended,~~ † Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed ..... SUBDIVISION .....
(Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No 6564
Date 19/08/1994
(Signature) .....
Council Clerk
Council File No 17/30491/10110/01

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water, Sewerage and Drainage Board and the Hunter District Water Board.
† Delete if inapplicable

SURVEYOR'S REFERENCE S. 890

DP 844711

Registered 24.11.1994

C.A. Nº 6564 OF 19.8.1994

Title System TORRENS

Purpose: SUBDIVISION

Ref Map: U5457-5,6,8,9

Last Plan: D.P. 810119

PLAN OF SUBDIVISION OF LOT 211 D.P. 810119

Lengths are in metres. Reduction Ratio 1: 5000

~~Maitland~~ City: NEWCASTLE

Locality: MINMI

Parish: HEXHAM

County: NORTHUMBERLAND

~~This is sheet 1 of my plan in~~ ~~sheets~~
(Delete if inapplicable).

I, EWAN ELLIOTT SMART
of PALMER BRUYN & PARKER NEWC DX7855

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made in accordance with the Survey Practice Regulation 1990 and was completed on

5 JULY 1994

Signature Ewan Smart
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth. 'A' - 'B'
#Insert date of survey.

Plans used in preparation of survey/compilation.

D.P. 628378
D.P. 810119
D.P. 800035
D.P. 734297
D.P. 739187
D.P. 831806
D.P. 175106
R. 312331603

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919 - 1964 AS AMENDED IT IS INTENDED TO CREATE :
1. RIGHT OF CARRIAGEWAY 20 WIDE ~~AND~~
2. EASEMENT FOR SERVICES 20 WIDE

PLAN AMENDED IN L.T.O 23.12.1994 AL

LOT 4 DP 795 AMENDED IN L.T.O 19.6.1995 AL

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

PLAN FORM 2 (APPROVED FORM 3) — Plan Drawing only to appear in this space

DP1108608 P

Registered: 28.5.2008

CA: SEE CERTIFICATE

Title System: TORRENS

Purpose: SUBDIVISION

Ref Map: 9457-5*, 6*, 8*, 9* & 55*

Last Plan: DP869101, DP844711, DP1008132, DP800036

PLAN OF SUBDIVISION OF LOT 36 DP.869101, LOT 3 DP.844711, LOT 2414 DP.1008132 & LOT 35 DP.800036 AND RIGHT OF CARRIAGEWAY 15 WIDE WITHIN LOT 1 D.P.844711

Lengths are in metres. Reduction Ratio 1: 6000

LGA: NEWCASTLE

Locality: FLETCHER, MINMI

Parish: ~~KAHIBAH~~ HEXHAM

County: NORTHUMBERLAND

This is sheet 1 of my plan in 2 sheets. (Delete if inapplicable)

I, MURRAY PAUL EDWARDS

of Asquith & deWitt P.O.Box 179 CHARLESTOWN, 2290

a surveyor registered under the Surveying Act, 2002, certify that the survey represented in this plan is accurate, has been made in accordance with the Surveying Regulation, 2001 and was completed on 28th JULY 2006

The survey relates to LINES A, B, C & B, D, E, F, G, J

(Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Signature: 3-8-06. Surveyor registered under the Surveying Act, 2002

Datum Line: "X" - "Y" (M.G.A.) - SEE SHEET 2 "

Type: Urban / Rural*

Plans used in preparation of survey/compilation.

DP 869101
DP.844711
DP.1008132
DP.800035
DP 800036
DP 1008133

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT, 1919, AS AMENDED, IT IS INTENDED

(A) TO CREATE :-

(1) RIGHT OF CARRIAGEWAY 15 WIDE

(2) RESTRICTION ON THE USE OF LAND

(B) TO RELEASE :-

(1) RIGHT OF CARRIAGEWAY 20 WIDE (D.P.844711)

(2) EASEMENT FOR SERVICES 20 WIDE (D.P.844711)

Signatures, Seals and Statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

Executed by Kingston Fletcher Pty Limited ACN 109 187 564 in accordance with Section 127 of Corporations Act 2001 by Peter Thomas Durbin Sole Director/Secretary

Executed by Kingston Minmi Pty Limited ACN 109 824 473 in accordance with Section 127 of Corporations Act 2001 by Peter Thomas Durbin Sole Director Secretary

EXECUTED BY MOUNT THORLEY OPERATIONS PTY LIMITED ACN 000 132 867 PURSUANT TO SECTION 127 OF THE CORPORATIONS ACT IN THE PRESENCE OF:

BOB VASSIE DIRECTOR

IAN POOLE DIRECTOR

EXECUTED BY BORAL RESOURCES (NSW) PTY LIMITED ACN 000 743 568 PURSUANT TO SECTION 127 OF THE CORPORATIONS ACT IN THE PRESENCE OF:

ROB LIGHT DIRECTOR

IAN POOLE DIRECTOR

Crown Lands Office Approval

PLAN APPROVED ..... Authorised Officer

Land District .....

Paper No .....

Field Book ..... pages .....

Subdivision Certificate

I certify that provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to:

* the proposed SUBDIVISION set out herein

* (insert "subdivision" or "new road")

* the subdivision is for lease purposes in accordance with s23H of the Conveyancing Act 1919

* Authorised Person/General Manager/Accredited Certifier

Council Authority: Newcastle City Council

Date of endorsement 19/2/2007

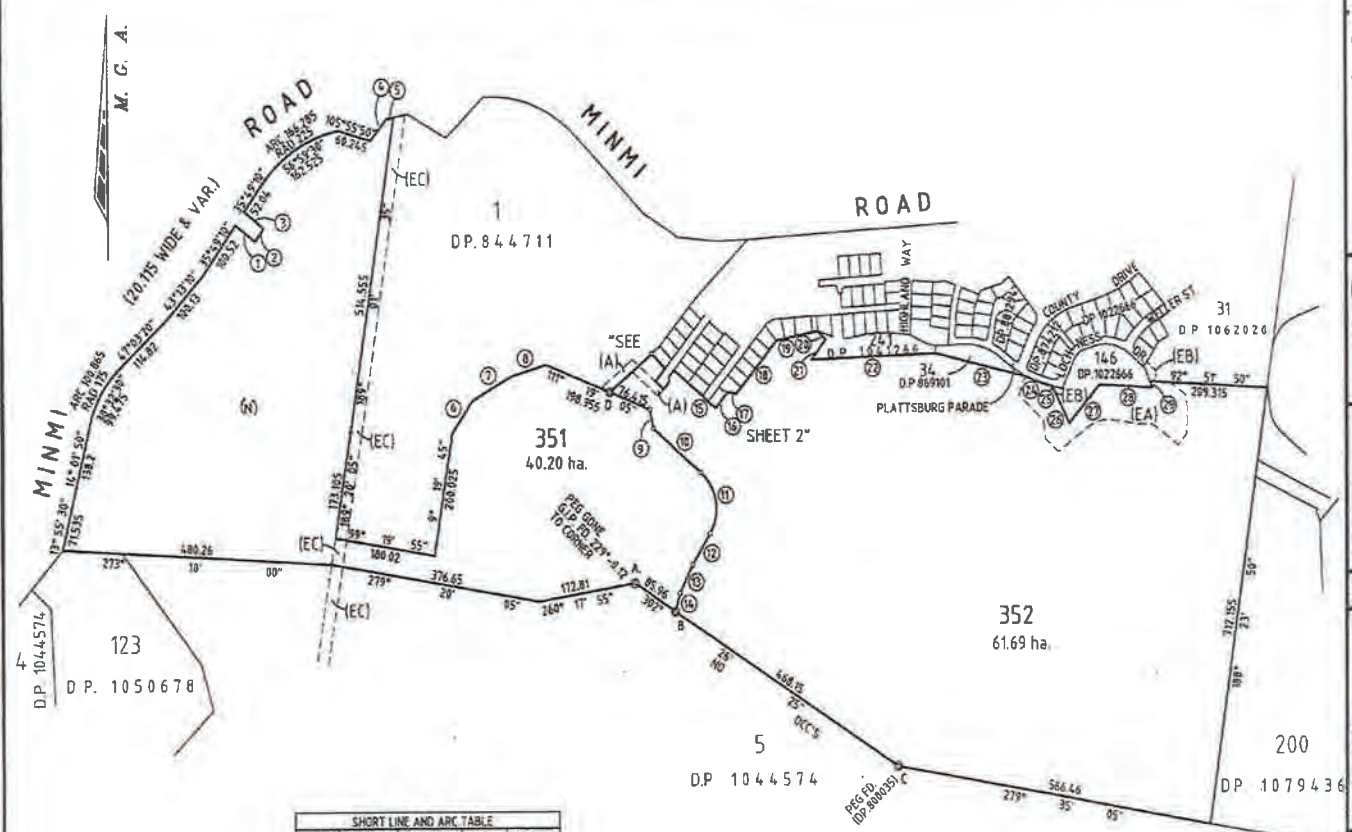
Accreditation no: .....

Subdivision Certificate no 7946

File no: DA 06/1794

Note:
When the plan is to be lodged electronically in the Land Titles Office, it should include a signature in an electronic or digital format approved by the Registrar General

* Delete whichever is inapplicable.



SHORT LINE AND ARC TABLE				
LINE	BEARING	DISTANCE	ARC	RADIUS
1	126°48'30"	43.51		
2	36°36'30"	25.53		
3	308°35'30"	43.915		
4	40°15'40"	45.295		
5	78°19'	13.185		
6	35°04'35"	64.005		
7	60°49'25"	80.01		
8	73°11'45"	64.005		
9	169°29'20"	31.36		
10	129°53'10"	119.825		
11	170°55'20"	99.79	108.86	76
12	212°44'30"	52.225		
13	296°35'	57.93		
14	195°06'20"	31.66		
15	130°07'50"	64.11		
16	40°07'50"	34.38		
17	101°55'50"	15.6		
18	40°07'50"	111.1		
19	78°17'50"	75.1		
20	135°12'50"	20.4		
21	238°51'50"	40.7		
22	87°27'50"	219.8		
23	103°04'50"	166.2		
24	309°36'20"	44.0	44.095	193.585
25	103°04'50"	6.05		
26	153°17'50"	66.595		
27	40°48'50"	82.0		
28	92°44'50"	95.3		
29	339°14'50"	10.7		

(A) RIGHT OF CARRIAGEWAY 15 WIDE

(EA) EASEMENT FOR WATER QUALITY CONTROL POND & ASSOCIATED STRUCTURES (DP.1022666)

(EB) EASEMENT FOR DRAINAGE OF WATER OVER EXISTING LINE OF PIPES (DP.1022666)

(EC) RIGHT OF CARRIAGEWAY & EASEMENT 20.115 WIDE (C.136521 & B.17280)

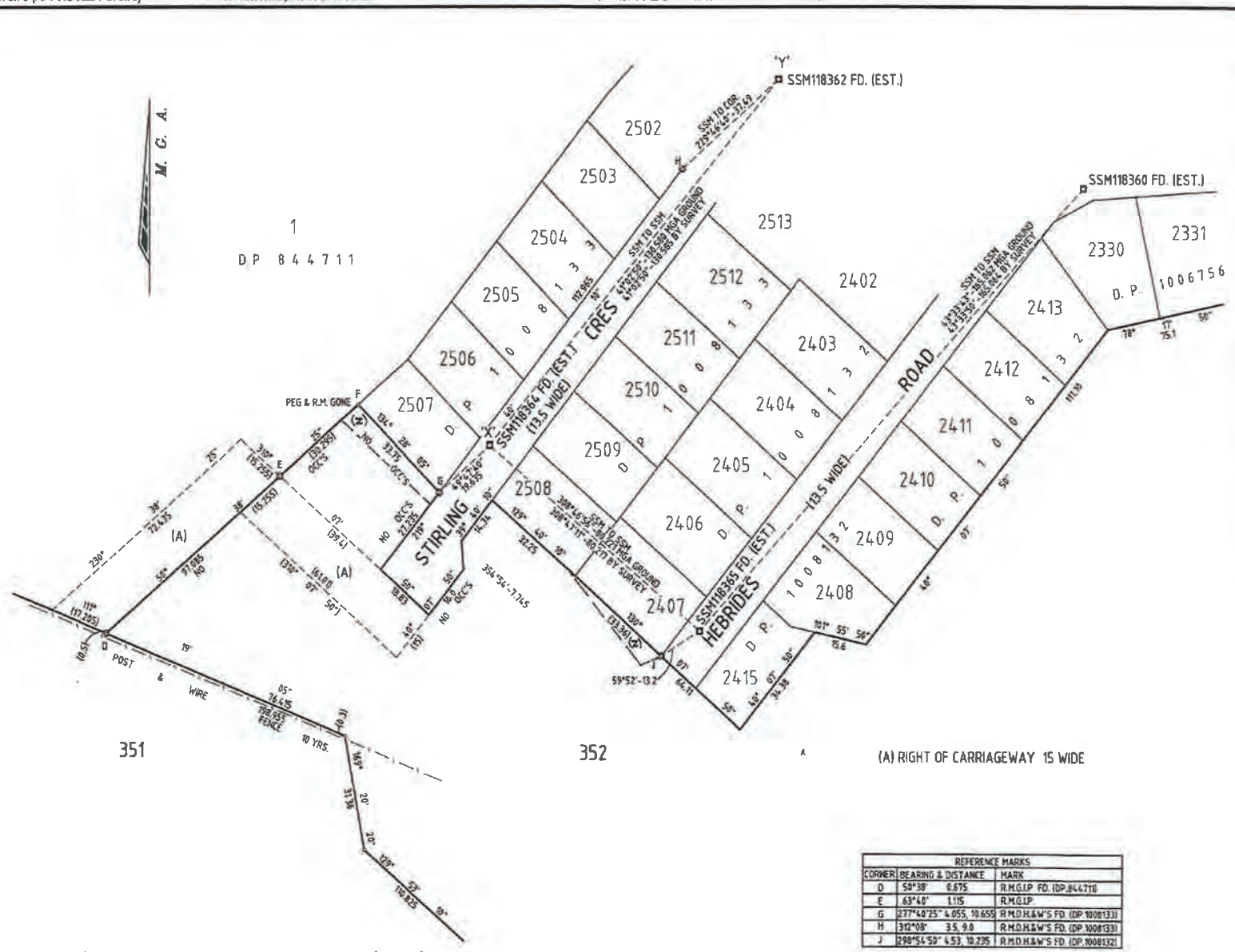
(N) COVENANT - Y190400

REFERENCE MARKS		
CORNER	BEARING & DISTANCE	MARK
A	259°35' - 1.51	R.M.G.I.P. FD. (DP.800035)
B	195°06' - 0.445	R.M.G.I.P.
C	182°57' - 1.895	R.M.G.I.P. FD.(DP.800035)
D	50°58' - 0.675	R.M.G.I.P. FD. (DP.844711)

SURVEYORS REFERENCE: 37031DP-2b 2006M7100(1961) CHECKLIST

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

PLAN FORM 3 (APPROVED FORM 5) To be used in conjunction with Plan Form 2 WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION *OFFICE USE ONLY



(Z) BENEFITED BY- EASEMENT FOR DRAINAGE OF WATER 2 WIDE (DP874212)
- EASEMENT FOR DRAINAGE OF WATER 2 WIDE (DP982142)
- RIGHT OF ACCESS 5-6 WIDE (DP982142)
- EASEMENT FOR DRAINAGE OF WATER 2 WIDE (DP1006756)

REFERENCE MARKS		
CORNER	BEARING & DISTANCE	MARK
D	59°38' 0.675	R.M.G.I.P. FD. (DP.844711)
E	63°40' 1.115	R.M.G.I.P.
G	277°40'25" 4.055, 10.659	R.M.D.H.&W'S FD. (DP.1008133)
H	312°08' 3.5, 9.0	R.M.D.H.&W'S FD. (DP.1008133)
J	298°54'59" 4.53, 10.235	R.M.D.H.&W'S FD. (DP.1008132)

SURVEYING REGULATION, 2001 CLAUSE 32 (2)				
MARK	M.G.A. CO-ORDINATES ZONE 56		CLASS	ORDER
	EASTING	NORTHING		
SSM 118360	372 382. 026	6 361 408. 910	B	2
SSM 118362	372 211. 509	6 361 438. 022	C	3
SSM 118364	372 125. 777	6 361 339. 563	C	3
SSM 118365	372 289. 299	6 361 289. 376	A	1
COMBINED SCALE AND SEA LEVEL CORRECTION - 0.999916				
SOURCE	LPI NSW SCIMS 27TH JULY 2006			

DP1108608

Registered: 28.5.2008

This is sheet 2 of my plan 2 sheets dated 3-8-06

M. Edwards.

Surveyor registered under the Surveying Act, 2002

This is sheet 2 of my plan of 2 sheets covered by my Certificate No. 7946 of 19/2/2007

G. Mountford

Authorised Person/General Manager/Accredited Certifier

For use where space is insufficient in any panel on Plan Form 2

Signed at Sydney this 1st day of May 2008 For Commonwealth Bank of Australia A.C.N. 123 123 124 by its duly appointed Attorney under Power of Attorney No. 498 Book 4347 who declares that he has not received notice of revocation of the power

Witness

Title of Attorney
RAY BARROGA
MANAGER CREDIT DOCUMENTATION

Mirvac Homes (NSW) Pty Limited ABN 22 006 922 998 pursuant to S.127(1) of the Corporations Act

Secretary
MICHAEL GRANT SMITH

Director
GARY WILFRED WOOD

Reduction Ratio 1: 800

Plan Drawing only to appear in this space

SURVEYORS REFERENCE 37031DP-2b

CERTIFICATE OF TITLE

NEW SOUTH WALES — PROPERTY ACT, 1900

Vol. 11852 Fol. 218

Appln. No.13723

Prior Title Vol.5168 Fol.237

Edition issued 15-6-1972

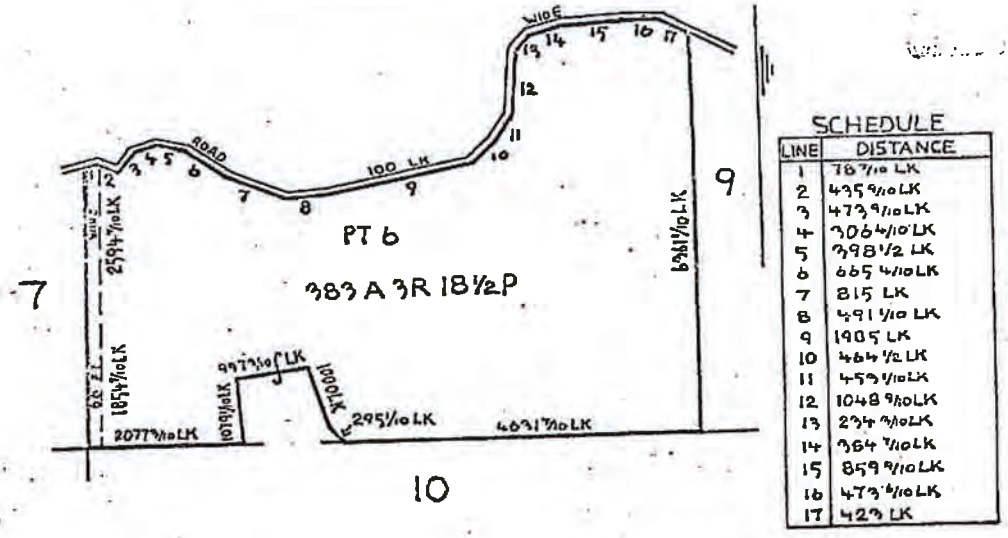
M582521

(Page 1) Vol. 11852 Fol. 218

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Registrar General

PLAN SHOWING LOCATION OF LAND



SCHEDULE

LINE	DISTANCE
1	78 7/10 LK
2	435 9/10 LK
3	473 9/10 LK
4	306 4/10 LK
5	398 1/2 LK
6	665 4/10 LK
7	815 LK
8	491 1/10 LK
9	1905 LK
10	464 1/2 LK
11	459 1/10 LK
12	1048 9/10 LK
13	234 9/10 LK
14	364 7/10 LK
15	859 9/10 LK
16	473 6/10 LK
17	423 LK

SCALE: 20 CHAINS TO ONE INCH

M582521 DN

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in the land shown in plan lodged with Transfer No.B17280 (Filed as F.P. 175106) in the City of Newcastle Parish of Hexham and County of Northumberland being the part of Portion 6 granted to William Charles Wentworth on 20-2-1839 shown in the plan hereon. EXCEPTING THEREOUT an undivided one half share in all mines, beds, veins and seams of coal and shale excepted by Transfer No.M582521.

FIRST SCHEDULE

BRIAN HARDIE of Wallsend, Medical Practitioner.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Rights of Way and Easement created by Transfer No.B17280 affecting the part of the land within described shown as "66 Ft. Wide" in the plan hereon.
3. Right of Way created by Transfer No.C136521 affecting the part of the land within described shown as "66 ft. wide" in the plan hereon.
4. Rights to mine created by Transfer No.M582521 affecting the land within described.

Registrar General

Vol. 11852 Fol. 218

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
Mortgage	M582522	7-1-1972	to Sketchley Pty. Limited.	10-7-1972				
Mortgage	M582522	—	Mortgagee now Bank of New South Wales See Transfer T177466	3-4-1974				
Mortgage	0339900	—	to Bank of New South Wales	29-8-1977		Discharged	T273608	
M582522 Mortgage.Mortgagee:Sketchley Pty. Limited by Transfer T273606. Registered 9-11-1982.								

This deed is cancelled as to the whole
New certificates of Title have issued
for lots in Deposited Plan No.
Lots Vol Folio

REGISTRAR GENERAL

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

[redacted]

ICATE OF TITLE

14942223

PROPERTY ACT, 1900

NEW SOUTH WALES

First Title: Old System

Prior Title: Vol.11852 Fol.218

Vol. 14942 Fol. 223

EDITION ISSUED

7 12 1982

I certify that the person named in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set out below) in the land described subject to the recordings appearing in the Second Schedule and to the provisions of the Real Property Act, 1900.

CANCELLED

Registrar General.

14942 223 Fol.

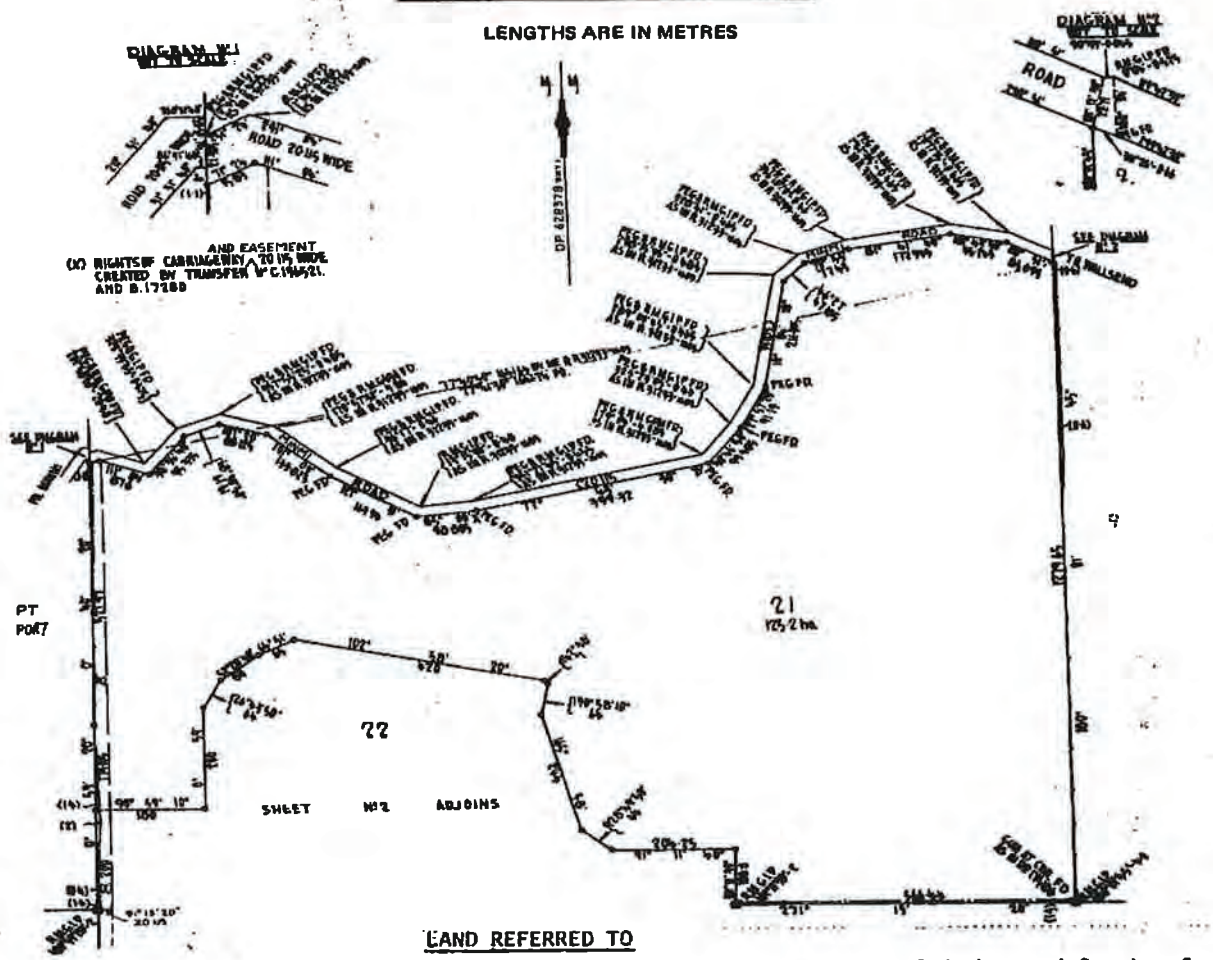
(Page 1) Vol.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



LAND REFERRED TO

Lot 21 in Deposited Plan 628378 at Minmi in the City of Newcastle Parish of Hexham and County of Northumberland.

FIRST SCHEDULE

BRIAN HARDIE.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant.
2. B17280 Right of way and easement affecting the part of the land above described shown so burdened in Deposited Plan 628378.
3. C136521 Right of way affecting the part of the land above described shown so burdened in Deposited Plan 628378.
4. M502522 Mortgage to Sketchley Pty. Limited. Discharged V46060
5. ~~M502522 Mortgage. Mortgagee: Westpac Banking Corporation. See Transfer N777466.~~ Cancelled V46060
6. ~~M502522 Mortgage. Mortgagee: Sketchley Pty. Limited. See Transfer T273606.~~ Cancelled V46060

RG 2/64

(Page 2 of 2 pages)

Vol 14942 Fol 223

99346D 8.81 D. West, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	Registrar General

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION
The Interest of the Council of the Local Government Area in the public road dedicated in DP 739187 Registered		
Y145929 Mortgage to Westpac Savings Bank Limited Registered 2-2-1989 Y255598 Mortgage to Westpac Banking Corporation. Registered 29-3-1989	8	
DP/SP 810119 Registered 4-7-91 Ex Road This folio is cancelled as to whole/part upon creation of computer folios for lots all in the abovementioned plan.		

NOTATIONS AND UNREGISTERED DEALINGS

V460601 DP739187 R Y145929M R Y255598M R

SFR Service First Registration

Historical Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
21/2/2014 3:10PM

FOLIO: 211/810119

First Title(s): OLD SYSTEM
Prior Title(s): VOL 14942 FOL 223

Recorded	Number	Type of Instrument	C.T. Issue
5/7/1991	DP810119	DEPOSITED PLAN	FOLIO CREATED EDITION 1
24/11/1994	DP844711	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

mg

PRINTED ON 21/2/2014

SFR
Service First Registration

Historical Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
21/2/2014 3:09PM

FOLIO: 1/844711

First Title(s): OLD SYSTEM
Prior Title(s): 211/810119

Recorded	Number	Type of Instrument	C.T. Issue
24/11/1994	DP844711	DEPOSITED PLAN	FOLIO CREATED EDITION 1
15/8/1995	0459530	CAVEAT	
2/2/1996	0883648	CAVEAT	
18/6/1996	2237045	WITHDRAWAL OF CAVEAT	
9/10/2000	6996350	APPLICATION FOR PREPARATION OF LAPSING NOTICE	
2/6/2003	9663491	CAVEAT	
7/4/2005	AB395889	WITHDRAWAL OF CAVEAT	
7/4/2005	AB395890	DISCHARGE OF MORTGAGE	
7/4/2005	AB395891	TRANSFER	
7/4/2005	AB395892	MORTGAGE	EDITION 2
27/3/2008	AD847132	DEPARTMENTAL DEALING	
28/5/2008	DP1108608	DEPOSITED PLAN	
23/7/2008	AE100145	DEPARTMENTAL DEALING	EDITION 3
26/8/2008	AE171148	DISCHARGE OF MORTGAGE	
26/8/2008	AE171149	MORTGAGE	EDITION 4
13/3/2013	AH607889	DISCHARGE OF MORTGAGE	
13/3/2013	AH607890	MORTGAGE	EDITION 5

*** END OF SEARCH ***

mg

PRINTED ON 21/2/2014

SFR Service First Registration

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/844711

SEARCH DATE	TIME	EDITION NO	DATE
21/2/2014	3:09 PM	5	13/3/2013

LAND

LOT 1 IN DEPOSITED PLAN 844711
AT MINMI
LOCAL GOVERNMENT AREA NEWCASTLE
PARISH OF HEXHAM COUNTY OF NORTHUMBERLAND
TITLE DIAGRAM DP844711

FIRST SCHEDULE

KINGSTON MINMI ROAD PTY LTD (T AB395891)

SECOND SCHEDULE (4 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 EASEMENT(S) AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM CREATED BY:
B17280 -RIGHT OF CARRIAGEWAY & EASEMENT 20.115 WIDE
C136521 -RIGHT OF CARRIAGEWAY
3 DP1108608 RIGHT OF CARRIAGEWAY 15 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1108608
4 AH607890 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mg PRINTED ON 21/2/2014

APPENDIX D
CERTIFICATE OF ANALYSIS

Cardno Geotech Solutions
Shaping the Future

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 91632

Client:
Cardno Geotech Solutions
PO Box 4224
Edgeworth
NSW 2285

Attention: Dane Dwyer / Daniel Barnes

Sample log in details:

Your Reference:	**CGS1706**		
No. of samples:	4 Soils		
Date samples received / completed instructions received	31/05/13	/	31/05/13

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	7/06/13	/	6/06/13
Date of Preliminary Report:	Not issued		

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil					
Our Reference:	UNITS	91632-1	91632-2	91632-3	91632-4
Your Reference	----------	ES001	ES003	ES004	ES005
Date Sampled	----------	29/05/2013	29/05/2013	29/05/2013	29/05/2013
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/06/2013	03/06/2013	03/06/2013	03/06/2013
Date analysed	-	04/06/2013	04/06/2013	04/06/2013	04/06/2013
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	102	109	104	107

svTRH (C10-C40) in Soil					
Our Reference:	UNITS	91632-1	91632-2	91632-3	91632-4
Your Reference	----------	ES001	ES003	ES004	ES005
Date Sampled	----------	29/05/2013	29/05/2013	29/05/2013	29/05/2013
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/06/2013	03/06/2013	03/06/2013	03/06/2013
Date analysed	-	04/06/2013	04/06/2013	04/06/2013	04/06/2013
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	92	93	88	86

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	91632-1 ES001 29/05/2013 Soil	91632-2 ES003 29/05/2013 Soil	91632-3 ES004 29/05/2013 Soil	91632-4 ES005 29/05/2013 Soil
Date extracted	-	03/06/2013	03/06/2013	03/06/2013	03/06/2013
Date analysed	-	03/06/2013	03/06/2013	03/06/2013	03/06/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	95	93	91

Acid Extractable metals in soil					
Our Reference:	UNITS	91632-1	91632-2	91632-3	91632-4
Your Reference	----------	ES001	ES003	ES004	ES005
Date Sampled	----------	29/05/2013	29/05/2013	29/05/2013	29/05/2013
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	03/06/2013	03/06/2013	03/06/2013	03/06/2013
Date analysed	-	03/06/2013	03/06/2013	03/06/2013	03/06/2013
Arsenic	mg/kg	<4	12	9	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	9	9	9
Copper	mg/kg	3	48	26	24
Lead	mg/kg	19	70	31	29
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	7	7	5
Zinc	mg/kg	19	390	210	140

Miscellaneous Inorg - soil					
Our Reference:	UNITS	91632-1	91632-2	91632-3	91632-4
Your Reference	----------	ES001	ES003	ES004	ES005
Date Sampled	----------	29/05/2013	29/05/2013	29/05/2013	29/05/2013
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	04/06/2013	04/06/2013	04/06/2013	04/06/2013
Date analysed	-	04/06/2013	04/06/2013	04/06/2013	04/06/2013
pH 1:5 soil:water	pH Units	5.4	6.7	7.0	7.0
Electrical Conductivity 1:5 soil:water	µS/cm	36	22	46	28

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	91632-1 ES001 29/05/2013 Soil	91632-2 ES003 29/05/2013 Soil	91632-3 ES004 29/05/2013 Soil	91632-4 ES005 29/05/2013 Soil
Date prepared	-	03/06/13	03/06/13	03/06/13	03/06/13
Date analysed	-	04/06/13	04/06/13	04/06/13	04/06/13
Moisture	%	18	9.9	11	9.5

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA 22nd ED, 4500-H+.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell and dedicated meter, in accordance with APHA 22nd ED 2510 and Rayment & Lyons.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 4 hours.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm# 148	Spike % Recovery
Date extracted	-			03/06/2013	[NT]	[NT]	LCS-10	03/06/2013
Date analysed	-			04/06/2013	[NT]	[NT]	LCS-10	04/06/2013
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-10	102%
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-10	102%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-10	90%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-10	100%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-10	106%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-10	107%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-10	114%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	116	[NT]	[NT]	LCS-10	116%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/06/2013	[NT]	[NT]	LCS-2	03/06/2013
Date analysed	-			04/06/2013	[NT]	[NT]	LCS-2	04/06/2013
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	108%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	111%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	107%
TRH>C_{10}-C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	108%
TRH>C_{16}-C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	111%
TRH>C_{34}-C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	107%
Surrogate o-Terphenyl	%		Org-003	86	[NT]	[NT]	LCS-2	104%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/06/2013	[NT]	[NT]	LCS-2	03/06/2013
Date analysed	-			03/06/2013	[NT]	[NT]	LCS-2	03/06/2013
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	106%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	114%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	107%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	108%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm# 149	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	115%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	101%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-2	129%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	92	[NT]	[NT]	LCS-2	91%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			03/06/2013	[NT]	[NT]	LCS-1	03/06/2013
Date analysed	-			03/06/2013	[NT]	[NT]	LCS-1	03/06/2013
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	95%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-1	93%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	97%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	94%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	105%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	97%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	97%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm# 150	Spike % Recovery
Date prepared	-			04/06/2013	91632-1	04/06/2013 || 04/06/2013	LCS-1	04/06/2013
Date analysed	-			04/06/2013	91632-1	04/06/2013 || 04/06/2013	LCS-1	04/06/2013
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	91632-1	5.4 || 5.2 || RPD: 4	LCS-1	103%
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	91632-1	36 || 42 || RPD: 15	LCS-1	108%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

APPENDIX E
SITE PHOTOGRAPHS

Cardno Geotech Solutions
Shaping the Future

Photograph 1: Dumped waste and abandoned vehicle

Photograph 2: Abandoned vehicle

Photograph 3: Bricks adjacent to and filled in tracks

Photograph 4: Dumped waste, timber stockpile, and small fill mound adjacent to track

Photograph 5: Dumped waste adjacent track

Photograph 6: Filled area

Photograph 7: Fire pit area with dumped waste

Photograph 8: Fill mound adjacent to fire pit area

Photograph 9: Concrete fragments

Photograph 10: Filling in area of concrete fragments

Photograph 11: Fragments of possible asbestos containing material

Appendix 5 – Ecology Briefs and OEH Correspondence

Extract Stage 1 Brief

Since the production of the original Flora and Fauna Assessment prepared by Ecobiological (2012), the methods for collection of flora and fauna data has changed and the type of report to inform a planning proposal are to be in line with the BAM (2017). As the information provided in the Ecobiological Report is older than the accepted 5 years and surveys carried out differ to current requirements, this report can only be used to anecdotally to inform the assessment process but cannot be used in place of targeted flora and fauna surveys required as part of the new Biodiversity Assessment process. Based on the above information, and the recommendation by DPIE that "any biodiversity assessment is in the form of a Biodiversity Development Assessment Report consistent with Stages 1 and 2 of the Biodiversity Assessment Methodology (BAM)", we would see that to ensure compliance with Biodiversity requirements to inform gateway determination a Stage 1 BAM Biodiversity Inventory Report would be prepared. The Biodiversity Inventory Report would be the first stage of a two-stage Biodiversity assessment process, with Stage 1 being prepared for the planning proposal application.

Stage 1: Biodiversity Assessment.

Stage 1 of the BAM is to identify biodiversity values present within the land proposed for development. Biodiversity values that are required to be assessed include:

- Landscapes features and site context;
- Presence of Threatened ecological communities (TEC), Plant community Types (PCT), and the condition of the vegetation:
- Habitat suitability for threatened species and survey requirements for each predicted species.

To collate information on the above attributes the following task will be carried out:

Stage 1a - Desktop Analysis

It is proposed that the stage 1a works would be a desktop review of biodiversity information available for the site, that may indicate constraints and opportunities of the proposal going forward. This information will guide field works proposed.

At a minimum a desktop review will provide the client with the following information:

- Broad scale mapping of the vegetation found on site using OEH State Vegetation Type Mapping;
- Provide an understanding of broad vegetation types on site, and potential areas to avoid as part of the proposal;
- Develop a list of potential threatened species that may require targeted surveys to complete the biodiversity assessment and timing need to undertake the surveys.

Stage 1b – Field Survey

The initial field assessment will be to review the biodiversity constraints of the landholding, whilst collecting BAM Plot data that will be used to calculate offset liabilities in future stages of the biodiversity assessment.

Flora surveys will be conducted in accordance with BAM (2017) to identify the vegetation communities existing on site. The data collected will be used in the credit calculation found on the subject site and to collect data to be used in the BAM credit calculation.

Preliminary analysis of Lower Hunter Vegetation Mapping prepared by Cockerill et al. 2013, for the area in question has been undertake at a desktop level.

The following vegetation types were identified within the investigation area:

- PCT 1588: Grey Ironbark - Broad-leaved Mahogany - Forest Red Gum shrubby open forest on Coastal Lowlands of the Central Coast (Approx. 26.3ha). This mapping will require field validation to inform the confirmation of these plant community types on site and where possible to avoid and/or minimise impacts on this vegetation. The flora surveys will consist of the following:
- Mapping/validation of vegetation communities on site. The mapping shall delineate extent and condition of each vegetation community;
- Map and collect attribute data for habitat trees; and
- Survey plot sampling in accordance with BAM (2017) of up to 9 plots (based on varying condition classes) on site
- Hollow bearing tree assessment

<u>Stage 1c: Targeted Threatened Species Surveys</u>

Threatened Flora Survey

The following flora surveys methodology has been prepared in accordance with the *NSW Guide to Surveying Threatened Plants* (OEH 2016), with particular reference to survey effort guidelines in Table 1 and Table 3.

- Targeted threatened species survey for flora species identifiable at any time of the year, and any threatened species known to occur in the locality. Known species in the locality include Callistemon linearifolius, Rutidosis heterogama and Grevillea parviflora subsp. parviflora;
- Targeted survey for cryptic flora species if the plant community type is assessed to provide habitat for this species:
    - Tetratheca juncea (Aug- Dec)

Threatened Fauna Surveys

During Stage 1a &b vegetation and Stage 1c threatened flora surveys, we will develop an understanding of what threatened fauna species (species credit species) are likely to occur on site and determine the effort of fauna surveys that will be required based on habitat constraints present within the study area (outside what has been provided in this fee proposal).

A review of previous ecological surveys undertaken over the study area and review of the NSW BioNet Atlas provides some information to understand what surveys are likely to be carried out. The following survey methodology is the minimum required to ensure the collection of Biodiversity data is carried in accordance with the BAM (2017).

The following fauna surveys methodology has been prepared in accordance with the guidelines:

- Threatened Biodiversity Survey and Assessment: Guidelines for development and activities (DECC 2004). The ecological survey methodology has been modified to incorporate modern survey techniques and equipment.
- Threatened Species Survey and Assessment guidelines: Field survey methods for Fauna: Amphibian (2009); and
- Species Credit Threatened Bats and their habitats NSW Survey guide for the Biodiversity Assessment Method (2018)

Herpetofauna Surveys

There is the potential for amphibian species (Frogs) to occur within the two ephemeral creeklines within the Study Area. To ensure sufficient survey for amphibian species is carried out the following survey methods will be undertaken over two nights after a rain event.

- 200m transect per creekline on a minimum of two nights (preferred after rain);
- Nocturnal Call playback on a minimum of two nights (preferred after rain);
- Habitat search for reptiles on two separate days; and
- Opportunistic surveys during diurnal flora and fauna surveys

Forest Owls Surveys

Surveys for Nocturnal birds such as forest owls will be carried out in conjunction with other nocturnal surveys. This species will also require additional surveys during breeding (May- Aug) if sufficient breeding habitat is observed (hollows with a diameter >20cm) within the study area. These additional surveys will form part of the second stage of biodiversity assessment works.

- Call play back for 2 nights; and
- Spotlight transects: this method will also cover off on all nocturnal fauna species

Arboreal and Terrestrial Mammals

In case suitable foraging and/or denning habitat is observed during vegetation surveys arboreal and terrestrial mammals, the following survey effort will be required assess presence /absences of the targeted threatened species.

- Arboreal: up to 10 trail cameras will be deployed for 14 consecutive nights (in areas with existing native canopy) to capture the presences/absence of arboreal mammals (Squirrel Glider) on site;
- Terrestrial: up to 6 trail cameras will be deployed for 14 consecutive nights (in areas with existing native canopy) to capture the presences/absence of Terrestrial mammals on site; and
- We would propose to use cameras in conjunction with bait stations that will attract any fauna to the location where the camera is deployed. This option is the preferred method to trapping mammals.

Microbats

Microbats will be surveyed using Anabat Recorders. The use of an ultrasonic echolocation recorder will be used to record bats within the study area. These recording and assessment of the study area habitat and surrounds will inform whether further surveys will be required in accordance with Species Credit Threatened Bats and their habitats NSW Survey guide for the Biodiversity Assessment Method (2018) A total of two Anabats will be utilised over 4 nights.

Stage 1d: Preparation of a Biodiversity Inventory Report

A Biodiversity Inventory Report will be prepared detailing the aims, methods and results of the Stage 1 BAM field assessments. The BIR will provide an understanding of the Biodiversity opportunities and constraints that may be present. At a minimum the Report will include:

1. Desktop Assessment
2. Detailed field survey methodology;
3. Vegetation communities within the site resulting from condition mapping
4. A table of the relevant spatial areas and figures with biodiversity results
5. Threatened species Results
6. A likelihood of occurrence table for threatened species which were identified to have potential habitat present within the study area.
7. Indication of additional surveys that are likely required to ensure compliance with the development of a Biodiversity Development Assessment report which will be required for the Stage 2 assessment post receipt of study requirements from the NSW Government.

Extract Stage 2 Brief

This scope of works represents Stage 2 of the biodiversity assessment process and will ensure the BDAR is prepared in accordance with the Biodiversity Assessment Methodology (2017) for assessment by determining authorities considering the planning proposal.

The following scope identifies additional survey requirements that will be outlined in the Biodiversity Inventory Report (BIR) which is to be developed prior to gateway determination. These additional surveys will be carried out for species that are likely to occur on site (as determined in the BIR). In the case where surveys are not surveyed in accordance with the BAM the proponent will be liable for additional biodiversity credits.

Additional Survey requirements.

The following survey requirements cannot be confirmed until the Stage 1 BIR is completed. Not all surveys may be required and will be completely dependent on the habitat assessment and preliminary surveys undertaken during the production of the BIR.

Threatened Fauna Surveys

The following survey methodology is the minimum required to ensure the Biodiversity Assessment is carried out in accordance with the BAM (2017).

The following fauna surveys methodology has been prepared in accordance with the guidelines:

- Threatened Biodiversity Survey and Assessment: Guidelines for development and activities (DECC 2004). The ecological survey methodology has been modified to incorporate modern survey techniques and equipment; and
- Species Credit Threatened Bats and their habitats NSW Survey guide for the Biodiversity Assessment Method (2018)

Forest Owls Surveys (Breeding Only May-Aug)

If during the field surveys undertaken for the preparation of the Biodiversity Inventory Report suitable habitat for breeding Forest Owls is observed (hollows with a diameter >20cm), a formal Owl survey will be required.

At a minimum the following survey method will be employed:

- Stag watch any trees with suitable hollows that present recent utilisation;
- Call play back for 5 nights.

- Spotlight transects: this method will also cover off on all nocturnal fauna species as well as the Koala.

Microbats

It is likely that the following microbat surveys will be required due to the proximity to the following habitat constraints:

- The available breeding habitat for cave dwelling bats such as caves, escarpments, buildings, tunnels, bridges;

All species that have the potential to occur on site can only be surveyed for during November – March each year. This will allow for a single survey period for any microbats determined to have potential habitat present in the locality.

Survey methods will include:

- Harp traps for 16 nights over a 4-night period* Traps are to be set each evening and check each morning.
- Anabat detectors 16 nights over a 4-night period*

*Minimum requirement

Until suitable habitat can be confirmed on site an estimate of the cost for these surveys has been provided.

Development footprint information and Biodiversity Development Assessment Report (BDAR)

Following completion of the additional field survey, MJD Environmental will be able to provide an understanding of the biodiversity constraints associated with the site that would inform the final development footprint. At this stage of the biodiversity assessment we would propose a meeting with the planning team to explain the finding and provide GIS layers that would be used to develop the footprint. It is of note that at this stage of the process the need to begin the documentation of the proposal's avoidance and minimisation strategy.

Things to consider at this stage include:

- Avoidance of Ecological Endangered Communities with appropriate buffers;
- Avoidance of mapped fauna movement corridors;
- Avoidance of any recorded threatened species;
- Utilisation of cleared areas as development areas; and
- Avoid any areas that may provide habitat for target candidate species;

- When a final footprint is agree upon, we would begin the process of collating and entering the data collected into the online BAM Credit Calculator to determine ecosystem and species credits as per BAM (2017), to calculate the number of credits that could potentially be required to undertake the development works on site.

A Biodiversity Development Assessment Report (BDAR) will be prepared in accordance with Appendix 10 of the BAM (2017) to present the findings of the BAM Assessment and additional ecological surveys. Briefly this report will provide:

1. Detailed field survey methodology;
2. Vegetation communities within the site resulting from condition mapping
3. A table of the relevant spatial areas
4. Threatened species data
5. Impact summary

NSW GOVERNMENT | Office of Environment & Heritage

DOC18/641633-8
16NEW0091

Mathew Egan
Principal Planner
Barr Property and Planning
mategan@barrpandp.com.au

Dear Mathew

Request for comments on Conservation Agreement and Voluntary Planning Agreement - Planning Proposal – 505 Minmi Road, Fletcher

I refer to your letter dated 23 November 2018 and email dated 20 December 2018 seeking Office of Environment and Heritage (OEH) comment on progressing the draft conservation agreement and draft voluntary planning agreement for land at 505 Minmi Road, Fletcher.

In your email dated 20 December 2018 you requested that OEH consider whether clause 34A under the Biodiversity Conservation (Savings and Transitional) Regulation 2017 could apply to a new planning proposal at 505 Minmi Road, Fletcher to allow the development to be assessed under the previous *Threatened Species and Biodiversity Conservation Act 1995*. If clause 34A certification was achieved, this would allow the proponent to continue with a draft Voluntary Planning Agreement and draft Conservation Agreement to offset the impacts of the development.

The requirements of clause 34A certification include that the biodiversity impacts of the proposed development were satisfactorily assessed before the commencement of the *Biodiversity Conservation Act 2016* (BC Act) as part of a relevant planning arrangement, and that conservation measures have been secured into the future to offset the residual impact of the proposed development on biodiversity values after the measures required to be taken to avoid or minimise those impacts.

OEH assessed the biodiversity impacts of a previous planning proposal over the site. The flora and fauna assessment for that development is almost 7 years old. In its Record of Decision refusing the previous planning proposal on the site, the JRPP were of the view that the flora and fauna assessment should be updated given the length of time since it was prepared. There are a number of threatened species that have been listed since the flora and fauna assessment was completed that may be relevant for this development as well as potential changes in the presence and impacts on threatened species that were originally assessed. The flora and fauna assessment will need to be updated for the new planning proposal prior to further assessment by OEH.

Because further biodiversity assessment will be required by OEH for the new planning proposal, OEH considers that the biodiversity impacts of the proposed development have not been "satisfactorily assessed" before commencement of the BC Act and the requirements of clause 34A would not be met.

The biodiversity assessment for the new proposal and associated development application would need to be in accordance with the BC Act Biodiversity Offsets Scheme (BOS). Options for offsetting residual impacts under the BOS include retiring like-for-like credits or making a payment to the Biodiversity Conservation Fund. If the proponent seeks to retire credits from the off-site offset previously proposed under the Conservation Agreement, this would need to be secured through a Biodiversity Stewardship Agreement, rather than continuing with the Conservation Agreement over the land.

If you require any further information regarding this matter, please contact Steven Cox, Senior Team Leader Planning, on 4927 3140.

Yours sincerely

Sharon Molloy 17/01/2019.

SHARON MOLLOY
Director Hunter Central Coast Branch
Conservation and Regional Delivery Division

Contact officer: STEVEN COX
02 4927 3140

Planning, Industry & Environment

Our ref: DOC19/763010-1
Your ref: 16NEW0091

Ian Power

Senior Consultant
Barr Property and Planning
ipower@barrpandp.com.au

Dear Mr Power

Planning Proposal 505 Minmi Road, Fletcher

I refer to your correspondence dated 29 August 2019 in which you requested advice on whether in principle agreement to an offset strategy was required from Biodiversity Conservation Division (BCD) (formerly OEH) prior to gateway for the planning proposal at 505 Minmi Road, Fletcher.

It is recommended that you discuss the requirements for gateway determination with the Planning and Assessment Group of the Department of Planning, Industry and Environment (formerly Department of Planning and Environment). BCD can advise however, that an offset strategy or detailed biodiversity studies are generally not required prior to gateway determination. The Gateway determination outlines the additional studies required for the planning proposal and which public authorities must be consulted.

In regard to updating the biodiversity assessment for the site, BCD recommends that any biodiversity assessment is in the form of a Biodiversity Development Assessment Report consistent with Stages 1 and 2 of the Biodiversity Assessment Method (BAM). This will ensure consistency of surveys and assessment methods with what will be required at the development assessment stage. It will also identify any risks to development approval (for example, any Serious and Irreversible Impacts) and predict offset costs for the proposed development. Whilst the BAM does not require the proponent to identify specific offset areas, if specific offsets have been identified for the proposal you may include these in the information provided to BCD following gateway determination.

If you have any further questions in relation to this matter, please contact Brendan Mee, Senior Conservation Planning Officer, on 4904 2730 or via email at rog.hcc@environment.nsw.gov.au

Yours sincerely

10 September 2019

STEVEN COX
Senior Team Leader Planning
Hunter Central Coast Branch
Biodiversity and Conservation Division

Appendix 6 – Biodiversity Inventory Report

Biodiversity Inventory Report

505 Minmi Rd, Fletcher

Prepared for

Barr Property and Planning

Final V2 / January 2020

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DOCUMENT STATUS

Project Particulars			
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Version	Date	Prepared by	Details
V1	20-12-2019	PS/ES/AC/MD	Draft for client review
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Approval for use:

Matt Doherty

Accredited BAM Assessor # BAAS17044

07 January 2020

Disclaimer

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EXECUTIVE SUMMARY

MJD Environmental has been engaged by Barr Property and Planning to prepare a Biodiversity Inventory Report (BIR) to be submitted with the Planning Proposal application for the rezoning of a 26.2 hectare parcel of land at Lot 23 in DP 1244350, 505 Minmi Rd, Fletcher.

The Planning Proposal aims to rezone the 26.2 hectares of E4 Environmental Living zoned land to:

- R2 Low Density Residential Land (Approximately 15.4ha); and
- E2 Environmental Conservation (10.8ha)

The proposed rezoning would result in the removal 15.4 hectares of which contains at least 14.7 ha of native woody vegetation and the remainder (0.7ha) consisting of tracks and non-vegetated areas in the form of managed exotic groundcover, and exotic trees and shrubs.

This Biodiversity Inventory Report (BIR) has been prepared in response to correspondence between Barr Property and Planning, the Department of Planning, Industry and Environment and the City of Newcastle in preparation for submission for gateway determination.

In agreement with Council and DPIE, a current biodiversity report was to be developed to inform the planning proposal and a more extensive body of works was required given the site history. As such this BIR has been produced in a manner which is consistent with the Biodiversity Assessment Methodology (BAM) in order to satisfy later stages of the biodiversity planning process, post gateway.

The BAM was used as the assessment method, to establish impacts on threatened species and threatened ecological communities in the locality under the *Biodiversity Conservation Act* 2016.

In addition, preliminary assessment was also undertaken having regard to those threatened entities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The proposed subject site is zoned as E4 Environmental Living and is currently a vacant bush lot containing unsealed roads, fences, rubbish and native vegetation. The land has undergone historic clearing most likely for pit props and grazing evident by the young age cohorts of trees, fences, weed invasion and disturbed vegetation. The overall native woody vegetation is in moderate condition comprising good species composition and structure.

Field surveys carried out as part of the biodiversity assessment identified three Plant Community Types (PCT).

- 1589 – Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast
- 1590 – Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest commensurate with the BC Act listed Endangered Ecological Community (EEC) *Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions*
- 1619 – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands

Impact Analysis

The proposal will result in the following impacts and required offsets as calculated using the BAM-C Calculator:

- 2.05 ha of PCT 1589 requiring 78 ecosystem credits; and
- 11.77 ha of PCT 1590 requiring 406 ecosystem credits; and
- 0.94 ha of PCT 1619 requiring 24 credits.

The current method to retire credits for the proposal has not been determined and will be dependent on the availability of credits on the open market, viability of establishing a stewardship site in the locality or retirement of credits via payment into the Biodiversity Conservation Fund (BCF). It is likely that credit retirement will incorporate one or a combination of these options if the proposal was granted approval.

A preliminary assessment under the EPBC Act determined the proposed action is unlikely to have an impact to MNES based on the assessment criteria set out in relevant Commonwealth policies and advices as at the time of this assessment.

As part of the avoidance and minimisation strategy for the Planning Proposal, it is intended that the central area of the landholding will be rezoned as E2 – Environmental Conservation to conserve biodiversity in the locality and provide connectivity in a north-south direction via the Study Area. The connection to lands in the north is currently limited to highly mobile species that can navigate across the Minmi Road corridor and the fragmented nature of native vegetation to the north of the study area. The connection will facilitate movement to E2 lands in the south, which will require the crossing of the link road between both sides of the proposed lands to be rezoned to R2 lands.

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GLOSSARY OF TERMS AND ABBREVIATIONS

Term/ Abbreviation	Meaning
BAM	Biodiversity Assessment Method
BDAR	Biodiversity Development Assessment Report
BC Act	Biodiversity Conservation Act 2016
BS Act	Biosecurity Act 2016
CoN	City of Newcastle
Council	City of Newcastle
DoEE	Commonwealth Department of the Environment & Energy
DPIE	NSW Department of Planning Industry and Environment
DPI Water	NSW Department of Primary Industries – Water
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
ha	hectare
LGA	Local Government Area
LLS Act	Local Land Services Act
OEH	Former NSW Office of Environment and Heritage

1 Introduction

MJD Environmental has been engaged by Barr Property and Planning to prepare a Biodiversity Inventory Report (BIR) to be submitted with the Planning Proposal application for the rezoning of a 26.2 hectare parcel of land at Lot 23 in DP 1244350, 505 Minmi Rd, Fletcher (herewith referred to as the Study Area).

1.1 Planning Proposal

The objective of the Planning Proposal is to amend the Newcastle Local Environmental Plan 2012 to facilitate the future delivery of the land in question for low density residential development and environmental conservation purposes.

Refer to **Figure 1** for a site and location map and **Appendix A** for a plan of the proposal.

1.2 Aims & Objectives

The aims and objectives of this Biodiversity Inventory Report (BIR) was to provide an overall description of biodiversity attributes assessed to occur within the Study Area.

The assessment aims to examine the likelihood of the Planning Proposal having a significant effect on any threatened species, populations or ecological communities listed under the *NSW Biodiversity Conservation Act 2016* (BC Act). This assessment recognises the relevant requirements of the EP&A Act 1979 as amended by the *NSW Environmental Planning and Assessment Amendment Act 1997*. Preliminary assessment was also undertaken having regard to those threatened entities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The scope of this biodiversity assessment is to:

- identify vascular plant species occurring within the Study Area, including any threatened species listed under the BC Act and/or EPBC Act;
- identify and map the extent of vegetation communities within the Study Area, including any Threatened Ecological Communities (TEC) listed under the BC Act or EPBC Act;
- identify any fauna species including threatened and migratory species, populations or their habitats, occurring within the subject site and are known or likely to occur within 10 km of the subject site (locality);
- assess the potential of the proposed rezoning to have a significant impact on any threatened species, populations or ecological communities (or their habitats) identified from the subject site; and
- describe measures to be implemented to avoid, minimise, manage or monitor potential impacts of the proposal.

In addition to survey work within the Study Area, consideration has been afforded to habitats within the wider area in order to appreciate the broader environmental context. This includes assessment of potential direct and indirect impacts

1.3 Biodiversity Assessment Pathway

In response to correspondence between Barr Property and Planning (BPP) and the Department of Planning Industry and Environment (DPIE), the following iodiversity assessment pathway was selected to ensure all works relating to biodiversity to be present in the Planning Proposal for Gateway Determination can be utilised for subsequent stages of the planning and development process such as rezoning determination and development application.

The letter dated 10 September 2019 from DPIE Biodiversity Conservation Division noted that detailed biodiversity studies are not required at gateway determination though also notes that any updated Biodiversity Assessment for the Study Area it is recommended that the assessment is undertaken in accordance with Stage 1 and Stage 2 of the Biodiversity Assessment Method (BAM 2017).

In agreement by Council and OEH, a current Biodiversity report is required to inform the planning proposal and a more extensive body of works will be required given the site history. As such this BIR has been produced in a manner which is consistent with the Biodiversity Assessment Methodology (BAM) in order to satisfy later stages of the biodiversity planning process, post gateway.

Biodiversity Conservation Act 2016

In accordance with Part 7 of the Biodiversity Conservation Act 2016 a development or activity is likely to significantly affect threatened species if –

- *it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the Test of Significance (5-Part Test); or*
- *if the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity value; or*
- *it is carried out in a declared area of outstanding biodiversity value*.

The Biodiversity Offset Scheme (BOS) threshold is a test to determine if clearing or other impacts associated with development trigger one of the following:

- The clearing of native vegetation of an area declared by clause 7.2 (BC Regulation 2017) as exceeding the threshold
- the clearing of native vegetation, or other action prescribed by clause 6.1, on land included on the *Biodiversity Values Map* published under clause 7.3. (BC Reg).

In the case that either of the above are triggered the BOS applies requiring the biodiversity assessment to be carried out in accordance with the Biodiversity Assessment Method (BAM).

The land on which the rezoning is proposed is mapped on the Biodiversity Values Map, therefore is an automatic triggered into the BOS.

As such it is a requirement under the Biodiversity Conservation Act that an accredited assessor prepare and a submit a Biodiversity Development Assessment Report (BDAR) to the approval authority (SC) as part of a development.

This BIR has been prepared with consideration of the application of the NSW Biodiversity Assessment Methodology 2017 (BAM), which provides a framework for assessing development impact on biodiversity. Information from this BIR will be utilised to prepare a BDAR in the case gate determination is granted and formal requirements issued by DPIE.

A two-stage investigation path was performed:

Stage 1 – Biodiversity Assessment; and

Stage 2 – Proposed Rezoning Impact Assessment.

Commonwealth Environmental Protection and Biodiversity Conservation Act 1999

Under the EPBC Act assessment an approval is required for actions that are likely to have a significant impact on matters of national environmental significance (MNES). Environmental approvals under the EPBC Act may be required for an 'action' that is likely to have a significant impact on MNES being:

- World Heritage Areas.
- National Heritage Places.
- Ramsar wetlands of international importance.
- Nationally listed threatened species and ecological communities.
- Listed migratory species.

- Commonwealth marine areas.
- Nuclear actions.
- Great Barrier Reef Marine Park.
- A water resource in relation to coal seam gas development and large coal mining development.

Of potential relevance to the Study area are MNES which include nationally listed threatened species, ecological communities and listed migratory species. Where there is the potential for a proposed activity to have a significant impact on any MNES a Referral under the EPBC Act is submitted to Department of the Environment and Energy (DoEE) for approval.

Preliminary assessment was also undertaken having regard to those threatened entities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.4 Site Particulars

The following nomenclature has been used in this report (Refer to **Figure 1**):

- Study Area – Refers to the entire lot (Lot 23 DP 1244350, 505 Minmi Rd, Fletcher, NSW)
- Subject Site – Refers to the proposed areas of land to be rezoned as R2.

Locality	The Study Area is located in Fletcher, NSW
Land Title	Lot 23 DP 1244350
LGA	City of Newcastle
Area	Study Area – 26.2ha Subject Site – 15.4ha
Zoning	The Study Area is currently zoned E4 – Environmental Living (NSW Planning, Industry & Environment 2019).
Boundaries	The Study Area is situated in the recently established residential precinct of the Fletcher village with residential lots under construction adjoining the Study Area to the east and north, vacant land zoned as R2 - Low Density Residential to the west and to the south by E2 – Environmental Conservation zoned lands. The Study Area is bound by frontage (north) to Minmi Road.
Current Land Use	The lot is currently a vacant bush block, comprising native vegetation, unsealed roads, fences, rubbish dumps and motorcycle/bicycle tracks.
Topography	The highest point of Study Area is located on the eastern boundary at 53m ASL. The land falls steeply from the east (~20m ASL) until it reaches a creekline (28m ASL) and elevates again towards the west to 38m ASL.

505 MINMI RD, FLETCHER

FIGURE 1: SITE LOCATION

0 137.5 275 550

Meters

1:8,000

N W E S

Legend

Study Area

MJD Environmental

Aerial: NearMap (2019) | Data: MJD Environmental, NSW Spatial Services (2019) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 10/12/2019| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

STAGE 1 BIODIVERSITY ASSESSMENT

2 Landscape Context

2.1 Landscape Features

The following section provides a description of the landscape features within the Study Area and surrounding 1,500m buffer as outlined in Section 4 of the BAM (2017)

2.1.1 Interim Biogeographic Regionalisation of Australia (IBRA)

Bioregion

The subject site occurs wholly within the Sydney Basin Bioregion. The Sydney Basin Bioregion comprises of Mesozoic sandstones and shales; dissected plateaus: forest, woodlands and heaths: The soils are primarily skeletal soils, sands and podzolics (Thackway & Cresswell 1995).

This Bioregion borders NSW North Coast to the north: Nandewar and Brigalow Belt south and the South Eastern Highlands in the south.

Subregion

The Study Area occurs wholly within the Wyong subregion.

2.1.2 Mitchell Landscapes

The Study Area occurs wholly within *Gosford – Cooranbong Coastal Slopes,* Mitchell Landscape

Coastal fall of the Sydney Basin, rolling hills and sandstone plateau outliers of Triassic Narrabeen sandstones, extensive rock outcrop and low cliffs along ridge margins, general elevation 0 to 75m. Texture-contrast soils on lithic sandstones and shales. Loamy sand alluvium along creeks. Organic sand and mud in lagoons and swamps. Open forest and woodland of Smooth-barked Apple (*Angophora costata*), Red Bloodwood (*Corymbia gummifera*), Brown Stringybark *(Eucalyptus capitellata*), Sydney peppermint *(Eucalyptus piperita*), Spotted Gum *(Corymbia maculata*), Bastard Mahogany *(Eucalyptus carnea*), Northern Grey Ironbark *(Eucalyptus siderophloia*) and Grey Gum *(Eucalyptus punctata*) on hills and slopes. Small areas of closed forest with; Turpentine (*Syncarpia glomulifera*), Lilly Pilly (*Acmena smithii*), Mountain Cedar Wattle (*Acacia elata*), Coachwood (*Ceratopetalum apetalum*), Sassafras (*Doryphora sassafras*) and Water Gum (*Tristaniopsis laurina*) in gullies under high escarpments Prickly-leaved Tea-tree (*Melaleuca styphelioides*) and other shrubs with Swamp Mahogany *(Eucalyptus robusta*), Swamp Oak (*Casuarina glauca*), sedges and Common Reed (*Phragmites australis*) on swampy creek flats. Coastal heath subject to salt spray on headlands.

2.1.3 Rivers, Streams, Estuaries and Wetlands

The Study Area is located within the Hunter River catchment in the Hunter region. The Study Area is located approximately 7km south west of the Hunter River and approximately 3.6km south west of Hexham Swamp Nature Reserve between Minmi and Maryland.

The hydrology of the subject site is typified by a single ephemeral 1st order stream. The stream runs in a south-north direction near the northern boundary of the subject site which eventually connects with Back Creek in the southern section of Hexham Swamp. An additional 1st order stream is mapped within the south western corner of the study area, however a site inspection and ground truthing confirmed this stream is located outside of the study area.

2.1.4 Connectivity

The Study Area currently provides fragmented connectivity in an east-west and north-south direction. Land parcels in the surrounding locality consist of large areas of contiguous vegetation to the south and west of the Study Area. Although these areas currently provide connectivity to the study area large areas of this vegetation have been approved as part of large-scale residential subdivision in the Locality. This vegetation is fragmented further afield by roads and residential areas. Contiguous areas of vegetation become hostile to the west at the M1 Freeway, and to the east at residential areas with limited connections at the Hunter Expressway to the south and roads, residential areas and wetland areas to the north. The Study Area is bordered by a main road on the northern boundary. Connectivity to the north of the site is fragmented by Minmi road and the lack of persistent canopy cover in lands north of the road. This connectivity is generally limited to the isolated canopy trees present and open unmanaged pastures to the southern limits of Hexham Swamp.

2.1.5 Areas of Geological significance and soil hazard features

No karsts, caves, crevices or cliffs or other areas of geological significance occur in or adjacent to the subject site.

A review of the Acid Sulphate Soils Risk mapping (Naylor et al 1998) records indicate the site has not been assessed for ASS.

2.1.6 Areas of Outstanding Biodiversity Value

There are no Areas of Outstanding Biodiversity Values within the 1,500m buffer or in the general locality of the subject site.

2.2 Site Context

The site context was assessed for the Study Area via desktop assessment of Aerial Photograph Interpretation (API) using GIS Software and site assessment. Site context considerations included native woody cover and patch size in accordance with section 4.3 of the BAM (2017)

2.2.1 Native Vegetation Cover

The native vegetation cover of the subject land and 1,500m buffer was carried out by API of high-quality aerial photography using GIS Software (Map Info), and local vegetation mapping data *Lower Hunter Vegetation Mapping* (Cockerill *et al* 2013).

Native vegetation cover has been assessed as 65%

Refer to **Figure 2**.

2.2.2 Patch Size

A patch is defined in the BAM as:

an area of intact native vegetation that occurs on the subject land. The patch may extend onto adjoining land beyond the footprint of the subject land, and for woody ecosystems, includes native vegetation separated by ≤100 metres from the next area of intact native vegetation. For non-woody vegetation, this gap is reduced to ≤30 metres.

Patch size for the Study Area has been assessed using the methods outlined above in Section 3.2.1 and it has been determined that the patch size is greater than 100ha.

505 MINMI RD, FLETCHER

FIGURE 2: NATIVE VEGETATION EXTENT

0 230 460 920

Meters

1:13,500

N W E S

Legend

Watercourse

- 1st Order
- 2nd Order
- 3rd Order
- Study Area
- 1500m Site Buffer
- Native Vegetation

IBRA Region: Sydney Basin
Subregion: Hunter

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Aerial: NearMap (2019) | Data: MJD Environmental, NSW Spatial Services (2019) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 10/12/2019| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

3 Methodology

The BIR has been prepared in accordance with the following guidelines to ensure compliance with future requirements that are likely to be included in the DPIE *Environment Assessment Requirements (EARS)* should the planning proposal go through the Gateway Determination. The EARs will outline all studies required that will allow for the Planning Proposal to be submitted for determination of the rezoning and thereafter development application:

All vegetation survey methods have been carried in accordance with the following documentation and methods:

- *Biodiversity Assessment Methodology (BAM):* Office of Environment and Heritage (OEH), August 2017;
- *Biodiversity Assessment Method Operational Manual - Stage 1* Office of Environment and Heritage (OEH), May 2018; and
- *NSW Guide to Surveying Threatened Plants* Office of Environment and Heritage (OEH), February 2016.\

In addition, all Fauna survey methods have been carried out in accordance with the following documentation and methods:

- *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities, Working Draft* (DEC 2004); and
- *Threatened species survey and assessment guidelines: field survey methods for fauna: Amphibians* (DECC 2009)

3.1 Qualifications & Licencing

Qualifications

This BIR has been prepared by Phoebe Smith under the guidance of Matt Doherty (BAAS#17044) and Adam Cavallaro (BAAS# 18056) accredited BAM Assessors.

Field Work for the BIR was carried out by Phoebe Smith, Bret Stewart and Adam Cavallaro of MJD Environmental Pty Ltd.

Refer to **Appendix E** for personnel qualifications.

Licencing

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL101684 (Valid 30 November 2020).
- Animal Research Authority (Trim File No: 16/170) issued by NSW Department of Primary Industries (Valid 8 February 2020).
- Animal Care and Ethics Committee Certificate of Approval (Trim File No: 16/170) issued by NSW Department of Primary Industries (Valid 8 February 2020).

3.2 Desktop Assessment

A review of biodiversity information was undertaken to provide context and understanding of biodiversity values occurring within the subject site.

Information reviewed included:

- Online database searches involving a 10-km buffer around the Study Area to provide potentially occurring threatened flora and fauna and migratory species under both the BC Act and EPBC Act:
    - NSW Bionet (accessed 11 November 2019 and continually during BIR production)
    - Commonwealth Protected Matters of National Significance search tool (accessed 26 November 2019)
- BioNet Vegetation Classification – Threatened species associated with known PCTs to occur within the Study Area; and
- Ecobiological (2012) *Flora, Fauna and Threatened Species Assessment Lot 1 DP 844711 Minmi Rd, Fletcher NSW.* Prepared by ecobiological, May 2012

3.2.1 Preliminary Vegetation Review

A desktop analysis of vegetation within the Study Area and its surrounds were informed by large-scale vegetation mapping projects and aerial photography to determine potential Plant Community Types (PCT) occurring within the Study Area, they include:

- *Lower Hunter Vegetation Mapping* (Cockerill *et al* 2013);
- GIS analysis including - Aerial Photograph Interpretation (API) and consultation of topographic map (Scale 1:25,000) layers for the Study Area; and
- OEH VIS Classification Database.

3.3 Vegetation and Flora Survey Methodology

3.3.1 Field Survey

Field assessments of the vegetation were carried out within the subject land on 13th, 15th, 20th, 27th & 28th November by Phoebe Smith, Adam Cavallaro and Bret Stewart. The field surveys were carried out in accordance with the Biodiversity Assessment Methodology (BAM 2017) with additional assessment methods to assist in gaining an overview of subject sites biodiversity values.

The following methods were used to inform the vegetation survey associated with the BIR:

- Broad vegetation identification, delineation and stratification into vegetation zones carried out by detailed random meander methods (Cropper 1993);
- Collection of ten plots based full floristic data as per Section 5 of the BAM, recording the following;
    - Identification of all flora species to genus where identification attributes were present
    - Composition, Structure attributes within 20x20 plot; and
    - function attributes within the 20X50m plot
- Collection of subject site landscape attributes that included, landform, aspect, soil type, detailed descriptions of the vegetation condition, current land use and the current impacts.

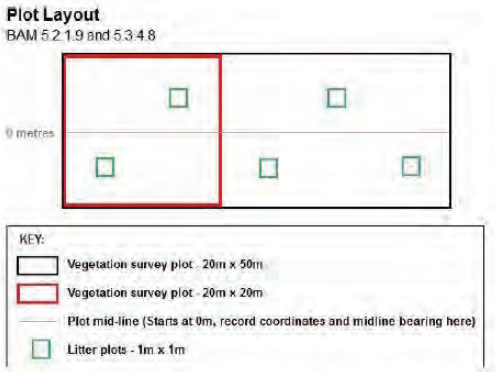

Plate 1: Plot Lay out (BAM Operational Manual 2018d)

3.3.2 Threatened Flora Survey

Targeted threatened flora surveys were carried out on 13th, 15th and 20th November 2019 targeting flora species that could not be conclusively ruled out from occurring on site due to suitable habitat occurring on site.

Threatened flora surveys were undertaken in accordance with the *NSW Guide to Surveying Threatened Plants* (OEH 2016). The following techniques were employed:

- Parallel field-transverse survey technique. One ecologist walking at a distance of 10m depending on density of the vegetation was at time of survey
- Surveys conducted in suitable habitat for each of the targeted species
- Transects were recorded using a hand-held GPS unit

NB: Some areas within the site were inaccessible due to density of *Lantana camara* thickets, thus these areas were unable to be surveyed. Due the density of these thickets it is considered highly unlikely for the surveyed threatened species to be present within these areas.

Refer to **Figure 3** for survey transect location and **Table 5** provides the survey schedule for each species.

3.3.3 Hollow Bearing Tree Survey

A hollow bearing tree survey was undertaken (November 2019) across the subject site with the following information collected:

- Location (D-GPS);
- Tree species;
- Tree DBH;
- Presences of hollows (including potential hollows) and class;
- Habitat suitability for large Forest Owls; and
- Any observational information.

505 MINMI RD, FLETCHER

FIGURE 3: VEGETATION SURVEY

0 45 90 180

Meters

1:2,700

N W E S

Legend

- BAM Plot
- Targeted Threatened Flora Survey
- Watercourse
- Study Area
- Cadastre Boundaries
- Tracks
- Waterbody

MJD Environmental

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3.4 Fauna Survey Methods

A desktop assessment of the potential use of the site by threatened fauna species (as listed under the BC Act and EPBC Act) identified from the vicinity was undertaken prior to the commencement of field surveys (Refer to **Section 3.2**).

Targeted surveys for fauna species recognised to have potential to occur within the Study Area were carried out by MJD Environmental as part of the works informing this BIR.

Refer to **Figure 4** for all targeted fauna surveys.

Arboreal Mammals

Arboreal mammal surveys were undertaken using Scout Guard remote wildlife cameras. Cameras were mounted to trees via a bracket or strap and set to record images in bursts of three photos, with a three-minute delay before the next photo sequence would be triggered.

To attract fauna to the camera, a bait station was attached to a tree within 1- 1.5m of the camera. The bait station was filled with a bait containing a mixture of sardines, oats, honey, and peanut butter. The tree in which the bait station was attached also was sprayed with an attractant of honey / sugar water to increase the chance of arboreal fauna.

A total of 98 camera trap nights were undertaken to target arboreal mammals within the Study Area.

Terrestrial Mammals

Terrestrial mammal surveys were undertaken within the study area by using Scout Guard remote wildlife cameras. Cameras were mounted to trees via a bracket or strap and set to record images at 3 photos per burst, with a three-minute delay before the next photo sequence would be triggered.

To attract fauna to trigger the camera, a bait station was pegged to the ground within 1- 1.5m of the camera. The bait station was filled with a bait containing a mixture of sardines, oats, honey, and peanut butter. The sweet bait station was sprayed with a honey water to increase the chance of attracting fauna.

A total of 98 camera trap nights were undertaken, to target large and small terrestrial mammals within the study area.

The presence of mammals was also assessed via opportunistic observations during other diurnal fieldwork and nocturnal mammal surveys. The surveys undertaken are outlined in detail below under Spotlighting and Call playback survey techniques.

Avifauna

The observation of avifauna within the Study Area was undertaken via targeted diurnal census supplemented by opportunistic observations during other diurnal fieldwork (Refer to **Figure 3**). The diurnal census surveys were undertaken at dusk and dawn (early morning being a peak activity period for birds). three person hours of diurnal census was undertaken during peak dusk and dawn activity periods.

Nocturnal bird surveys were undertaken, and detail of methods employed is outlined in below under Spotlighting and call playback survey techniques.

Herpetofauna

Opportunistic reptile searches were conducted during fauna surveys with a focus on suitable habitat areas. Known occurrences of threatened reptile species from the locality were taken into account during assessment of onsite habitat, to determine the potential for the Study Area to support such species.

Searches in likely habitat such as among thick leaf litter, under rocks and fallen timber were undertaken. These searches were carried out during peak activity periods, generally during the warmer parts of the day. Stockpiles and/ or dumped rubbish was also checked for sheltering reptiles.

Nocturnal listening and call playback surveys were conducted over two nights. Frogs were identified by call, and species occurring on site were noted during spotlighting transects across the study area. In addition, two 200m transect over two nights were undertaken covering waterbody and associated creekline.

Diurnal surveys where undertaken in conjunction with diurnal Avifauna surveys and vegetation surveys

Microchiropteran Bats

Microbat surveys were undertaken by recording echolocation calls using two Anabat Express Detector units set to remotely record for 4 nights night (6pm to 6am). This recording and assessment of the study area habitat and surrounds will inform whether further surveys will be required in accordance with *Species Credit Threatened Bats and their habitats NSW Survey guide for the Biodiversity Assessment Method* (2018). A total of 8-night recording was made over the study area. The Anabat units were placed with an emphasis on those areas deemed likely to provide potential foraging and flyway sites for microbats.

Bat call analysis was undertaken by Amanda Lo Cascio who is experienced in the analysis of bat echolocation calls. Each call sequence ('pass') was assigned to one of five categories, according to the confidence with which an identification could be made, being:

- Definite - Pass identified to species level and could not be confused with another species;
- Probable - Pass identified to species level and there is a low chance of confusion with another species;
- Possible - Pass identified to species level but short duration or poor quality of the pass increases the chance of confusion with another species;
- Species group - Pass could not be identified to species level and could belong to one of two or more species. Occurs more frequently when passes are short or of poor quality; or
- Unknown - Either background 'noise' files or passes by bats which are too short and/or of poor quality to confidently identify.

Appendix F contains the Anabat reports with all results, and the location of the Anabat site are shown in **Figure 4**.

Spotlighting

Spotlighting was undertaken with the use of a Lightforce Enforcer 140mm LED (376m @ 1 LUX) hand-held spotlight and head torch whilst traversing the study area. Areas of mature remnant vegetation were targeted, however, tracks around the site were also spotlighted whilst entering and exiting the vegetation.

A total of 5 person hours of spotlighting was conducted over two nights.

Figure 5 displays the spotlighting survey effort across the study area.

Nocturnal Call Playback

The use of pre-recorded calls of Forest Owl and Glider species that may occur within the Study Area and surrounding area were broadcast during the nocturnal surveys in an effort to receive a vocal response or to attract the species to the playback site. The calls were broadcast through an amplification system (25W megaphone) designed to project the sound for at least 1 km under still night conditions.

As described by Kavanagh and Peake (1993) and Debus (1995), the call of each species was broadcast for at least five minutes, followed by five minutes of listening, and stationary spotlighting. Following the final broadcast and listening, the area was spotlighted on foot. Species targeted included the Barking Owl (*Ninox connivens*), Powerful Owl (*N. strenua*), Masked Owl (*Tyto novaehollandiae*) and Squirrel Glider (*Petaurus norfolcensis*).

A total of two call playback sessions were undertaken over two separate nights. The location of the call playback sites is shown in **Figure 5**.

3.4.1 Habitat Survey

An assessment of the relative habitat value present within the study area was undertaken. This assessment focused primarily on the identification of specific habitat types and resources in the study area favoured by known threatened species from the locality. The assessment also considered the potential value of the study area (and surrounds) for all major guilds of native flora and fauna. Habitat assessment included:

- presence, size and types of tree hollows within the Study Area;
- survey for trees containing suitable hollows for Large Forest Owls within 100m of all impact areas;
- presence of rocks, logs, caves, rocky outcrops, leaf litter, overhangs and crevices;
- vegetation complexity, structure and quality;
- presence of freshwater or estuarine aquatic habitats, noting permanency;
- connectivity to adjacent areas of habitat;
- extent and types of disturbance;
- presence of foraging opportunities such as flowering eucalypts, fruits, seeds or other nectar bearing native plants; and
- presence and abundance of various potential prey species.

Habitat assessment was based on the specific habitat requirements of each threatened fauna species with regard to home range, feeding, roosting, breeding, movement patterns and corridor requirements. Consideration was given to contributing factors including topography, soil, light and hydrology for threatened flora and assemblages.

Secondary Indications and Incidental Observations

Opportunistic sightings of secondary indications (scratches, scats, diggings, tracks etc.) of resident fauna were noted. Such indicators included:

- Distinctive scats left by mammals;
- Scratch marks made by various types of arboreal animals;
- Nests made by various guilds of birds;
- Feeding scars on Eucalyptus trees made by Gliders;
- Whitewash, regurgitation pellets and prey remains from Owls;
- Aural recognition of bird and frog calls;
- Skeletal material of vertebrate fauna; and
- Searches for indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, and diggings).

3.5 Limitations

Limitations associated with this assessment report are presented herewith. The limitations have been taken into account specifically in relation to threatened species assessments, results and conclusions.

In these instances, a precautionary approach has been adopted; whereby 'assumed presence' of known and expected threatened species, populations and ecological communities has been made where relevant and scientifically justified to ensure a holistic assessment.

Seasonality & Conditions

The flowering and fruiting plant species that attract some nomadic or migratory threatened species, often fruit or flower in cycles spanning a number of years. Furthermore, these resources might only be accessed in some areas during years when resources more accessible to threatened species fail. As a consequence, threatened species may be absent from some areas where potential habitat exists for extended periods and this might be the case for nomadic and opportunistic species.

Data Availability & Accuracy

The collated threatened flora and fauna species records provided by NSW BioNet are known to vary in accuracy and reliability. This is usually due to the reliability of information provided to the National Parks and Wildlife Service (NPWS) for collation and/or the need to protect specific threatened species locations. During the review of threatened species records sourced from OEH BioNet Atlas of NSW, consideration has been given to the date and accuracy of each threatened species record in addition to an assessment of habitat suitability within the subject site.

Similarly, EPBC Protected Matters Searches provide a list of threatened species and communities that have been recorded within 10 km of the Study Area, or which have suitable habitat within the wider area, and are subject to the same inherent inaccuracy issues as the State derived databases.

In order to address these limitations in respect to data accuracy, threatened species records have only been used to provide a guide to the types of species that occur within the locality of the Study Area. Consequently, BAM assessment and the results of surveys conducted within the subject site and surrounds have been used to assess the likelihood of occurrence of threatened species, populations and ecological communities to occur therein.

3.6 Weather Conditions

Field surveys were undertaken by MJD Environmental between the 13th – 28th November 2019. The prevailing weather conditions during the survey are presented in a **Table 7** below.

Table 1 Prevailing Weather Conditions

Date	Min Temp (°C)	Max Temp (°C)	Rain (mm)	Wind (km/h)	Sunrise-Sunset
13 November 2019	15.8	21.6	0	WSW 17 to SE 26	0545-1930
14 November 2019	13.2	22.9	0	WSW 13 to E 9	0545-1931
15 November 2019	15.2	32.3	0	NW 31 to NW 33	0544-1932
16 November 2019	18.5	22.7	0	SSE 24 to SE 26	0544-1933
17 November 2019	17.2	21.5	0	W 11 to SSE 31	0543-1934
18 November 2019	18.0	26.2	0	NE 7 to E 30	0542-1935
19 November 2019	16.9	32.4	0	WNW 20 to E 24	0542-1935
20 November 2019	18.9	22.2	0	S 31 to SSE 28	0541-1936
21 November 2019	19.0	29.4	0	SE 6 to E 30	0541-1937
22 November 2019	21.0	33.3	0	NW 22 to S 31	0541-1938
23 November 2019	19.4	22.3	0.6	S 19 to SSE 17	0540-1939
24 November 2019	18.2	23.3	0.8	S 30 to S 22	0540-1940
25 November 2019	18.9	26.9	0	NNE 6 to E 33	0539-1941
26 November 2019	17.0	34.7	21.0	N 17 to NW 31	0539-1942
27 November 2019	15.9	20.6	0	SSW 17 to SE 20	0539-1943
28 November 2019	17.1	22.6	0	NNE 6 to E 35	0539 -1944

Sources: http://www.bom.gov.au/climate/dwo/201911/html/IDCJDW2097.201911.shtml

http://www.ga.gov.au/bin/geodesy/run/sunrisenset

505 MINMI RD, FLETCHER

FIGURE 4: FAUNA SURVEY

0 45 90 180

Meters

1:2,700

N W E S

Legend

- Anabat
- Camera (Aborreal)
- Camera (Terrestrial)
- Amphibian Call Playback Survey
- Owl Call Playback Survey
- Nocturnal Fauna Spotlight Survey
- Amphibian Listening/Aquatic Habitat Survey
- Watercourse
- Study Area
- Cadastre Boundaries
- Tracks
- Waterbody

MJD Environmental

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4 Vegetation Results

4.1 Native Vegetation Extent

The Study Area is 26.2ha in size, which 25.5ha was observed as native vegetation and 0.7ha of non-vegetation (unsealed roads/cleared lands). The extent of native vegetation has been interpreted using API and ground truthing during field survey works. (Refer to **Figure 3**).

The vegetation within the Study Area appears to have been historically cleared for grazing and the harvesting of Mine pit props. The historic land use has resulted in the modification of the structure of native vegetation within the Study Area comprising large patches of the exotic species *Lantana camara*, numerous unsealed roads, bike tracks, large rubbish dumps, and largely a young age cohort of tree species.

Identification of PCTs within the subject site were determined using:

- Occurrence within the Sydney IBRA bioregion;
- Vegetation formation and class:
- landscape position; and
- dominant species noted during field data collected from the full floristic plots/transects established in accordance.

Three PCT's were identified within the Study Area:

- **PCT 1589** Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast.
- **PCT 1590** Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest
- **PCT 1619** Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands

A total of 126 plant species were identified within ten plots comprising 122 native species and 4 exotic species. The results of the plot field data and a flora species list can be found in **Appendix B**.

4.2 Vegetation Description

PCT 1589: Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast

Plate 2: PCT 1589 – Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast

Vegetation Formation	KF_CH5B Dry Sclerophyll Forests (Shrub/grass sub-formation)
Vegetation Class	Hunter-Macleay Dry Sclerophyll Forests
Area	9.27ha
Vegetation Zone:	Vegetation Zone VZ 2:1589_moderate Vegetation Zone VZ 3: 1589_low Vegetation Zone VZ 6: 1589_moderate_A_costata
Description	*The Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast* is the second dominant plant community observed within the Study Area. This PCT is categorised into three condition classes, firstly as a moderate condition (VZ 1) variant characterised by a low number of high threat weeds, a relatively mildly disturbed formation and a moderate number of mature and hollow bearing trees. Secondly as a low condition variant (VZ 3) characterised by large and dense patches of the high threat weed *Lantana camara* (Lantana) with a reduced native species composition and structure. The midstorey is

limited with few existing native shrub species, and areas where shrubs are absent as a result of *Lantana camara* invasion. VZ 3 is predominantly situated within the gullies/creeklines. Thirdly as a moderate condition with a canopy variation (VZ 6), where *Angophora costata* becomes dominant, followed by *Corymbia maculata, Eucalyptus acmenoides, Corymbia gummifera*, *Eucalyptus umbra, Eucalyptus globoidea* and *Eucalyptus fibrosa*. This area is considered a transitional zone between PCTs 1589 and 1590 in the west, and between PCTs 1589 and 1619 in the north.

The canopy is generally dominated by *Corymbia maculata, Eucalyptus paniculata, Eucalyptus acmenoides* and *Eucalyptus punctata* with *Eucalyptus umbra, Eucalyptus fibrosa, Angophora costata* and *Eucalyptus siderophloia* (Grey Ironbark) as co-dominants. Juvenile individual tree species *Notelaea longifolia*, *Brachychiton populneus* (Kurrajong) and *Clerodendrum tomentosum* were also recorded within this PCT. The canopy trees range from juvenile to semi-mature age cohorts. Good canopy cover exists within this PCT resulting in approximately 58-69% foliage cover over the entire area.

The midstorey comprises a mixture of shrub species dominated by, *Daviesia ulicifolia, Breynia oblongifolia* and *Bursaria spinosa* with *Acacia falcata* (Hickory Wattle), *Polyscias sambucifolia* (Elderberry Panax)*, Acacia ulicifolia* (Prickly moses)*,* and *Denhamia silvestris* (Narrow-leaved Orangebark) with *Melaleuca nodosa* and *Melaleuca stypheloides* occurring within the gullies. It should be noted *Pultenaea euchila, Pultenaea spinosa* and *Daviesia squarrosa* occurred within VZ 6, where *Daviesia ulicifolia* was absent. This area also had a higher percent foliage cover for shrubs at 10% compared to 3-5% occurring throughout the rest of the PCT. The high threat exotic *Lantana camara* occurring within VZ 3 resulted in approximately 50-65% foliage cover over the entire area.

Generally, the groundcover comprises a mixture of native grass species, dominated by *Entolasia stricta* (Wiry Panic), *Themeda triandra* (Kangaroo Grass), *Imperata cylindrica* (Blady Grass) with *Poa affinis, Lomandra filiformis* subsp. *coriacea, Lomandra confertifolia* (Mat-rush)*, Lomandra longifolia* (Spiny-headed Mat-rush)*, Lepidosperma laterale, Lomandra filiformis* subsp. *filiformis, Rytidosperma pallidum* and *Microlaena stipoides* subsp. *stipoides* with *Oplismenus aemulus, Oplismenus imbecillis, Gahnia clarkei* and *Carex appressa* occurring within the gullies. Grass growth forms were highly prevalent within this PCT occurring as a high cover percentage ~35% in the low condition variant and 50-80% in the moderate condition variants. Native forb species occurring within this PCT include *Dianella caerulea* var. *producta, Brunoniella pumilio, Brunoniella australis*, *Dianella revoluta* var. *revoluta, Vernonia cinerea, Veronica plebeia, Dichondra repens* and *Lobelia purpurascens* with *Pseuderanthemum variable* occurring within the gullies. Native forbs occurred consistently throughout this PCT at 0.7-2% foliage cover.

Vines and twiners were scarce within this PCT, accounting for only 0.5-2% foliage cover. Native species present include, *Pandorea pandorana* (Wonga Wonga Vine)*, Cassytha glabella* (Devils Twine)*, Eustrephus latifolius* (Wombat Berry)*, Hardenbergia violacea* (False Sarsaparilla)*, Glycine clandestina, Geitonoplesium cymosum* (Scrambling Lily)*, Billardiera scandens* (Hairy Apple Berry) with *Convolvulus* spp., *Clematis aristata* (Old Man's Beard)*, Smilax australis* (Wait-a-while), *Clematis glycinoides* var. *glycinoides* (Gulwalyari), *Cayratia clematidea* (Native Grape), *Dioscorea transversa* (Native Yam)*, Hibbertia scandens* (Climbing Guinea Flower) and *Stephania japonica* (Snake Vine). The high threat exotic *Asparagus aethiopicus* (Ground Asparagus) was also observed in low numbers at 0.1% foliage cover.

	The main high threat exotic species observed include, *Lantana camara, Senna pendula* var. *glabrata* and *Asparagus aethiopicus* (Ground Asparagus).
Species relied upon for Id of vegetation type	*Corymbia maculata, Eucalyptus umbra, Eucalyptus punctata, Daviesia ulicifolia, Breynia oblongifolia, Notelaea longifolia*, *Pandorea pandorana, Billardiera scandens*, *Themeda triandra, Poa affinis*, *Rytidosperma pallidum, Imperata cylindrica*, *Lomandra confertifolia, Dianella caerulea* var. *producta, Lomandra longifolia* and *Glycine clandestina.*
Threatened Ecological Community	No
%cleared of PCT	71% cleared (BioNet 2019)
Justification of assigning PCT	The PCT assignment of 1589 to the vegetation within the subject land is based on the follow key attributes: ▪ Key diagnostic species within all stratums ▪ The Study Area is located within the Wyong IBRA sub-region and Gosford – Cooranbong Coastal Slopes NSW Landscape (Mitchell 2002). This landscape has an association with the lithology noted in the PCT description.

PCT 1590 – Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest

Plate 3: PCT 1590 – Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest

Vegetation Formation	KF_CH5A Dry Sclerophyll Forests (Shrub/grass sub-formation)
Vegetation Class	Hunter-Macleay Dry Sclerophyll Forests
Area	15.25 ha
Vegetation Zone:	Vegetation Zone VZ 1:1590_moderate Vegetation Zone VZ 5: 1590_low_M_nodosa
Description	The *Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest* is the dominant plant community observed within the Study Area. This PCT is categorised into two condition classes, firstly as a moderate condition variant (VZ 1) characterised by a mildly disturbed formation with very low numbers of high threat exotic species present and relatively good species composition and structure. Secondly as a low condition variant (VZ 5) with lower species composition and structure due to the dominance and dense cover of *Melaleuca nodosa*, most likely a symptom of historic disturbance such as land clearing which is evident by the young age cohort of canopy species present

within this zone. This PCT is generally located on higher elevations throughout the study area.

Generally, the groundcover comprises a mixture of native grasses and forbs. The midstorey has low to moderate species structure and composition. Good native canopy exists with a variety of *Eucalyptus* spp. and *Corymbia maculata*.

Overall the canopy is dominated by *Corymbia maculata, Eucalyptus fibrosa* and *Eucalyptus umbra* with *Eucalyptus acmenoides* and *Eucalyptus punctata* as co-dominants. *Eucalyptus resinifera* subsp. *resinifera* (Red Mahogany) becomes co-dominant with *Corymbia maculata* closer to the creekline. *Notelaea longifolia* and *Glochidion ferdinandi* var. *ferdinandi* were observed in low numbers but consistent throughout this PCT as saplings or juvenile age cohorts. Other tree species observed in low numbers include *Alphitonia excelsa* and *Eucalyptus globoidea.* The canopy trees range from young to semi mature to mature age cohorts. Good canopy cover exists within this area resulting in approximately between 50-62 % foliage cover over the entire area.

The midstorey comprises a mixture of shrub species dominated by *Bursaria spinosa, Pultenaea euchila, Acacia ulicifolia, Daviesia ulicifolia* and *Breynia oblongifolia* with *Daviesia squarrosa, Phyllanthus hirtellus, Hibbertia empetrifolia* subsp. *empetrifolia* and *Hibbertia aspera*. *Melaleuca nodosa* occurs as the dominant shrub species within VZ 5 as well as occurring within the southernmost gully situated within this PCT. The shrub layer is variable, being very dense within the lower condition class at 72% and low within the moderate condition class ranging from 2-4%.

Generally, the groundcover comprises a mixture of native grass species, dominated by *Entolasia stricta* followed by *Themeda triandra* (Kangaroo Grass). Other grass species occurring consistently throughout this PCT include *Lomandra confertifolia, Lomandra multiflora, Rytidosperma pallidum, Poa affinis, Microlaena stipoides* var. *stipoides, Aristida vagans Lomandra obliqua, Lepidosperma cf. laterale* and *Rytidosperma bipartitum.* Grass growth forms were highly prevalent within this PCT occurring as a high cover percentage ~28% in the low condition variant and 45-90% in the moderate condition variants. Native forb species occurring within this PCT include *Dianella caerulea* var. *producta, Brunoniella pumilio, Brunoniella australis*, *Dianella revoluta* var. *revoluta, Vernonia cinerea, Boronia polygalifolia, Dichondra repens, Goodenia heterophylla, Opercularia diphylla* and *Lobelia purpurascens.* Native forbs occur inconsistently throughout this PCT at 0.1-1% foliage cover.

Vines and twiners were also scarce within this PCT, accounting for only nearly 0.1-0.8% foliage cover. Native species present include; *Pandorea pandorana, Kennedia prostrata, Eustrephus latifolius, Geitonoplesium cymosum Hardenbergia violacea, Glycine clandestina, Billardiera scandens* and *Hibbertia scandens.* The high threat exotic *Asparagus aethiopicus* (Ground Asparagus) was also observed in low numbers at 0.1% foliage cover.

Lantana camara occurs in low numbers throughout this PCT mostly occurring in areas adjacent to the gullies.

Species relied upon for Id of

Corymbia maculata, Eucalyptus umbra, Eucalyptus fibrosa, Bursaria spinosa, *Daviesia ulicifolia*, *Breynia oblongifolia* (Coffee Bush),

vegetation type	*Leucopogon juniperinus* (Prickly Beard-heath), *Pandorea pandorana* (Wonga Wonga Vine) and *Lepidosperma laterale*. .
Threatened Ecological Community	Yes, this PCT is commensurate with the BC Act listed *EEC Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions*
%cleared of PCT	48% cleared (BioNet 2019)
Justification of assigning PCT	The PCT assignment of 1590 to the vegetation within the subject land is based on the follow key attributes: ▪ Key diagnostic species within all stratums ▪ The Study Area is located within the Wyong IBRA sub-region and Gosford – Cooranbong Coastal Slopes NSW Landscape (Mitchell 2002). This landscape has an association with the lithology noted in the PCT description.

PCT 1619 – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands

Plate 4: PCT 1619 – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands.

Vegetation Formation	KF_CH5B Dry Sclerophyll Forests (Shrubby sub-formation)
Vegetation Class	Sydney Coastal Dry Sclerophyll Forests
Area	0.94 ha
Vegetation Zone:	Vegetation Zone VZ 4: 1619_Low
Description	The *Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands* occurs as a small patch within the south-eastern portion of the study area. This PCT is categorised as a low condition variant due to the presence of a number of tracks and unsealed roads, the trees are generally of a young age cohort most likely a symptom of historic disturbance such as land clearing. Overall the canopy is dominated by *Angophora costata and Corymbia gummifera* with *Eucalyptus umbra*. *Notelaea longifolia* was observed in low numbers but consistent throughout this PCT as saplings. The canopy trees range from young to semi mature to mature age cohorts. Good

	canopy cover exists within this area resulting in approximately between 60 % foliage cover over the entire area. The midstorey comprises a mixture of shrub species dominated by *Leptospermum polygalifolium* followed by *Daviesia ulicifolia, Pultenaea euchila, Acacia ulicifolia, Pultenaea villosa, Acacia falcata, Phyllanthus hirtellus, Bursaria spinosa, Hibbertia aspera, Hibbertia empetrifolia* and *Persoonia linearis*. The shrub layer is quite dense throughout this PCT with a 24% foliage cover. Generally, the groundcover comprises a mixture of native grass species, dominated by *Entolasia stricta* followed by *Rytidosperma pallidum* and *Themeda triandra*. Other grass species occurring consistently throughout this PCT include *Lomandra obliqua, Lomandra multiflora, Aristida vagans* and *Lomandra filiformis* subsp. *filiformis.* Grass growth forms were highly prevalent within this PCT occurring as a high cover percentage ~64%. Native forb species occurring within this PCT include *Dianella revoluta var. revoluta, Brunoniella pumilio, Vernonia cinerea, Opercularia diphylla* and *Goodenia heterophylla.* Native forbs occur in low numbers at 0.7% foliage cover. Vines and twiners were also scarce within this PCT, accounting for only nearly 0.9% foliage cover. Native species present include; *Hibbertia scandens, Pandorea pandorana, Kennedia prostrata, Glycine clandestina, Billardiera scandens* and *Clematis aristata.* *Lantana camara* occurs in low numbers throughout this PCT at 0.5%
Species relied upon for Id of vegetation type	*Angophora costata, Corymbia gummifera, Leptospermum polygalifolium*, *Billardiera scandens, Lomandra obliqua*, *Aristida vagans, Dianella caerulea* var. *producta, Themeda triandra* and *Goodenia heterophylla*
Threatened Ecological Community	No
%cleared of PCT	45% (Bionet 2019)
Justification of assigning PCT	The PCT assignment of 1619 to the vegetation within the subject land is based on the follow key attributes: ▪ Key diagnostic species within all stratums ▪ The Study Area is located within the Wyong IBRA sub-region and Gosford – Cooranbong Coastal Slopes NSW Landscape (Mitchell 2002). This landscape has an association with the lithology noted in the PCT description

505 MINMI RD, FLETCHER

FIGURE 5: PLANT COMMUNITY TYPE LOCATION

0 45 90 180

Meters

1:2,700

N

W E

S

Legend

- Watercourse
- Study Area
- Cadastre Boundaries
- Tracks
- Waterbody
- Lower Hunter Spotted Gum Ironbark Forest (EEC)

Vegetation Condition

- Low
- Moderate

Plant Community Type

- 1589: Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on coastal lowlands
- 1589: Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest (*A. costata* Dominant)
- 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest
- 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest (*M. nodosa* Dominant)
- 1619: Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands

MJD Environmental

Aerial: NearMap (2019) | Data: MJD Environmental, NSW Spatial Services (2019) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 19/12/2019| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

4.3 Vegetation Zones

Native vegetation identified as PCT 1589, 1590 and 1619 within the Study Area are categorised into six vegetation zones based on the general condition of vegetation. observation of distinct change or variation in the vegetation based on general attributes such as vegetation age, observable disturbance (past and present), exotic species presences and any structural difference in the stratum present were used to delineate the subject site into a vegetation zone with the remaining area identified as non-native vegetation.

The subject site has been delineated into six vegetation zones:

- PCT 1590 Moderate
- PCT 1589: Moderate
- PCT 1589: Low
- PCT 1619 Low
- PCT 1590: Low_M_nodosa
- PCT 1589: Moderate_A_costata

The following table provides a brief description of the vegetation zones justifying the categorisation.

Ten full floristic plots were conducted. The number of plots carried out are in accordance with the minimum required plots per area as outlined in **Table 4** of the BAM (2017).

Vegetation Zone: VZ1_1590_Moderate			
PCT 1590: Spotted Gum - Broad-leaved Mahogany – Red Ironbark shrubby open forest			
Zone Area (ha)	13.52ha	Survey Effort	3 Plots
The vegetation assigned to VZ1 -1590_Moderate is generally observed to have a mildly disturbed variant of the PCT. Vegetation had a structure condition score of >70 and comparatively higher species composition score (76) with a high threat weed cover of 0%. The vegetation was observed to have a comparatively high native groundcover structure and a high cover of native species represented in all three stratum and most growth forms.			
			

Vegetation Zone: VZ2_1589_Moderate			
PCT 1589: Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast			
Zone Area (ha)	4.73ha	Survey Effort	2 BAM Plots
The vegetation assigned to VZ2 -1589_Moderate is generally observed to have a mildly disturbed variant of the PCT. Vegetation had a structure condition score of >70 and comparatively higher species composition score (>85) with a high threat weed cover of 0.2-2.2%. The vegetation was observed to have a comparatively high native groundcover structure and a high cover of native species represented in all three stratum and most growth forms.			

Vegetation Zone: VZ3_1589_Low			
PCT 1589: Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast			
Zone Area (ha)	3.49ha	Survey Effort	2 BAM Plots

The vegetation assigned to VZ3 -1589_Low was generally observed to have a low condition due to the high occurrence of the high threat weed species *Lantana camara*. This species occurs as high-density infestations, which were observed to provide some protection for re-establishing native groundcover. The groundcover is predominantly native persisting with low foliage cover.

The vegetation was observed to be lacking in structure compared to the moderate condition variant of this PCT due to the *Lantana camara* outcompeting other native shrub species and smothering groundcover species. Species composition is relatively high (>90) due to the location within the gullies, allowing for more diverse species to occur including both wet and dry tolerant species.

Vegetation Zone: VZ4_1619_Low			
PCT 1619: Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands			
Zone Area (ha)	0.94ha	Survey Effort	1 BAM Plot
The vegetation assigned to VZ4 -1619_Low comprises a dominance of *Angophora costata* and *Corymbia gummifera*, where Ironbark species were notably absent, and the understorey becomes heathy. This zone is highly disturbed due to the presence of numerous roads fragmenting this PCT and the low number of existing mature trees.			

Vegetation Zone: VZ5_1590_Low_M_nodosa			
PCT 1590: Spotted Gum - Broad-leaved Mahogany – Red Ironbark shrubby open forest			
Zone Area (ha)	1.73ha	Survey Effort	1 BAM Plot
The vegetation assigned to VZ5 -1590_Low_M_nodosa comprises a dominance of *Melaleuca nodosa* occurring as a dense thicket. The structure, composition and function scores were comparatively lower to the moderate condition variant of this PCT. *Melaleuca nodosa* has outcompeted other native species at all stratum layers. The canopy trees are noticeably younger with no large trees or hollows observed, negatively impacting on the function condition score of this vegetation zone.			

Vegetation Zone: VZ6_1589_Moderate_A_costata			
PCT 1589: Spotted Gum - Broad-leaved Mahogany – Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast			
Zone Area (ha)	1.06ha	Survey Effort	1 BAM Plot
The vegetation assigned to VZ6 -1589_Moderate_A_costata comprises a dominance of *Angophora costata*, unlike the other vegetation zones within this PCT. The structure, composition and function scores are relatively similar to the other moderate condition variant within this PCT. This vegetation zone could be a transition zone to PCT 1619 and PCT 1590.			
			

5 Threatened Species Results

5.1 Desktop Assessment

A review of threatened species information was undertaken to provide context and understanding of biodiversity values occurring within the subject site. Information reviewed included:

- Online database searches involving a 10-km buffer around the Study Area to provide potentially occurring threatened flora and fauna and migratory species under both the BC Act and EPBC Act:
  - NSW Bionet (accessed 11 November 2019 and continually during BIR production)
  - Commonwealth Protected Matters of National Significance search tool (accessed 26 November 2019)
- BioNet Vegetation Classification – Threatened species associated with known PCTs to occur within the Subject Site.

5.1.1 Ecosystem Credit Species

Ecosystem Credit Species (in accordance with the BAM) are reliably predicted to occur by vegetation surrogates and landscape features. An assessment of the habitat suitability for each predicted species was undertaken to determine the presences or potential utilisation of the subject site as part of their home range. These species are presented in **Table 2**.

Table 2 : Ecosystem Credit Species

Scientific Name	Common Name	BC Act	EPBC Act	PCT 1589	PCT 1590	PCT 1619	Habitat Present
**Anthochaera phrygia*	Regent Honeyeater	CE	CE	X	X		Yes
**Callocephalon fimbriatum*	Gang-gang Cockatoo	V		X	X	X	Yes
**Calyptorhynchus lathami*	Glossy Black Cockatoo	V		X	X	X	No
Chthonicola sagittata	Speckled Warbler	V		X	X	X	Yes
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V		X	X	X	Yes
Daphoenositta chrysoptera	Varied Sittella	V		X	X	X	Yes
Dasyurus maculatus	Spotted-tailed Quoll	V	E	X	X	X	Yes
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		X	X	X	Yes
Glossopsitta pusilla	Little Lorikeet	V		X	X	X	Yes
Grantiella picta	Painted Honeyeater	V	V	X	X	X	Yes
**Haliaeetus leucogaster*	White-bellied Sea-eagle	V		X	X	X	No
**Hieraaetus morphnoides*	Little Eagle	V		X	X	X	Yes
**Lathamus discolor*	Swift Parrot	E	CE	X	X	X	Yes
**Lophoictinia isura*	Square-tailed Kite	V		X	X	X	Yes
Melithreptus gularis gularis	Black-chinned Honeyeater	V		X	X	X	Yes

Scientific Name	Common Name	BC Act	EPBC Act	PCT 1589	PCT 1590	PCT 1619	Habitat Present
Micronomus norfolkensis	Eastern Freetail-bat	V		X	X	X	Yes
**Miniopterus australis*	Little Bentwing-bat	V		X	X	X	Yes
**Miniopterus orianae oceansis*	Eastern Bentwing-bat	V		X	X	X	Yes
Neophema pulchella	Turquoise Parrot	V		X	X	X	Yes
**Ninox connivens*	Barking Owl	V		X	X	X	Yes
**Ninox strenua*	Powerful Owl	V		X	X	X	Yes
Pandion cristatus	Eastern Osprey	V				X	No
Petaurus australis	Yellow-bellied Glider	V		X	X	X	No
Petroica boodang	Scarlet Robin	V		X	X	X	No
**Phascolarctos cinereus*	Koala	V	V	X	X		Yes
Phoniscus papuensis	Golden-tipped Bat	V		X	X	X	No
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V		X	X	X	Yes
Pseudomys gracilicaudatus	Eastern Chestnut Mouse	V				X	No
**Pteropus poliocephalus*	Grey-headed Flying-fox	V	V	X	X	X	Yes
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		X	X	X	Yes
Scoteanax rueppellii	Greater Broad-nosed Bat	V		X	X	X	Yes
Stagonopleura guttata	Diamond Firetail	V		X	X		Yes
**Tyto novaehollandiae*	Masked Owl	V		X	X	X	Yes

Key:

V = Vulnerable E = Endangered CE = Critically Endangered * Dual Credit Species

The vegetation within the subject site has been assessed to provide marginal suitable habitat for 26 of the 33 species listed above. It is therefore assumed that these species may utilise the subject site frequently for foraging opportunities.

5.1.2 Species Credit Species

Species Credit Species are species that cannot be reliably predicted to use an area based on habitat surrogates. Species credit species that are likely to occur within the Study Area must be surveyed to determine presences/absence or provide an expert report. In the absence of either of these the species will be presumed to be present within the Study Area.

The conditions of vegetation and habitat within the Study Area can be assessed by an accredited assessor (BAM Accredited) to have sufficient site degradation of the key habitat constraints associated with species credits species, therefore is unlikely to utilise the subject site and not requiring further assessment. These species are presented in **Table 3** and a habitat assessment for species credit species in **Table 4**.

Table 3 Species Credit Species

Scientific Name	Common Name	BC Act	EPBC Act	Survey Period	Paddock Trees	Requires further assessment
Acacia bynoeana	Bynoe's Wattle	E	V	Sept-March		Yes
Angophora inopina	Charmhaven Apple	V	V	All year	Yes	No
Anthochaera phrygia	Regent Honeyeater (Breeding)	CE	CE	N/A		No
Burhinus grallarius	Bushstone Curlew	E		All year	Yes	Yes
Caladenia tessellata	Thick Lip Spider Orchid	E	V	Sept-Oct		No
Callistemon linearifolius	Netted Bottle Brush	V		Sept-March		Yes
Callocephalon fimbriatum	Gang-gang Cockatoo (Breeding)	V		Oct-Jan		Yes
Calyptorhynchus lathami	Glossy Black Cockatoo (Breeding)	V		Mar- Aug	Yes	Yes
Cercartetus nanus	Eastern Pygmy-possum	V		Oct-March		No
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Sept-March		No
Corunastylis sp. charmhaven		CE	CE	Dec-April	Yes	No
Crinia tinnula	Wallum Froglet	V		All year		No
Cryptostylis hunteriana	Leafless Tongue Orchid	V	V	Nov-Jan		No
Cynanchum elegans	White-flowered Wax Plant	E	E	All year		Yes
Diuris bracteata		E	EX	Aug-Sept		No
Diuris praecox	Rough Doubletail	V	V	July-Aug		No
Eucalyptus oblonga – endangered population	*Eucalyptus oblonga* population at Bateau Bay, Forresters Beach and Tumbi Umbi in the Wyong local government area	E		All year	Yes	No
Genoplesium insigne	Variable Midge Orchid	CE	CE	Oct-Nov	Yes	No
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	V	V	All year		Yes

Scientific Name	Common Name	BC Act	EPBC Act	Survey Period	Paddock Trees	Requires further assessment
Haliaeetus leucogaster	White-bellied Sea-eagle (Breeding)	V		July- Dec	Yes	No
Hieraaetus morphnoides	Little Eagle (Breeding)	V	-	August-Oct	Yes	Yes
Hoplocephalus bitorquatus	Pale-headed Snake	V		Nov-March	Yes	Yes
Lathamus discolor (Breeding)	Swift Parrot	E	CE	May-August	Yes	No
Litoria aurea	Green and Golden Bell Frog	E	V	Nov-March		Yes
Litoria brevipalmata	Green-thighed Frog	V		Oct-March		No
Lophoictinia isura	Square-tailed Kite (Breeding)	V		Sept -Jan		Yes
Melaleuca biconvexa	Biconvex Paperbark	V	V	All year		Yes
Melaleuca groveana	Grove's Paperbark	V		All year	Yes	No
Miniopterus australis	Little Bentwing-bat (Breeding)	V		Dec-Feb		No
Miniopterus orianae oceanensis	Eastern Bentwing-bat (Breeding)	V		Nov-Feb		No
Myotis macropus	Southern Myotis	V		Nov-March	Yes	No
Ninox connivens	Barking Owl (Breeding)	V		May-Dec	Yes	Yes
Ninox strenua	Powerful Owl (Breeding)	V		May- August		Yes
Pandion cristatus	Eastern Osprey	V		April-Nov	Yes	No
Petaurus norfolcensis	Squirrel Glider	V		All year	Yes	Yes
Petrogale penicillata	Brush-tailed Rock wallaby	E	V	All year		No
Phascogale tapoatafa	Brush-tailed Phascogale	V		All year	Yes	Yes
Phascolarctos cinereus	Koala (Breeding)	V	V	All year	Yes	No
Planigale maculata	Common Planigale	V		All year		No

Scientific Name	Common Name	BC Act	EPBC Act	Survey Period	Paddock Trees	Requires further assessment
Prostanthera askania	Tranquility Mintbush	E	E	Sept-Nov		No
Pteropus poliocephalus	Grey-headed Flying-fox (Breeding)	V	V	Oct-Dec		No
Rutidosis heterogama	Heath Wrinklewort	V	V	All Year		Yes
Tetratheca glandulosa		V		Aug-Nov		No
Tetratheca juncea	Black-eyed Susan	V	V	Sept-Oct		Yes
Thelymitra adorata	Wyong Sun Orchid	CE	CE	Sept-Oct		No
Turnix maculosus	Red-backed button-quail	V		All year		No
Tyto novaehollandiae	Masked Owl (Breeding)	V		May-Aug	Yes	Yes
Uperoleia mahonyi	Mahony's Toadlet	E		Oct-March		No
Vespadelus troughtoni	Eastern Cave Bat	V		Nov-Jan		No

Key:

V = Vulnerable E = Endangered CE = Critically Endangered EX = Extinct

Table 4 Species Credit Species Habitat Assessment

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Flora				
Acacia bynoeana	Bynoe's Wattle	This species occurs in heath or dry sclerophyll forest on sandy soils. Prefers open, sometimes disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include *Corymbia gummifera, Eucalyptus haemastoma, Eucalyptus parramattensis*, *Banksia serrata* and *Angophora bakeri.* The vegetation within the study area comprises a dry & wet sclerophyll forest formation, of which only one of the listed over-storey species (*C. gummifera*) associated with the threatened species occurs. Although there are no records within the locality as defined on the OEH BioNet using a 10km search radius of the locality, this species requires further survey.	Likely	Yes
Angophora inopina	Charmhaven Apple	This species occurs most frequently in four main vegetation communities: (i) *Eucalyptus haemastoma–Corymbia gummifera–Angophora inopina* woodland/forest; (ii) *Hakea teretifolia–Banksia oblongifolia* wet heath; (iii) *Eucalyptus resinifera–Melaleuca sieberi–Angophora inopina* sedge woodland; (iv) *Eucalyptus capitellata–Corymbia gummifera–Angophora inopina* woodland/forest. The subject site's PCTs are not associated with these vegetation communities. Further survey is not required.	Unlikely	No
Caladenia tessellata	Thick Lip Spider	This species is generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. In NSW, this species is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. The study area is located outside of its known geographic distribution; therefore, further survey is not required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Callistemon linearifolius	Netted Bottle Brush	This species grows in dry sclerophyll forest in sheltered locations on the coast and on adjacent ranges. This species is recorded from the Georges River to Hawkesbury River in the Sydney area, and north to the Nelson Bay area of NSW. It has also been recorded in Yengo National Park. The vegetation within the study area is a dry sclerophyll forest formation, comprising associated canopy species. All PCTs found within the subject site are associated with this species. Six records exist within a 10km search of the locality as defined on the OEH BioNet Atlas. Further survey is required.	Likely	Yes
Corunastylis sp. *charmhaven*		This species is known only from the Wyong LGA where it is restricted to a few locations in the Charmhaven, Warnervale and Tooheys Rd areas. The study area is located outside of this LGA and known locations. Furthermore, no records exist as defined by the OEH BioNet 10km search. Further survey is not required.	Unlikely	No
Cryptostylis hunteriana	Leafless Tongue Orchid	This species is known to be extremely cryptic as it does not flower each year. Known to occur within a wide range of habitats including woodlands to swamp heaths. Within the Hunter region larger populations have been typically found in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black Sheoak (*Allocasuarina littoralis*), and it prefers areas with an open grassy understorey. The species typically prefers moist sandy soils in sparse to dense heath and sedge land, or moist to dry clay loams in coastal forests. This species is known to occur in association with *C. subulata* and *C. erecta.* The study area comprises marginal habitat in the form of open grassy understorey, however due to past disturbance the grass layer is very dense in areas with potential habitat, which is not optimal conditions for successful flowering. Additionally, no associated species occur within the study area. Furthermore, this species has not been recorded within a 10km search of the locality as defined on the OEH BioNet Atlas. No further survey is required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		Although no further survey was recommended based on the lack of marginally habitat. All threatened flora surveys were carried out during the optimal time for survey of this species. Furthermore, it was confirmed that this species was flowering in the wider region at the time of survey (Central Coast Council email and author pers comm.)		
Cynanchum elegans	White-flowered Wax Plant	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; Coastal Tea-tree *Leptospermum laevigatum* – Coastal Banksia *Banksia integrifolia* subsp. *integrifolia* coastal scrub; Forest Red Gum *Eucalyptus tereticornis* aligned open forest and woodland; Spotted Gum *Corymbia maculata* aligned open forest and woodland; and *Melaleuca armillaris* Bracelet Honey myrtle scrub to open scrub. The study area comprises marginal habitat in the form of *Corymbia maculata* dominated dry open forest. Although, no records exist within a 10km search of the locality as defined on the OEH BioNet Atlas this species cannot be ruled out on this attribute alone and on this basis further survey is required.	Likely	Yes
Diuris bracteata		This species has an extremely restricted geographic distribution. Extant populations from north-west of Gosford have been recorded and this area is now the only known area of occurrence of the species. All known plants fall within the Gosford and Wyong Local Government Areas. The study area falls outside of these LGAs and therefore is located outside the known geographic distribution. No records exist within a 10km search of the locality as defined on the OEH BioNet Atlas. No further survey is required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Diuris praecox	Rough Doubletail	The habitat of this species is generally on hills and slopes of near coastal districts in open forests which have a grassy to fairly dense understorey. This species grows on well-drained sandy soils (DoEE 2008). The vegetation within the study area is a dry sclerophyll forest formation. Although the site contains sandy soils, the site is approximately 13km away from the coastal fringe (Glenrock SCA & Worimi Conservation Lands) of which this species is recorded. Additionally, no records exist as defined by the OEH Bionet 10km search. No further survey is required.	Unlikely	No
Eucalyptus oblonga – endangered population	*Eucalyptus oblonga* population at Bateau Bay, Forresters Beach and Tumbi Umbi in the Wyong local government area	Normally found in dry open forest with infertile sandy soils on sandstone. The population at Bateau Bay occurs on coastal sands. The species occurs from Gosford to the Appin and Waterfall districts. The disjunct outlier population at Bateau Bay, Forresters Beach and Tumbi Umbi includes occurrences on the Patonga Claystone Formation and derived soils, corresponding to the Woodburys Bridge Soil Landscape. No suitable habitat in the form of sandstone occurs within the study area. Furthermore, the study area does not occur near its known occurrences. No records exist within the locality as defined on the OEH BioNet Atlas 10km search. On this basis no further survey is required.	Unlikely	No
Genoplesium insigne	Variable Midge Orchid	Grows in patches of *Themeda australis* (Kangaroo Grass) amongst shrubs and sedges in heathland and woodland. Associated canopy includes; *Eucalyptus haemastoma* (Scribbly Gum), *Corymbia gummifera* (Red Bloodwood), *Angophora costata* (Smooth-barked Apple) and *Allocasuarina littoralis* (Black She-oak). The species has been recorded in disturbed locations, including in areas lacking upper vegetation strata. Most sites have a mostly native understorey. Recorded from four localities between Chain Valley Bay and Wyong in Wyong local government area. A small population also occurs within Lake Macquarie LGA.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		Although suitable habitat exists within the study area in the form of associated canopy species including *Angophora costata* and *Corymbia gummifera*, as well as associated groundcover species *Themeda triandra*, the subject site does not occur near its known occurrences. No records exist within the locality as defined on the OEH BioNet Atlas using a 10km search. On this basis no further survey is required.		
Grevillea parviflora subsp. *parviflora*	Small-flower Grevillea	This species is sporadically distributed throughout the Sydney Basin with sizeable populations in the Hunter and in the Cessnock - Kurri Kurri area (particularly Werakata NP). Separate populations are also known from Putty to Wyong and Lake Macquarie on the Central Coast. This species grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules. Occurs in a range of vegetation types from heath and shrubby woodland to open forest, the Hunter in Kurri Sand Swamp Woodland and is also known to occur in *C. maculata- A. costata* open forest. Found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Hunter occurrences are usually 30-70m ASL, while the southern Sydney occurrences are typically at 100-300m ASL. Often occurs in open, slightly disturbed sites such as along tracks. Suitable vegetation occurs within the study area in the formation of dry sclerophyll forest comprising *Corymbia maculata* open forest. All three PCTs (1589, 1590 and 1619) occurring within the study area are commensurate with which this species is associated with. Thirty-two records exist within the locality as defined on the OEH BioNet Atlas using a 10km search radius. Further survey is required.	Likely	Yes

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Melaleuca biconvexa	Biconvex Paperbark	Biconvex Paperbark generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. Biconvex Paperbark is only found in NSW, with scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. A small area of the study area comprises a marginally damp place adjacent to a ephemeral creek, which could potentially become a swamp environment during high rainfall. One record exists within the locality as defined on the OEH Bionet Atlas using the 10km search radius. On this basis further survey is required.	Likely	Yes
Melaleuca groveana	Grove's Paperbark	This species grows in heath and shrubland, often in exposed sites, in low coastal hills, escarpment ranges and tablelands on outcropping granite, rhyolite and sandstone on rocky outcrops and cliffs. It also occurs in dry shrubby open forest and woodlands. Although the study area is a form of dry shrubby open forest, no records exist within the locality as defined on the OEH BioNet Atlas using a 10km search radius. Furthermore, this conspicuous species was not recorded during preliminary ecological surveys. No further survey is required.	Unlikely	No
Prostanthera askania	Tranquility Mintbush	This species occurs adjacent to, but not immediately in, drainage lines on flat to moderately steep slopes formed on Narrabeen sandstone and alluvial soils derived from it. Occurs in moist sclerophyll forest and warm temperate rainforest communities, and the ecotone between them. These communities are generally tall forests with a mesic understorey; Sydney Blue Gum *Eucalyptus saligna* and Turpentine *Syncarpia glomulifera* are usually present, though canopy species present can be highly variable. No suitable habitat exists within the study area. Furthermore, the study area does not occur near known occurrences. No records exist within the locality as defined on the OEH BioNet Atlas using a 10km search. On this basis no further survey is required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Rutidosis heterogama	Heath Wrinklewort	This species grows in heath on sandy soils and moist areas in open forest and has been recorded along disturbed roadsides. This species has been recorded from near Cessnock to Kurri Kurri with an outlying occurrence at Howes Valley. Suitable habitat occurs within the study area in the form of heathy vegetation on sandy soils, as well as, a small area of moist areas in open forest. One record exists within the locality as defined on the OEH BioNet Atlas using a 10km search. On this basis further survey is required.	Likely	Yes
Tetratheca glandulosa		This species is associated with shale-sandstone transition habitat where shale-cappings occur over sandstone, with associated soil landscapes such as Lucas Heights, Gymea, Lambert and Faulconbridge. Topographically, the plant occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. Soils are generally shallow, consisting of a yellow, clayey/sandy loam. Stony lateritic fragments are also common in the soil profile on many of these ridgetops. Vegetation structure varies from heaths and scrub to woodlands/open woodlands, and open forest. Vegetation communities correspond broadly to Benson & Howell's Sydney Sandstone Ridgetop Woodland (Map Unit 10ar). Common woodland tree species include: *Corymbia gummifera, C. eximia, Eucalyptus haemastoma, E. punctata, E. racemosa*, and/or *E. sparsifolia*, with an understorey dominated by species from the families Proteaceae, Fabaceae, and Epacridaceae. This species is restricted to the following Local Government Areas: Baulkham Hills, Gosford, Hawkesbury, Hornsby, Ku-ring-gai, Pittwater, Ryde, Warringah, and Wyong. No suitable habitat occurs within the study area. Furthermore, the subject site does not occur near its known occurrences therefore the site is located outside of its known geographic distribution. No records exist within the locality as defined on the OEH BioNet Atlas using a 10km search. On this basis no further survey is required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Tetratheca juncea	Black-eyed Susan	Locally this species is usually found in low open forest/woodland with an undisturbed mixed shrubby understorey and grassy groundcover often in association with the Awaba Soil Landscape. It generally prefers well-drained sites below 200m elevation and annual rainfall between 1000 - 1200mm. The preferred substrates are sandy skeletal soil on sandstone, sandy-loam soils, low nutrients; and clayey soil from conglomerates, pH neutral. While some studies show the species has a preference for cooler southerly aspects, it has been found on slopes with a variety of aspects. Suitable habitat exists within the study area in the form of open forest with a native grassy groundcover. The PCT 1619 Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia found within the subject site is very commonly associated with this threatened species. However, the site does not face the preferred south easterly aspect. Many records exist as defined by the OEH Bionet 10km search. On this basis further survey is required.	Likely	Yes
Thelymitra adorata	Wyong Sun Orchid	Occurs from 10-40 m ASL. in grassy woodland or occasionally derived grassland in well-drained clay loam or shale derived soils. The vegetation type in which the majority of populations occur (including the largest colony) is a Spotted Gum - Ironbark Forest with a diverse grassy understorey and occasional scattered shrubs. Currently known from a few localised occurrences in the area bounded by the towns of Wyong, Warnervale and Wyongah on the New South Wales Central Coast, within the Wyong Local Government Area. Although the subject comprises suitable habitat in the form of PCT 1589 – Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub- - open forest on Coastal Lowlands of the Central Coast, the subject site is located outside of its known geographic distribution (not within the listed LGAs). Furthermore, no records exist within the locality as defined on the OEH BioNet Atlas using a 10km search. On this basis no further survey is required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Birds				
Anthochaera phrygia	Regent Honeyeater (Breeding)	This species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-Oak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Every few years non-breeding flocks are seen foraging in flowering coastal Swamp Mahogany and Spotted Gum forests, particularly on the central coast and occasionally on the upper north coast. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Other tree species may be regionally important. For example; the Lower Hunter Spotted Gum forests have recently been demonstrated to support regular breeding events. Flowering of associated species such as Thin-leaved Stringybark *Eucalyptus eugenioides* and other Stringybark species, and Broad-leaved Ironbark *E. fibrosa* can also contribute important nectar flows at times. The study area comprises suitable winter foraging habitat such as Spotted Gum, *E. fibrosa* and stringybark species, however the study area is not located within Important Mapped Areas for this species (confirmed via email with DPIE 2020).	Unlikely	No
Burhinus grallarius	Bushstone Curlew	This species inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Nests on the ground in a scrape or small bare patch. Species is mainly found in western slopes and plains and the Riverina, smaller numbers on Central and North Coast with increasing numbers in Tweed Valley. Marginal suitable habitat is found within the study area in the form of open forests and woodlands with fallen timber. Although no records occur within the OEH Bionet 10km search this species is known to occur within the locality. On this basis the likelihood for this species to occur within the study area cannot be discounted. Further survey is required.	Likely	Yes

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Callocephalon fimbriatum	Gang-gang Cockatoo (Breeding)	This species is usually found in spring and summer in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. This species favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts. The study area comprises marginal suitable foraging habitat in the form of open eucalypt forests and woodlands and hollows suitable for breeding (>10cm) exist within the study area. Furthermore, two records exist within the locality as defined on the OEH BioNet Atlas using a 10km search. Further survey is required.	Likely	Yes
Calyptorhynchus lathami	Glossy Black Cockatoo (Breeding)	The species is uncommon although widespread throughout suitable forest and woodland habitats. Inhabits open forest and woodlands of the coast where stands of She-oak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species). This species is dependent on large hollow-bearing eucalypts for nest sites. Suitable habitat trees (Breeding) occur within the study area. Although, no records exist within the locality as defined on the OEH BioNet Atlas using a 10km search, this species is known to occur within the region. On this basis, this species likelihood to occur cannot be discounted. Further survey is required.	Likely	Yes

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Haliaeetus leucogaster	White-bellied Sea-eagle (Breeding)	In New South Wales this species is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass. The study area is located >2km away from a large waterbody limiting the potential for this species to breed within the study area. No further survey is required.	Unlikely	No
Hieraaetus morphnoides	Little Eagle (Breeding)	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Suitable roosting habitat in the formation of large trees within remnant patches exist on site. Additionally, three records exist as defined on the OEH BioNet Atlas using a 10km search radius of the locality. Further survey is required	Likely	Yes
Lathamus discolor	Swift Parrot (Breeding)	This species migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there is abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. The study area comprises suitable winter foraging habitat such as Spotted Gum, however the study area is not located within draft Important Mapped Areas for this species (confirmed via email with DPIE 2020).	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Lophoictinia isura	Square-tailed Kite (Breeding)	This species is found in a variety of timbered habitats including dry woodlands and open forests and shows a particular preference for timbered watercourses. This species is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. Breeding sites are generally located along or near watercourses, in a fork or on large horizontal limbs. The study area comprises suitable habitat in the formation of dry sclerophyll forest, however no major river systems exist nearby. Although, no records exist as defined on the OEH BioNet Atlas using a 10km search radius of the locality, this species is known to occur within the region. Further survey is required.	Likely	Yes
Ninox connivens	Barking Owl (Breeding)	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as *Acacia* and *Casuarina* species. The study area comprises suitable foraging habitat in the formation of dry sclerophyll forest, within an urban landscape. Suitable roosting or nesting habitat exists in the form of dead and living eucalypts with large hollows. On this basis further survey is required.	Likely	Yes
Ninox strenua	Powerful Owl (Breeding)	Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. This species requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine *Syncarpia glomulifera*, Black She-oak	Likely	Yes

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		Allocasuarina littoralis, Blackwood *Acacia melanoxylon*, Rough-barked Apple *Angophora floribunda*, Cherry Ballart *Exocarpus cupressiformis* and a number of eucalypt species. The main prey items are medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. As most prey species require hollows and a shrub layer, these are important habitat components for the owl. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. The study area comprises suitable foraging habitat in the form of dry sclerophyll forest in a fragmented landscape. Suitable roosting or nesting habitat exists in the form of mature dead and living eucalypts with large hollows. Furthermore, 20 records exist within the locality as defined on the OEH BioNet Atlas using a 10km search radius. On this basis further survey is required.		
Pandion cristatus	Eastern Osprey (Breeding)	This species favours coastal areas, especially the mouths of large river, lagoons and lakes. This species breeds in nests that are made high up in dead trees or in the crowns of live trees, usually within one kilometres of the sea. The study area is located >10km from the coast and >8km from the closest river being the Hunter River. On this basis no suitable foraging or breeding habitat occurs within the study area. No further survey is required.	Unlikely	No
Turnix maculosus	Red-backed button-quail	This species is known to inhabit grasslands, open and savannah woodlands with grassy ground layer, pastures and crops of warm temperate areas, typically only in regions subject to annual summer rainfall greater than 400 mm. In NSW, said to occur in grasslands, heath and crops. Said to prefer sites close to water, especially when breeding. The species has been observed associated with the following grasses (in various vegetation formations): speargrass *Heteropogon*, Blady Grass *Imperata cylindrica*, *Triodia*, *Sorghum*, and Buffel Grass *Cenchrus ciliaris*. No suitable habitat occurs within the study area in the form of native grasslands, open savannah woodlands, pastures and crops. No further survey is required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Tyto novaehollandiae	Masked Owl (Breeding)	Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. The typical diet consists of tree-dwelling and ground mammals, especially rats. Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW. Pairs have a large home-range of 500 to 1000 hectares. The study area comprises suitable foraging habitat in the form of dry sclerophyll forest in a fragmented landscape. Suitable roosting or nesting habitat exists in the form of mature dead and living eucalypts with large hollows. On this basis further survey is required. Furthermore, seven records exist within the locality as defined on the OEH BioNet Atlas using a 10km search radius.	Likely	Yes
Bats				
Chalinolobus dwyeri	Large-eared Pied Bat	Found mainly in areas with extensive cliffs and caves. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. No caves or old mines, culverts or derelict buildings are present within the study area thus no suitable habitat occurs.	Unlikely	No
Miniopterus australis	Little Bentwing-bat (Breeding)	Inhabits moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		canopy of densely vegetated habitats. Only five nursery sites /maternity colonies are known in Australia. The study area comprises dry sclerophyll forest with no naturally occurring caves. No caves or old mines, culverts or derelict buildings are present on site thus no suitable habitat for potential usage a as a nursery or maternity breeding area		
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat (Breeding)	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Hunt in forested areas, catching moths and other flying insects above the treetops. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. The study area comprises dry sclerophyll forest with no naturally occurring caves. No caves or old mines, culverts or derelict buildings are present on site thus no suitable habitat for potential usage a as a nursery or maternity breeding area.	Unlikely	No
Myotis macropus	Southern Myotis	Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. The study area comprises suitable foraging habitat in the form of native vegetation. Hollow bearing trees were recorded within the study area; and the study area comprises a disturbed form of riparian habitat with no water withheld at time of site inspection. Additionally, the creekline is highly unlikely to hold pools of water >3m wide. Therefore, it is unlikely that this species would forage or be detected within the study area. On this basis no further survey is required.	Unlikely	No
Pteropus poliocephalus	Grey-headed Flying-fox (Breeding)	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		dense canopy. Feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia*, and fruits of rainforest trees and vines. No known roosting colonies are present on site.		
Vespadelus troughtoni	Eastern Cave Bat	A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals. Occasionally found along cliff-lines in wet eucalypt forest and rainforest. Little is understood of its feeding or breeding requirements or behaviour. The study area comprises dry sclerophyll forest with no naturally occurring caves. No caves or old mines, culverts or derelict buildings are present on site thus no suitable habitat for potential usage a as a nursery or maternity breeding area.	Unlikely	No
Reptiles				
Hoplocephalus bitorquatus	Pale-headed Snake	The Pale-headed Snake is a highly cryptic species that can spend weeks at a time hidden in tree hollows. Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest. In drier environments, it appears to favour habitats close to riparian areas. Shelter during the day between loose bark and tree-trunks, or in hollow trunks and limbs of dead trees. The study area comprises suitable habitat in the form of dry sclerophyll forest and numerous hollow bearing trees. This coupled with its cryptic nature its likelihood of occurrence cannot be ruled out. Further survey is required.	Likely	Yes
Amphibians				
Crinia tinnula	Wallum Froglet	This species inhabits a wide range of habitats, usually associated with acidic swamps on coastal sand plains. They typically occur in sedgelands and wet heathlands. They can also be found along drainage lines within other vegetation communities and disturbed areas, and occasionally in swamp sclerophyll forests.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		The mapped drainage line within the study area does not contain suitable habitat for this species. Furthermore, no records exist as defined by the OEH Bionet 10km search. On this basis no further survey is required.		
Litoria aurea	Green and Golden Bell Frog	Inhabits marshes, dams and stream-sides, particularly those containing bull rushes (*Typha* spp.) or spike rushes (*Eleocharis* spp.). Optimum habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas. The study area contains suitable habitat in the form of an ephemeral water body with suitable vegetation in the form of bull-rushes and an adjacent grassy area. Furthermore, three records exist within the locality as defined on the OEH BioNet Atlas using a 10km search radius. On this basis further survey is required.	Likely	Yes
Litoria brevipalmata	Green-thighed Frog	Occurs in a range of habitats from rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain. It prefers wetter forests in the south of its range but extends into drier forests in northern NSW and southern Queensland. This species is thought to forage in leaf-litter. The study area is predominantly a very dry open forest with only a minor area of suitable habitat in the form of a marginal moist eucalypt forest. Although this area was observed to be dry at the time of the site inspection and has been for a long period due to the ongoing drought conditions, it could potentially hold water after a high rainfall event. However, the subject site has a history of disturbance reducing the likelihood of its occurrence. Furthermore, no records exist as defined on the OEH BioNet Atlas using a 10km search radius of the locality limiting the likelihood of this species being detected within the subject site. On this basis no further survey is required.	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
Uperoleia mahonyi	Mahony's Toadlet	This species is known to inhabit ephemeral and semi-permanent swamps and swales. Known records occur in heath or wallum habitats almost exclusively associated with leached (highly nutrient impoverished) white sand. Commonly associated with acid paperbark swamps, Mahony's Toadlet also is known to occur in wallum heath, swamp mahogany-paperbark swamp forest, heath shrubland and Sydney red gum woodland. Recent studies suggest intact vegetation adjacent to and within water bodies is an important habitat feature for this species. No suitable habitat occurs within the study area and no records exist as defined by the OEH Bionet 10km search.	Unlikely	No
Marsupials				
Cercartetus nanus	Eastern Pygmy - Possum	This species is found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests etc. Tree hollows are favoured. The study area comprises very marginal suitable vegetation in the form of dry sclerophyll forest. No Banksias and limited bottlebrushes were observed within the study area, which are important foraging habitat features for this species. Although the study area does contain tree hollows no records exist as defined on the OEH BioNet Atlas using a 10km search radius of the locality. No further survey is required.	Unlikely	No
Petaurus norfolcensis	Squirrel Glider	Inhabits mature or old growth Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Require abundant tree hollows for refuge and nest sites.	Likely	Yes

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		Many records exist on the OEH BioNet Atlas using a 10km search radius of the locality, the site comprises preferential habitat in the form of autumn/winter flowering trees such as *Corymbia maculata* and *C. gummifera*. Numerous large mature trees with hollows occur within the subject site. Further survey is required.		
Petrogale penicillata	Brush-tailed Rock wallaby	This species occupies rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Generally, browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night. The study area comprises no suitable habitat in the form of rocky landscape characteristics and no records exist as defined on the OEH BioNet Atlas using a 10km search radius of the locality.	Unlikely	No
Phascolarctos cinereus	Koala (Breeding)	Inhabit eucalypt woodlands and forests in a fragmented distribution throughout eastern Australia. In NSW this species mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range but have been recorded in the southern tablelands. This species feeds on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Spend most of their time in trees but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size. It is highly unlikely this species would be a visitor to the study area due to difficult accessibility such as; fences, the limited/fragmented connection to larger tracts of bushland in the area, proximity to residential housing development indicating a high number of dogs in the area, and main roads/highways hugging the northern fringe of the subject site. Larger areas of better-quality vegetation occur within the locality indicating the species is not dependent on the available habitat within the impacted area for breeding or important life cycle periods. Field surveys did record the presence of *Eucalyptus punctata,* which are listed	Unlikely	No

Scientific Name	Common Name	Habitat requirement	Habitat present on development site	Species requires further assessment
		as a primary Koala Feed Tree within the SEPP 44 Koala Feed Tree species list. This species did not make up 15% of the overall canopy and therefore does not trigger further assessment under SEPP 44. On this basis further assessment is required. Additionally, only		
Phascogale tapoatafa	Brush-tailed Phascogale	This species prefers dry sclerophyll open forest with a sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Agile climber foraging preferentially in rough barked trees of 25 cm DBH or greater. Feeds mostly on arthropods but will also eat other invertebrates, nectar and sometimes small vertebrates. Females have exclusive territories of approximately 20 - 40 ha, while males have overlapping territories often greater than 100 ha. Nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span. Marginal habitat occurs within the study area in the form of dry sclerophyll open forest, with sometimes sparse groundcover. Numerous hollow bearing trees occur within the subject site. Further survey is required	Likely	Yes
Planigale maculata	Common Planigale	Inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water. They are active at night and during the day shelter in saucer-shaped nests built in crevices, hollow logs, beneath bark or under rocks. Marginal habitat occurs within the study area in the form of a dry eucalypt open forest. Limited hollow logs occur and no water or suitable rocks are present. Furthermore, no records exist as defined by the OEH Bionet 10km search. As such this limits the likelihood for this species to occur within the subject site. On this basis no further assessment is required.	Unlikely	No

5.2 Threatened Flora Results

In accordance with methods outlined in **Section 3.3.2** no threatened flora species were recorded during field surveys.

The following table outline the species that could not be discounted from occurring within the Study Area and dates surveys were undertaken.

Table 5 Threatened Flora Survey Schedule

Species	Survey Period	Survey Carried out	Presence/ Absence	Comment
Acacia bynoeana	All year	13th, 15th and 20th November 2019	Not recorded	
Callistemon linearifolius	Sept-March	13th, 15th and 20th November 2019	Not recorded	This survey was undertaken outside the survey period, due to the reliability of identification (conspicuous nature) of this species all year round. Furthermore, warm weather was still persisting in early April 2019. No similar *Callistemon* spp. were observed within the subject site during biodiversity surveys, only mature *Callistemon saligna.*
Cynanchum elegans	All year	13th, 15th and 20th November 2019	Not recorded	
Cryptostylis hunteriana	Nov-Jan	13th, 15th and 20th November 2019	Not recorded	Although no further survey was recommended based on the lack of marginally habitat. All threatened flora surveys were carried out during the optimal time for survey of this species. Furthermore, it was confirmed that this species was flowering in the wider region at the time of survey (Central Coast Council email and author pers comm.)
Grevillea parviflora subsp. parviflora	All year	13th, 15th and 20th November 2019	Not recorded	
Melaleuca biconvexa	All year	13th, 15th and 20th November 2019	Not recorded	
Rutidosis heterogama	All year	13th, 15th and 20th November 2019	Not recorded	
Tetratheca juncea	Sept-Oct	13th, 15th and 20th November 2019	Not recorded	This survey was undertaken outside the survey period. This species was known to still be flowering in nearby locations at the time of survey for this BIR. Furthermore, no slopes facing the preferred south easterly direction are present within the study area.

5.3 Fauna Survey Results

A total of 50 fauna species were recorded during the survey period. A full list of the fauna species recorded within the site is provided as **Appendix C**. Locations of threatened fauna caught on cameras, detected via ultrasonic call analysis or observed during nocturnal events have been presented as **Figure 6.**

Table 6 outline the species (Species Credit Species as determined by the BAM-C) that could not be discounted from occurring within the Study Area and outlines the survey requirements and dates surveys were undertaken.

5.3.1 Mammals

No threatened mammal species were observed. Native species including the Brushtail Possum, one Brushtail Possum and joey (*Trichosurus vulpecula*), Sugar Glider (including adults and a juvenile (*Petaurus breviceps*), Feathertail Glider (*Acrobates pygmaeus*), Brown Antechinus (*Antechinus stuartii*), Red-necked Wallaby and joey (*Macropus rufogriseus*), Short-beaked Echidna (*Tachyglossus aculeatus*), and the introduced Red Fox (*Vulpes vulpes*) were recorded.

5.3.2 Avifauna

Numerous bird species were recorded during the early morning and dusk survey efforts. A total of 26 bird species were identified visually or by vocalisation during the surveys. The species recorded include; Brown Thornbill (*Acanthiza pusilla*), Lewin's Honeyeater (*Meliphaga lewinii),* Bell Miner (*Manorina melanophrys*), Rainbow Lorikeet (*Trichoglossus moluccana*), Eastern Rosella (*Platycercus eximius*), Brown Goshawk (*Accipiter fasciatus*), Australian Magpie (*Cracticus tibicen*), White-winged Chough (*Corcorax melanorhamphos*), Australian Raven (*Corvus coronoides*), Laughing Kookaburra (*Dacelo novaeguineae)*, Pied Currawong (*Strepera graculina*), Black-faced Cuckooshrike (*Coracina novaehollandiae*), Sacred Kingfisher (*Todiramphus sanctus*), Noisy Miner (*Manorina melanocephala*), White-browed Scrubwren (*Sericornis frontalis*), Olive-backed Oriole (*Oriolus sagittatus*), Noisy Friarbird (*Philemon corniculatus)*, Superb Fairy Wren (*Malurus cyaneus*), Grey Butcherbird (*Craticus torquatus*), Yellow-faced Honeyeater (*Lichenostomus chrysops*), Spotted Pardalote (*Pardalotus punctatus*), Eastern Yellow Robin (*Eopsaltria australis*), Red Wattlebird (*Anthochaera carunculata*) and Grey Fantail (*Rhipidura albiscapa*). Additionally, nocturnal bird species Southern Boobook (*Ninox novaeseelandiae*) and Australia Owlet-nightjar (*Aegotheles cristatus*) were also observed.

5.3.3 Herpetofauna

Four reptile species and one amphibian species were recorded during surveys. A Common Garden Skink (*Lampropholis guichenoti*), Red-bellied Black Snake (*Pseudechis porphyriacus*), Blue Tongue Lizard (*Tiliqua scinoides scinoides*) and Lace Monitor (*Varanus varius*) were observed during diurnal surveys. The frog species *Uperoleia fusca* (Dusky Toadlet) was recorded during nocturnal surveys and during call playback near the unnamed waterbody.

5.3.4 Microbats

A total of nine microbat species identified as definite were detected using two Anabat express echo-location call recorder.

Two species identified as definite are listed as *Vulnerable* under the BC Act, specifically the Little Bent-wing Bat (*Miniopterus australis*) and the Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis)*. Other species include;

- White-striped Free-tailed Bat *Austronomus australis*
- Ride's Free-tailed Bat *Mormopterus ridei*
- Gould's Wattled Bat *Chalinolobus gouldii*
- Eastern Broad-nosed Bat *Scotorepens orion*
- Chocolate Wattled Bat *Chalinolobus morio*

- Eastern Forest Bat *Vespadelus pumilus*
- Eastern Horseshoe Bat *Rhinolophus megaphyllus*

Eight bat species identified as probable include;

- Southern Free-tailed Bat *Mormopterus planiceps*
- Greater Broad-nosed Bat *Scoteanax rueppellii* (listed as Vulnerable under the BC Act
- Eastern False Pipistrelle *Falsistrellus tasmaniensis* (listed as *Vulnerable* under the BC Act),
- Southern Myotis *Myotis macropus (*listed as Vulnerable under the BC Act*)*
- Southern Forest Bat *Vespadelus regulus*
- Large Bent-winged Bat *Miniopterus orianae oceanensis* (listed as Vulnerable under the BC Act)
- Little Forest Bat *Vespadelus vulturnus*
- *Vespadelus troughtoni* (Eastern Cave Bat)

Two bat species identified as possible include;

- Large-eared Pied Bat *Chalinolobus dwyeri* (listed as *Vulnerable* under the BC and EPBC Acts)
- *Falsistrellus tasmaniensis* (V) /Large Forest Bat *Vespadelus darlingtoni*

Refer to **Appendix C** for a detailed list of recorded species and **Appendix F** for the Anabat Call Recording reports.

5.3.5 Nocturnal Call Playback

No owls or gliders were heard responding to calls played during the two nights of survey.

5.4 Habitat Survey

The study area contains a large patch of native vegetation comprising 45 hollow-bearing trees.

The current condition of the study area is a well vegetated rural block with no structures with the exception of fences. The lot is approximately 26.2ha in size of which 25.5ha has been identified as low to moderate quality native vegetation. The remainder of the study area is cleared unsealed tracks.

The construction of unsealed vehicle tracks has promoted erosion and soil compaction and have increased the percentage of bare ground. This may also facilitate the spread of weeds.

Illegal dumping has resulted in the introduction of household refuse and industrial waste to the study area. This material may adversely affect flora through pollution and may harm native fauna.

The remnant native vegetation within the study area provides good habitat for flora and fauna species within both the canopy and groundcover. A large number of semi mature trees, with numerous hollows occur primarily within the northern portion of the study area. The *Myrtaceae* species observed within the study area have at least three age cohorts. Such species provide good foraging opportunities for species that rely on nectar, seed, sap and other vegetative food sources within the community.

The groundcover is very dense throughout the study area providing good shelter and foraging habitat for terrestrial fauna.

A waterbody was observed within the 1st order unnamed creek within the northern portion of the study area. This area was observed to be damp/muddy (no visible water) comprising bull rushes (*Typha orientalis*) and other sedge species - habitat suitable for amphibians and other water-tolerant

species such as the Red-bellied black Snake. This area is highly likely to hold water after a rainfall event.

5.5 Additional Fauna Survey Requirements

Due to breeding habitat constraints (as per the Threatened Biodiversity Collection Data) identified within the Study Area for certain Species Credit Species likely to occur, the following additional surveys are required.

Forest Owls:

Suitable breeding habitat for threatened large Forest Owls including Powerful Owl (*Ninox strenua*), Barking Owl (*Ninox connivens*) and Masked Owl (*Tyto novaehollandiae*) were identified within the study area. Such habitat includes hollow bearing trees with large hollows (>20cm). The survey period for the Powerful Owl and Masked Owl occur between May-August, therefore further surveys are required for these threatened Forest Owls which will occur during the required Stage 2 works for this proposal.

Additional nocturnal call playbacks will be required during the appropriate survey season in accordance with Section 6.5.1.3 of the BAM (2017).

Calyptorhynchus lathami (Glossy-black Cockatoo):

Suitable breeding habitat for this species was identified within the study area. Such habitat includes hollow bearing trees with large hollows (>15cm, >5m above the ground). The survey period for *C. lathami* occurs between April-August, therefore further surveys are required for this species which will occur during the required Stage 2 works for this proposal.

Additional avifauna surveys such as targeting areas of appropriate habitat (habitat trees with hollows >15cm, >5m above ground) **and** opportunistic diurnal bird surveys will be required during the appropriate survey season.

Table 6 Survey Effort

Fauna Group	Target species	Survey Period	Survey Carried out	Survey method	Survey effort	Comment
Herpetofauna	*Hoplocephalus bitorquatus* (Pale-headed Snake)	Nov-March	13th, 15th, 20th, 27th & 28th November 2019	▪ **Herpetofauna surveys** targeting areas of appropriate habitat - Targeted habitat searches/habitat surveys - Opportunistic surveys	- Raking leaf litter and turning logs, rocks and other debris	-
	Litoria aurea (Green & Golden Bell Frog)	Nov-March	20th & 25th November	▪ Amphibian surveys - **200 m transect** along the creekline - **Nocturnal Call playback & listening** - Opportunistic surveys	- The call of each species was broadcast for at least five minutes, followed by five minutes of listening, the area was then spotlighted on foot. - Opportunistically and during field work - A total of 2 call-back nights were undertaken - A total of 2 transects were undertaken undertaken at a distance of >200m each covering the waterbody and associated creekline. - A total of 2 person hours were undertaken over 2 separate nights.	-
Arboreal & Terrestrial	*Petaurus norfolcensis* (Squirrel Glider)	All year	13th – 27th November	▪ **Infrared Camera Survey** - Cameras were mounted in appropriate habitat within	- 14 Scoutguard infrared motion cameras (7 x Terrestrial & 7 x Arboreal) were utilised during field surveys - A total of 28 camera nights were undertaken.	-

Fauna Group	Target species	Survey Period	Survey Carried out	Survey method	Survey effort	Comment
	Phascogale tapoatafa (Brush-tailed Phascogale)			subject site, designed to take photographs when triggered by motion - Cameras were used to detect both diurnal and nocturnal faunal movement - Spotlighting Transects	- 4 x transects were undertaken at a distance of 7.07km in total covering over a large portion of the study area. - A total of 5 person hours were undertaken over 2 separate nights.	-
Nocturnal Avifauna	*Ninox connivens* (Barking Owl)	May-Dec	20th & 25th November	▪ **Call back** for aural recognition of threatened owls - Pre-recorded calls of owls with the potential to occur within the study area were broadcast to elicit vocal responses or to attract nocturnal fauna to the playback site. - Calls were broadcast through an amplification system (loud hailer) designed to project the sound for at least 1 km under still night conditions - Spotlighting Transects	- The call of each species was broadcast for at least five minutes, followed by five minutes of listening, the area was then spotlighted on foot. - Opportunistically and during field work - A total of 2 owl call-back nights were undertaken - 4 x transects were undertaken at a distance of 7.07km in total covering over a large portion of the study area. - A total of 5 person hours were undertaken over 2 separate nights.	-
	Ninox strenua (Powerful Owl)	May-August				- Further surveys are required in the May-August period for *N. strenua* and *T. novaehollandiae.*
	Tyto novaehollandiae (Masked Owl)	May-August				
	Burhinus grallarius (Bush-stone Curlew)	All year, however, potentially better	13th, 15th, 20th, 25th, 27th and 28th November	▪ **Listening for distinct calls**	- Opportunistically listening for calls during nocturnal works.	- Call backs are unknown to be

Fauna Group	Target species	Survey Period	Survey Carried out	Survey method	Survey effort	Comment
		detected during breeding season (spring to early summer)		during nocturnal works ▪ Spotlighting transects ▪ **Opportunistic surveys**	- Searching opportunistically during diurnal field work for nests on the ground (scrape or small bare patch). - 4 x transects were undertaken at a distance of 7.07km in total covering over a large portion of the study area. - A total of 5 person hours were undertaken over 2 separate nights.	successful for this species
Diurnal Avifauna	*Callocephalon fimbriatum* (Gang-gang Cockatoo)	Oct-Jan	13th, 15th, 20th, 27th and 28th November	▪ **Avifauna surveys** targeting areas if appropriate habitat - **Targeted habitat searches**/habitat surveys - **Opportunistic surveys**	- Binoculars were used to assess hollow bearing trees with hollows >10cm, 9m above the ground. - Opportunistically - visually or by vocalisation during the early morning and dusk survey efforts.	-
	Hieraaetus morphnoides (Little Eagle)	Aug-October			- Binoculars were used to assess large living and dead trees for large stick nests in the top half of the tree canopy. - Opportunistically - visually or by vocalisation during the early morning and dusk survey efforts.	- Surveys were conducted mid-November. Large stick nests are considered to still be identifiable during this period since it is post breeding season.
	Lophoictinia isura (Square-tailed Kite)	Oct-Jan			- Binoculars were used to assess large living and dead trees for large stick nests in a fork or on large horizontal limbs - Opportunistically - visually or by vocalisation during diurnal survey efforts.	-

505 MINMI RD, FLETCHER

FIGURE 6: FAUNA RESULTS

0 45 90 180

Meters

1:2,700

N W E S

Legend

- Hollow Bearing Tree
- Micronomus norfolkensis, Miniopterus australis, #Chalinolobus dwyeri
- Miniopterus australis, *Micronomus norfolkensis, *Saccolaimus flaviventris, ^Chalinolobus dwyeri
- Watercourse
- Study Area
- Cadastre Boundaries
- Tracks
- Waterbody

* Probable
^ Possible

MJD Environmental

Aerial: NearMap (2019) | Data: MJD Environmental, NSW Spatial Services (2019) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 19/12/2019| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

6 Matters of National Environmental Significance

An EPBC Act Protected Matters Search (accessed 26-11-2019) was undertaken to generate a list of those Matters of National Environmental Significance (MNES) from within 10 km of the Study Area. An assessment of those MNES relevant to biodiversity has been undertaken in accordance within EPBC Act Policy Statement 1.1 Significant Impact Guidelines Matters of National Environmental Significance (DoE, 2013). The Matters of National Environmental Significance protected under national environment law include:

- Listed threatened species and communities;
- Listed migratory species;
- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- World heritage properties;
- National heritage places;
- The Great Barrier Reef Marine Park;
- Nuclear actions; and
- A water resource, in relation to coal seam gas development and large coal mining development.

Listed Threatened Species and Communities:

A total of 50 threatened species and 4 threatened ecological communities listed under the EPBC Act have been recorded on the protected matters search. A likelihood of occurrence assessment for these MNES has been completed in **Appendix E**.

Threatened Species

Eighteen threatened birds, eight mammals, four amphibians 20 plants were recorded on the protected matters search. Of these, 7 species were considered to have the potential to utilise the habitats within the subject site:

- *Acacia bynoeana* Bynoe's Wattle
- *Grevillea parviflora* subsp. *parviflora* Small-flower Grevillea
- *Melaleuca biconvexa* Biconvex Paperbark
- *Litoria aurea* Green and Golden Bell Frog
- *Pteropus poliocephalus* Grey-headed Flying Fox
- *Rutidosis heterogama* Heath Wrinklewort
- *Tetratheca juncea* Black-eyed Susan

This assessment concluded that the proposal is unlikely to impact the listed threatened species.

No Threatened Ecological Communities listed under the EPBC Act have been recorded within the subject site.

Listed Migratory Species:

The protected matters search nominated 28 migratory species or species habitat that may occur with the 10km subject site buffer search area. No listed migratory species were observed within the subject site. The assessment contained in **Appendix E** concluded that, no habitat within the subject site or Study Area is critical to their survival. Therefore, it is unlikely that the proposal over the subject site will impact migratory species.

Wetlands of International Significance (declared Ramsar wetlands):

The subject site is not a wetland of international significance or declared Ramsar wetland.

One wetland of international importance was nominated within a 10 km radius of the Study Area. The subject site is located <10 km south west of:

Hunter estuary wetlands

- The Hunter Estuary Wetlands Ramsar site supports species that are nationally and internationally listed. Importantly the green and golden bell frog (Litoria aurea) listed as vulnerable under the EPBC Act 1999 have been found within the Kooragang component of the Ramsar site. The Australasian bittern (Botaurus poiciloptilus) listed as endangered on both the EPBC Act and the IUCN Red List (Version 2009.1) has been found at both components of the Ramsar site.

  The Hunter Estuary Wetland Ramsar site supports 112 species of waterbirds and 45 species of migratory birds listed under international agreements, including the great egret (Ardea alba), cattle egret (Ardea ibis), terns (Sterna spp.), glossy ibis (Plegadis falcinellus) and white-breasted sea-eagle (Haliaeetus leucogaster).
  These wetlands also provide refuge for waterbirds such as ducks and herons during periods of inland drought.

  The Hunter Estuary Wetland Ramsar site regularly supports 1% of the population of the eastern curlew (Numenius madagascariensis) and the red-necked avocet (Recurvirostra novaehollandiae),

Commonwealth Marine Areas:

The subject site is not part of a Commonwealth Marine Area and is not in close proximity to any such area.

World Heritage Properties:

The subject site is not a World Heritage area and is not in close proximity to any such area.

National Heritage Places:

The subject site is not a National Heritage area and is not in close proximity to any such area.

Great Barrier Reef Marine Parks:

The subject site is not part of or within close proximity to any Great Barrier Reef Marine Park.

Nuclear Actions:

The proposal over the subject site is not and does not form part of a Nuclear action.

Water Resources in relation to Coal Mining and CSG:

The proposal over the subject site is related to residential development and as such is not or does not form part of a coal mining and/or CSG proposal.

Summary - In summary, the proposed action is unlikely to have an impact to MNES based on the preliminary assessment undertaken in accordance with criteria set out in relevant Commonwealth policies and advices as at the time of this assessment.

7 SEPP 44 -Koala Habitat Protection

Assessment of potential koala habitat under SEPP 44 requires the following steps be undertaken:

(a) *Identification of 'potential Koala habitat' within the site area to be impacted; if the total tree cover contains 15% or more of the Koala food tree species listed in Schedule 2 of SEPP 44 then it is deemed to be 'potential Koala habitat'. Identification of 'potential Koala habitat requires the determination of the presence of 'core Koala habitat';*

(b) *Identification of 'core Koala habitat' within the area to be impacted. 'Core Koala habitat' is defined as an area of land with a resident population of Koalas, evidenced by attributes such as breeding females (females with young), recent sightings and historical records of a Koala population;*

(c) *Identification of 'core Koala habitat' will require that a plan of management must accompany the application;*

(d) *If the rezoning of lands, other than to environmental protection, involves potential or core Koala habitat then the Director of planning may require a local environmental study be carried out.*

Koala feed tree species *Eucalyptus punctata* listed in Schedule 2 of the SEPP as a 'Koala Feed Tree Species' occur within the study area. Systematic sampling detected this species in six of the ten plots. Cover (structure) scores resulted in an average score of 15% over these six plots, however when averaged over the ten plots the average score is <15% cover for the overall canopy cover. Therefore, the study area does not meet requirements for it be considered 'potential koala habitat'.

8 Impact Assessment

8.1 Proposed Rezoning Impacts

The Planning Proposal seeks to rezone 15.4 hectares of land from the current E4 Environmental Living zoning to R2 Low Density Residential Zoning The rezoning would result in the removal of 14.76 hectares of native vegetation and additional area of E4 zoned land being impacted for the construction and operation of a Link road between the proposed R2 lands. The road corridor would include all infrastructure to service any future development in the proposed R2 zoned lands.

For the proposes of the preliminary impact assessment of the rezoning the areas proposed to be rezoned as R2 lands and the link road corridor are referred to as the Subject Site. (Refer to **Figure 7**).

8.2 Vegetation Integrity Assessment results

As part of the Biodiversity Assessment Methodology, the data collected during vegetation surveys has been entered into the BAM-C Calculator to determine the biodiversity value of vegetation (Vegetation Integrity Score). This score is then used to calculate biodiversity credit liabilities associated with the impacts on native vegetation in the subject site.

The results of the vegetation integrity assessment is summarised in **Table 7**. All plot data collected in accordance with the BAM during field surveys and a flora species list can be found in **Appendix B** and **Appendix C**.

Table 7 Vegetation Integrity Results

Vegetation Zone	No. of Plots	Composition condition Score	Structure Condition Score	Function Condition score	Vegetation Integrity Score (V.I)
VZ1_1590_Moderate	3	76	71.3	69.9	72.4
VZ2_1589_Moderate	2	85.3	71.4	88.7	81.4
VZ3_1589_Low	2	93.4	58	69.4	72.2
VZ4_1619_Low	1	61	65	74.9	66.7
VZ5_1590_Low_M_nodosa	1	65.1	63.5	30.1	50
VZ6_1589_Moderate_A_costata	1	68.7	75.3	85.4	76.2

- As outlined in section 10.3.1 of the BAM biodiversity offset credits are required for native vegetation where the vegetation integrity score:
    - is >15 where the PCT is representative of an endangered or critically endangered ecological community; or
    - is >17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community: or
    - is >20 where the PCT is not representative of a TEC or associated with threatened species habitat.

Biodiversity offsets are required for all of the above vegetation zones as the vegetation integrity score is >17

All remaining area within the development area has been assessed to be non-vegetated and no further assessment or offset is required for these areas.

8.3 Direct Impacts

8.3.1 Native Vegetation & TEC

A total of 14.76 ha of native vegetation will be removed as part of the rezoning. The following table provides an overview of the area to be cleared and the current and future vegetation integrity score (V.I).

Table 8 Direct Impacts on Native Vegetation

Vegetation Zone	Condition	Threatened Ecological Community	Area (ha)	Current V.I Score	Future V.I Score
1590: Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest					
VZ1	1590_Moderate	Yes	10.04	72.4	0
VZ5	1590_Low_M_nodosa	Yes	1.73	50	0
1589: Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast					
VZ2	1589_Moderate	No	0.69	81.4	0
VZ3	1589_Low	No	0.29	72.2	0
VZ6	1589_Moderate_A_costata	No	1.06	76.2	0
1619: Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands					
VZ4	1619_Low	No	0.94	66.7	0

8.3.2 Threatened Species

Flora

No threatened flora species are to be removed under this proposal.

Fauna

A total of two threatened fauna species were recorded on site, both of which were microbats

The Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis)* is identified as an Ecosystem Credit species due to it being reliably predicted to occur by vegetation surrogates and landscape features, therefore this species is considered in calculations when determining the Ecosystem credit liability for each PCT.

The Little Bent-wing Bat (*Miniopterus australis*) is identified as a dual credit species. This species is regarded a species credit species when habitat constraints for breeding (as per the Threatened Biodiversity Data Collection) are present within the Study Area. An assessment of the Study Area did not identify habitat constraints associated with breeding. This species is therefore considered an Ecosystem Credit Species based on foraging only, and is considered in calculations when determining the Ecosystem credit liability for each PCT

A total of 14 (of 45) hollow bearing trees were recorded within the subject site and are to be removed as part of the proposed rezoning. The remainder (31) are located within the proposed E2 – Environmental Conservation zoned lands and are to be retained under this proposal.

Indirect Impacts

The proposal may result in the following indirect impacts associated with the development of the proposal:

- Increases in edge effects for within retained vegetation patches proximate to the development areas;
- Potential introduction and dispersal of exotic flora species from the use of civil equipment in the construction of the roads.
- Increase in water flow and nutrients within the mapped creekline.

9 Offset Requirements for Unavoidable Impacts

A summary of offset liabilities for the proposed rezoning with respect to native vegetation are provided below:

An offset is required for all impacts of development on PCTs that are associated with:

- a vegetation zone that has a vegetation integrity score ≥15 where the PCT is representative of an endangered or critically endangered ecological community, or
- a vegetation zone that has a vegetation integrity score of ≥17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community, or
- a vegetation zone that has a vegetation integrity score ≥20 where the PCT is not representative of a TEC or associated with threatened species habitat.

9.1 Ecosystem Credits

Table 9 Ecosystem Credits

Vegetation Zone	PCT ID	Area (ha)	Vegetation Integrity Score (V.I) loss	Ecosystem Credits Required
VZ1_1590_Moderate	1590	10.04	72.4	363
VZ2_1589_Moderate	1589	0.69	81.4	28
VZ3_1589_Low	1589	0.29	72.2	10
VZ4_1619_Low	1619	0.94	66.7	24
VZ5_1590_Low_M_nodosa	1590	1.73	50	43
VZ6_1589_Moderate_A_costata	1589	1.06	76.2	40

9.2 Species Credit

No Species Credit Species were observed during targeted surveys therefore no species credits are required at this stage. Further Forest Owl surveys are required in Stage 2 biodiversity works during the required survey period of May-August (Refer to **Table 6**).

9.3 Areas not requiring Offsets

There is 0.7ha of non-vegetated area comprising unsealed tracks that will be impacted by the proposal. As this area does not align with native vegetation, they do not require offsetting or further assessment.

9.4 Credit Summary

The following **Table 10** displays the required biodiversity offset liability based on the BAM-c Calculator.

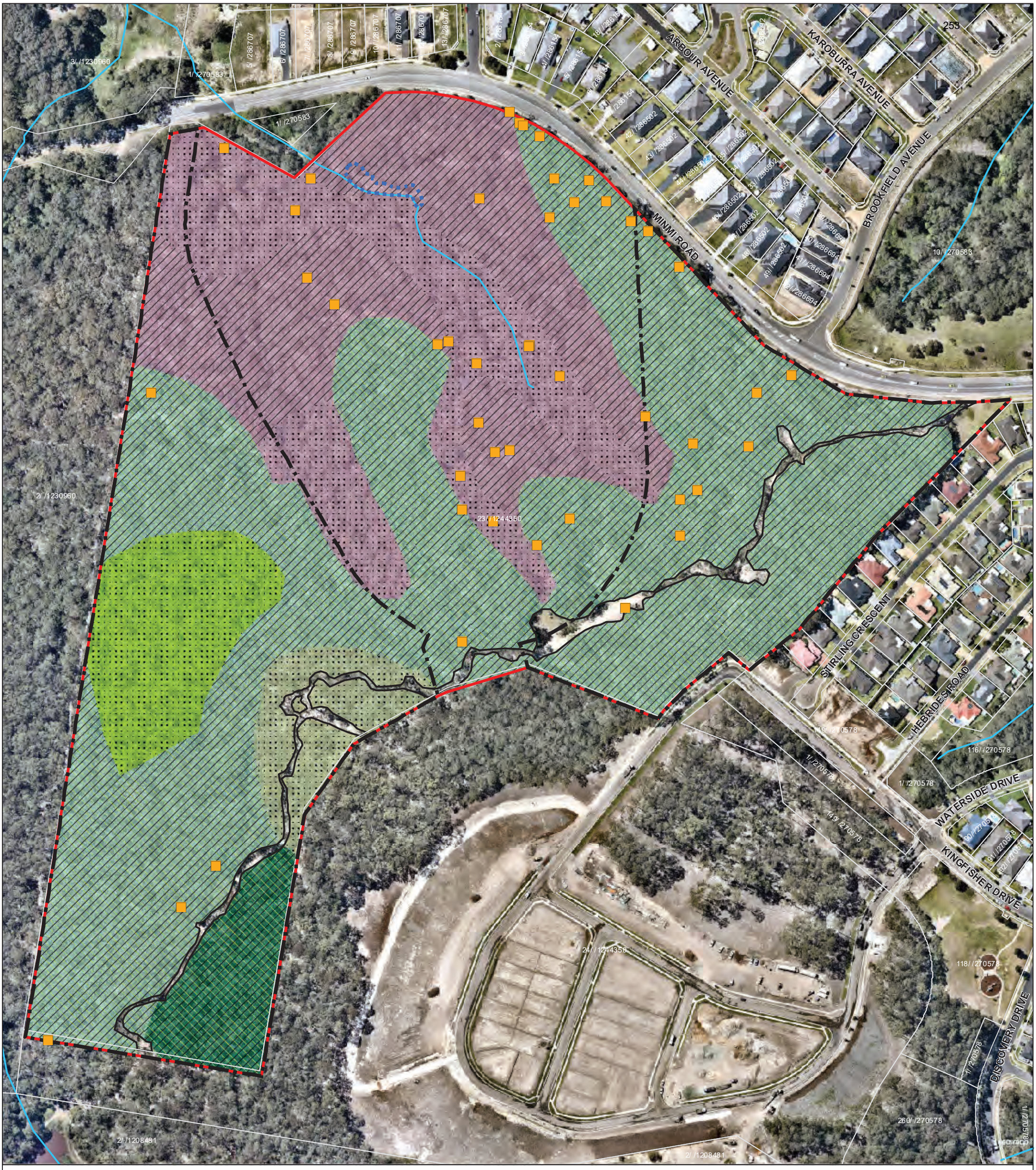
Table 10 Biodiversity Liability Credit Summary

Ecosystem Credits	Offset Credits required
PCT 1589: Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast	78
PCT 1590: Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest	406
PCT 1619: Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands	24

The current method to retire credits for the proposal has not been determined and will be dependent on the availability of credits on the open market, viability of establishing a stewardship site in the locality or retirement of credits via payment into the Biodiversity Conservation Fund. It is likely that credit retirement will incorporate one or a combination of these options as the development is delivered.

505 MINMI RD, FLETCHER

FIGURE 7: DEVELOPMENT FOOTPRINT



0 45 90 180

Meters

1:2,700

Legend

- Hollow Bearing Tree
- Watercourse
- Study
- Subject Site
- Cadastre Boundaries
- Tracks
- Waterbody

Vegetation Condition

- Low
- Moderate
- Lower Hunter Spotted Gum Ironbark Forest (EEC)

Plant Community Type

- 1589: Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on coastal lowlands
- 1589: Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest (*A. costata* Dominant)
- 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest
- 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest (*M. nodosa* Dominant)
- 1619: Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands

MJD Environmental

Aerial: NearMap (2019) | Data: MJD Environmental, NSW Spatial Services (2019) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 19/12/2019| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

10 Avoidance and Minimisation Strategy

10.1 Habitat Retention and Connectivity to Surrounding land

The design of the proposed rezoning will see the retention of a moderate sized patch of native vegetation centrally located in the Study Area and rezoned E2 Environmental Conservation (10.8ha). This patch of vegetation would provide a north-south connectivity corridor to facilitate faunal movements albeit only for highly mobile species. The connectivity corridor would connect vegetation conserved in E2 zoned land to the south via the central patch of vegetation to a fragmented landscape (north of Minmi Road) of scattered canopy trees and unmanaged pasture that connects to the southern areas of Hexham Swamp. The connection is limited by the location of Minmi Road although the connection remains non-hostile (<35m wide) to small Arboreal mammals.

Currently, this corridor is connected to the E2 zoned lands existing on the western side of the study area (on the southern side of Minmi Rd), but will be fragmented by the proposal and approved developments adjacent to the Study Area. The E2 zoned lands extends in a band around the west, south and south east of the study area. Additionally, this corridor extends north across Minmi Road, as a short 100m long and 100m wide corridor to the main body of conservation land known as the Hexham Swamp.

Furthermore, the patch of existing vegetation on Lot 1 DP 270583 and associated road reserve adjacent to the northern boundary of the study area and Minmi Road is likely to be retained due to the presence of a 1st order stream running directly through this area.

In addition, a further conservation connection has been provided from the proposed E2 zoned lands within the study area to existing E2 zoned lands within the Winten Precinct 1 land located to the south east of the study area. This connection will be limited by the proposed internal residential road needed to provide access from the proposed R2 zoned lands in the east of the study area to R2 zoned lands in the west. The proposed residential road is likely to be no more than 20m wide, creating a limited connection (non-hostile) to the additional E2 zoned lands within the Winten Precinct This connection will provide a habitat corridor for highly mobile species and arboreal mammals such as gliders. Road signs for potential wildlife crossings will be recommended with a speed zone of no more than 40km/hr, providing protection for potential terrestrial fauna known to inhabit the area.

Habitat to be conserved within the Study Area falls steeply below Minmi Road in a west and north westerly direction via three defined gullies and drainage lines, which converge together in the Study Area's north west corner. A first order stream located within the study area's north west is proposed to be retained under this proposal. This stream was observed to be damp and muddy, comprising aquatic species such as amphibians, bull rushes and spike rushes. The ephemeral stream is highly likely to withhold water during high rainfall events.

11 Conclusion

MJD Environmental has been engaged by Barr Property and Planning to prepare a Biodiversity Inventory Report (BIR) to be submitted with the Planning Proposal application for the rezoning of a 26.2-hectare parcel of land at Lot 23 in DP 1244350, 505 Minmi Rd, Fletcher.

The Planning Proposal aims to rezone the 26.2 hectares of E4 Environmental Living zoned land to:

- R2 Low Density Residential Land (Approximately 15.4ha); and
- E2 Environmental Conservation (10.8ha).

The proposed rezoning would result in the removal 15.4 hectares of which contains at least 14.7ha of native woody vegetation and the remainder (0.7ha) consisting of tracks and non-vegetated areas in the form of managed exotic groundcover, and exotic trees and shrubs.

This Biodiversity Inventory Report (BIR) has been prepared in response to correspondence between Barr Property and Planning, the Department of Planning, Industry and Environment and the City of Newcastle in preparation for submission for gateway determination.

In agreement with Council and DPIE, a current Biodiversity report was to be developed to inform the planning proposal and a more extensive body of works was required given the site history. As such this BIR has been produced in a manner which is consistent with the Biodiversity Assessment Methodology (BAM) in order to satisfy later stages of the biodiversity planning process, post gateway.

The BAM was used as the assessment method, to establish impacts on threatened species and threatened ecological communities in the locality under the *Biodiversity Conservation Act* 2016.

In addition, preliminary assessment was also undertaken having regard to those threatened entities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The proposed subject site is zoned as E4 Environmental Living and is currently a vacant bush lot containing unsealed roads, fences, rubbish and native vegetation. The land has undergone historic clearing most likely for pit props and grazing evident by the young age cohorts of trees, fences, weed invasion and disturbed vegetation. The overall native woody vegetation is in moderate condition comprising good species composition and structure.

Field surveys carried out as part of the biodiversity assessment identified three Plant Community Types (PCT).

- 1589 – Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast
- 1590 – Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest commensurate with the BC Act listed Endangered Ecological Community (EEC) *Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions*
- 1619 – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands

Impact Analysis

The proposal will result in the following impacts and required offsets as calculated using the BAM-C Calculator:

- 2.05 ha of PCT 1589 requiring 78 ecosystem credits; and
- 11.77 ha of PCT 1590 requiring 406 ecosystem credits; and
- 0.94 ha of PCT 1619 requiring 24 credits.

The current method to retire credits for the proposal has not been determined and will be dependent on the availability of credits on the open market, viability of establishing a stewardship site in the locality or retirement of credits via payment into the Biodiversity Conservation Fund. It is likely that

credit retirement will incorporate one or a combination of these options as the development is delivered.

A preliminary assessment under the EPBC Act determined the proposed action is unlikely to have an impact to MNES based on the assessment criteria set out in relevant Commonwealth policies and advices as at the time of this assessment.

As part of the avoidance and minimisation strategy for the Planning Proposal, It is intended that the central area of the landholding will be rezoned as E2 – Environmental Conservation to conserve biodiversity in the locality and provide connectivity in a north-south direction via the Study Area. The connection to lands in the north is currently limited to highly mobile species that can navigate across the Minmi Road corridor and the fragmented nature of native vegetation to the north of the study area. The connection will facilitate movement to E2 lands in the south, which will require the crossing of the link road between both sides of the proposed lands to be rezoned to R2 lands.

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Appendix A Plan of Proposal

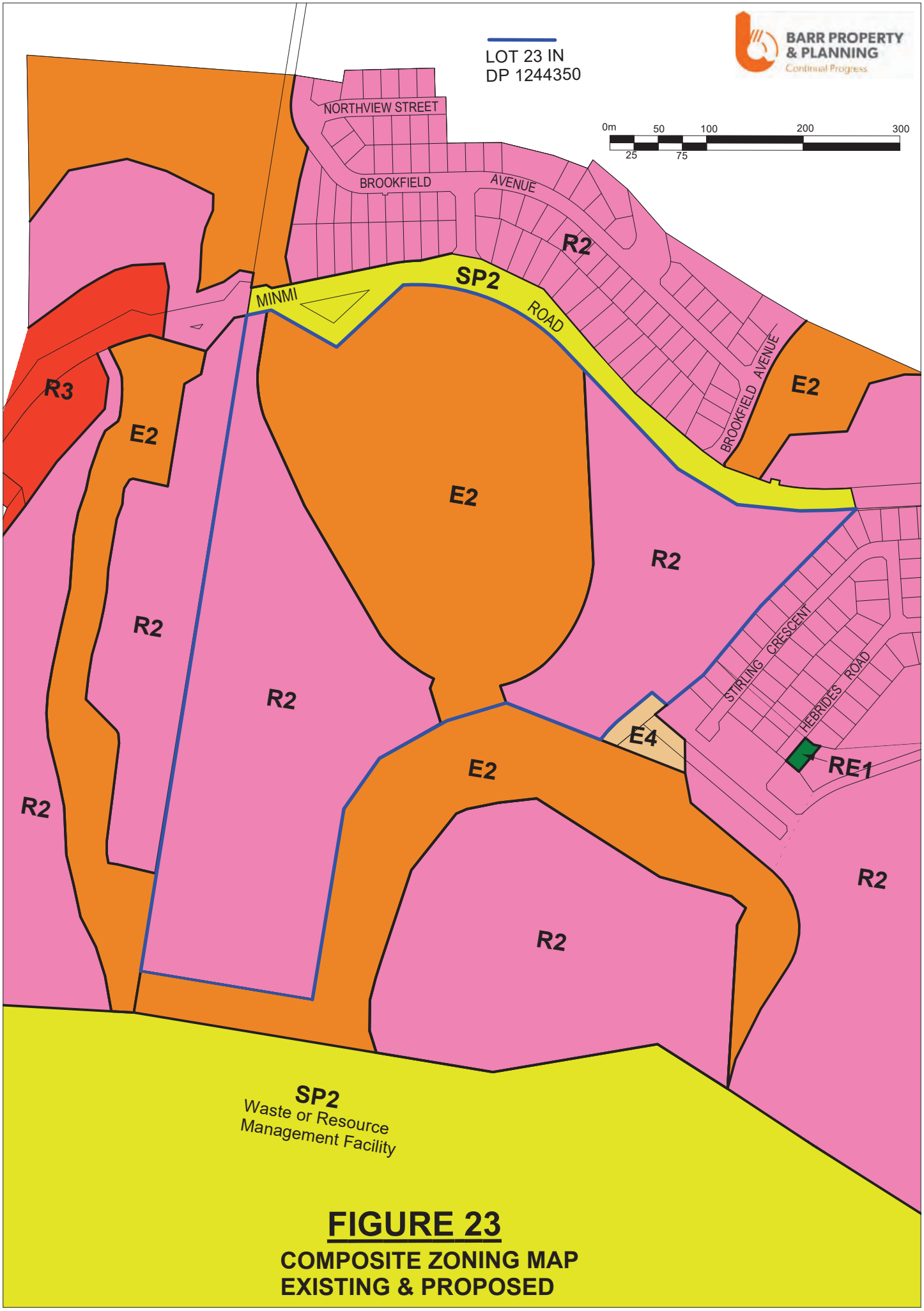


FIGURE 23

COMPOSITE ZONING MAP EXISTING & PROPOSED

Appendix B BAM Plot Data

Plot Info							Composition						Structure (%)						Function									
Plot	PCT	Condition Class	Zone	Easting	Northing	Bearing	Tree	Shrub	Grass	Forbs	Ferns	Other	Tree	Shrub	Grass	Forbs	Ferns	Other	Lge Tree	Hollows	Litter Cover (%)	Logs	Tree Stem 5-10	Tree Stem 10-20	Tree Stem 20-30	Tree Stem 30-50	Tree Stem 50-80	Tree Regen	HTE (%)
B01	1590	1590_Moderate	56	372101	6361454	25	5	6	9	6	0	6	62.3	4.1	65.2	1.1	0.0	0.8	1	0	82.0	0.0	Y	Y	Y	Y	Y	Absent	0.0
B02	1589	1589_Moderate_A_costata	56	371648	6361079	5	8	6	10	4	0	7	67.1	9.7	98.1	0.8	0	1.7	3	0	66	15	Y	Y	Y	Y	Y	Present	1.1
B03	1619	1619_Low	56	371732	6361248	190	4	11	8	5	0	6	60.1	24.3	64.4	0.6	0	0.9	2	0	90	5	Y	Y	Y	Y	Y	Present	0.5
B04	1590	1590_Moderate	56	372118	6361532	243	6	4	11	9	0	4	60.1	2.6	45.0	1.0	0.0	0.4	3	0	55.0	6.0	Y	Y	Y	Y	Y	Present	0.0
B05	1590	1590_Low_M_nodosa	56	371604	6361278	349	6	7	9	4	0	2	38.2	71.9	28.1	0.4	0	0.2	3	0	66	15	Y	Y	Y	Y	Y	Present	1.1
B06	1589	1589_Moderate	56	371734	6361626	100	7	8	14	6	0	6	67.5	2.8	73.8	1.0	0.0	0.6	4	0	89.0	21.0	Y	Y	Y	Y	Y	Present	0.2
B07	1589	1589_Low	56	371649	6361681.0	85	9	10	11	10	1	10	58.2	3.3	16.1	1.2	0.1	1.8	4	0	72.0	9.0	Y	Y	Y	Y	Y	Absent	65.1
B08	1590	1590_Moderate	56	371553	6361092	85	85	9	10	12	1	0	1	51.7	3.7	92.5	0.1	0.0	1	0	56.0	30.0	Y	Y	Y	Y	Y	Present	0.0
B09	1589	1589_Moderate	56	371807	6361738	95	6	6	13	9	0	11	65.3	4.5	49.2	1.4	0.0	1.6	6	3	85.0	32.0	Y	Y	Y	Y	Y	Absent	2.2
B10	1589	1589_Low	56	371754	6361471.0	143	9	8	9	6	1	12	69.4	3.9	54.1	0.7	0.1	1.7	6	1	70.0	18.0	Y	Y	Y	Y	Y	Absent	50.0

Family	Scientific Name	Common Name	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Acanthaceae	*Brunoniella australis*	Blue Trumpet	X			X		X	X		X	X
	Brunoniella pumilio	Dwarf Blue Trumpet	X	X	X	X	X	X	X		X	X
	Pseuderanthemum variabile	Pastel Flower							X			
Amaranthaceae	**Alternanthera philoxeroides*	Alligator Weed										
Apocynaceae	*Parsonsia straminea*	Monkey Rope							X			
Araceae	*Gymnostachys anceps*	Settlers' Twine							X			
Araliaceae	*Polyscias sambucifolia* subsp. *sambucifolia*	Elderberry Panax						X	X			X
Asparagoides	**Asparagus aethiopicus*	Ground Asparagus		X			X		X		X	
Asteraceae	*Cyanthillium cinereum* var. *cinereum*				X	X		X	X			
	Ozothamnus diosmifolius	Rice Flower										
Bignoniaceae	*Pandorea pandorana* subsp. *pandorana*	Wonga Wonga Vine	X		X				X	X	X	X
Celastraceae	*Denhamia silvestris*	Narrow-leaved Orangebark							X			
Chenopodiaceae	*Einadia hastata*	Berry Saltbush							X			
Commelinaceae	*Commelina cyanea*	Commelina							X			
Convolvulaceae	*Convolvulus* spp.			X		X					X	
	Dichondra repens	Kidney Weed				X	X	X	X		X	
Cyperaceae	*Carex appressa*	Tall Sedge										X
	Carex spp.							X				
	Cyperus gracilis	Slender Flat-sedge							X			
	Gahnia clarkei	Tall Saw-sedge										X
	Lepidosperma laterale		X	X		X	X	X		X		
	Ptilothrix deusta				X							
Dilleniaceae	*Hibbertia aspera*	Rough Guinea Flower			X		X					
	Hibbertia empetrifolia				X		X					

Family	Scientific Name	Common Name	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
	Hibbertia scandens	Climbing Guinea Flower	X		X						X	
Dioscoreaceae	*Dioscorea transversa*	Native Yam									X	X
Ericaceae (Epacridoideae)	*Leucopogon juniperinus*	Prickly Beard-heath								X		
Fabaceae (Caesalpinioideae)	*Senna pendula* var. *glabrata**	Senna									X	
Fabaceae (Faboideae)	*Daviesia squarrosa*			X						X		
	Daviesia ulicifolia	Gorse Bitter Pea			X	X	X	X	X		X	
	Desmodium varians	Slender Tick tre-foil							X		X	X
	Glycine clandestina	Glycine	X	X	X	X	X		X			X
	Glycine tabacina											X
	Hardenbergia violacea	False Sarsaparilla	X	X				X			X	
	Kennedia prostrata	Running Postman	X	X	X	X		X			X	X
	Mirbelia speciosa subsp. *speciosa*	Purple Mirbelia										
	Podolobium ilicifolium	Prickly Shaggy Pea										
	Pultenaea euchila	Orange Pultenaea	X	X	X					X		
	Pultenaea spinosa	Spiny Bush-pea		X				X				
	Pultenaea villosa	Hairy Bush-pea			X							
Fabaceae (Mimosideae)	*Acacia falcata*	Hickory Wattle		X	X			X		X	X	X
	Acacia fimbriata	Fringed Wattle								X		
	Acacia ulicifolia	Prickly Moses	X	X	X	X	X	X		X		X
Goodeniaceae	*Goodenia heterophylla subsp. heterophylla*				X	X					X	
Haloragaceae	*Gonocarpus tetragynus*											X
Lamiaceae	*Clerodendrum tomentosum*	Hairy Clerodendrum							X		X	X
Lauraceae	*Cassytha glabella* var. *glabella*	Devils Twine		X				X	X			
Lobeliaceae	*Lobelia purpurascens*	Whiteroot					X				X	X

Family	Scientific Name	Common Name	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Lomandraceae	*Lomandra confertifolia*	Mat-rush	X	X					X	X	X	
	Lomandra filiformis subsp. *coriacea*							X	X		X	X
	Lomandra filiformis subsp. *filiformis*	Wattle Mat-rush	X	X	X			X	X	X	X	
	Lomandra longifolia	Spiny-headed Mat Rush			X	X					X	X
	Lomandra multiflora subsp. *multiflora*	Many-flowered Mat Rush	X	X	X	X	X	X		X	X	
	Lomandra obliqua			X	X		X			X		
Loranthaceae	*Muellerina eucalyptoides*			X	X							
Luzuriagaceae	*Eustrephus latifolius*	Wombat Berry	X	X				X	X		X	X
	Geitonoplesium cymosum	Scrambling Lily				X		X	X			X
Malvaceae	*Brachychiton populneus* subsp. *populneus*	Kurrajong							X			
Menispermaceae	*Stephania japonica* var. *discolor*	Snake Vine							X			X
Myrtaceae	*Angophora costata*	Smooth-barked Apple		X	X							
	Callistemon linearis	Narrow-leaved Bottlebrush						X				
	Corymbia gummifera	Red Bloodwood		X	X							
	Corymbia maculata	Spotted Gum	X	X		X	X	X	X	X	X	X
	Eucalyptus acmenoides	White Mahogany	X	X		X	X	X	X	X	X	X
	Eucalyptus fibrosa	Red Ironbark	X	X		X	X	X	X	X		
	Eucalyptus globoidea	White Stringybark		X						X		
	Eucalyptus paniculata	Grey Ironbark						X	X		X	X
	Eucalyptus punctata	Grey Gum				X		X	X	X	X	X
	Eucalyptus siderophloia	Grey Ironbark										X
	Eucalyptus umbra	Broad-leaved White Mahogany	X	X	X	X	X	X	X	X		X
	Leptospermum polygalifolium subsp. *polygalifolium*	Tantoon			X					X		
	Melaleuca nodosa	Prickly-leaved Paperbark					X					X

Family	Scientific Name	Common Name	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
	Melaleuca styphelioides	Prickly-leaved Tea-tree										X
Oleaceae	*Notelaea longifolia f. longifolia*	Large Mock-olive	X	X	X	X	X	X	X	X	X	X
	Notelaea ovata								X			
Oxalidaceae	*Oxalis perrenans*			X								
Phormaceae	*Dianella caerulea* var. *producta*	Blue Flax-lily	X	X	X	X	X	X		X	X	X
	Dianella longifolia	Blueberry Lily	X									
	Dianella revoluta var. revoluta		X	X	X	X		X			X	
Phyllanthaceae	*Breynia oblongifolia*	Coffee bush	X			X		X	X		X	X
	Glochidion ferdinandi var. *ferdinandi*	Cheese Tree					X			X		X
	Phyllanthus hirtellus	Thyme Spurge	X		X		X			X		
Pittosporaceae	*Billardiera scandens* var. *scandens*	Apple Berry dumpling			X		X	X	X			
	Bursaria spinosa	Blackthorn	X	X	X	X	X		X	X	X	X
	Pittosporum multiflorum	Orangethorn							X			
	Pittosporum revolutum	Wild Yellow Jasmine	X						X		X	
	Pittosporum undulatum	Sweet Daphne										
Plantaginaceae	**Plantago lanceolata**	Lamb's Tongue									X	
	Veronica plebeia	Trailing Speedwell									X	X
Poaceae	*Aristida ramosa*	Purple Wiregrass	X									
	Aristida vagans	Threeawn Speargrass	X	X	X	X		X	X	X	X	
	Cymbopogon refractus	Barbed-wire Grass						X				
	Dichelachne micrantha	Shorthair Plumegrass				X					X	
	Echinopogon caespitosus var. *caespitosus*	Hedgehog- grass						X				
	Entolasia marginata	Bordered Panic						X				
	Entolasia stricta	Wiry Panic	X	X	X	X	X	X	X	X	X	X

Family	Scientific Name	Common Name	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
	Eragrostis brownii	Brown's Lovegrass					X					
	Imperata cylindrica	Blady Grass				X		X	X		X	X
	Microlaena stipoides var. *stipoides*	Weeping Grass		X			X		X	X		X
	Oplismenus aemulus	Australian Basket Grass							X		X	
	Oplismenus imbecillis	Basket Grass							X			X
	Panicum simile	Two-colour Panic								X		
	Poa affinis					X	X	X		X	X	
	Rytidosperma bipartitum	Wallaby Grass				X	X	X			X	
	Rytidosperma pallidum	Silvertop Wallaby Grass	X	X	X	X		X		X	X	
	Themeda triandra	Kangaroo Grass	X	X	X	X	X	X		X	X	X
Primulaceae	*Myrsine variabilis*								X		X	
Proteaceae	*Persoonia linearis*	Narrow-leaved Geebung			X					X		
Pteridaceae	*Adiantum aethiopicum*	Common Maidenhair										X
	Cheilanthes sieberi subsp. sieberi	Poison Rock Fern							X			
Ranunculaceae	*Clematis aristata*	Old Man'Beard			X				X		X	X
	Clematis glycinoides var. *glycinoides*	Headache Vine									X	
Rhamnaceae	*Alphitonia excelsa*	Red Ash								X		
Rosaceae	*Rubus parvifolius*	Native Raspberry										X
Rubiaceae	*Gynochthodes jasminoides*	Sweet Morinda										
	Opercularia diphylla				X	X						
Rutaceae	*Boronia polygalifolia*	Dwarf Boronia	X			X						
Smillaceae	*Smilax australis*	Wait-a-while									X	
Solanacea	*Solanum prinophyllum*	Forest Nightshade							X			
	Solanum stelligerum	Devil's Needles							X			

Family	Scientific Name	Common Name	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Thymelaeceae	*Pimelea linifolia*	Slender Rice Flower										
Typhaceae	*Typha orientalis*	Broadleaf Cumbungi										
Verbenaceae	**Lantana camara**	Lantana		X	X			X	X		X	X
Vitaceae	*Cayratia clematidea*	Native Grape							X			X
	Cissus antarctica	Kangaroo Vine										X
Violaceae	*Viola hederacea*	Ivy-leaved Violet									X	
Xanthorrhoeaceae	*Xanthorrhoea* spp.											

Appendix C Fauna Results

Fauna List	
Mammals	
Brushtail Possum	*Trichosurus vulpecula*
Brown Antechinus	*Antechinus stuartii*
Feathertail Glider	*Acrobates pygmaeus*
**Red Fox	*Vulpes vulpes*
Red-necked Wallaby	*Macropus rufogriseus*
Sugar Glider	*Petaurus breviceps*
Short-beaked Echidna	*Tachyglossus aculeatus*
Chocolate Wattled Bat	*Chalinolobus morio*
Eastern Broad-nosed Bat	*Scotorepens orion*
Eastern Coastal Free-tailed Bat	***Micronomus norfolkensis (V)***
Eastern Horseshoe Bat	*Rhinolophus megaphyllus*
Eastern Forest Bat	*Vespadelus pumilus*
Gould's Wattled Bat	*Chalinolobus gouldii*
Little Bentwing Bat	***Miniopterus australis (V)***
#Long-eared Pied Bat	***Chalinolobus dwyeri (V)***
Ride's Freetail Bat	*Mormopterus ridei*
***Yellow-bellied Sheath-tailed Bat**	***Saccolaimus flaviventris (V)***
White-striped Free-tailed Bat	*Austronomus australis*
Birds	
Australian Magpie	*Cracticus tibicen*
Australian Owlet Nightjar	*Aegotheles cristatus*
Australian Raven	*Corvus coronoides*
Bell Miner	*Manorina melanophrys*
Black-faced Cuckoo-Shrike	*Coracina novaehollandiae*
Brown Goshawk	*Accipiter fasciatus*
Brown Thornbill	*Acanthiza pusilla*
Eastern Rosella	*Platycercus eximius*
Eastern Whipbird	*Psophodes olivaceus*
Eastern Yellow Robin	*Eopsaltria australis*
Grey Butcherbird	*Cracticus torquatus*
Grey Fantail	*Rhipidura fuliginosa*
Laughing Kookaburra	*Dacelo novaeguineae*
Lewin's Honeyeater	*Meliphaga lewinii*
Noisy Friarbird	*Philemon corniculatus*
Noisy Miner	*Manorina melanocephala*
Olive-backed Oriole	*Oriolus sagittatus*
Pied Currawong	*Strepera graculina*
Rainbow Lorikeet	*Trichoglossus haematodus*
Red Wattle Bird	*Anthochaera carunculata*
Sacred Kingfisher	*Todiramphus sanctus*

Fauna List	
Southern Boobook	*Ninox novaeseelandiae*
Spotted Pardalote	*Pardalotus punctatus*
Superb Fairy-wren	*Malurus cyaneus*
White-browed Scrubwren	*Sericornis frontalis*
White-winged Chough	*Corcorax melanorhamphos*
Yellow-faced Honeyeater	*Lichenostomus chrysops*
Herpetofauna	
Delicate Skink	*Lampropholis delicata*
Blue Tongue Lizard	*Tiliqua scinoides scinoides*
Red-bellied Black Snake	*Pseudechis porphyriacus*
Lace Monitor	*Varanus varius*
Dusky Toadlet	*Uperoleia fusca*

**Introduced, *Probable, #Possible

Appendix D BAM Credit Report Summary

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00018524/BAAS17044/20/00018525	19082 - 505 Minmi Rd Fletcher	26/11/2019
Assessor Name	Report Created	BAM Data version *
	07/01/2020	22
Assessor Number	BAM Case Status	Date Finalised
	Open	To be finalised
Assessment Revision	Assessment Type	
0	Part 4 Developments (General)	

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	Vegetation integrity loss / gain	Area (ha)	Constant	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands								
4	1619_Low	66.7	0.9	0.25	High Sensitivity to Potential Gain	1.50		24
							Subtotal	**24**

BAM Credit Summary Report

Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast								
2	1589_Moderate	81.4	0.7	0.25	High Sensitivity to Potential Gain	2.00		28
3	1589_Low	72.2	0.3	0.25	High Sensitivity to Potential Gain	2.00		10
6	1589_Moderate_A_costata	76.2	1.1	0.25	High Sensitivity to Potential Gain	2.00		40
							Subtotal	**78**
Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest								
1	1590_Moderate	72.4	10.0	0.25	High Sensitivity to Potential Gain	2.00		363
5	1590_Low_M_nodosa	50.0	1.7	0.25	High Sensitivity to Potential Gain	2.00		43
							Subtotal	**406**
							Total	**508**

Species credits for threatened species

Vegetation zone name	Habitat condition (HC)	Area (ha) / individual (HL)	Constant	Biodiversity risk weighting	Potential SAII	Species credits

Appendix E EPBC Likelihood of Occurrence Table

EPBC Likelihood of Occurrence

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
Birds				
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-Oak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Every few years non-breeding flocks are seen foraging in flowering coastal Swamp Mahogany and Spotted Gum forests, particularly on the central coast and occasionally on the upper north coast. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Other tree species may be regionally important. For example, the Lower Hunter Spotted Gum forests have recently been demonstrated to support regular breeding events. Flowering of associated species such as Thin-leaved Stringybark *Eucalyptus eugenioides and other Stringybark species, and Broad-leaved Ironbark E. fibrosa can also contribute important nectar flows at times.* The study area comprises suitable winter foraging habitat such as Spotted Gum, *E. fibrosa* and stringybark species, however the study area is not located within Important Mapped Areas for this species (confirmed via email with DPIE 2020).	Unlikely
Botaurus poiciloptilus	Australasian Bittern	Endangered	Inhabits dense tall sedge vegetation and permanent wetlands. No suitable habitat occurs within the subject site.	Unlikely
Calidris canutus	Red Knot	Endangered	Inhabits intertidal mud flats in estuaries, bays, lakes and lagoons or areas of bare mud or sand on which to forage. No suitable habitat occurs within the subject site	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
Calidris ferruginea	Curlew Sandpiper	Critically Endangered, Migratory	Inhabits intertidal mud flats in estuaries, bays, lakes and lagoons or areas of bare mud or sand on which to forage. No suitable habitat occurs within the subject site.	Unlikely
Calidris tenuirostris	Great Knot	Critically Endangered, Migratory	Inhabits coastal habitats such as intertidal mudflats, sandflats, inlets, bays, harbours estuaries and lagoons. No suitable habitat occurs within the subject site.	Unlikely
Charadrius leschenaultii	Greater Sand Plover	Vulnerable	Inhabits coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. No suitable habitat occurs within the subject site.	Unlikely
Charadrius mongolus	Lesser Sand Plover	Endangered	Inhabits coastal areas in NSW, favouring the beaches of sheltered bays, harbours and estuaries with large intertidal sandflats or mudflats; occasionally occurs on sandy beaches, coral reefs and rock platforms. No suitable habitat occurs within the subject site.	Unlikely
Dasyornis brachypterus	Eastern Bristlebird	Endangered	Inhabits dense, low vegetation including heath and open woodland with a heathy understorey. No suitable habitat occurs within the subject site.	Unlikely
Erythrotriorchis radiatus	Red Goshawk	Vulnerable	Inhabit open woodland and forest, preferring a mosaic of vegetation types as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, *Melaleuca* swamp forest and riparian *Eucalyptus* forest of coastal rivers.	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
			Although the subject site does comprise a form of riparian *Eucalyptus/Melaleuca* forest this does not occur on a coastal river, instead only adjacent to a 1st order ephemeral stream. No suitable habitat occurs within the subject site.	
Grantiella picta	Painted Honeyeater	Vulnerable	Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. No suitable habitat occurs within the subject site.	Unlikely
Hirundapus caudacutus	White-throated Needletaill	Vulnerable	This species is mostly aerial, occurring over most habitat types including open forests and fly below the canopy between trees and or clearings. This species is also known to roost in trees amongst dense foliage in the canopy or in hollows. The subject site contains suitable foraging habitat, however this dense foliage for roosting is limited within the study area. Furthermore, no records exist as defined by the OEH Bionet 10km search	Unlikely
Lathamus discolor	Swift Parrot	Critically Endangered	This species migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there is abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. The study area comprises suitable winter foraging habitat such as Spotted Gum, however the study area is not located within draft Important Mapped Areas for this species (confirmed via email with DPIE 2020).	Unlikely
Limosa lapponica baueri	Bar-tailed Godwit	Vulnerable	Inhabits coastal environments such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays.	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
			No suitable habitat occurs within the subject site.	
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	Critically Endangered	Inhabits coastal environments such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. No suitable habitat occurs within the subject site.	Unlikely
Numenius madagascariensis	Eastern Curlew	Critically Endangered, Migratory	Inhabits intertidal mud flats in estuaries, bays, lakes and lagoons. No suitable habitat occurs within the subject site.	Unlikely
Rostratula australis	Australian Painted Snipe	Endangered	Inhabits floodplain wetlands of major coastal rivers, minor flood plain, coastal sandplain wetlands and estuaries. No suitable habitat occurs within the subject site.	Unlikely
Sternula nereis nereis	Australian Fairy Tern	Vulnerable	Inhabits sandy beaches, spits, estuarine or lacustrine islands, wetlands and mainland coastline. No suitable habitat occurs within the subject site.	Unlikely
Thinornis rubricollis	Hooded Plover	Vulnerable	Inhabits sandy ocean beaches, tidal bays, estuaries, rock platforms, rocky sand-covered reefs, coastal intermittently open/closed lakes/lagoons and saltmarsh. No suitable habitat occurs within the subject site.	Unlikely
Frogs				

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
Heleioporus australiacus	Giant burrowing Frog	Vulnerable	Inhabits open dry sclerophyll forest, woodlands, and heaths, breeding in soaks or pools within first or second order streams. This species is dependent on hanging swamps on the top of sandstone plateaus and deeply dissected gullies that occur as erosion features in the Sydney Basin. Although the subject site comprises both first order streams, it does not comprise swamps on sandstone plateaus and deeply dissected gullies, which are important habitat features for this species. Furthermore, no records exist within the locality based on a 10km OEH Bionet search. No further survey is required.	Unlikely
Litoria aurea	Green and Golden Bell Frog	Vulnerable	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas. Suitable habitat is present in the form of an ephemeral waterbody containing bulrushes and spikerushes. Further survey is required	Likely
Litoria littlejohni	Littlejohn's Tree Frog	Vulnerable	Inhabits wet and dry sclerophyll forests and heathlands, breeding in a wide range of water bodies including semi-permanent dams, permanent ponds, ephemeral pools, and permanent streams. The streams that occur within the site are ephemeral and thus are not permanent. Furthermore, no records exist within the locality based a 10km OEH Bionet search. No further survey is required.	Unlikely
Mixophyes balbus	Stuttering Frog	Vulnerable	Inhabits rainforest, wet tall open forest in the foothills and escarpment on eastern side of the Great Dividing Range No suitable habitat occurs within the subject site.	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
Mammals				
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Found mainly in areas with extensive cliffs and caves. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. No caves are present within the subject site thus no suitable habitat occurs within the subject site.	Unlikely
Dasyurus maculatus maculatus (SE mainland population)	Spotted-tail Quoll	Endangered	Inhabits a wide range of habitat types, including woodlands, rainforest, coastal heath and inland riparian forest. This species uses fallen logs and hollow bearing trees. Predates primarily on terrestrial fauna, however, is an excellent climber and will hunt possums and gliders in tree hollows and prey on roosting birds. The subject site comprises a moderate sized patch of native vegetation. No suitable habitat in the form of suitable fallen logs and few suitable hollow bearing trees exist within the subject site. The majority of the site has been historically cleared or disturbed. This land management practice has reduced the likelihood of this species occurring in the subject site due limited prey and denning sites. Furthermore, only two records exist within the OEH 10km Bionet search both of which are over 5 years old. No further survey is required.	Unlikely
Petauroides volans	Greater Glider	Vulnerable	Inhabits and is restricted to eucalypt forests and woodlands. This species favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows.	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
			No large continuous stretch of suitable vegetated forest and woodlands are present within the subject site. No old growth trees occur within the study area and few tree hollows are present. The subject site is located outside of this species geographic distribution. No suitable habitat occurs within the subject site.	
Petrogale penicillata	Brush-tailed Rock-wallaby	Vulnerable	This species occupies rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Generally, browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night. The subject site comprises no suitable habitat in the form of rocky landscape characteristics and no records exist as defined on the OEH Bionet using a 10km search radius of the locality.	Unlikely
Phascolarctos cinereus	Koala	Vulnerable	Inhabit eucalypt woodlands and forests in a fragmented distribution throughout eastern Australia. In NSW this species mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range but have been recorded in the southern tablelands. This species feeds on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Spend most of their time in trees but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size. It is highly unlikely this species would occur within the subject site, due to the surrounding urban environment including fences, dogs and busy roads surrounding the site. Similar habitat to the subject site is widely distributed in the local area, indicating the species is not dependent on the available habitat within the impacted area for breeding or important life cycle periods. Field surveys did record the presence of *Eucalyptus punctata,* which are listed as a primary Koala Feed Tree within the SEPP 44 Koala Feed Tree species list. This species makes up <15% of the overall canopy and therefore does not trigger further assessment under SEPP 44.	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
Potorous tridactylus tridactylus	Long-nosed Potoroo (SE mainland)	Vulnerable	Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature. No suitable habitat in the form of coastal heaths or wet sclerophyll forests occur within the study area. Dry sclerophyll forest does occur, however the understorey is made of dense grasses only. Furthermore, no records exist as defined on the OEH Bionet using a 10km search radius of the locality.	Unlikely
Pseudomys novaehollandiae	New Holland Mouse	Vulnerable	Inhabits heathlands, woodlands with dense undergrowth, vegetated sand dunes, generally in areas with soils suitable for digging. No suitable habitat in the form of heathlands or vegetated sand dunes exist within the subject site. Furthermore, no records exist as defined on the OEH Bionet using a 10km search radius of the locality.	Unlikely
Pteropus poliocephalus	Grey-headed Flying Fox	Vulnerable	Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia*, and fruits of rainforest trees and vines. Suitable foraging habitat is present within the subject site in the form of *Eucalyptus* spp. Similar habitat to the subject site is widely distributed in the local area, indicating the species is not dependent on the available habitat within the impacted area for breeding or important life cycle periods. No known roosting colonies are present on site.	Likely
Plants				

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
Acacia bynoeana	Bynoe's Wattle	Vulnerable	This species occurs in heath or dry sclerophyll forest on sandy soils. Prefers open, sometimes disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include *Corymbia gummifera, Eucalyptus haemastoma, Eucalyptus parramattensis*, *Banksia serrata* and *Angophora bakeri.* The vegetation within the subject site comprises a dry & wet sclerophyll forest formation, of which only one of the listed over-storey species (*C. gummifera*) associated with the threatened species occurs. Although there are no records within the locality as defined on the OEH BioNet using a 10km search radius of the locality, this species requires further survey.	Likely
Angophora inopina	Charmhaven Apple	Vulnerable	This species occurs most frequently in four main vegetation communities: (i) *Eucalyptus haemastoma–Corymbia gummifera–Angophora inopina* woodland/forest; (ii) *Hakea teretifolia–Banksia oblongifolia* wet heath; (iii) *Eucalyptus resinifera–Melaleuca sieberi–Angophora inopina* sedge woodland; (iv) *Eucalyptus capitellata–Corymbia gummifera–Angophora inopina* woodland/forest. The subject site comprises no associated canopy species, indicating no suitable habitat occurs.	Unlikely
Caladenia tessellata	Thick-lipped Spider-orchid	Vulnerable	This species is generally found in grassy sclerophyll woodland on clay loam or sandy soils. Suitable habitat in the form of grassy sclerophyll woodland exists on site, however no known populations are recorded as defined by on the OEH Bionet using a 10km search radius of the locality. The subject site is located outside of its known geographic distribution; thus, no records exist within the locality as defined on the OEH Bionet using a 10km search radius of the locality. No further survey is required.	Unlikely
Commersonia prostrata	Dwarf Kerrawang		Grows in patches of *Themeda australis* (Kangaroo Grass) amongst shrubs and sedges in heathland and woodland. The presence of other orchid species and therefore micorrhyza assemblages can, though not always, be an indication of suitable habitat. Associated vegetation at known populations is described as dry sclerophyll woodland dominated by *Eucalyptus haemastoma* (Scribbly Gum), *Corymbia gummifera* (Red Bloodwood), *Angophora costata* (Smooth-barked Apple) and *Allocasuarina littoralis* (Black She-oak). The species has been recorded in disturbed locations, including in areas lacking upper vegetation strata. Most sites have a mostly native understorey.	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
			Marginal suitable vegetation occurs within the subject site in the form of PCT 1619 dominated by *Angophora costata* and *Corymbia gummifera*, as a very small and disturbed area. No known populations are recorded as defined by on the OEH Bionet using a 10km search radius of the locality. No further survey is required.	
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable	This species is known to be extremely cryptic as it does not flower each year. Known to occur within a wide range of habitats including woodlands to swamp heaths. Within the Hunter region larger populations have been typically found in woodland dominated by *Eucalyptus racemosa* (Scribbly Gum) and it prefers areas with an open grassy understorey. The species typically prefers moist sandy soils in sparse to dense heath and sedge land, or moist to dry clay loams in coastal forests. This species is known to occur in association with *C. subulata* and *C. erecta.* The study area comprises marginal habitat in the form of open grassy understorey, however due to past disturbance the grass layer is very dense in areas with potential habitat, which is not optimal conditions for successful flowering. Additionally, no associated species occur within the study area. Furthermore, this species has not been recorded within a 10km search of the locality as defined on the OEH BioNet Atlas. No further survey is required. Although no further survey was recommended based on the lack of marginally habitat. All threatened flora surveys were carried out during the optimal time for survey of this species. Furthermore, it was confirmed that this species was flowering in the wider region at the time of survey (Central Coast Council email and author pers comm.)	Unlikely
Cynanchum elegans	White-flowered Wax Plant	Endangered	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation and other associated vegetation types such as littoral rainforest; coastal scrub and open forest and woodland. Species associated include; Coastal Tea-tree *Leptospermum laevigatum* – Coastal Banksia *Banksia integrifolia* subsp. *integrifolia* coastal scrub; Forest Red Gum *Eucalyptus tereticornis* aligned open forest and woodland; Spotted Gum *Corymbia maculata* aligned open forest and woodland; and Bracelet Honey myrtle *Melaleuca armillaris* scrub to open scrub.	Likely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
			The subject site comprises marginal habitat in the form of *Corymbia maculata* dominated dry open forest. Although, no records exist within a 10km search of the locality as defined on the OEH BioNet Atlasthis species cannot be ruled out on this attribute alone and on this basis further survey is required.	
Diuris praecox	Newcastle Doubletail	Vulnerable	The habitat of this species is generally on hills and slopes of near coastal districts in open forests which have a grassy to fairly dense understorey. This species grows on well-drained sandy soils (DoEE 2008). The vegetation within the subject site is a dry sclerophyll forest formation. Although the site contains sandy soils, the site is over 15km away from the coastal fringe (Glenrock SCA & Worimi Conservation Lands) of which this species is recorded. Additionally, no records exists as defined by the OEH Bionet 10km search. No further survey is required.	Unlikely
Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	This species occurs in poor coastal country in shallow sandy soils overlying Hawkesbury sandstone. Coastal heath mostly on exposed sandy ridges. Occurs mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas. Associated species frequently include stunted species of *E. oblonga* Narrow-leaved Stringybark, *E. capitellata* Brown Stringybark and *E. haemastoma* Scribbly Gum. No suitable habitat occurs within the subject site.	Unlikely
Eucalyptus parramattensis subsp. decadens	Earp's Gum	Vulnerable	This species generally occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high. It occurs in dry sclerophyll woodland with dry heath understorey. It also occurs as an emergent in dry or wet heathland. Often where this species occurs, it is a community dominant. Only two separate meta-populations are recorded, one of which is in the Kurri Kurri area.	Unlikely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
			No suitable habitat occurs within the subject site.	
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	Vulnerable	This species is sporadically distributed throughout the Sydney Basin with sizeable populations in the Hunter and in the Cessnock - Kurri Kurri area (particularly Werakata NP). Separate populations are also known from Putty to Wyong and Lake Macquarie on the Central Coast. This species grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules. Occurs in a range of vegetation types from heath and shrubby woodland to open forest, the Hunter in Kurri Sand Swamp Woodland and is also known to occur in *C. maculata-A. costata* open forest. Found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Hunter occurrences are usually 30-70m ASL, while the southern Sydney occurrences are typically at 100-300m ASL. Often occurs in open, slightly disturbed sites such as along tracks. Suitable vegetation occurs on site in the formation of dry sclerophyll forest comprising *Corymbia maculata* open forest. All three PCTs (1589, 1590 and 1619) occurring within the study area are commensurate with which this species is associated with. Thirty-two records exist within the locality as defined on the OEH BioNet Atlas using a 10km search radius. Further survey is required.	Likely
Grevillea shiressii		Vulnerable	Grows along creek banks in wet sclerophyll forest with a moist understorey in alluvial sandy or loamy soils. Known from two populations near Gosford, on tributaries of the lower Hawkesbury River north of Sydney (Mooney Mooney Creek and Mullet Creek). Both populations occur within the Gosford Local Government Area. There is also a naturalised population at Newcastle. The subject site is located outside of its known geographic distribution. No records exists within the OEH Bionet using a 10km search radius of the locality.	Unlikely
Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Biconvex Paperbark generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. Biconvex Paperbark is only found in NSW, with scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north.	Likely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
			A small area of the study area comprises a marginally damp place adjacent to a ephemeral creek, which could potentially become a swamp environment during high rainfall. One record exists within the locality as defined on the OEH Bionet Atlas using the 10km search radius. On this basis further survey is required.	
Prasophyllum sp. Wybong	A Leek Orchid	CE	This species is known only to occur in an isolated population in Wybong within the local area. Therefore, the site is located outside of its known geographical distribution. Furthermore, no records exist as defined by on the OEH Bionet using a 10km search radius of the locality. No further survey is required.	Unlikely
Pterostylis gibbosa	Illawarra Greenhood	E	All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. In the Hunter region, the species grows in open woodland dominated by Narrow-leaved Ironbark *E. crebra*, Forest Red Gum and Black Cypress Pine *Callitris endlicheri*. No suitable habitat occurs within the study area.	Unlikely
Rutidosis heterogama	Heath Wrinklewort	Vulnerable	This species grows in heath on sandy soils and moist areas in open forest and has been recorded along disturbed roadsides. This species has been recorded from near Cessnock to Kurri Kurri with an outlying occurrence at Howes Valley. Suitable habitat occurs within the subject site in the form of heathy vegetation on sandy soils, as well as, a small area of moist areas in open forest. One record exists within the locality as defined on the OEH BioNet Atlas using a 10km search. On this basis further survey is required.	Likely

Scientific Name	Common Name	Status	Habitat Requirement	Habitat present on development site
Syzygium paniculatum	Magenta Lilly Pilly	Vulnerable	Occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities. No suitable habitat occurs within the subject site	Unlikely
Tetratheca juncea	Black-eyed Susan	Vulnerable	Locally this species is usually found in low open forest/woodland with an undisturbed mixed shrubby understorey and grassy groundcover often in association with the Awaba Soil Landscape. It generally prefers well-drained sites below 200m elevation and annual rainfall between 1000 - 1200mm. The preferred substrates are sandy skeletal soil on sandstone, sandy-loam soils, low nutrients; and clayey soil from conglomerates, pH neutral. While some studies show the species has a preference for cooler southerly aspects, it has been found on slopes with a variety of aspects. Suitable habitat exists within the subject site in the form of open forest with a native grassy groundcover. The PCT 1619 Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia found within the subject site is very commonly associated with this threatened species. However, the site does not face the preferred south easterly aspect. Many records exist as defined by the OEH Bionet 10km search. On this basis further survey is required.	Likely
Thesium australe	Austral Toadflax	Vulnerable	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*). No suitable habitat occurs within the subject site.	Unlikely

Appendix F Anabat Report

Identification of echolocation call sequences recorded at Fletcher, New South Wales.

Data

Data was received by Dropbox© on the 28th November 2019 and was analysed using Anabat Insight 1.9.0v. Data was received from two detectors, recorded over twenty-five nights from the 13th – 23rd November 2019 and the 13th – 26th November 2019 respectively. In total 6,939 files were received. Location was provided as an address as log files were not received with the data set. Calls were recorded with a division ratio of 8. The original call files display Australian Eastern Standard Time.

Reference Library

Call identification for this data set was based on call keys and descriptions for New South Wales (Pennay et al 2004) with reference to descriptions published for southern Queensland (Reinhold et al 2001), and the authors own reference calls.

Analysis

The reliability of identification is as follows;

Definite; one or more calls were there is no doubt about the identification of the species

Probable; most likely to be the species named, low probability of confusion with species that use similar calls

Possible; call is comparable with the named species, with a moderate to high probability of confusion with species of similar calls.

A total of twenty species were identified. Nine species; *Austronomus australis*, *Mormopterus ridei, Mormopterus norfolkensis, Chalinolobus gouldii, Scotorepens orion*, *Chalinolobus morio, Vespadelus pumilus, Miniopterus australis* and *Rhinolophus megaphyllus* were identified as definite. Nine species; *Saccolaimus flaviventris, Mormopterus planiceps/Mormopterus ridei, Chalinolobus gouldii /Mormopterus* sp., *Scoteanax rueppellii/ Scotorepens orion/Falsistrellus tasmaniensis, Scoteanax rueppellii/ Scotorepens orion, Myotis macropus/Nyctophilus species, Vespadelus regulus/ Miniopterus orianae oceanensis, Chalinolobus morio/Vespadelus species,* and *Vespadelus vulturnus/Vespadelus pumilus/ Vespadelus troughtoni* were identified as probable. Two species, *Chalinolobus dwyeri* and *Falsistrellus tasmaniensis/Vespadelus darlingtoni* were identified as possible.

While some call sequences were recognised as bat calls the quality was not sufficient to assign species identification. These species have been recorded or are considered likely to occur in the surrounding area (NPWS Atlas and Wildlife of Living Australia Data November 2019).

Please see Table 1. for an outline of species detected per detector.

Table 1 - Anabat recording results per detector

Detector Name	**AB1**	**AB2**
Species name		
Definite		
Austronomus australis	X	X
Saccolaimus flaviventris		*
Chalinolobus dwyeri	#	#
Mormopterus ridei	X	
Mormopterus norfolkensis	X	*
Chalinolobus gouldii	X	X
Scotorepens orion	X	X
Chalinolobus morio	X	X
Vespadelus pumulis	X	X
Miniopterus australis	X	X
Rhinolophus megaphyllus	X	
Species composites/groups identified		
Mormopterus planiceps/M. ridei	*	*
Chalinolobus gouldii / Mormopterus species	*	*
Scoteanax rueppellii/ Scotorepens orion/Falsistrellus tasmaniensis	*	*
Scoteanax rueppellii/ Scotorepens orion	*	*
Myotis macropus/ Nyctophilus species	*	*
Falsistrellus tasmaniensis/Vespadelus darlingtoni	#	
Vespadelus regulus / Miniopterus orianae oceanensis	*	
Chalinolobus morio /Vespadelus species	*	*
Vespadelus vulturnus/Vespadelus pumilus/ Vespadelus troughtoni	*	*

Probability assigned values are discussed in report

X definite

* probable

possible

Call Examples (calls have been edited and filtered for reporting purposes)

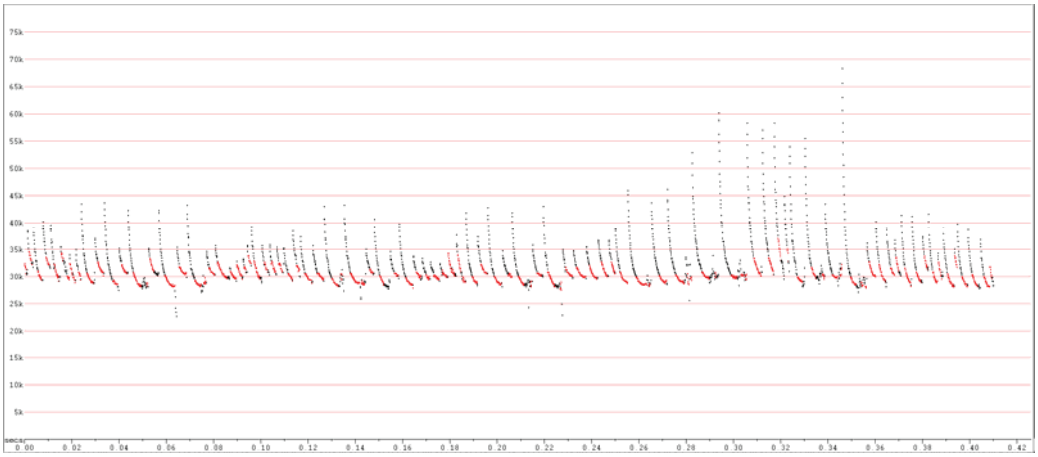
Section 1.

Species positively identified

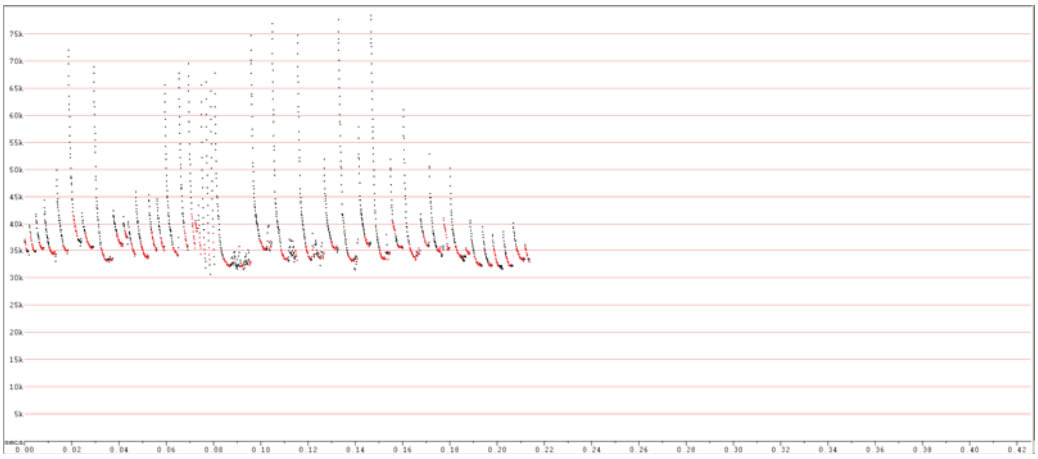
Definitely *Austronomus australis*. The characteristic frequency if this species is between 10 – 15 kHz. This species may be confused with *Saccolaimus flaviventris* at its lower harmonics.

Definitely *Mormopterus ridei*. The species produces flat or shallow-curved pulses with no alternation between approximately 30 – 36 kHz. Attach phase pulses are typically more curved than cruise phase.

Definitely *Mormopterus norfolkensis*. The species calls between 31 – 35 kHz with pulses alternating by approximately 2 kHz while in search phase. The alternation and the pulse shape are characteristic of the species.



Definitely *Chalinolobus gouldii*. The call sequence is curved average characteristic frequency is between 25 and 34 KHz. Consecutive pulses alternate in frequency.

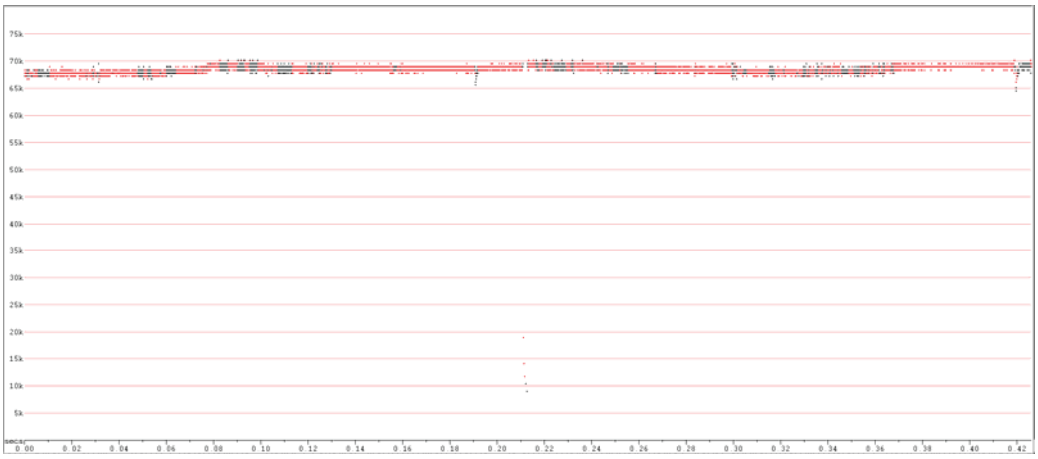


Definitely *Scotorepens orion*. The pre characteristic drop of this calls sequence is 1.74 kHz and the 'hook' at the end of the tail section indicate that the call belongs to the species.

Definitely *Chalinolobus morio*. The species can be distinguished by a down sweeping tail between 49.5 – 52.5 kHz.

Definitely *Vespadelus pumilus*. The end frequency of this call is above 54.5 kHz, distinguishing it from other Vespadelus species calling between 50 – 53.5 kHz.

Definitely *Miniopterus australis*. The species has a curved call between 54.5 – 64.5khz with a down-sweeping tail.



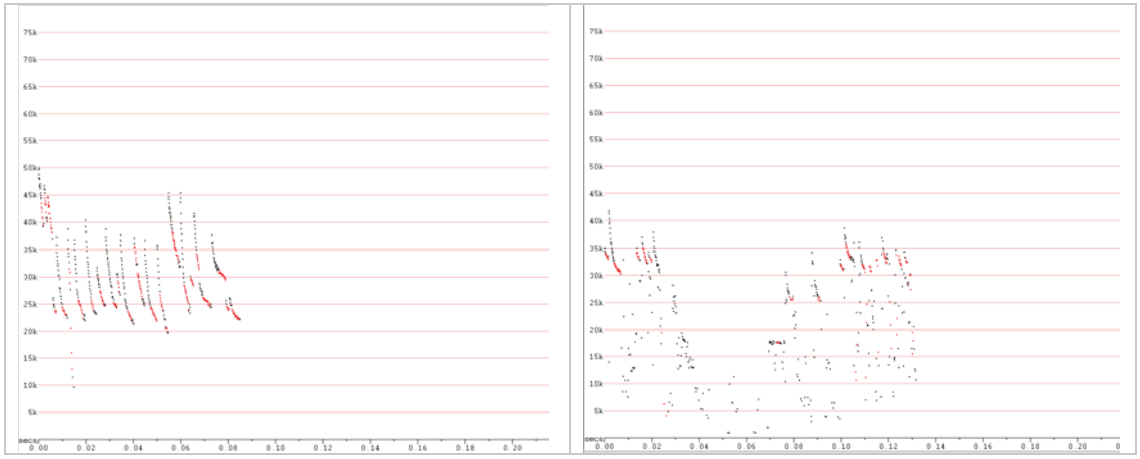
Definitely *Rhinolophus megaphyllus*. The species displays a constant frequency 'flat' call between 66 – 70 kHz.

Section 2.

Species composites/groups identified

A species listed here that is not also listed in the species positively identified should be considered as present. Likelihood of occurrence and call identification issues for these species are discussed below each call example.

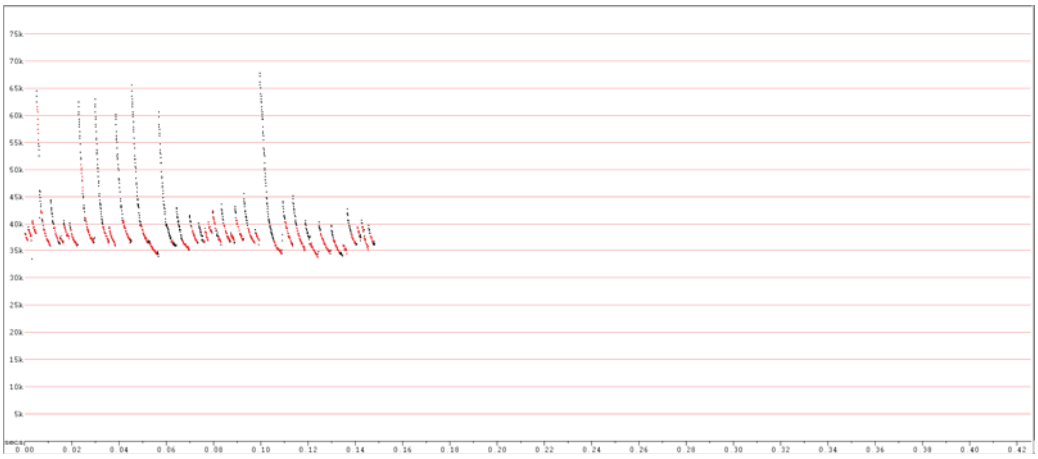
Probably *Saccolaimus flaviventris*. The pulses are a little steep for the species at this frequency as such the call has been marked as probable.



Possibly *Chalinolobus dwyeri*. The species calls between 22 – 23.5 kHz in the Sydney Basin region, with curved pulses alerting in frequency. There is insufficient detail in this call sequence to assign species identification. The pulses could belong to the social calls of *Chalinolobus gouldii* which is present in other parts of this call sequence.

Probably *Mormopterus planiceps/Mormopterus ridei*. Published descriptions of calls for *M. planiceps* species report that it calls between 26 – 30.5 kHz, although it has been recorded lower at around 24 kHz (pers. com. Greg Ford November 2015), and overlaps with *M. ridei* at around 30 kHz. The calls will be flat in the lower ranges and curved at the higher limits, and dependant on activity and environment.

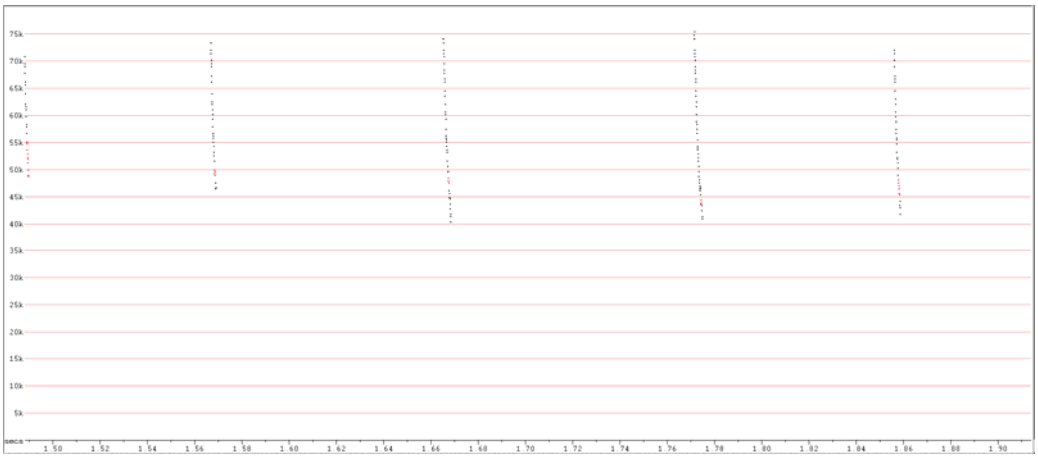
Probably *Chalinolobus gouldii /Mormopterus* sp. Frequency ranges overlap in the species, *C. gouldii* usually has steep, curved pulses that alternate in frequency compared to flat or shallow-curved pulses with no alternation in *Mormopterus* species. The calls could belong to *C. gouldii*, or *M. ridei*.



Probably *Scoteanax rueppellii/ Scotorepens orion/Falsistrellus tasmaniensis*. The pre – characteristic drop of this call sequence is 2.31 kHz with a characteristic frequency of 36.34 kHz (cleaned call). All three species overlap at this frequency and the pre – characteristic drop is too close to 3 kHz to be a reliable metric to separate the species. This is one example of several calls recorded at this frequency within the data set were of insufficient quality to be able to assign positive identification.

Probably *Scoteanax rueppellii/ Scotorepens orion*. The characteristic frequency of this call sequence is 33.81 kHz with a pre characteristic drop of 2.41 kHz. Both species overlap at this frequency and the pre – characteristic drop is too close to 3 kHz to be a reliable metric to separate the species. This is one example of several calls recorded at this frequency within the data set were of insufficient quality to be able to assign positive identification.

Possibly *Falsistrellus tasmaniensis/Vespadelus darlingtoni*. The two species may overlap at approximately 40 kHz when for example flying in clutter. There is insufficient detail in pulse structure to assign positive species identification.



Probably *Myotis macropus/Nyctophilus species*. *M. macropus* calls can be differentiated from Nyctophilus species by having a pulse interval less than 75ms, an initial slope of greater than 400 OPS and often displaying a single change in slope (kink) in the central part of the pulse. This call is uncompressed. There is insufficient detail in the call sequence to separate the species. *Nyctophilus* bats generally produce distinctive calls, however the species within the genus cannot be reliably differentiated from call data. *N. geoffroyi,* N*. gouldi* and *N. corbeni (formerly N. timoriensis* south-eastern form) occur in the area.

Probably *Vespadelus regulus/ Miniopterus orianae oceanensis.* Call characteristics sufficient to separate the species are not evident in some of the call sequences recorded at Fletcher.

Probably *Chalinolobus morio*/*Vespadelus species*. Calls of insufficient pulse structure detail as above were attributed to *C. morio*/*Vespadelus species* where they overlap in frequency around 50 kHz. *Vespadelus vulturnus, V. regulus* and *Vespadelus troughtoni* both exhibit characteristic frequencies that overlap at 50 kHz.

Probably *Vespadelus vulturnus/Vespadelus pumilus/ Vespadelus troughtoni*. The calls of these species overlap between 50.5 – 53 KHz.

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Reardon T. B., McKenzie N. L., Cooper S. J. B., Appleton B., Carthew S. & Adams M. (2014) A molecular and morphological investigation of species boundaries and phylogenetic relationships in Australian free-tailed bats Mormopterus (Chiroptera : Molossidae). Australian Journal of Zoology 62, 109-36.

Reinhold, L., Law, B., Ford, G. and Pennay, M. 2001, Key to the bat calls of southeast Queensland and north-east New South Wales. Forest Ecosystem Research and Assessment Technical paper 2001-07, Department of Natural Resources and Mines, Queensland.

Disclaimer

Appendix G Personnel Qualifications

Name	Title	Qualifications	Roles
Matt Doherty	Director	▪ BAM Assessor (#BAAS17044) ▪ B. Landscape Management and Conservation (Soil and Water Management) ▪ Bush Regeneration Cert IV	Approval of BDAR.
Adam Cavallaro	Senior Ecologist	▪ BAM Assessor (#BAAS18056) ▪ B. Environmental Science (Conservation Ecology) ▪ Bush Regeneration Cert IV	Review BDAR for submission Provide guidance on BAM calculator assessment. Contributor to BDAR, PCT identification and vegetation mapping
Phoebe Smith	Ecologist	▪ B. Environmental Science and Management (Honours) ▪ Master Environmental Management & Sustainability	Undertake BAM assessment and BDAR. Field work including PCT identification, vegetation mapping, and threatened flora and fauna surveys.
Bret Stewart	Ecologist	▪ B. Science in Evolution and Ecology	Fieldwork including threatened flora and fauna surveys
Ellen Saxon	GIS Coordinator	▪ B. Environmental Science and Management (in progress) ▪ Diploma Conservation & Land Management	Produce figures for BDAR and Spatial Data Management for Project

Appendix 7 – Traffic Impact Assessment

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

Barr Property & Planning

Traffic Impact Assessment Report

Planning Proposal for 505 Minmi Road, Fletcher

20 December 2019

ENGINEERING
PLANNING
PROJECT MANAGEMENT
SURVEYING
CERTIFICATION

brs.com.au

Project No.	CC190151
Author	RD
Checked	
Approved	

Rev No.	Status	Date	Comments
1	DRAFT	26/11/2019	
2	Final Draft	9/12/2019	
3	Final	20/12/2019	

TABLE OF CONTENTS

1 Executive Summary

Barker Ryan Stewart have been engaged by Barr Property & Planning to prepare a Traffic Impact Assessment in accordance with the requirements of City of Newcastle and the Roads and Maritime Services (RMS) '*Guide to Traffic Generating Developments*' to accompany a planning proposal for a residential subdivision consisting of 150 lots at 505 Minmi Road, Fletcher.

The purpose of this report is to assess and address traffic and access impacts generated by the proposed development. This can be briefly outlined as follows:

- The expected traffic generation to/from the proposed development.
- The impact of the proposed development on the surrounding road network.
- Intersection analysis based on traffic counts.

SIDRA modelling has been conducted to assess the impact of the proposed rezoning and development at 505 Minmi Road on the Minmi Road / Britannia Boulevard intersection. The results of the modelling indicate that the Minmi Road / Britannia Boulevard intersection is currently operating at the highest level of service (LoS A) with minimal delays and queue lengths. The degree of saturation shows that the intersection has almost 50% spare capacity.

The modelling has also concluded that this intersection has sufficient spare capacity to cater for the additional traffic that would be generated by the approved subdivision immediately adjoining the site to the south-east (Winten Precinct 1) as well as the traffic from the current panning proposal including an assumed growth in traffic on Minmi Road of 2% over 10 years. The intersection will continue to operate at LoS A with minimal delays and queue lengths. Consequently, there is no necessity for the current proposal to provide a new connection to Minmi Road.

At full development (Winten Precinct 1 and the current planning proposal) it is estimated that the additional traffic that will be generated onto Minmi Road will range from 148 to 162 vehicles per hour (two-way). Since Minmi Road has spare capacity for at least two-way volumes of 600 vehicles per hour, it will still operate at an acceptable level of service at full development of the residential land within the study area.

Britannia Boulevard, Kingfisher Drive and County Drive will all be operating at just over their desirable environmental capacities and would benefit from the construction of an alternative access to and from Minmi Road. The Winten Precinct 1A development is proposing several connections to Minmi Road that will reduce the traffic impacts on these streets. The current planning proposal should provide a road connection to the Winten Precinct 1A development or, as a minimum, an emergency access to cater for traffic incidents or emergencies such as bushfires

This Traffic Impact Assessment concludes that the development of the subject site will have acceptable impacts on the operation of the Minmi Road / Britannia Boulevard intersection. Minmi Road will also operate well within its mid-block capacity with the additional traffic generated by the development. The surrounding road network will thus not require any upgrade works as a result of the proposed rezoning and development.

2 Existing Conditions

2.1 Site Location

The site is currently undeveloped and located at 505 Minmi Road, Fletcher and comprises Lot 23 DP1244350. The site is bounded by Minmi Road in the north, existing residential development to the east, and proposed residential developments to the west and south-east.

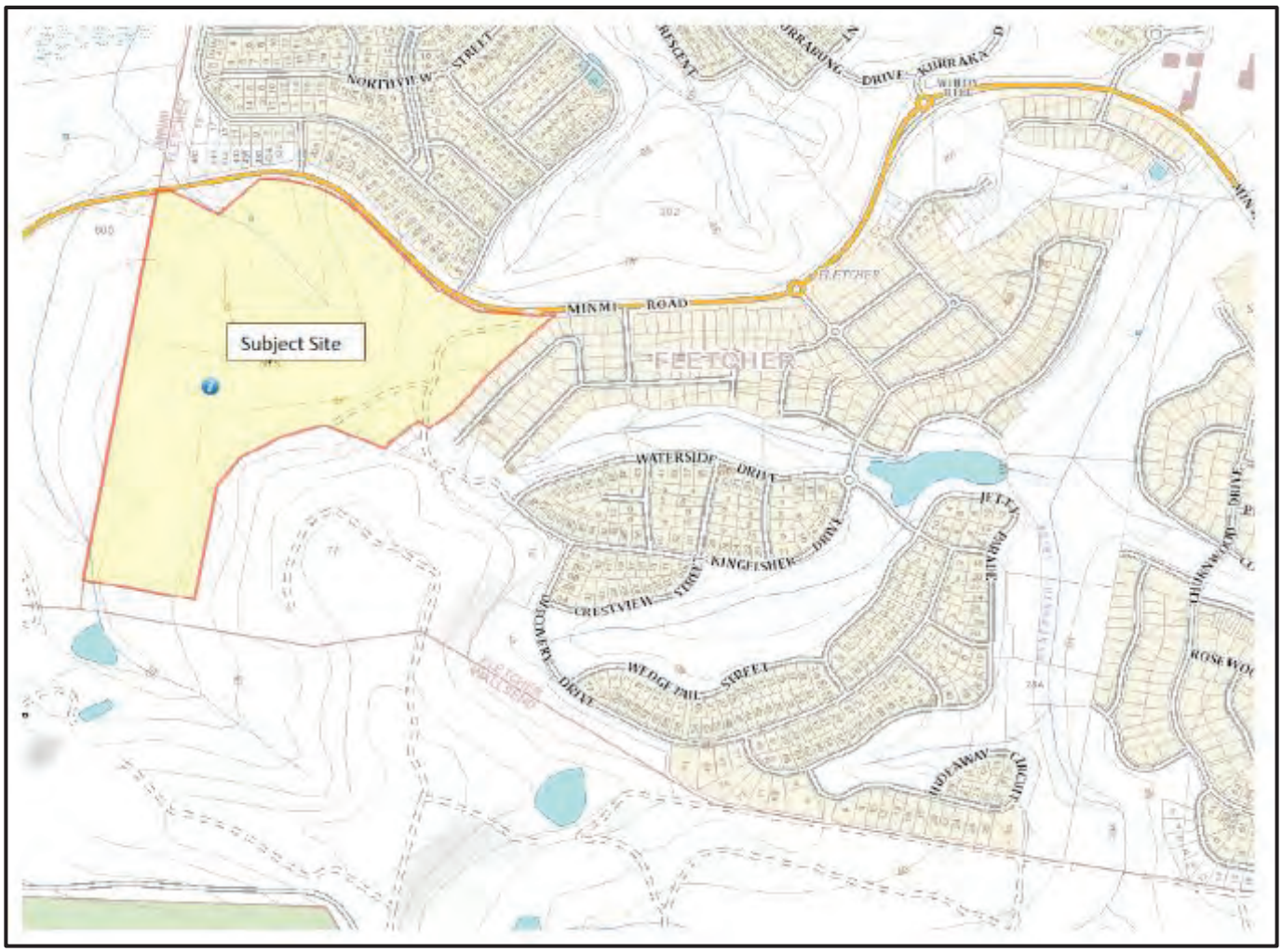

Figure 2.1: Site Location (NSW Land & Property Information SIX Maps 2013)

2.2 Existing Road Network

The site is bounded by Minmi Road to the north, however, there is currently no direct access between the site and Minmi Road. The existing access between Minmi Road and the residential area east of the site is via Britannia Boulevard, County Drive and Kingfisher Drive.

Minmi Road

Minmi Road is a collector road providing a generally east / west connection between Woodford Street, Minmi and Newcastle Road at Wallsend. For most of its length and, in the vicinity of the subject site, it has a two-lane rural road formation with grassed verges on both sides. This formation is particularly prevalent to the west between Fletcher and Minmi. Further towards the east (Maryland and Wallsend), Minmi Road operates primarily as an urban road with isolated sections of four lane divided formation and auxiliary lanes at intersections to facilitate turning movements. From a point 25 metres east of Britannia Boulevard,

Minmi Road is divided by a central concrete median 55 metres long that has been installed as part of the development of an "Aldi" supermarket. The central median restricts traffic movements for the supermarket to left in / left out only. Lane widths are generally 3.5 metres and the posted speed limit past the site of the planning proposal varies between 60 and 70km/h.

Britannia Boulevard

Britannia Boulevard is a local collector street that provides the only connection between Minmi Road and the local street network within the Fletcher residential area. It has a two-lane divided formation with 5 metre wide lanes and a 2 metre wide central median. At its northern end it connects with Minmi Road at a single lane roundabout and connects with County Drive at its southern end as a T-intersection. The posted speed limit is 50km/h.

County Drive, Kingfisher Drive.

County Drive and Kingfisher Drive are both local collector streets with 9 metre wide pavements. Kingfisher Drive provides an east / west connection between the subject site and Minmi Road via County Drive and Britannia Boulevard. The default speed limit on these streets is 50 km/h.

2.3 Existing Traffic Volumes

Barker Ryan Stewart conducted traffic counts on Thursday 14 November 2019 from 8.00am to 9.00am and 4.30pm to 5.30pm at the Minmi Road / Britannia Boulevard intersections. The results are summarised below:

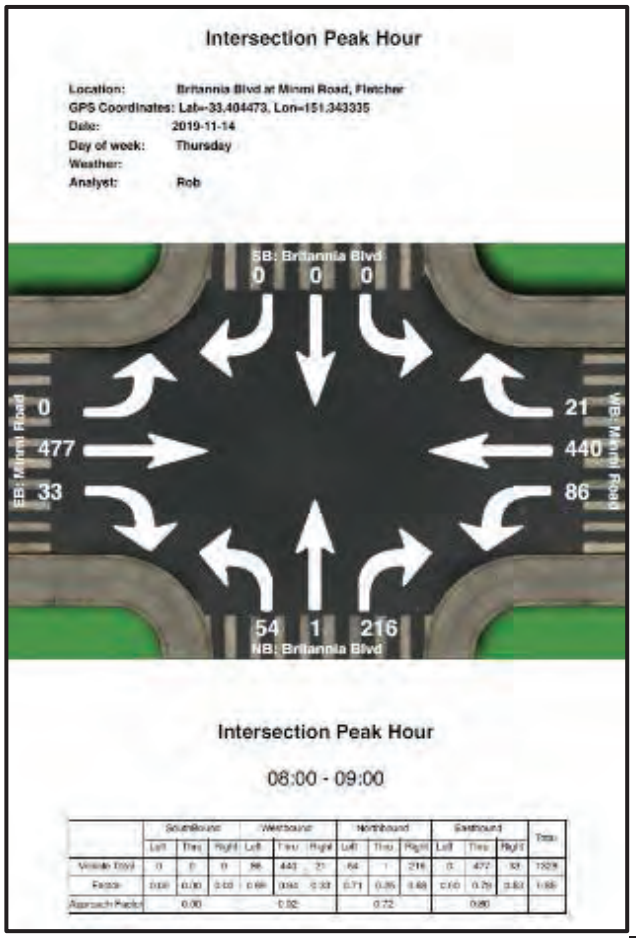

Figure 2.2: AM peak hour traffic count results (BRS)

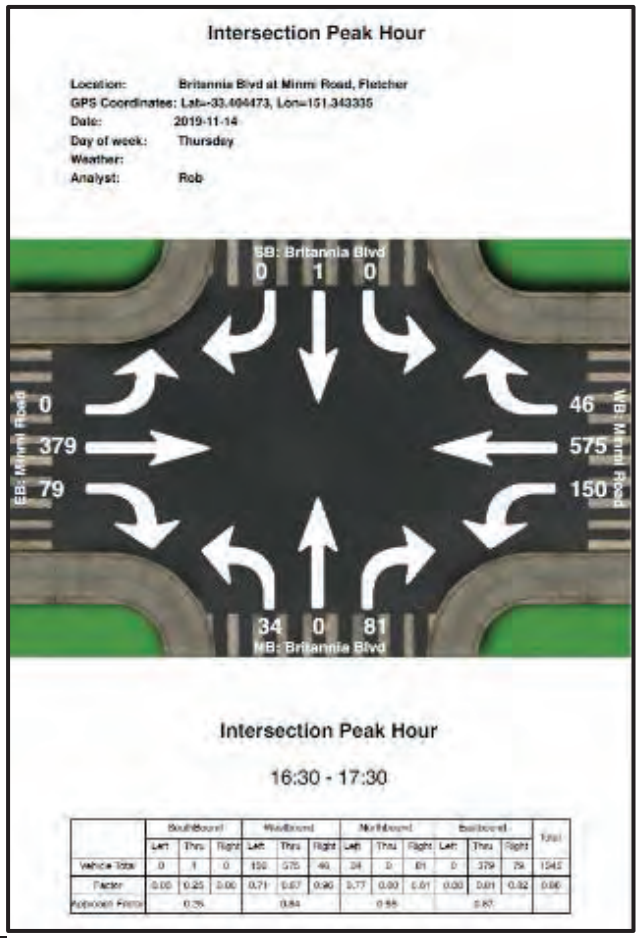

Figure 2.3: PM peak hour traffic count results (BRS)

Minmi Road

The intersection counts indicate that Minmi Road carries between 1,000 and 1,200 vehicles per hour in the AM and PM peak periods. The higher volumes occur east of Britannia Drive towards Wallsend and the Newcastle Link Road. The priority movements were eastbound in the AM peak (56%) and westbound in the PM peak (63%) indicating a typical commuter traffic pattern of travel between residential areas and the locations of employment and education.

Note: The westbound right turns in Minmi Road shown in the diagrams above, indicate U-turns by eastbound vehicles exiting the Aldi supermarket.

Britannia Boulevard

The intersection counts indicate that Britannia Boulevard carried 389 vehicles per hour in the AM peak with 70% of trips outbound towards Minmi Road with 30% inbound. The outbound trips were distributed 80% to the east and 20% to the west. The inbound trips were distributed 70% from the east and 30% from the west.

Britannia Boulevard carried 344 vehicles per hour in the PM peak with 33% outbound and 67% inbound. The outbound trips were distributed 70% to the east and 30% to the west. The inbound trips were distributed 65% from the east and 35% from the west.

These trip distributions are generally typical of the travel patterns for most residential areas.

Further traffic counts were conducted at the Kingfisher Drive, Waterside Drive intersection on Friday 29 November 2019 from 8.00am to 9.00am. The results are summarised below:

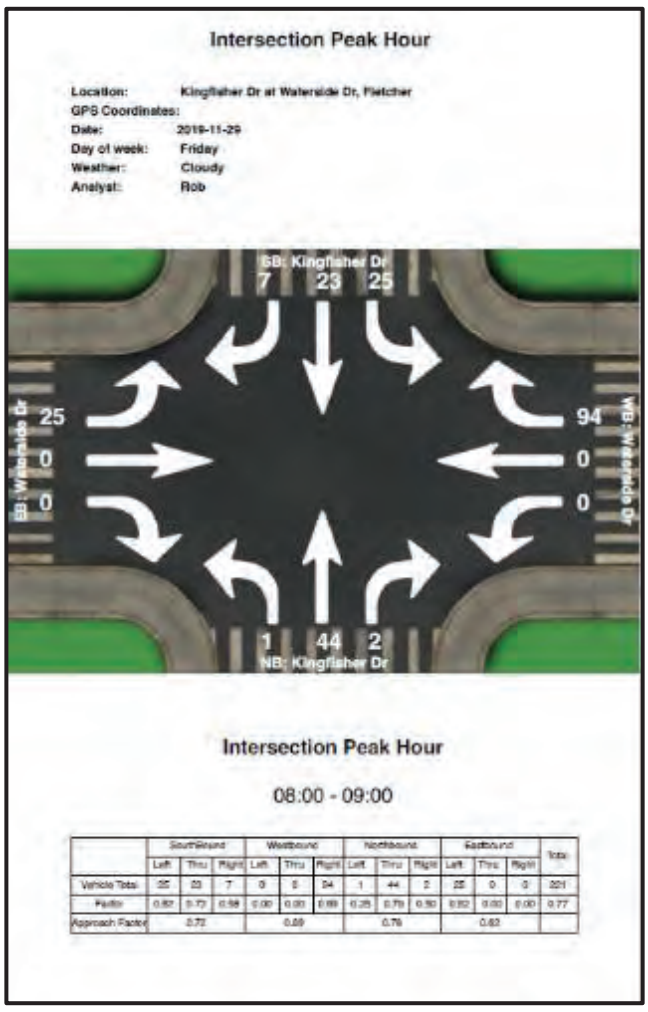

Figure 2.4: AM peak hour traffic counts

These results indicate that Kingfisher Drive carried 218 vehicles per hour during the AM peak north of Waterside Drive (towards Britannia Boulevard) and 70 vehicles per hour south of Waterside Drive with 75% of trips being outbound towards Minmi Road and 25% inbound. These results are consistent with the traffic volumes and distribution recorded at the Minmi Road / Britannia Boulevard intersection.

2.3.1 Existing Road Service Level

The RMS 'Guide to Traffic Generating Developments' provides an indication of the level of service for urban roads for a range of one-way, mid-block volumes (Table 4.4). The traffic counts conducted for this assessment have shown that one-way volumes on Minmi Road would be in the range of 500 to 600 vehicles per hour, indicating that it is operating at a level of service C with spare capacity of at least 300 vehicles per hour per direction (600 vehicles per hour, two-way).

The RMS 'Guide to Traffic Generating Developments' also provides an indication of environmental capacity performance standards on residential streets (table 4.6) that considers a street's traffic function as well as the safety and amenity of residents. For local collector streets such as Britannia Boulevard, County Drive and Kingfisher Drive, the environmental capacity ranges from 300 vehicles per hour (environmental goal) to a maximum of 500 vehicles per hour.

Britannia Boulevard is currently carrying close to 400 vehicles per hour and could be regarded as having a maximum environmental capacity of 500 vehicles per hour due to its wide lanes, divided carriageway and lack of property accesses. It would thus have spare capacity of 100 vehicles per hour.

Similarly, Kingfisher Drive and County Drive are currently carrying around 220 vehicles per hour and could be regarded as having a desirable environmental capacity of 300 vehicles per hour as they both have single two-way carriageways and provide access to the adjacent residential properties. However, they would also be capable of carrying up to the maximum of 500 vehicles per hour providing spare capacity of up to 280 vehicles per hour.

2.4 Existing Trip Generation Rates

Currently, Britannia Boulevard is the only connection between Minmi Road and the Fletcher residential area providing access for approximately 540 developed lots. The traffic counts conducted for this project indicate that the AM trip generation rate is 0.72 trips per dwelling (389 trips / 540 dwellings) which compares favourably with the AM trip rate of 0.71 per dwelling provided in the RMS Technical Direction TDT 2013/04a based on surveys conducted in 2010 in regional NSW.

The calculated PM trip rate, however, equates to only 0.64 trips per dwelling (344 trips / 540 dwellings) which is well below the PM trip rate of 0.78 trips per dwelling provided by RMS.

2.5 Public Transport, Pedestrians and Cyclists

Two bus services run along Minmi Road past the site providing connections between Minmi and either Newcastle University or the Stockland shopping centre at Jesmond. The services run on a regular timetable at 10 to 15 minute intervals during peak periods and 30 minute intervals at other times.

While the existing local streets include a network of concrete footpaths that provides a high level of connectivity for pedestrians, there is very little in the way of facilities for cyclists within the residential area. In addition, pedestrian and cyclist facilities along Minmi Road are generally lacking with only short sections of on-road cycle lanes provided at isolated locations where residential subdivisions have been recently developed.

The City of Newcastle Western Corridor Section 94 Contributions Plan dated August 2013 has identified the need for an off-road footway / cycleway between Britannia Boulevard and Woodford Street, Minmi.

3 Proposed Developments

3.1 Current Planning Proposal

The current planning proposal is for the rezoning of part of 505 Minmi Road for a residential subdivision consisting of 150 lots. Access between this site and Minmi Road will be primarily via Kingfisher Drive, County Drive and Britannia Boulevard. The proposed subdivision layout is provided at **Appendix A**.

3.2 Adjoining Developments

Winten Precinct 1 residential subdivision (DA 2015/10360) is located south east of the subject site is currently under construction and will consist of 57 lots. Access between this site and Minmi Road will be provided via Kingfisher Drive, County Drive and Britannia Boulevard.

Winten Precinct 1A residential subdivision (DA 2015/10393) is located immediately west of the subject site. Construction has not commenced on this subdivision that has been approved for 305 lots that will be constructed over 5 stages. The study team has advised that this subdivision will provide several direct connections to Minmi Road, including a left in / left out arrangement immediately west of the western boundary of 505 Minmi Road, the site of the current planning proposal.

4 Traffic Assessment

4.1 Trip Generation

Proposed Development

The RMS "*Guide to Traffic Generating Developments, Updated traffic surveys*" (TDT 2013/04a) provides the following trip generation rates for low density residential dwellings in regional areas:

- Weekday average morning peak hour vehicle trips = 0.71 per dwelling;
- Weekday average evening peak hour vehicle trips = 0.78 per dwelling.

The proposed subdivision of 150 lots would therefore generate 107 trips in the AM and 117 trips in the PM.

Winten Precinct 1 (57 lots) will generate 41 trips in the AM and 45 trips in the PM.

Winten Precinct 1A (305 lots) will generate 217 trips in the AM and 238 trips in the PM. Since this proposed development will include several road connections with Minmi Road it is assumed that the trips generated by this proposal will not impact on the existing road network within the study area.

4.2 Trip Assignment and Distribution

For the purposes of assigning and distributing these trips to the network it is assumed that the current traffic patterns recorded at the Minmi Road / Britannia Boulevard intersection will continue at that location and at any future connection with Minmi Road.

In summary the assumed assignment and distribution of trips is as follows:

AM Peak
- 70% outbound, 30% inbound.
- Outbound trips 80% to the east and 20% to the west.
- Inbound trips 70% from the east and 30% from the west.

PM Peak
- 33% outbound and 67% inbound.
- Outbound trips 70% to the east and 30% to the west.
- Inbound trips 65% from the east and 35% from the west.

4.3 Network Analysis

In assessing the potential impacts of the current planning proposal on the surrounding road network it has been assumed that all traffic between Minmi Road, the Winten Precinct 1 development (currently under construction) and the subject site will use Britannia Boulevard, County Drive and Kingfisher Drive. This is considered to be the worst-case scenario as the Winten Precinct 1A development will include additional connections to Minmi Road thus providing alternate access to and from areas to the west and reducing the volume of traffic at the Minmi Road / Britannia Boulevard intersection.

In order to quantify the traffic impacts of the current planning proposal the following scenarios have been assessed:

1. All traffic generated by the Winten Precinct 1 subdivision (57 lots) and the proposed 150 lot subdivision at 505 Minmi Road enter and exit via Britannia Boulevard (123 trips AM, 135 trips PM)
2. The above scenario plus 10 years of background growth in traffic volumes on Minmi Road of 2% per annum to assess the longer-term sustainability of this option.

The assignment and distribution of trips is shown in Figures 4.1 and 4.2 below.

Figure 4.1 AM Trip Distribution – Winten Precinct 1 + 505 Minmi Road

Figure 4.2 PM Trip Distribution – Winten Precinct 1 + 505 Minmi Road

4.4 Impact of Generated Traffic

4.4.1 Minmi Road / Britannia Boulevard Intersection

The main traffic impacts of the development will be seen in the am and pm peak hour traffic periods and for traffic assessment purposes the peak hour traffic generation is the important consideration. In most areas the capacity of intersections generally constrains the capacity of the overall road network therefore the impact of the proposal on intersection performance on the local road network needs to be assessed.

The performance of the Minmi Road / Britannia Boulevard intersection has been assessed using the SIDRA 8 modeling software which uses the level of service (delay) model adopted by the Roads and Maritime Services (RMS) in NSW to assess intersection performance. Average delay is used to determine the level of service (LOS) based on the following table sourced from the RMS' *'Guide to Traffic Generating Developments'*.

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Figure 4.6: RMS level of service criteria for intersections

For assessment purposes a LOS D or higher is considered satisfactory intersection operation. In predicting future traffic growth, a background traffic growth rate of 2 % per annum has been adopted.

The other significant indicator of intersection performance is degree of saturation (volume / capacity ratio). It provides a measure of the amount of spare capacity that is available for a movement, e.g. a degree of saturation (DoS)of 0.532 indicates that the movement has about 30% spare capacity, as a DoS of 0.85 is considered to be a measure of full capacity.

The results of this analysis are available in **Appendix B** of this report and are summarized in the tables below:

Minmi Road / Britannia Boulevard 2019 AM Peak

Approach	Degree of Saturation	Average Delay (sec)	Level of Service	95% Queue (metres)
Britannia Drive	0.3	9.1	A	11.2
Minmi Road (east approach)	0.389	7.2	A	17.7
Minmi Road (west approach)	0.476	5.8	A	22.2

Minmi Road / Britannia Boulevard 2019 PM Peak

Approach	Degree of Saturation	Average Delay (sec)	Level of Service	95% Queue (metres)
Britannia Drive	0.154	9.5	A	5.9
Minmi Road (east approach)	0.584	7.5	A	32.2
Minmi Road (west approach)	0.382	5.4	A	15.6

The results in the tables above indicate that the Minmi Road / Britannia Boulevard intersection is currently operating at the highest level of service (LoS A) with minimal delays and queue lengths. The degree of saturation shows that the intersection has almost 50% spare capacity.

Minmi Road / Britannia Boulevard 2029 AM Peak – Winten Precinct 1 + 505 Minmi Road

Approach	Degree of Saturation	Average Delay (sec)	Level of Service	95% Queue (metres)
Britannia Drive	0.431	10.3	A	19.4
Minmi Road (east approach)	0.499	7.3	A	27.7
Minmi Road (west approach)	0.638	7.5	A	41.7

Minmi Road / Britannia Boulevard 2029 PM Peak – Winten Precinct 1 + 505 Minmi Road

Approach	Degree of Saturation	Average Delay (sec)	Level of Service	95% Queue (metres)
Britannia Drive	0.255	10.8	A	11.3
Minmi Road (east approach)	0.741	7.9	A	56.1
Minmi Road (west approach)	0.486	5.7	A	23.3

The results in the tables above indicate that the Minmi Road / Britannia Boulevard intersection has sufficient spare capacity to cater for the additional traffic that would be generated by the approved Winten Precinct 1 subdivision as well as the traffic from the current panning proposal. The intersection will continue to operate at LoS A with minimal delays and queue lengths. This analysis includes assumed growth in traffic on Minmi Road of 2% over 10 years. Consequently, there is no necessity for the current proposal to provide a new connection to Minmi Road.

4.4.2 Minmi Road

The traffic counts conducted for this assessment have shown that existing one-way volumes on Minmi Road would be in the range of 500 to 600 vehicles per hour, indicating that it is operating at a level of service C, with spare capacity of at least 300 vehicles per hour per direction (600 vehicles per hour, two-way).

At full development (Winten Precinct 1 and the current planning proposal) it is estimated that the additional traffic that will be generated onto Minmi Road will range from 148 to 162 vehicles per hour (two-way). Since Minmi Road has spare capacity for at least two-way volumes of 600 vehicles per hour, it will still operate at an acceptable level of service at full development of the residential land within the study area.

4.4.3 Britannia Boulevard, Kingfisher Drive, County Drive

Britannia Boulevard is currently carrying volumes of 344 to 389 vehicles per hour and would have a maximum environmental capacity of 500 vehicles per hour due to its wide lanes, divided carriageway and lack of property accesses. It would thus have spare capacity of 111 to 156 vehicles per hour.

Kingfisher Drive and County Drive are currently carrying around 220 vehicles per hour and would have a desirable environmental capacity of 300 vehicles per hour as they both have single two-way carriageways and provide access to the adjacent residential properties. However, as they function as the main collector routes through the residential area, they would be capable of carrying up to a maximum of 500 vehicles per hour providing spare capacity of up to 280 vehicles per hour.

The Winten Precinct 1 development will generate between 41 and 45 peak hour trips and the current planning proposal will generate an additional 107 to 117 peak hour trips at full development. Without an alternative access to and from Minmi Road, these additional trips will need to access Minmi Road via Kingfisher Drive, County Drive and Britannia Boulevard.

These additional trips would increase traffic volumes on these streets as follows:
Winten Precinct 1 (nearing completion)

- Britannia Boulevard – 430 vehicles per hour (AM) and 389 (PM);
- Kingfisher Drive, County Drive – 260 vehicles per hour (AM) and 265 (PM).

Winten Precinct 1 + Planning Proposal

- Britannia Boulevard – 537 vehicles per hour (AM) and 506 (PM);
- Kingfisher Drive, County Drive – 368 vehicles per hour (AM) and 382 (PM).

It is clear from the above that, at full development of the Winten Precinct 1 development and the current planning proposal, the streets between these sites and Minmi Road would be operating close to or just over their desirable environmental capacity but less than their maximum environmental capacity, with no significant impact on the safety and amenity of residents. This situation would be acceptable, however, the residential amenity of the existing residential area would benefit from reduced traffic volumes provided by an alternative access to and from Minmi Road.

The timing of the construction of this new connection to Minmi Road will be dependent on the timing of approval and construction of the Winten Precinct 1A development (west of the subject site) and the current planning proposal. If the Winten Precinct 1A development proceeds first the provision of a new connection to Minmi Road (albeit a left in / left out arrangement) will be included as part of Stage 5 of this development. However, if the current planning proposal proceeds to approval and construction first, provision should be made in the design of the subdivision road network for a future connection to the adjoining Winten Precinct 1A road network for access to and from Minmi Road.

At full development, the Minmi Road / Britannia Boulevard intersection would be providing access to over 700 developed lots that will generate over 500 vehicles per hour during peak periods. Without an alternative access, any major traffic incidents at this intersection could temporarily block all access to and from the area. In addition, in the case of a major emergency such as a bushfire, this intersection may not have sufficient capacity to cater for the safe and efficient evacuation of residents.

For these reasons a new connection to Minmi Road should be included in either the Winten Precinct !A development or in the current planning proposal, dependent on the timing of construction of these developments.

5 Conclusion/Recommendations

This Traffic Impact Assessment has been prepared in accordance with the requirements of the City of Newcastle and the Roads and Maritime Services (RMS) *'Guide to Traffic Generating Developments'* to accompany a planning proposal for the rezoning of part of 505 Minmi Road, Fletcher for a 150 lot residential subdivision.

Access between this site and Minmi Road will be primarily via Kingfisher Drive, County Drive and Britannia Boulevard. The proposed residential development immediately to the west of the subject site (Winten Precinct 1A) will include additional connections to Minmi Road thus providing alternate access to and from areas to the west and reducing the volume of traffic at the Minmi Road / Britannia Boulevard intersection.

SIDRA modelling has been conducted to assess the impact of the proposed development at 505 Minmi Road on the Minmi Road / Britannia Boulevard intersection. The results of the modelling indicate that the Minmi Road / Britannia Boulevard intersection is currently operating at the highest level of service (LoS A) with minimal delays and queue lengths. The degree of saturation shows that the intersection has almost 50% spare capacity.

The modelling has also concluded that this intersection has sufficient spare capacity to cater for the additional traffic that would be generated by the approved Winten Precinct 1 subdivision as well as the traffic from the current panning proposal including an assumed growth in traffic on Minmi Road of 2% over 10 years. The intersection will continue to operate at LoS A with minimal delays and queue lengths. Consequently, there is no necessity for the current proposal to provide a new connection to Minmi Road.

At full development (Winten Precinct 1 and the current planning proposal) it is estimated that the additional traffic that will be generated onto Minmi Road will range from 148 to 162 vehicles per hour (two-way). Since Minmi Road has spare capacity for at least two-way volumes of 600 vehicles per hour, it will still operate at an acceptable level of service at full development of the residential land within the study area.

Britannia Boulevard, Kingfisher Drive and County Drive will all be operating at just over their desirable environmental capacities and would benefit from the construction of an alternative access to and from Minmi Road. The Winten Precinct 1A development is proposing several connections to Minmi Road that will reduce the traffic impacts on these streets. The current planning proposal should provide a road connection to the Winten Precinct 1A development or, as a minimum, an emergency access to cater for traffic incidents or emergencies such as bushfires.

This Traffic Impact Assessment concludes that the development of the subject site will have acceptable impacts on the operation of the Minmi Road / Britannia Boulevard intersection. Minmi Road will also operate well within its mid-block capacity with the additional traffic generated by the development. The surrounding road network will thus not require any upgrade works as a result of the proposed rezoning and development.

6 References

Roads and Maritime Services, *'Guide to Traffic Generating Developments'* Version 2.2 dated October 2002.

NSW Department of Planning, *'SEPP (Infrastructure) 2007*

City of Newcastle *Western Corridor Section 94 Contributions Plan, August 2013*

Appendix A
Subdivision Layout

FIGURE 22

INDICATIVE SUBDIVISION LAYOUT

Appendix B
SIDRA Results

MOVEMENT SUMMARY

Site: 101 [Minmi Road / Britannia Blvd 2019 AM]

Minmi Road / Britannia Blvd 2019 AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Britannia Blvd												
21a	L1	57	3.7	0.300	5.8	LOS A	1.5	11.2	0.56	0.76	0.56	47.2
23	R2	227	3.7	0.300	9.9	LOS A	1.5	11.2	0.56	0.76	0.56	47.2
23u	U	1	0.0	0.300	11.6	LOS A	1.5	11.2	0.56	0.76	0.56	28.2
Approach		285	3.7	0.300	9.1	LOS A	1.5	11.2	0.56	0.76	0.56	47.2
NorthEast: Minmi Road												
24	L2	91	5.8	0.389	4.6	LOS A	2.5	17.7	0.17	0.59	0.17	47.0
26a	R1	462	3.0	0.389	7.5	LOS A	2.5	17.7	0.17	0.59	0.17	52.5
26u	U	22	4.8	0.389	10.3	LOS A	2.5	17.7	0.17	0.59	0.17	53.4
Approach		575	3.5	0.389	7.2	LOS A	2.5	17.7	0.17	0.59	0.17	52.0
West: Minmi Road												
10a	L1	502	2.3	0.476	5.5	LOS A	3.1	22.2	0.52	0.61	0.52	53.6
12a	R1	35	9.1	0.476	8.9	LOS A	3.1	22.2	0.52	0.61	0.52	47.2
12u	U	1	0.0	0.476	11.4	LOS A	3.1	22.2	0.52	0.61	0.52	54.4
Approach		538	2.7	0.476	5.8	LOS A	3.1	22.2	0.52	0.61	0.52	53.3
All Vehicles		1398	3.2	0.476	7.0	LOS A	3.1	22.2	0.39	0.63	0.39	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Minmi Road / Britannia Blvd 2029 AM + development]

Minmi Road / Britannia Blvd 2029 AM + part development
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Britannia Blvd												
21a	L1	73	4.3	0.431	7.0	LOS A	2.7	19.4	0.69	0.85	0.71	46.0
23	R2	301	4.2	0.431	11.0	LOS A	2.7	19.4	0.69	0.85	0.71	46.0
23u	U	1	0.0	0.431	12.7	LOS A	2.7	19.4	0.69	0.85	0.71	26.8
Approach		375	4.2	0.431	10.3	LOS A	2.7	19.4	0.69	0.85	0.71	46.0
NorthEast: Minmi Road												
24	L2	118	6.3	0.499	4.8	LOS A	3.8	27.7	0.31	0.58	0.31	46.5
26a	R1	555	3.0	0.499	7.7	LOS A	3.8	27.7	0.31	0.58	0.31	52.2
26u	U	22	4.8	0.499	10.5	LOS A	3.8	27.7	0.31	0.58	0.31	53.1
Approach		695	3.6	0.499	7.3	LOS A	3.8	27.7	0.31	0.58	0.31	51.5
West: Minmi Road												
10a	L1	603	2.3	0.638	7.2	LOS A	5.8	41.7	0.71	0.76	0.78	52.8
12a	R1	67	9.4	0.638	10.6	LOS A	5.8	41.7	0.71	0.76	0.78	46.2
12u	U	1	0.0	0.638	13.0	LOS A	5.8	41.7	0.71	0.76	0.78	53.5
Approach		672	3.0	0.638	7.5	LOS A	5.8	41.7	0.71	0.76	0.78	52.3
All Vehicles		1741	3.5	0.638	8.0	LOS A	5.8	41.7	0.54	0.71	0.58	51.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Minmi Road / Britannia Blvd 2019 PM]

Minmi Road / Britannia Blvd 2019 PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Britannia Blvd												
21a	L1	36	11.8	0.154	6.7	LOS A	0.8	5.9	0.62	0.77	0.62	46.4
23	R2	85	4.9	0.154	10.6	LOS A	0.8	5.9	0.62	0.77	0.62	46.6
23u	U	1	0.0	0.154	12.3	LOS A	0.8	5.9	0.62	0.77	0.62	27.5
Approach		122	6.9	0.154	9.5	LOS A	0.8	5.9	0.62	0.77	0.62	46.5
NorthEast: Minmi Road												
24	L2	158	4.0	0.584	4.9	LOS A	4.5	32.2	0.35	0.59	0.35	46.4
26a	R1	605	1.7	0.584	7.9	LOS A	4.5	32.2	0.35	0.59	0.35	52.1
26u	U	48	0.0	0.584	10.6	LOS A	4.5	32.2	0.35	0.59	0.35	53.2
Approach		812	2.1	0.584	7.5	LOS A	4.5	32.2	0.35	0.59	0.35	51.4
West: Minmi Road												
10a	L1	399	1.1	0.382	4.8	LOS A	2.2	15.6	0.34	0.53	0.34	54.0
12a	R1	83	2.5	0.382	8.0	LOS A	2.2	15.6	0.34	0.53	0.34	48.0
12u	U	4	0.0	0.382	10.7	LOS A	2.2	15.6	0.34	0.53	0.34	54.8
Approach		486	1.3	0.382	5.4	LOS A	2.2	15.6	0.34	0.53	0.34	53.3
All Vehicles		1420	2.2	0.584	6.9	LOS A	4.5	32.2	0.37	0.59	0.37	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Minmi Road / Britannia Blvd 2029 PM + development]

Minmi Road / Britannia Blvd 2029 PM + part development
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Britannia Blvd												
21a	L1	49	12.8	0.255	8.0	LOS A	1.5	11.3	0.76	0.86	0.76	45.1
23	R2	119	5.3	0.255	11.9	LOS A	1.5	11.3	0.76	0.86	0.76	45.4
23u	U	1	0.0	0.255	13.6	LOS A	1.5	11.3	0.76	0.86	0.76	26.0
Approach		169	7.5	0.255	10.8	LOS A	1.5	11.3	0.76	0.86	0.76	45.2
NorthEast: Minmi Road												
24	L2	220	4.3	0.741	5.5	LOS A	7.9	56.1	0.56	0.61	0.56	45.7
26a	R1	726	1.7	0.741	8.4	LOS A	7.9	56.1	0.56	0.61	0.56	51.6
26u	U	48	0.0	0.741	11.1	LOS A	7.9	56.1	0.56	0.61	0.56	52.7
Approach		995	2.2	0.741	7.9	LOS A	7.9	56.1	0.56	0.61	0.56	50.7
West: Minmi Road												
10a	L1	479	1.1	0.486	5.1	LOS A	3.3	23.3	0.44	0.57	0.44	53.6
12a	R1	116	2.7	0.486	8.3	LOS A	3.3	23.3	0.44	0.57	0.44	47.4
12u	U	4	0.0	0.486	10.9	LOS A	3.3	23.3	0.44	0.57	0.44	54.4
Approach		599	1.4	0.486	5.7	LOS A	3.3	23.3	0.44	0.57	0.44	52.8
All Vehicles		1763	2.4	0.741	7.4	LOS A	7.9	56.1	0.54	0.62	0.54	51.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix 8 – Visual Impact Assessment

BARR PROPERTY & PLANNING
Continual Progress

Visual Impact Assessment
Planning Proposal
505 Minmi Road, Fletcher

Prepared By Barr Property and Planning
For Kingston Minmi Road Pty Ltd
February 2020

Document Control

Title: Visual Impact Assessment
Address: 505 Minmi Road, Fletcher
Job No. 16NEW0091

Client: Kingston Minmi Road Pty Ltd

Document Issue:

Issue	Date	Prepared by	Reviewed by
Draft 1	30/01/2020	Laura Robinson	Rebecca Johnston
Final	17/01/2020	Laura Robinson	Rebecca Johnston

Signed

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Glossary

Below is a table of the terminology frequently used within this document. All terminology is used in accordance with the Environmental impact assessment practise note EIA-N04 prepared by Roads and maritime Services, December 2018 (RMS EIA-N04).

Term	Meaning
Aesthetics	*Relating to the sense of the beautiful or science of aesthetics, i.e. the deduction, from nature and taste, the rules and principles of beauty.*
Desired future character	*A term used to capture the desirable future outcome or vision for an area as set down in planning documents or as professionally assessed and envisaged by urban designers or other built environment professionals.*
EP&A Act	*Environmental Planning and Assessment Act 1979*
Impact	*The effect of a proposal, which can be adverse or beneficial, when measured against an existing condition.*
Impact Assessment	*Broadly, the process of describing and characterising the expected effects of a proposal. In the context of an EIS or REF, impact assessment will also lead to the identification of mitigation measures and safeguards which would be addressed if the proposal were approved.*
Landscape	*All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure.*
Landscape character	*The combined quality of built, natural and cultural aspects which make up an area and provide its unique sense of place.*
Landscape character zone	*An area of landscape with similar properties or strongly defined spatial qualities, distinct from areas immediately nearby.*
Landscape character type	*Multiple similar landscape character zones repeated within a larger study area, grouped to avoid repetition in their description.*

Magnitude	*The measurement of the scale, form and character of a development proposal when compared to the existing condition. In the case of visual assessment this also relates to how far the proposal is from the viewer. Combined with sensitivity, magnitude provides a measurement of impact.*
PSC	*Professional Service Contractor*
Sensitivity	*The sensitivity of a landscape character zone or view and its capacity to absorb change of the nature of the proposal. In the case of visual impact this also relates to the type of viewer and number of viewers. Combined with magnitude, sensitivity provides a measurement of impact.*
Significant	*In the context of EIA, after analysing the extent (type, size, scope, intensity and duration) and nature (predictability, resilience of the environment, reversibility, ability to manage/mitigate, level of public interest) of a proposal, an expected level of impact of a proposal which requires an EIS to be undertaken. The term should be avoided in landscape character and visual impact assessments if the expected level of impact is below this threshold.*
Urban Design	*Urban design is the process and product of designing projects so they: fit sensitively with the built natural and community environment; contribute to the functioning of the community; and contribute to the quality of the public domain for the community and road users. Architects, engineers, environmental experts, landscape architects, planners and urban designers are all involved in urban design. Urban designers are generally landscape architects and architects who have extended their expertise into the field of urban design.*
VEM	*A Visual Envelope Map, also referred to as 'viewshed' or 'visual catchment', is the area within which a project can be seen at eye level above ground. Its extent will usually be defined by a combination of landform, vegetation and built elements.*
View	*The sight or prospect of a landscape or scene.*
Visibility	*The state or fact of being visible or seen*
Visual Impact	*The impact on the views from residences, workplaces and public places.*

1 Introduction

Barr Property and Planning have been engaged Kingston Minmi Road Pty Ltd to prepare a Visual Impact Assessment (VIA) to support a Planning Proposal at Lot 23 in DP 1244350, 505 Minmi Road, Fletcher (the Site). The objective of the Planning Proposal is for the rezoning of E4 Environmental Living to part R2 Low Density Residential and part E2 Environmental Conservation. The preparation of a VIA will assist in determining the landscape and visual impacts of the Planning Proposal.

1.1 Scope

This VIA addresses the potential landscape and visual impacts associated with a Planning Proposal at Lot 23 in DP 1244350, 505 Minmi Road, Fletcher. This VIA has been undertaken as per Newcastle City Councils instructions including the correspondence from TCG Planning dated 25 May 2018.

1.2 Purpose

The purpose of this VIA is to:

(a) identify the landscape and visual impacts of the proposal; and

(b) analyse these impacts to determine their significance of the locality.

2 Methodology

The following evaluation method has been adopted from the methodology outlined in the Guideline for landscape character and visual impact assessment – Environmental impact assessment practise note EIA-N04 prepared by NSW Roads and maritime Services, December 2018 (RMS EIA-N04).

2.1 Evaluating Visual Impact

The RM EIA_N04 method measures impact based on the combination of sensitivity and magnitude. In this regard sensitivity refers to:

> *"the qualities of an area, the number and type of receivers and how sensitive the existing character of the setting is to the proposed nature of change. For example a pristine natural environment is likely to be more sensitive to a change of the nature of a four lane motorway than a built up industrial area. The design quality of the proposed development does not make the area less sensitive to change but instead affects the magnitude of the impact as described following".*

Whereas magnitude refers to:

> *"the physical scale of the project, how distant it is and the contrast it presents to the existing condition. For example a large interchange would have a very different impact on landscape character than a localised road widening in the same area. A more distant bridge would have a lesser magnitude than one nearer to residents. A vegetated embankment facing a parkland would have less contrast than a retaining wall in the same location.*
>
> *Magnitude will also need to consider cumulative impact, which is a consideration of the result of the incremental impact of the proposal when added to other past, current and known likely future activity".*

To evaluate the impact a rating matrix from EIA-N04 has been adopted per Figure 1. Each viewpoint is given a rating per the matrix and a description of both the magnitude and sensitivity for each viewpoint has been provided justifying that rating.

Sensitivity	Magnitude: High	Magnitude: Moderate	Magnitude: Low	Magnitude: Negligible
High	High	High-Moderate	Moderate	Negligible
Moderate	High-Moderate	Moderate	Moderate-Low	Negligible
Low	Moderate	Moderate-Low	Low	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Figure 1 Landscape Character and Visual Impact Rating Matrix (Source: RMS.nsw.gov.au)

The following classifications for describing the meaning of each degree of impact have been adapted from Landscape Institute of Environmental Management and Assessment, 2002:

Negligible- Only a very small part of the proposal is discernible and/or is at such a distance that it is scarcely appreciated. Consequently, it would have very little effect on the scene.

Low - The proposal constitutes only a minor component of the wider view, which might be missed by the casual observer or receptor. Awareness of the proposal would not have a marked effect on the overall quality of the scene.

Moderate - The proposal may form a visible and recognisable new element within the overall scene that affects and changes its overall character.

High - The proposal forms a significant and immediately apparent part of the scene that affects and changes its overall character.

3 Background

The objective of this Planning Proposal is to amend the Newcastle LEP 2012 to facilitate the future delivery of the land for low density residential development and environmental conservation purposes. The previous Planning Proposals did not include a Visual Impact Assessment. The locality of Minmi and Fletcher has been developing over the past 10-20 years into more heavily urbanised, residential land with the previous uses as bushland and passive agricultural land. Specifically the sites history according to the Flora, Fauna and Threatened Species Assessment historically the study area (the site's) vegetation has been significantly disturbed by selective logging of mature trees. More recent disturbance at the site includes grazing by domestic goats, the creation of tracks by motor bike riders, rubbish dumping and firewood collecting. (Source: Flora, Fauna and Threatened Species Assessment prepared for the site by ecobiological 2012).

4 Existing Conditions

4.1 Site Description

The site is a 26.2 ha parcel of land situated on the southern side of Minmi Road. The site is predominantly disturbed, relatively heavily vegetated bushland.

Figure 2 Site Location (Source: Sixmaps)

The subject site is located within the suburb of Fletcher. As seen in Figure 3 predominant surrounding land uses are R2 Low Density Residential, E2 Environmental Conservation and SP2 Infrastructure.
The site is an isolated lot bounded by residential zoned land and approved residential subdivision to the west and south east (under civil works construction), east and north by fully residentially developed areas. In the general area and to the south is the Newcastle City Council operated Waste and Resource Management Facility. To the south west is Blue Gum Regional Park. To the west is the township of Minmi and the Cemetery. In a general northern and western area open space corridors leading to the main body of the Hexham Swamp.

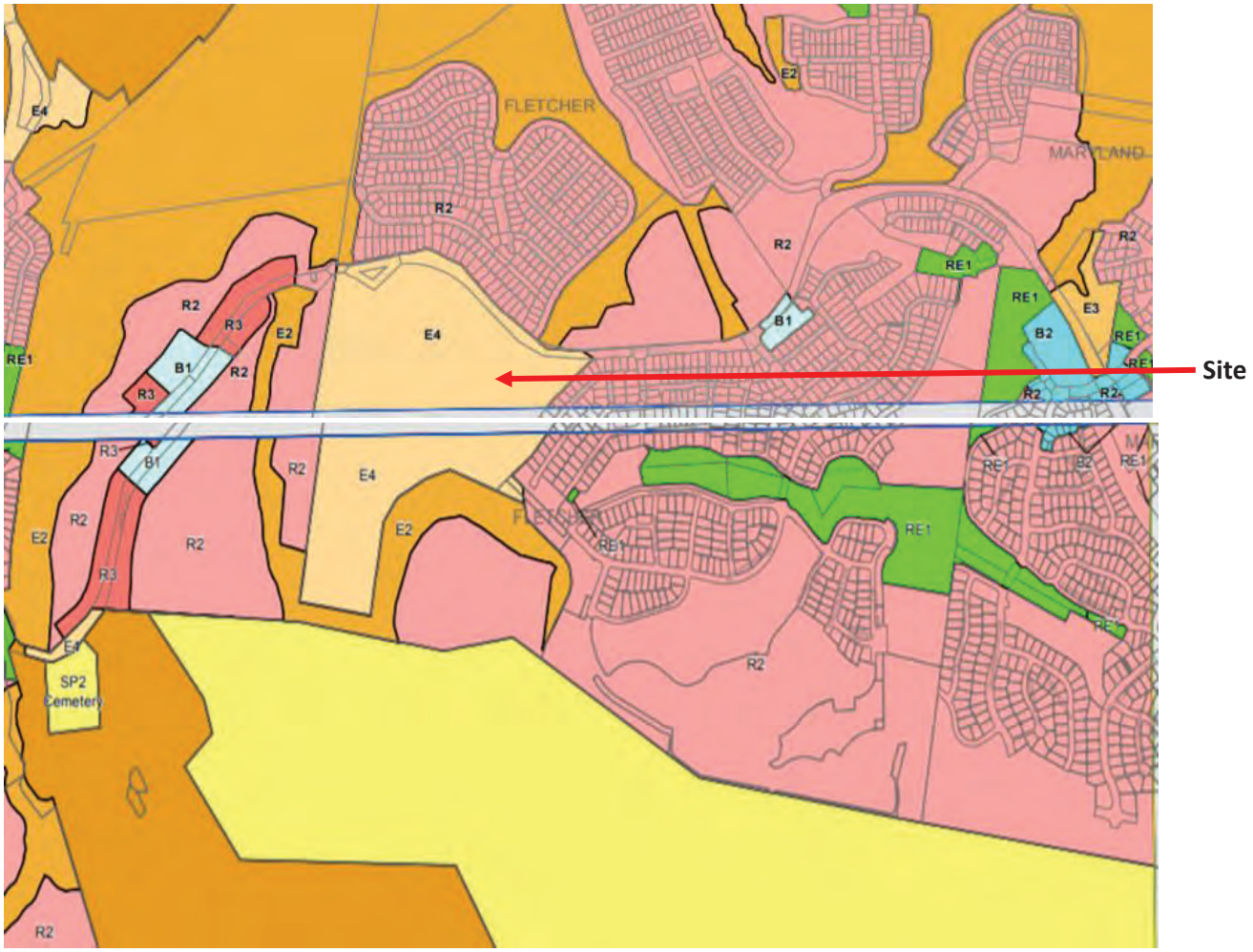

Figure 3 Extract of Current Land Zoning Map Sheet LZN_001B and, Map Sheet LZN_002A (Newcastle LEP 2012)

4.2 The Project

The project is a Planning Proposal is for the rezoning of E4 Environmental Living to part R2 Low Density Residential and part E2 Environmental Conservation. The low-density residential component of the land has an area of 15.4ha and the environmental conservation component an area of 10.8ha of the site. Should the Planning Proposal proceed, and the land be rezoned for low density residential and environmental conservation purposes, then the residential portion of the site will be subdivided and developed with primarily detached dwelling houses and the remaining area conserved and retained in its present bushland state.

4.3 Landscape Character and Visual Environment

4.3.1 Existing Landscape Character

Natural Topography

The land is generally undulating. Topographically the site spans three north westerly tending gullies running off a north-east trending ridgeline with proposed development area on both east and west

facing slopes, either side of the combined gullies. Site slopes are generally gentle to moderate, but steeper in the vicinity of site boundaries and locally in drainage lines and gullies which cross the site falling to the west to north-west. Surface drainage follows the natural surfaces and existing drainage lines falling ultimately to Minmi Creek, to the north of the site.

Built Environment

The surrounding built environment is predominately low density residential buildings. The dwellings are generally one to two storeys high and represent architecture and building design trends from the last twenty years. The dwellings are generally one building per lot and include wide driveways, landscaping and double garages. To the north of the site is a subdivision awaiting development.

Vegetation

The site is predominantly disturbed, relatively heavily vegetated bushland. The surrounding vegetation is generally dispersed patches of disturbed bushland vegetation between subdivisions and surrounding riparian corridors.

Waterways

There is no predominate waterways existing that contribute to the landscape character.

4.3.2 Existing Visual Environment

Landmarks and dominant visual features

There are no dominate landmarks on the site. The dominate visual features of the setting are thick vegetated bushland amongst mountainous terrain.

Distant or filtered views

The distance filtered views include Blue Gum Hills Regional Park to the west of the site and further to the south of the site distant views of Hexham Swamp. Views to and from the site are generally filtered due to tall mature trees and the slopped terrain.

Visual barriers

The visual barriers to and from the site include clusters of tall mature trees and ridge lines surrounding the site. Residential development and the roofs of dwellings on neighbouring sites create a visual barrier from the surrounding views and vistas.

4.4 View Selection Criteria

4.4.1 Basis of selection

The selection of the viewpoints was based on:

- Desktop mapping
- Site inspection
- Consent authority requirements

4.4.2 Heritage items

The following heritage items are surrounding the site.

Table 1

Item Name and relationship to site	Address	Suburb	LGA	SHR/LEP Reference
John Brown's Model Farm within 250m south of the site.	29 Woodford Street	Minmi	Newcastle	Item no. 1337
Cemetery within 500m west of the site.	27 Minmi Road	Minmi	Newcastle	Item no. 1334
Duckenfield Colliery Railway (relics) large heritage area west of the site.		Minmi	Newcastle	Item A14

The proposed development will not have an adverse landscape or visual impact on these surrounding heritage items. This is due to their distance from the site and the surrounding residential development existing between the heritage items and proposed development site.

5 Visual Impact Assessment

Based on the foregoing selection criteria this section maps and describes 6 views of the site from a variety of close and more distant viewpoints. A photograph of each viewpoint is accompanied by a description of the view and the major visual elements within that view.

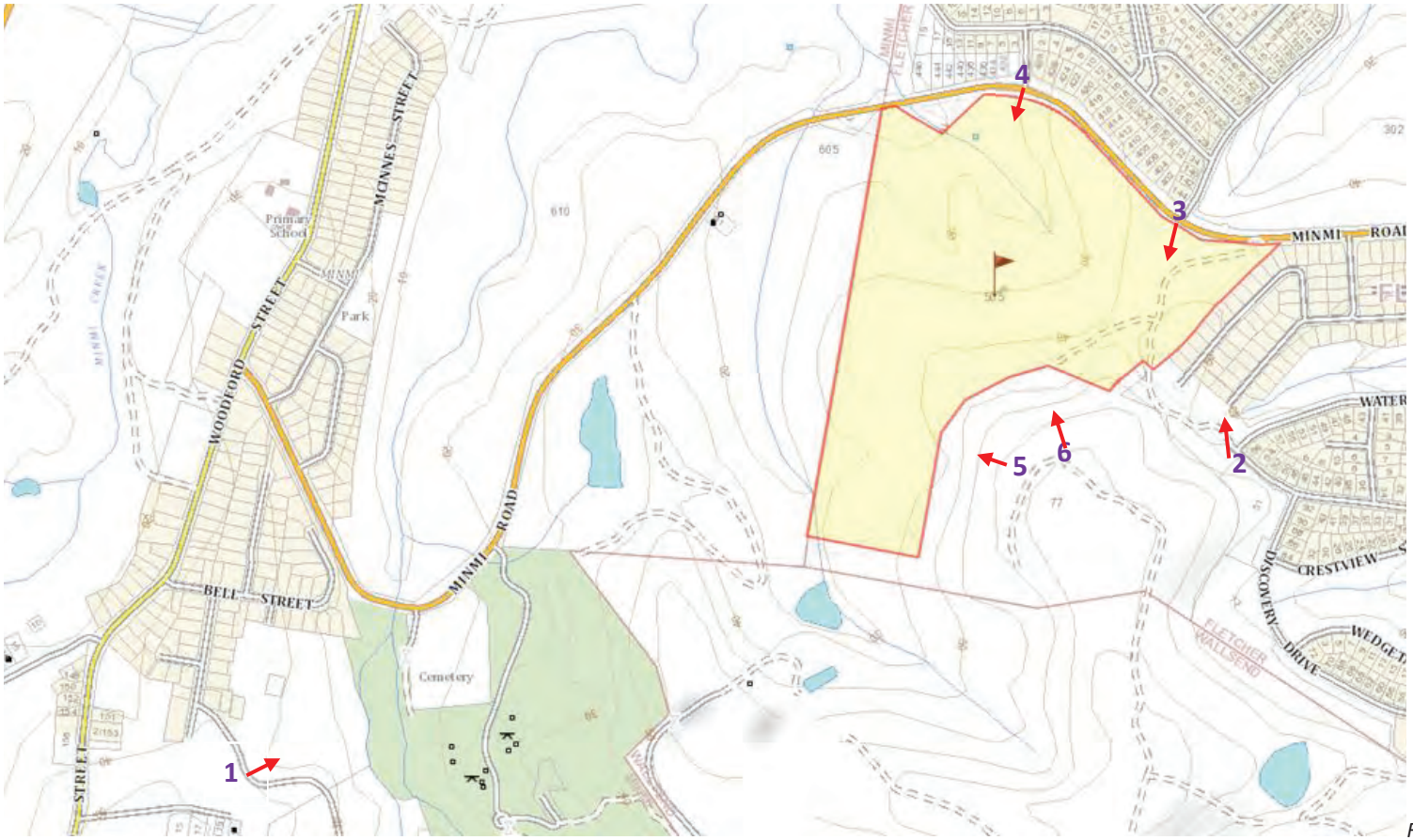

Figure 4 Viewpoints Selected

Figure 5 Indicative Subdivision Layout Showing Ridge Lines and Viewpoints.

5.1 Identification of key views, vistas and analysis

Viewpoint 1

Photo taken on Church Street, Minmi close to Telford St looking northeast towards the site.

Viewpoint 1	
Location	Church St, Minmi close to Telford
Distance	1km south-west
Receptors	Existing residences
No. of viewers	Moderate
Existing view	Bush of Blue Gum Hills Regional Park.

Expected Visual Impact	
This viewpoint assesses the visual impact from the existing Minmi Village and the Blue Gum Hills Regional Park. Blue Gum Hills Regional Park is an outdoor recreational area located to the south- west of the site. The proposed development cannot be observed from this viewpoint or Minmi Village as a whole. The tree line in the photograph is the ridge line. The ridge is covered in thick bushland protecting this vista and view, which combined with the vegetation to be retained on site, will suitably screen the development site from view. Blue Gum Hills Regional Parks views and vistas are similarly also protected by this thick bushland ridge.	
The landscape impact from this point will remain the same as the site cannot be seen. The current landscape character is a residential village nestled amongst passive agricultural plots and bushland.	
Visual Impact Rating	**Negligible**
Landscape Impact Rating	**Negligible**

Viewpoint 2

Photo taken at junction of Kingfisher Parade and Walker Crescent, Fletcher. Looking north – northwest towards the site.

Viewpoint 2	
Location	Junction of Kingfisher Pde and Walker Crescent
Distance	10 metres – 100 metres
Receptors	Existing residents, future residential development
No. of viewers	Moderate
Existing view	Mix of residential development, bushland vegetation and infrastructure in the form of roads.

Expected Visual Impact	
The visual impact of the proposed development is shown above. As indicated the green represents the approximate vegetation to be retained from the neighbouring development, screening future development of the proposed site. The red circle indicates vegetation to be removed where future residential development will occur.	
The landscape impact is that the proposed development will continue the current surrounding amenity of landscape character. The proposed development site is an isolated lot surrounded by residential development and as such the proposal matches the landscape character type.	
Visual Impact Rating	**Moderate Low**
Landscape Impact Rating	**Low**

Viewpoint 3

Photo taken at the eastern entry at junction of Brookfield Avenue and Minmi Road, Fletcher. Looking directly towards the site.

Viewpoint 3	
Location	Junction of Brookfield Ave and Minmi Rd
Distance	10 metres – 100 metres
Receptors	Existing residents and passers-by.
No. of viewers	Moderate
Existing view	Screened residential to the left and thick vegetation to the right.

Expected Visual Impact	
The visual impact of the proposed development is shown above. As seen the green represents the approximate vegetation to be retained for environmental conservation purposes. The red circle indicates vegetation to be removed where future residential development will occur, this residential development is backing onto existing residential development. The residents of this viewpoint primary view are north towards Hexham swamp not south towards the proposed development site. Passers-by along Minmi Road will predominately only have a screened view of the development, as most of the development is located on the other side of the retained vegetation.	
The landscape impact is that the proposed development will continue the current surrounding amenity of landscape character that is residential dwellings. The proposed development site is an isolated lot surrounded by residential development and as such the proposal matches the landscape character type .	
Visual Impact Rating	**Moderate-Low**
Landscape Impact Rating	**Low**

Viewpoint 4

Photo taken at the western entry at the junction of Brookfield Avenue and Minmi Road, Fletcher. Looking directly towards the site

Viewpoint 4	
Location	Junction of Brookfield Ave and Minmi Rd
Distance	10 metres – 100 metres
Receptors	Existing residents and passers-by.
No. of viewers	Moderate
Existing view	Minmi Road and bushland.

Expected Visual Impact	
There is no visual impact from this view as this bushland is being retained for environmental conservation.	
The landscape impact is that the proposed development will continue the current surrounding amenity of landscape character that is residential dwellings. The proposed development site is an isolated lot surrounded by residential development and as such the proposal matches the landscape character type. The landscape impact of the above photograph maintains the character of bushland as no vegetation is being removed and is being retained for environmental conservation.	
Visual Impact Rating	**Negligible**
Landscape Impact Rating	**Negligible**

Viewpoint 5

Photo taken from future Walker Crescent, Fletcher looking directly west over the site.

Viewpoint 5	
Location	Future Walker Crescent
Distance	10 metres – 100 metres
Receptors	Future residents.
No. of viewers	Moderate
Existing view	Residual land awaiting residential development and bushland

Expected Visual Impact	
The expected visual impact from this viewpoint is low as the site will be screened by the future residential development that will occur on the residual parcel of land directly south of the site from where the photograph was taken	
The landscape impact is that the proposed development will continue the current surrounding amenity of landscape character that is residential dwellings. The proposed development site is an isolated lot surrounded by residential development and as such the proposal matches the landscape character type.	
Visual Impact Rating	**Low**
Landscape Impact Rating	**Low**

Viewpoint 6

Photo taken from future Walker Crescent, Fletcher looking directly north over the site

Viewpoint 6	
Location	Future Walker Crescent
Distance	10 metres – 100 metres
Receptors	Future residents
No. of viewers	Moderate
Existing view	Residual land awaiting residential development and bushland.

Expected Visual Impact	
The visual impact from this view is that the green circle approximately indicates the vegetated bushland being retained for environmental conservation. The rest of the views will be screened by the future residential development to occur on the residual parcel of land directly south of the site from where the photograph was taken. The future residents on this residual parcel of land will maintain their view of distant bushland.	
The landscape impact is that the proposed development will continue the current surrounding amenity of landscape character that is residential dwellings. The proposed development site is an isolated lot surrounded by residential development and as such the proposal matches the landscape character type.	
Visual Impact Rating	**Low**
Landscape Impact Rating	**Low**

6 Assessment of Impacts

6.1 Impact findings

The findings of the visual impact indicate that as the proposed development is not changing the broader landscape character of the locality. There is change to the specific landscape character zone on site, however this is only occurring to 58.8% of the site and the other 41.2% is being maintained in its current state.

There is no visual impact from sensitive areas such as Minmi Village and Blue Gum Hills Regional Park as there is a heavily vegetated ridgeline separating the areas.

6.2 Mitigation measures

The Planning Proposal proposes to rezone 58.8% of the site as low density residential and 41.2% as retained bushland for environmental conservation. The retention of bushland mitigates the discernible changes in landscape and visual impact. The Planning Proposal is considered infill development between residentially zoned areas. A mitigating factor of the development is that it is in character of the surrounding landscape.

7 Conclusion

This VIA was undertaken to assess the visual impacts of the proposed rezoning and future development on surrounding roads, the Blue Gum Hills Regional Park, proposed conservation lands, existing Minmi village and other nearby suburbs. This VIA has found that the combination of landscape and visual sensitivity impacts will be of minor significance. The direct significance of impacts for development is minimal, in comparison to the already cumulative impacts of existing and proposed development in the broader area. The visual impact of this development is mitigated by the fact that it is an isolated site amongst existing residential developments and has a significant amount of bushland being retained on the site.

8 References

NSW Roads and Maritime Services (December 2018) *Environmental Impact Assessment Practise Note EIA-N04.*

Ecobiological (2012) *Flora, Fauna and Threatened Species Assessment prepared for 505 Minmi Road Fletcher.*

Appendix 9 – Aboriginal Cultural Heritage Assessment

Residential Development of 505 Minmi Road, Fletcher NSW

Aboriginal Cultural Heritage Assessment

For Kingston Minmi

October 2013

0203956 –Final

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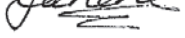
Residential Development of 505 Minmi Road, Fletcher NSW

Aboriginal Cultural Heritage Assessment

Approved by:	Janene May
Position:	*Project Manager*
Signed:	
Date:	21 October, 2013
Approved by:	Steve Laister
Position:	*Partner Director*
Signed:	
Date:	21 October, 2013

Environmental Resources Management Australia Pty Ltd Quality System

Kingston Minmi Pty Ltd

October 2013

0203956 Final

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EXECUTIVE SUMMARY

Environmental Resources Management Pty Ltd Australia (ERM) was commissioned by Kingston Minmi Pty Ltd to prepare an Aboriginal Cultural Heritage Assessment (ACHA) for a proposed housing development on 26.4 hectares of land at 505 Minmi Road, Fletcher, NSW (the study area). It is proposed to rezone the study area to part R2 Low Density Residential and part E2 Environmental Conservation to allow low density residential development while ensuring that significant environmental habitat is preserved. The project is in the planning stage and as yet, no ground disturbing activities have occurred. Prior to any development occurring the land needs to be rezoned to allow residential use and development application and construction certificates approved. This ACHA considers the Aboriginal and historical heritage and archaeology of the study area, assesses the potential impacts of the proposed housing development on the identified heritage values and presents an impact mitigation strategy.

This ACHA has been prepared in accordance with the following Office of Environment and Heritage (OEH) 2010 standards:

- *Due Diligence Code of Practice for the protection of Aboriginal Objects in NSW* (Due Diligence Code);
- *Code of Practice for the Archaeological investigation of Aboriginal Objects in NSW* (COPAI); and
- *Aboriginal Heritage Consultation Requirements for proponents 2010* (Consultation Requirements).

The aim of the ACHA is to ascertain whether there are any heritage values associated with the study area that could potentially be affected by the development and provide mitigation measures for the management of impacts to these heritage values through the various steps of the development approval and construction process in the event that the development proceeds.

A search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted on 31st of May 2013 for an area of five kilometres around the study area. The AHIMS Search identified 35 Aboriginal sites within the region, one of which (an isolated silcrete artefact) has been identified within the study area and will be impacted by the development.

Following the AHIMS search the study area was surveyed over one day (on the 17 of June 2013) using pedestrian survey techniques. The previously recorded archaeological site was searched for, but not relocated. Three areas of Potential Archaeological Deposit (PAD) were identified within the study area. These areas are considered to have a moderate potential to reveal subsurface archaeological Aboriginal site deposits. The PAD areas are on higher land outside riparian corridors and are the areas of the site on which future housing is proposed. Rather than avoid the PAD areas, an alternative

heritage strategy of sub-surface investigations – to determine the presence, nature and extent of archaeological sites – must be conducted before ground disturbing elements of the development can occur.

If, during the sub-surface investigations, significant archaeological deposits are located, then two management options have been identified:

1. Consultation with Aboriginal stakeholders should be undertaken prior to any investigations to inform the development of an appropriate research design and methodology after which salvage excavation should be undertaken.

2. Monitoring during the Project's construction phase in any areas identified as having moderate or high archaeological sensitivity that cannot be adequately protected by avoidance or management strategies. Monitoring is generally undertaken by Aboriginal stakeholder representatives during the initial construction phase (typically topsoil stripping to the end of the A horizon), for the presence of any archaeological material. If any heritage objects and/or relics, as protected under NSW legislation, are uncovered, then work in the area should cease and the advice of a qualified heritage professional should be sought in accordance with the Chance Find Procedure provided at *Section 10.2* of this report.

The primary proposed mitigation strategy for sensitive areas is:

- Avoidance;
- Signposting to increase awareness of site locations;
- Fencing to inhibit access; and
- Vegetation plantings such as Native Raspberry to inhibit access.

No Historical heritage sites were identified during the fieldwork.

The study area has been mapped in respect to its archaeological sensitivity and the three PAD areas have been accurately recorded.

Any further archaeological assessment is to be undertaken in accordance with the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010) and the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (2011).

ABBREVIATIONS

ACHCRs	Aboriginal cultural heritage consultation requirements for proponents 2010 (OEH, formerly DECCW, 2010)
AHIMS:	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ADTOAC	Awabakal Descendants Traditional Owners Aboriginal Corporation
ALALC:	Awabakal Local Area Land Council
ATOAC	Awabakal Traditional Owners Aboriginal Corporation
Burra Charter:	Australian best heritage practice reference that provides guidance for the conservation and management of places of cultural significance (cultural heritage places).
COPAI	Code of practice for the Archaeological investigation of Aboriginal Objects in NSW (OEH 2010)
DA	Development Application
DECCW:	Department of Environment, Climate Change and Water
EP&A Act	Environmental Planning & Assessment Act (NSW, 1979)
ERM:	Environmental Resources Management
LEP	Local Environmental Plan
LGA	Local Government Area
LHRS:	Lower Hunter Regional Strategy
NP&W Act	National Park and Wildlife Act (NSW, 1974)
NPWS	NSW National Parks & Wildlife Service
OEH	Office of Environment and Heritage
PAD:	Potential Archaeological Deposit
RNE:	Register of the National Estate

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1 INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Kingston Minmi Pty Ltd to undertake an Aboriginal Cultural Heritage Assessment of Lot 1 DP 844711, 505 Minmi Road Fletcher (the study area). It is proposed to rezone and subdivide approximately half of the 26.4 hectares which comprises the site. The site is currently undeveloped and zoned as E4 Environmental Living under the Newcastle Local Environmental Plan 2012. It is proposed to rezone the site to part R2 Low Density Residential and part E2 Environmental Conservation to allow low density residential development while ensuring that significant environmental habitat is preserved.

The overall aim of this assessment was to ascertain whether there are any heritage values associated with the study area, and whether these values would be affected by the proposed development. Mitigation measures are provided to offset impacts to the identified heritage values during any future development.

This report has been informed by an archaeological assessment conducted in accordance with the *Code of practice for archaeological investigation of Aboriginal Objects in NSW* (Office of Environment and Heritage (OEH) 2010).

1.1 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The role of the current study is to provide an Aboriginal cultural heritage assessment of the 26.4 hectares of land which is proposed to be rezoned and developed (see *Figure 1.1* and *1.2*). This report identifies Aboriginal cultural heritage values which may be impacted by the proposed development and provides recommendations to manage these constraints. This study forms part of the documentation provided to support a Planning Report for rezoning of the land. If the land is rezoned a proposed development application will be lodged with Newcastle City Council to seek approval for development of the land. The proposed low density development will comprise approximately 110 residential lots and includes a 12 hectare environmental conservation area in the southern and northern portions of the site (see *Annex A*).

Client:	ADW Johnson		
Drawing No:	0203956h_ACHA_C001_R0.cdr		
Date:	23/05/2013	Drawing size: A4	
Drawn by:	JD	Reviewed by: AB	

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Figure 1.1 - Locality Plan

Aboriginal Cultural Heritage Assessment
505 Minmi Road, Fletcher NSW

Environmental Resources Management ANZ

Auckland, Brisbane, Canberra, Christchurch,
Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney

ERM

1.2 REPORT AUTHORSHIP

This report was authored by Alexander Beben (Senior Archaeologist) and Alister Bowen (Senior Archaeologist) of ERM. Shelley James (Principal Heritage Consultant) carried out the technical review of this document. Jemay Carrillo (ERM GIS Specialist) prepared all maps and figures contained within the report. Steve Laister (ERM Partner-in-charge) reviewed the document and was responsible for overall Quality Control.

2 DESCRIPTION OF THE STUDY AREA

The study area is Lot 1 DP 844711 located on 505 Minmi Road, Fletcher and is located within the Newcastle Local Government Area (LGA. The study area is bounded to the north by Minmi Road, Hexham swamp, and a residential development called 'Highland County'. To the east of the study area is the residential development of Fletcher, to the south is bush land and an area for waste management, and to the west there exists approximately 700 metres of bush land before the town of Minmi is reached (see *Figure 1.1*). The study area is currently used by pleasure walkers and is undeveloped. The boundaries of the site are forested and indicated by fence lines and unsealed roads.

2.1 ABORIGINAL OBJECTS

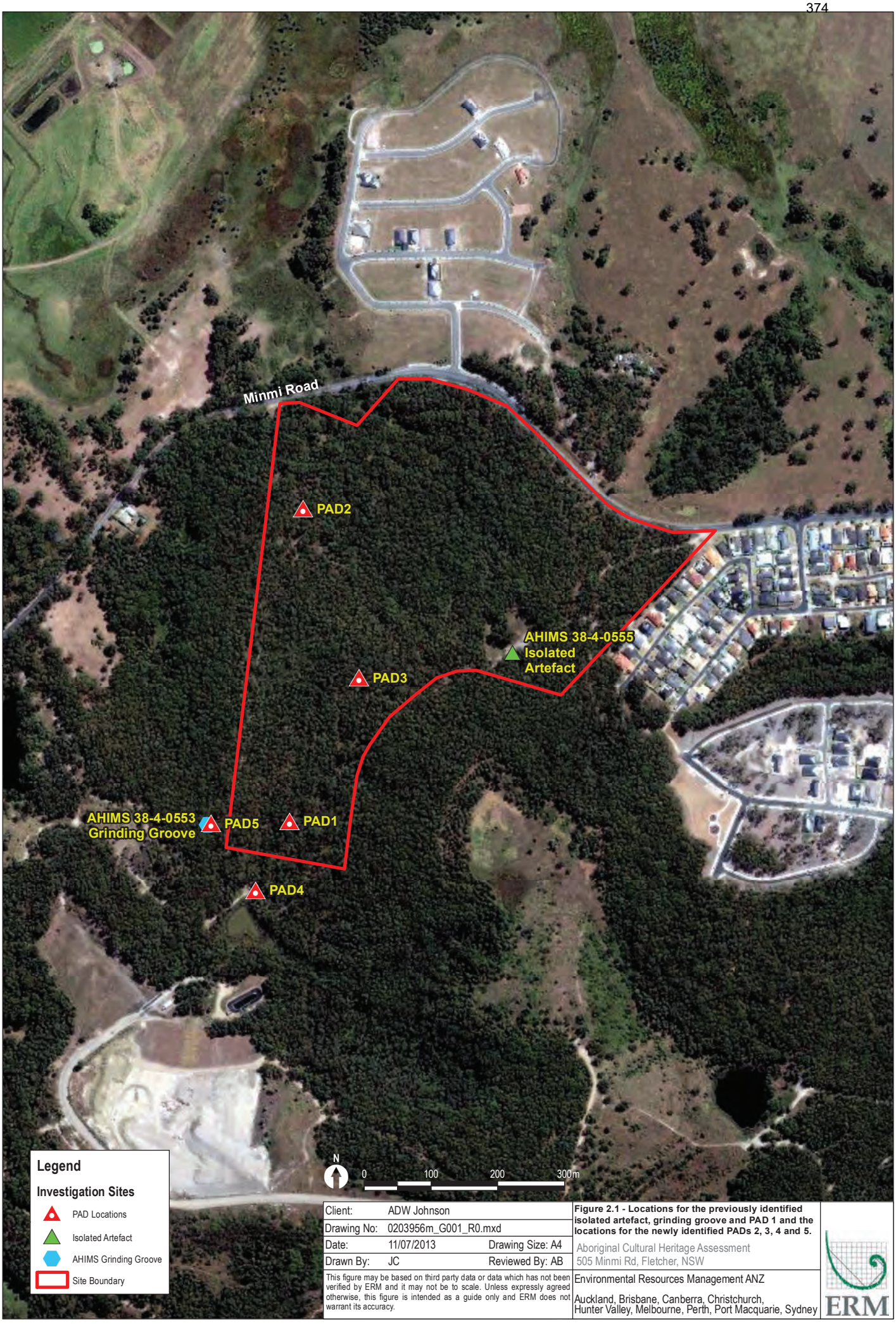
An Extensive Search of the Aboriginal Heritage Management System (AHIMS) database for an area of five kilometres around the study area was conducted on 31 May 2013 by Alexander Beben (see AHIMS Search ID#0203953, *Annex B*). The AHIMS Search identified 35 Aboriginal sites and no Aboriginal places; one recorded Aboriginal site and one unrecorded PAD have previously been identified within the study area. Two further PADs were recorded as a result of this study. The recorded isolated artefact site is listed in *Table 2.1* and illustrated, with its AHIMS search number in *Figure 2.1*.

AHIMS search results are a record of known and reported Aboriginal sites, and do not necessarily reflect the full extent of Aboriginal heritage sites within an area. AHIMS results will generally be limited to previous survey locations that are hindered by factors such as ground surface visibility or sediment deposition.

Table 2.1 Aboriginal Objects located within the study area

Site Name	AHIMS #	Site Type	Location
M-1F-1	38-4-0555	Isolated Find	Ridgeline

AHIMS Site # 38-4-0555 is located within the study area and was recorded by AMBS (1999). AHIMS site# 38-4-0553 is an Aboriginal Grinding Groove site located approximately 30 metres outside of the study areas western boundary – mentioned here due to its close proximity to the study area. The area where the isolated artefact was recorded consists of a clearing, a fence line and an unsealed road. Disturbance of the topsoil in the immediate vicinity has resulted from vegetation clearance and subsequent wash and the construction of the unsealed road.



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Drawing No:	0203956m_G001_R0.mxd	
Date:	11/07/2013	Drawing Size: A4
Drawn By:	JC	Reviewed By: AB

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Figure 2.1 - Locations for the previously identified isolated artefact, grinding groove and PAD 1 and the locations for the newly identified PADs 2, 3, 4 and 5.

Aboriginal Cultural Heritage Assessment
505 Minmi Rd, Fletcher, NSW

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The site consists of an isolated silcrete artefact measuring 20-30mm (maximum dimension). Subsequent surveys of the study area – including the current survey on 17 June 2013 – have failed to relocate the site (ERM 2003a; 2003b). ERM (2003a; 2003b) identified a Potential Archaeological Deposit (PAD) in the south-west corner of the study area associated with an unnamed drainage channel.

The conclusions and recommendations ERM (2003b: 45-46) relating to the study area stated that:

- *AHIMS Site # 38-4-0555: no further archaeological investigation is required in regards to AHIMS Site # 38-4-0555, an isolated artefact identified by AMBS (1999). If this site is impacted by rezoning and development it is recommended that an Aboriginal Heritage Impact Permit (AHIP) is applied for with NPWS / DEC; and*

- *In the event that this riparian buffer zone is not conserved test excavation of the PAD should occur in order to assess whether an AHIP should be applied for without further archaeological salvage excavation.*

An archaeological field survey was undertaken for the study area on 17 June 2013 by ERM senior archaeologist Alister Bowen and Awabakal Local Aboriginal Land Council representative Peter Townsend (See *Annex C for survey route*). The previously identified PAD 1 (within the study area) and the previously identified Grinding Groove (outside of the study area) were located and re-inspected. In addition, two new PAD areas were identified within the study area, recorded as – PAD 2 and PAD 3. Two further PAD areas were identified immediately outside of the study area – PAD 4 and PAD 5 Grid (see *Figure 2.1*). All grid coordinates given in this report are projected in GDA MGA 1994, Zone 56.

In addition to the above identified sites and PADs, consultation undertaken with local Aboriginal groups (on Tuesday 18 of June 2013) identified the general consensus that there are Aboriginal cultural heritage concerns and conservation issues in relation to the three PAD areas and the Grinding Groove site located just outside of the study area, and archaeological scientific potential associated with the study area.

In appreciation of the above factors, further investigation in the form of archaeological sub-surface testing of the three identified PADs in the study area is required. A sub-surface testing program will add to the understanding of Aboriginal occupation of the region and is necessary to adequately assess the Aboriginal cultural heritage significance of the study area. The locations identified for sub-surface testing are*:*

- PAD 1: approximately 100 metres by 100 metres.
- PAD 2: approximately 100 metres by 55 metres.
- PAD 3: approximately 100 metres by 100 metres.

2.2 ENVIRONMENTAL CONTEXT

The study area is located in Fletcher, which is located within the Newcastle Local Government Area (LGA). The study area is heavily forested but incorporates a diverse range of conditions that presently including: informal tracks, logging, areas of illegal dumped material, mining and cleared agricultural areas.

2.3 BIOREGION

Bioregions and bio-subregions are large, geographically distinct areas of land with common characteristics such as geology, landform patterns, climate, ecological features and plant and animal communities. The Interim Biogeographic Regionalisation for Australia (IBRA) provides a regional and national planning framework for the systematic development of a comprehensive, adequate and representative National Reserve System. Bioregions delineate salient environmental characteristics which frequently correspond with changes in Aboriginal site patterning.

The study area is located within the 'Sydney Basin' bioregion, which extends from Batemans Bay to Nelson Bay, and almost as far west as Mudgee. The total area of this bioregion is 3,624,008 hectares (equating to 4.53% of NSW). The study area's bio-subregion is Hunter (see *Table 2.2*).

Table 2.2 Summary of Attributes for the Hunter Bio-subregion (from Morgan 2000)

Characteristic	*Description*
Geology	A complex of Permian shales, sandstones, conglomerates, volcanics and coal measures. Bounded on the north by the Hunter Thrust fault and on the south by cliffs of Narrabeen Sandstone. Pleistocene coastal barrier system in Newcastle bight.
Landforms	Rolling hills, wide valleys, with a meandering river system on a wide flood plain. River terraces are evident, the highest with silicified gravels. Streams can be brackish or saline at low flow. Numerous small swamps in upper catchment, extensive estuarine swamps behind the coastal barrier of beach and dunes.
Soils	A variety of harsh texture contrast soils on slopes and deep sandy loam alluvium on the valley floors. Small number of source bordering dunes on southern tributaries of the Hunter. Deep sands with podsol profiles in dunes on the barrier, saline, organic muds in the estuary. Soil salinity is common on some bedrocks in the upper catchment.
Vegetation	Patches of rainforest brush in the lower valley. Forest and open woodland of white box, forest red gum, narrow-leaved ironbark, grey box, grey gum spotted gum, rough-barked apple and extensive of stands of swamp oak in upper reaches and foothills. River oak and river red gum along the streams. Coastal dune vegetation of blackbutt, smooth-barked apple, coast banksias and swamp mahogany. Mangroves, salt marsh and freshwater reed swamps in the estuary.

2.4 CLIMATE

The study area is located within the coastal portions of the North Coast NSW biographic region where the climate is sub-tropical in nature. A breakdown of climatic variables for the bioregion is outlined in *Table 2.3*.

*Table 2.3 Sydney Basin Bioregion - Climate Variable Information**

Climate information	*Variable*
Mean annual temperature	10-17°C
Minimum average monthly temperature	-1.4-8.1°C
Maximum average monthly temperature	22.4-31.9°C
Mean annual rainfall	522-2395mm
Minimum average monthly rainfall	26-101mm
Maximum average monthly rainfall	69-245mm

** http://www.environment.nsw.gov.au/bioregions/SydneyBasin-Climate.htm*

2.5 GEOLOGY AND SOIL LANDSCAPE CONTEXT

The study area is located on the boundary of the Newcastle and Tomago Coal Measures. Both of these geological units are from the Permian period (a geological period and system which extends from 299 to 252 million years ago). The Tomago Coal Measures consist of shale, mudstone, sandstone, tuff and coal. The Newcastle Coal Measures consist of conglomerate, sandstone, tuff, shale and coal. Bedrock outcrops within the study area are confined to the drainage channel landforms. Bedrock was most often observed outcropping in the upper reaches of the drainage channels. Soils within the study area have been formed through in situ weathering of the natural rock with minor colluvial (loose sediments) movement and modern development-induced erosion into drainage channels.

The study area falls within the Beresfield soil landscape which is characterised by undulating low hills and rises on Permian sediments in the East Maitland Hills region (Matthei 1995: 30). Within the landscape landform relief is generally between 10 to 50 metres with elevations of 20 to 50 metres. Crests are broad (250 to 400 metres) with side slopes long and gently inclined and can sometimes possess very long foot slopes up to 2000 metres long. Drainage lines are often deeply incised and narrow. Topsoil consists of a friable brownish black loam that generally has gravel-sized ironstone and sub-angular sandstone inclusions. This overlies a hard setting dull yellowish brown sandy loam that can range from sandy loam through clay loam to fine sandy clay loam. Below these top layers a pedal brown plastic mottled clay is located which overlies reddish brown plastic pedal clay and grey silty clay. Overall soils within this landscape are considered moderately deep (<120 centimetres) (Matthei 1995: 31).

The study area is located on undulating terrain consisting of two deeply incised drainage channels. The centre of the study area consists of the two drainage channels that flow north-west towards Minmi Road and Hexham Swamp. The undulating terrain of the study area contrasts with Hexham Swamp, which is a large, flat, tidal formation on the northern side of Minmi Road. Landform units within the wider study region are shown in *Figure 2.2*.

2.6 *HYDROLOGY*

The availability of water has significant implications for the range of resources available and the suitability of the area for Aboriginal and historical settlement and occupation. The landscape surrounding the study area has two second order creeks (Strahler model). Minmi Creek runs through the western area of Minmi town; and Back Creek runs through the eastern area of Minmi town. Both drain into Hexham Swamp. In addition, there are several rivulets (first order creeks) also running to the west of Minmi town, which are offshoots of these creeks. A number of minor creek lines (first and small second order) occur in the areas to the north and south of the study area (this includes the source of Back Creek).

The study area contains a drainage channel within the north-west portion of the study area. A further drainage channel is located to the west of the study area. These drainage channels are characterised by relatively steep upper reaches with outcropping bedrock, and lower gradient lower reaches subject to sedimentation. Both channels flow to the north-western corner of the study area where they continue beneath Minmi Road and into Hexham Swamp. A separate drainage channel passes north-west through the south-western corner of the study area. This channel is also deeply incised with some outcropping bedrock along the creek line.

2.7 *FLORA AND FAUNA*

Ecological assessment undertaken by RPS (2006; 2007) and Ecobiological (2010) found that the vegetation occurring in the study area generally comprises Coastal Foothills Spotted Gum Ironbark Forest that includes:

- Dry open forest; and
- Moist shrubby forest.

These vegetation communities (where older trees exist) contain the potential for Aboriginal scarred and carved trees, although none have been observed during the site surveys.

The Ecobiological (2010) and RPS (2006; 2007) reports also note a range of fauna species present or likely to be present in the site. These species are predominantly comprised of birds, small mammals, frogs and reptiles. The RPS (2010) study contains a detailed summary of ecological information for the surrounding region.

These vegetation communities (where older than 200 years) contain the potential for Aboriginal scarred and carved trees to occur in the study area.

2.8 PREVIOUS LAND USE DISTURBANCE

Late Eighteenth Century British settlers identified the Lower Hunter and Lake Macquarie region as a source of coal for the colony of New South Wales. Newcastle became a penal settlement shortly afterwards during which time this coal was mined using convict labour. With the closing of the penal settlement at Newcastle in the 1820s the Lower Hunter was opened to larger scale coal mining and other European land uses such as tree clearance and grazing. The study area is located in an area that has been subject to significant amounts of coal mining and logging (timber extraction) since the early to mid-Eighteenth Century. These activities have affected the study area, disturbing the upper soil layers, creating ground subsidence form underground mining activities and allowing for the potential for mining shafts to exist.

2.8.1 Aerial Photos

Aerial photographs have been reviewed as part of this assessment to look for evidence of structures, roads and other items within the subject area. This review was also carried out to gauge the possible level of disturbance to potential Aboriginal sites or objects within the subject area, including tree clearance and topsoil stripping.

July 1954

The July 1954 photograph shows the Minmi Road alignment to the north of the subject area. There is heavy vegetation coverage across the subject area. There is a clearing and surface stripping on land immediately to the west of the subject area.

August 1966

The August 1966 photograph shows some possible unsealed tracks through the central section of the subject area. As with the *July 1954* photograph there is heavy vegetation coverage across the remainder of the subject area. The clearing and surface stripping west of the subject area that was noted in the *July 1954* photograph has partly covered over with vegetation.

April 1984

The April 1984 photograph shows that extensive earthwork activity has occurred to the south-east of the subject area. Vegetation has almost obscured the clearing and surface stripping observed in the *July 1954* photograph and to a lesser extent in the *August 1966* photograph. There is heavy vegetation coverage across the subject area, as exhibited in the *July 1954* and *August 1966* photographs.

2.9 *CULTURAL CONTEXT*

Prior to European settlement, the Pambalong people inhabited the Hexham Swamp region. The Pambalong people are believed to be a clan group of the Awabakal people of Lake Macquarie. Natural resources associated with Hexham Swamp were utilised by the Pambalong people and later by settlers in the Hexham and Minmi district. Pambalong territories extended from the south bank of the Hunter River west to Tarro and South to Lake Macquarie (Effenberger & Baker 1996:8-9).

ERM (2011) interpreted local Aboriginal site patterning to be associated with Hexham Swamp which, as a resource dense zone, provided a focus for Holocene Aboriginal subsistence (see *Figure 2.3*). Ethnographical accounts and past archaeological work shows that the margins of this swamp has undergone a high density Aboriginal occupation – a direct result of long term Aboriginal use of the many food sources available. Identified Aboriginal site contents and patterning also provides evidence for ceremonial activities occurring to the west of the study area. Dense scatters of stone artefact sites also occur to the south west, which are suggestive of stone artefact manufacture zones.

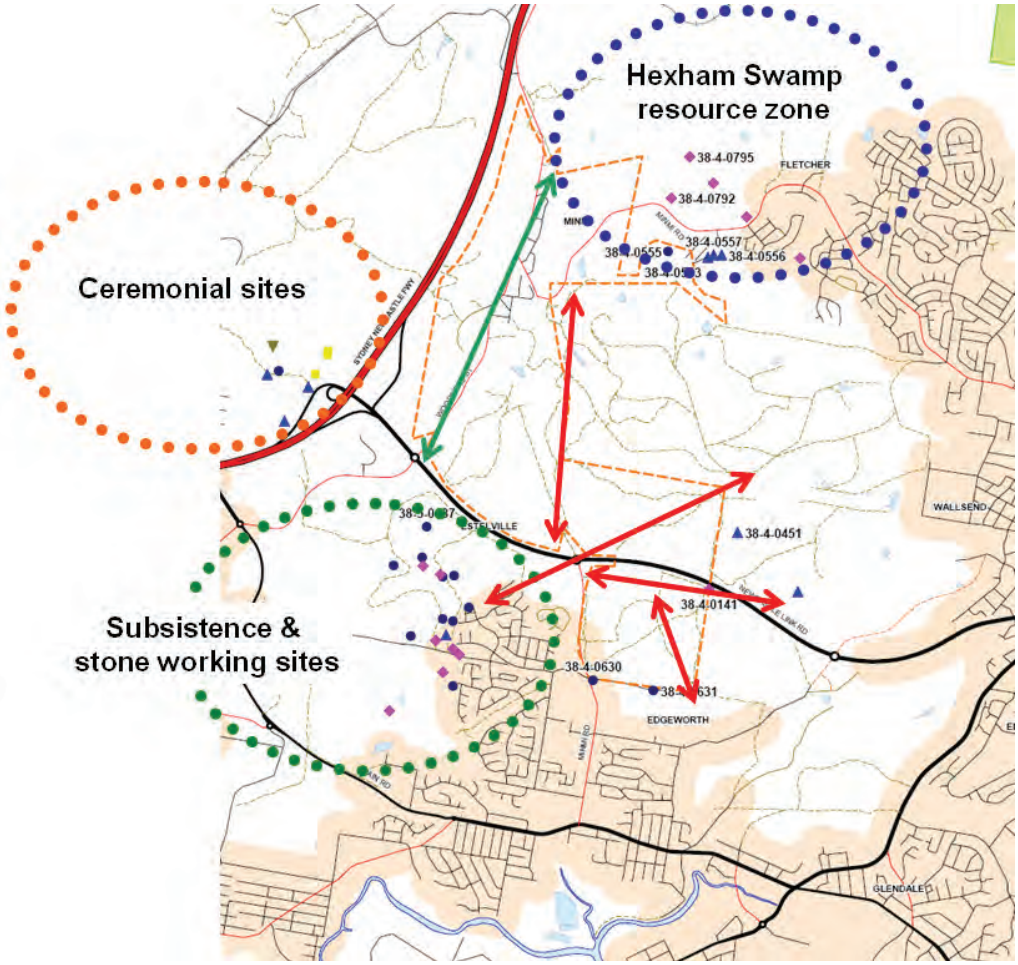


Figure 2.2 ***A model of estimated Aboriginal landscape use in the Minmi area (ERM 2011). Red arrows indicate routes of movement through the landscape via ridgelines; green arrow indicates movement through the Minmi 'valley'.***

The archaeological site patterning suggests that Hexham Swamp provided a subsistence focus for Aboriginal people and that people travelled to the area through the southern ridges and high ground. The lower topography and ridge lines associated with Minmi and the study area would have likely formed part of a preferred travelling route and stop over area to and from Hexham Swamp. The above interpretation (which incorporated submissions from Aboriginal stakeholders) indicates that the study area is located on the edge of a resource rich zone which links to ceremonial and manufacturing sites to areas of economic resource.

3 ABORIGINAL STAKEHOLDER CONSULTATION PROCESS

This chapter contains specific details of the Aboriginal community consultation undertaken in regard to the Aboriginal cultural heritage of the study area.

Aboriginal consultation is required for any assessment of Aboriginal heritage. In addition, if the project has potential to impact or harm an Aboriginal object, the consultation process must follow the OEH '*Aboriginal cultural heritage consultation requirements for proponents 2010*' for Aboriginal consultation. Where harm or impact is imminent, an application under Part 6 of the *National Parks and Wildlife Act 1974*, for an AHIP must be sought.

The consultation guidelines establish a staged process for registering Aboriginal parties to participate in the project. The stages involved in community consultation include:

1. Notification of project proposal and registration of interest;
2. Presentation of information about the proposed project;
3. Gathering information about cultural significance; and
4. Review of draft cultural heritage assessment report.

The Aboriginal community consultation for this project has been carried out in accordance with the OEH guidelines (OEH *Aboriginal Cultural Heritage Consultation Requirements For Proponents (April 2010)*. A complete log of all communications undertaken for the Aboriginal community consultation process is presented in *Annex D*. This chapter provides an overview of the consultation process with the key dates and milestones achieved.

3.1 STAGE 1 NOTIFICATION AND REGISTRATION

3.1.1 Stage 1 Initial letter to Government Agencies

Initial letters identifying the proponent of the project, the project location, and requesting advice on Aboriginal organisations with an interest in the project were sent to the following organisations (see *Annex E*):

- Newcastle OEH Branch;
- Awabakal Local Aboriginal Land Council;
- The Registrar, *Aboriginal Land Rights Act*;
- The National Native Title Tribunal;
- Native Title Services Corporation (NTS Corp);

- Newcastle City Council; and
- Hunter Catchment Management Authority.

From the initial consultation undertaken with the relevant government agencies the following list of potentially interested Aboriginal parties was made, see *Table 3.1*.

A search of the National Native Title Tribunal online system (accessed online at http://www.nntt.gov.au/) showed that a claim was registered on behalf of Awabakal and Guringai People on the 13 June 2013. The study area falls within the extent of this claim registered as NC2013/002. A copy of this search result is provided in *Annex D* of this report.

Table 3.1 Identified Aboriginal parties after letter to Government Agencies

Registered Aboriginal Stakeholder	Contact
Arwarbukarl Cultural Resource Association	Darren McKenny
Awabakal Descendants Traditional Owners Aboriginal Corporation	Shane Frost
Awabakal Newcastle Aboriginal Co-op	Kevin McKenney
Awabakal Traditional Owners Aboriginal Corporation	Kerrie Brauer
Cacatua Culture Consultants	Donna & George Sampson
Cultural Heritage Officer	Daniella Chedzey & Jessica Wegener
Gimbay Gatigaan Aboriginal Corporation	Jaye Quinlan
I & E Aboriginal Culture and Heritage	Ivy Jaeger
Kauma Pondee Inc.	Jill Green
Lower Hunter Aboriginal Incorporated	Les Ahoy
Smith Dhagaans Cultural Group	Tim Smith
Wurrumay Consultants	Kerrie Slater
Yamuloog Group Initiatives Ltd	Sean Gordon
Arwarbukarl Cultural Resource Association	Darren McKenny
Myland Cultural and Heritage Group	Warren Schilling
Murrawan Cultural Consultants	Robert Smith

A project notification letter requesting interested Aboriginal parties to register was sent to the above listed organisations on 30 May 2013.

3.1.2 Stage 1 Media Advertisement

A local press advertisement requesting Aboriginal party participation was placed in the *Newcastle Herald* on 26 and 27 May 2013 (see *Annex F*). The response period for Aboriginal parties to register an interest in the project was open until 10 June 2013. Aboriginal parties who responded to the media advertisement and letter request are identified in *Table 3.2*.

Table 3.2 Stage 1 Responding Aboriginal Stakeholders

Registered Aboriginal Party (RAP)	Contact Person
Awabakal Descendants Traditional Owners Aboriginal Corporation	Shane Frost
Awabakal Traditional Owners Aboriginal Corporation	Kerrie Brauer
Cacatua Culture Consultants	Donna and George Sampson
Kauma Pondee Inc.	Jill Green
Lower Hunter Aboriginal Incorporated	Les Ahoy
Smith Dhagaans Cultural Group	Tim Smith
Wurrumay Consultants	Kerrie Slater
Kawul Cultural Services	Vicky Slater
Wonn1 (Kawul Pty Ltd)	Arthur Fletcher
Registered Aboriginal Party (RAP)	**Contact Person**
Wonnarua National Aboriginal Corporation	Laurie Perry
Murrawan Cultural Consultants	Robert Smith
Awabakal Local Aboriginal Council	Peter Townsend
Gidawaa Walang	Ann Hicky

ERM provided a copy of the notification and record of Aboriginal parties to OEH and Awabakal LALC via post on 11 June 2013 as per the 2010 consultation guidelines.

3.2 STAGE 2 PRESENTATION OF INFORMATION ABOUT THE PROPOSED PROJECT

On 12 June 2013, each of the Aboriginal stakeholder groups was provided with written details (by post and email where available) concerning the proposed project, including an outline of the scope and impacts of the project, a survey methodology, and details concerning an information session (See *Annex G* for copy of information supplied). No reply comments were received on the proposed information session or survey methodology from any of the Aboriginal stakeholders.

3.3 STAGE 3 GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

An archaeological survey of the study area was undertaken on 17 June 2013 by ERM senior archaeologist Alister Bowen and Awabakal Local Aboriginal Land Council representative Peter Townsend). All identified RAPs were given the opportunity to attend an information session (held on the 18 June) which included a site walkover. During this information session, RAPs were able to provide comments on the cultural significance of the study area and on the Aboriginal site information identified within the study area during the archaeological survey (undertaken on 17 June). Details of the Aboriginal groups that attended the information session on the 18 June are provided in *Table 3.3*.

Table 3.3 Aboriginal Representatives who participated in the information session

Registered Aboriginal Party (RAP)	Representative
Awabakal Descendants Traditional Owners Aboriginal Corporation	Shane Frost
Awabakal Traditional Owners Aboriginal Corporation	Kerrie Brauer
Wonn1 (Kawul Pty Ltd)	Suzie Worth
Lower Hunter Aboriginal Incorporated	Les Ahoy (David)

The field survey (conducted on 17 of June 2013) inspected the entire study area for places of Aboriginal cultural heritage in order to identify and record Aboriginal heritage sites and assess the landforms within the study area for their potential to contain sub-surface Aboriginal cultural heritage sites, and any areas that the community felt may contain Aboriginal heritage. At the completion of the survey an open discussion was held during which the archaeological potential and any required further investigations were discussed and an archaeological sub-surface investigation program agreed upon. The sub-surface investigation program was discussed at the information session and was also agreed upon by all present.

During the information session (held on Tuesday 18 of June 2013), consultation was undertaken with local Aboriginal groups and a site walk over was conducted (focusing on the previously identified PADs and sites). Also discussed was the local Aboriginal heritage values and patterning with the community representative. This provided an understanding of the local perspective for Aboriginal habitation and subsistence patterns, as well as an understanding of local intangible heritage values.

An excavation methodology will be produced and sent to OEH and all registered Aboriginal stakeholders for their comment. Aboriginal stakeholders will be invited to assist in the archaeological text excavations.

3.3.1 Aboriginal Community Cultural Significance Assessment

The consultation session identified a general consensus that there are Aboriginal cultural heritage concerns and conservation issues associated with the three identified PAD areas within the study area and the Grinding Groove site and PADs located just outside of the study area. Archaeological scientific potential of Aboriginal culture within sub-surface layers of the study area was also discussed and believed to hold significance to add to the understanding of Aboriginal occupation of the region.

Comments received on the draft version of this report from the Awabakal Traditional Owners Aboriginal Corporation provided further information on the cultural significance of the study area. The Awabakal Traditional Owners Aboriginal Corporation state that 'the cultural value and significance (of the study area) remains high, which is attributed to our cultural heritage understanding of the connectivity and aspects of the regions holistic perspectives, thus emphasising the importance of the whole, instead of a scientific/archaeological value aspect of the independence of its site specific parts'.

3.4 STAGE 4 REVIEW OF DRAFT CULTURAL HERITAGE ASSESSMENT REPORT

On 20 August 2013 each of the Aboriginal stakeholder groups was provided with a draft copy of this Aboriginal Cultural Heritage Assessment (by post and email where available). Replies were received from three of the Aboriginal stakeholder groups as below:

- Awabakal Descendants Traditional Owners Aboriginal Corporation
- Lower Hunter Aboriginal Incorporation
- Awabakal Traditional Owners Aboriginal Corporation

The comments received have been incorporated into this report. These comments are also included within *Annex D* of this report. A table outlining ERM's response to each of these comments is also included within *Annex D*.

4 SUMMARY AND ANALYSIS OF BACKGROUND INFORMATION

The following section synthesises available information from previous archaeological and ethnohistorical studies to provide a context for what is known about Aboriginal cultural heritage in the study area. This contributes to the assessment of the archaeological significance of the proposed development area.

4.1 REGISTERS

4.1.1 Aboriginal Heritage Information Management System

An extensive search of the Aboriginal Heritage Management System (AHIMS) database for an area of five kilometres around the study area was conducted on 31 May 2013 by Alexander Beben (AHIMS Search ID#0203953). The AHIMS Search identified 35 Aboriginal sites and no Aboriginal places; one Aboriginal site been identified within the study area. The AHIMS search results are displayed in *Annex B* and summarised in *Table 4.1*.

Table 4.1 Count and percentage frequency of site features based on AHIMS Search ID#0203953

Site Feature	Count	Percentage frequency
Stone Artefact Sites	30	75%
Grinding Groove	5	12.5%
Potential Archaeological Deposit	4	10%
Non-Human Bone & Organic Material	1	2.5%
Total	**40**	**100%**

There are 35 known archaeological sites recorded within the AHIMS search area. The sites present a total of 40 archaeological features, with five sites having multiple features recorded. Sites with multiple features consist of artefact scatters with additional attributes such as potential archaeological deposits, non-human bone and organic material and in one instance a grinding groove. Approximately 150 metres east of the study area seven sets of grinding grooves have been recorded within a tributary of Wentworth Creek (recorded as AHIMS No#38-4-0553, 38-4-0557, and 38-4-0056).

Interpretation of the general Aboriginal site patterning suggests that Hexham Swamp provided a focus for Holocene Aboriginal subsistence – it was a resource dense zone. It is known that margins of this swamp feature a high density of Aboriginal sites that have resulted from long term access to the many food sources available (Umwelt 2008). Site patterning provides evidence for some ceremonial sites to the west of the study area, which have an association with local stone artefact sites. A dense scatter of sites is also present to the south west, where numerous artefact sites suggest a zone where stone artefact manufacture occurred. This patterning suggests that although the Hexham Swamp provided a subsistence focus, the Aboriginal people were travelling through the hills to the south, where they undertook other activities.

AHIMS Site # 38-4-0555 is located within the study area and was recorded by AMBS (1999). The area where the isolated artefact was recorded consists of a clearing, a large fence and an unsealed road. The topsoil where the isolated artefact was recorded has been disturbed through vegetation clearance, erosion and the construction of the unsealed road. The site consists of an isolated silcrete artefact measuring 20-30 mm (maximum dimension). Subsequent surveys of the study area have failed to relocate the site (ERM 2003a; 2003b).

4.1.2 Australian Heritage Database

The Australian Heritage Database contains statutory listings associated with the Commonwealth Heritage List (CHL), National Heritage List (NHL) and non-statutory listings associated with the Register of National Estate (RNE). A search of the Australian Heritage Database was undertaken by Alexander Beben on 31 May 2013.

No listings for the study area were identified however Hexham Swamp located approximately 3 kilometres north-west of the study area is listed on the RNE as part of the Hunter Estuary Wetlands (Place ID: 1296). The listing for Hexham Swamp primarily relates to its significance as a flora and fauna habitat. The listing does not include any references to Aboriginal heritage values but does identify the swamp as containing historical heritage values associated with Australia's oldest former railways (constructed c. 1856).

4.1.3 State Heritage Inventory

The State Heritage Inventory (SHI) contains listings for over 25,000 heritage items on statutory lists in New South Wales. The information contained on the SHI contains statutory listings located on the State Heritage Register, Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs). A search of the State Heritage Inventory was undertaken by Alexander Beben on 31 May 2013. Minmi Road contains five SHI sites identified for Historical heritage values are listed in Schedule 5 of the Newcastle LEP. These listings include:

- Duckenfield No 2 Colliery Air Furnace Shaft (Listing No# I333);
- Minmi Cemetery (Listing No# I334)
- Racecouse Hotel (Listing No# I648);
- Styles Grove - Former Residence & Farm Buildings (Listing No# I238); and
- Styles Grove Landscape (Moreton Bay Fig Trees) (Listing No# I237).

No listings were identified within the study area and none of the above local listings have any identifiable Aboriginal heritage values.

4.2 ETHNOHISTORY

Prior to European settlement the Pambalong people (sometimes referred to as Bambalong) inhabited the Hexham Swamp region. They were thought to be a clan group of the Awabakal people(Tindale 1974). The Awabakal people consisted of various clans that inhabited areas ranging from Lake Macquarie, west to the Sugarloaf Ranges, north around the Hexham Swamp and including the Central Coast (Gunson 1974). The Pambalong territory extended from the south bank of the Hunter River west to Tarro and South to Lake Macquarie (Effenberger & Baker 1996:8-9). The Pambalong were the subject of numerous observations by early European settlers the most detailed account for the region is by Reverend Lancelot Threlkeld (in Gunson 1974). Several articles published in a local newspaper, the *Wallsend and Plattsburg Sun*, from 1890 to 1891 provide the most detailed accounts of the Pambalong, which referred to the group as "people of the big swamp".

During the Holocene the Pambalong would have had access to abundant resources from swamp and wetland areas (refer to Kuskie and Kamminga 2000 for a comprehensive discussion). The ethnographic accounts from the Maitland area fail to provide a detail summary of the exploitation of floral and faunal resources by the Pambalong. Brayshaw (1986) references several early European commentaries which mention Aboriginals catching eels and fish in swamps within the locality. A range of floral and faunal resources were available and exploited by Aboriginal people, this is highlighted by Scott (1871- 1828: 18-20) who states "the waters of the bay teamed with fish of every description, easily taken at all times. The rocks were covered with oysters, which formed a staple part of their diet. The bush abounded with game in the form of kangaroos, wallabies, possums, emus, flying foxes, wild-ducks, swans and parrots. There were edible roots in the gullies, wild fruits in the bushes. It was really a land of plenty".

The *Wallsend & Plattsburg Sun* (1890: 17/12) provides a description of the resource gathering techniques employed by the Pambalong:

> *"The principle animal food of the Aboriginal was the possum, wallaby, and Kangaroo rat. The kangaroo, emu, and the hundred and one other animals that ranged the hills and scrub were also acceptable, but the possum was really the animal he relied most upon. The possum was always abundant and easily procured… By studying the habit of the animal (and he whose food depends upon the result is sure to make no mistake) various kinds of snares and traps were set at the foot of a tree in which a family of possums live, and generally one or two were caught in this manner. About sundown the possum descends from his hole to drink and to browse upon the tender herbage on the ground, and it is while descending that he invariably gets entangled in the snares made of fibre, the sinew of kangaroo, or spun hair. By setting dozens of these snares a breakfast was generally obtained… Besides snares, fire was employed in getting at possums and other animals, and the natives were very clever in smoking their victim out and capturing it when about to make its escape. Different tactics were adopted in the capture of different animals. The kangaroo, wallaby, and larger animals were generally hunted with spears. The hunter always tried to get as near his game as possible; if he could come within 40 or 50 yards of a kangaroo he stood an excellent*

> *chance of throwing his spear into the body of the animal. The barbed spear was generally employed in fighting. The Hunter River blacks never poisoned the tips in warfare. To give an idea of the force of a spear thrown by a powerful black we have seen a spear nearly 8 inches deep in a horse – the result of a quarrel with Europeans and native mode of taking revenge. If such a spear struck a naked man in a vital part of the body it would mean certain death. We have seen a spear sticking 3 inches in a gum tree – through 2 inches of bark and 1 inch of wood. The velocity of the spear depends upon the arm that throws it. If a kangaroo is hit in the right place it falls on the spot"*

Items such as shields, clubs, spears, digging sticks, boomerangs, water containers, canoes, rafts, message sticks, clapping sticks, spear throwers, cords, huts, netted and woven dilly bags, tools, pendants, belts and cloaks would have been manufactured from a combination of bark, wood, plant fibres, stone, shell, bone, skins, furs or sinews of animals (Brayshaw 1986; Bonhomme 1996: 7; McBryde 1974:13; Sokoloff 1977:21; Kuskie 2012: 26).

The *Wallsend & Plattsburg Sun* (1890: 17/12) highlights the seasonal movement of the Pambalong and its importance in ensuring that the land was allowed to rejuvenate:

> *"The fact is they are regulating the food supply. Directly on the coastline, a camp could exist for many months without shifting, but inland, on the creeks and rivers it was different thing. A few weeks played the accessible game in the vicinity out, and a shift had to be made. But all tribal movements were made with the knowledge of neighbouring tribes, and in this matter the laws were very definite and religiously followed. The line of march was generally in a semi-circle by the Big Swamp blacks. This plan when examined was strategical as well as necessary. For instance, we'll suppose that a body of blacks in the Old House paddock (a favourite camp) were about to strike camp, they would signal to the Tarro tribe by means of fire and smoke of their intention to move. The signal would be well understood, the Big Swamp (now called Hexham) lying between the parties. The camps move the next day – one to the right the other to the left – and when the day's march is over it will be found that the tribes stand no nearer to one another than before the camp was struck! This movement in opposite directions is essentially necessary, for if one tribe followed another the last must starve. This arrangement also allows the animal inhabitants of the hills and trees to recuperate"*

Several detailed descriptions relating to male initiation and marriage ceremonies which were conducted at the vicinity of the study area. The Wallsend & Plattsburg Sun (1891: 3/1) states that these ceremonies were "performed at the Doghole (Bora)" which is "situated a couple of miles from Minmi and is the head of the Big (Hexham) Swamp" located "on the hills….between Minmi and Black Hill, west of Lenaghans Drive". The 'Doghole' was "held in sacred regard" and "none but the initiated were allowed to visit the place". Interviews conducted by Kuskie and Kamminga (2000) with Black Hill residents identified knowledge that the Black Hill Spur was a route or pathway utilised by Aboriginal people. This pathway extends from Hexham Swamp to Mount Sugarloaf.

The landscape surrounding the study area is defined by landmarks with great cultural or spiritual significance. Mount Sugarloaf is referred to by Threlkeld (in Gunson 1974) as the home of the supernatural being 'Puttikan' and stone arrangements situated on the slopes of the mountain mark the location of initiation sites. Umwelt (2007: 6) note several landscape features of significance in the vicinity of the study area, which include:

- Nobby's headland was the home of a giant kangaroo like creature which occasionally shock itself, dislodging stones;
- a deep (bottomless) hole in the swamps between Mount Sugarloaf and Lake Macquarie was the home of a monster fish;
- an important ceremonial ground was located in what is now central Wallsend; and
- the "Knob" located 250 metres off the shore of southern Hexham Swamp is described as being of great spiritual significance and was possibly used for burials.

Upon European settlement the Aboriginal population of the Newcastle district declined dramatically. Aboriginal lives were lost through clashes with European settlers and disease epidemics were responsible for many more. The Aboriginal people of the district also suffered from declining resources caused by European fishing, hunting and land clearing, especially with regards to European farming practices which had reduced the amount of open water in the swamp (Kuskie 2008). The *Maitland Mercury* on 21 June 1854 reported the death of Harry Brown, who was known as "the last of the Newcastle Tribe".

4.3 *REGIONAL ARCHAEOLOGICAL CONTEXT*

Previous archaeological investigations in the region surrounding the study area are listed in *Table 4.2*.

Table 4.2 Previous Archaeological Assessments

Author / Date	Report Study area	Results
Brayshaw (1982)	Brayshaw's survey area is directly on the north west side of Minmi Road from the current study area.	Survey area follows a six metre contour to a high point of 43.3 metres above sea level. Two gullies flow east down to the flood plain, and three flow north, joining Flaggy Creek on its north easterly route to the swampy region. Brayshaw located three sites, one open site, 300 metres from Flaggy Creek and nearby the bitumen on the south western side of Minmi Road. This site was large with several hundred artefacts. Another open site was located containing one broken flaked piece and a silcrete core located in a circular sandy depression situated on the edge of floodplain. One isolated find (one flaked piece) was located on a vehicle track along the highest ridge north of Minmi Road.

Author / Date	Report Study area	Results
Donlon & Brayshaw (1986)	Archaeological Survey located approximately 4km north of the current study area.	Three sites were located during the survey including an axe grinding groove on a tributary of Cocked Hat Creek, an open site on a ridge east of Minmi Road and an open site on the ridge south of Maryland Creek.
Koettig (1988)	Pokolbin near Cessnock	A survey was undertaken for a proposed hotel and tourist facility. The survey area was approximately 68 has and a total of five sites, all open artefact scatters, and 22 isolated finds were located and recorded during the survey.
Koettig (1989)	Pokolbin, near Cessnock	Subsurface testing was carried out by Koettig due to the identification of five artefact scatters near a creek line and 24 isolated finds in a survey and the remainder of the western survey area containing poor ground surface visibility. The results of the test excavation along the main creek line found that artefacts are distributed along almost the entire length of the lower slopes of the interfluves which form the creek bank. Stone artefacts and one hearth were recovered during the excavations (Koettig 1988:1).
Kuskie (1994)	Thornton, near Maitland	Kuskie (1994) carried out a program of sub-surface testing recommended to understand archaeological site patterning across areas designated as being of high archaeological sensitivity after his initial survey due to poor visibility. Nine artefact scatters and one isolated find was located during the survey. Kuskie's investigation involved a series of grader scrapes in perpendicular transects at each site, in addition to several other locations. A total of twenty-three grader scrape transects were inspected for an initial scrape, and a second deeper scrape. A total of 21.57 m^3 of soil was sieved from the grader scrapes and backhoe trenches. 208 artefacts were located on the surface of the grader scrapes and a further 1026 artefacts were located in the sieved material, for a total artefact sample of 1234. For the total study area, the mean artefact density by surface area sampled is 1.77 artefacts per 100 m^2.
HLA Envirosciences (1995)	The study area included land directly east of the current study area.	Stuart (1995) carried out a survey of and area including land east of the current study area for a proposed housing subdivision for County Projects Pty Ltd in Lot 2 DO 84471 Minmi Road, Fletcher. It was determined that there were no archaeological grounds for preventing the development within the study area. However he identified that with the clearing of vegetation archaeological sites may become visible and it would then be the developers obligation under the NPW Act to avoid them unless a suitable permit is obtained
Mills and Associates (1995)	The study area was located abutting the road corridor reserved for future widening of the Minmi Road. It is located within Study area 1.	Northern creek line and eastern section of Wentworth Creek was identified as areas of potential archaeological sensitivity. Surface visibility was poor and access to some areas of the creekbed difficult. Sandstone platforms suitable for axe grinding were noted in the creek beds and may be present in unsurveyed areas.

Author / Date	Report Study area	Results
Brayshaw (1995)	Brayshaw's survey area was in Bolwarra Heights and was located north of the study area in the Maitland local government area.	The survey was carried out over 120 hectares and located two new open sites. A tree recorded in 1984 as being a possible scarred tree was re-examined and the scar assessed as not being Aboriginal in origin. Sub surface testing was recommended to identify open sites at other locations within the study area (Brayshaw 1995:2).
Silcox & Ruig (1995)	13ha on western edge of Hexham Swamp, adjacent to Ebenezer Park	Test excavation consisting of 218 test pits yielded 663 stone artefacts, the majority being indurated mudstone and silcrete, with small amounts of quartz, chert and quartzite. Artefacts included backed blades, flakes and cores.
AMBS (1996)	Site BH2 (NPWS Site no. 38-4-376) for the western margins of the Hexham Swamp, near Black Hill. North of the current study area.	The test excavation of this site found that artefacts occurred within the A unit soil in all areas tested. Testing of upper B unit clay demonstrated that artefact occurrence is rare and probably derive from artefact movement down into clay cracks. All assemblages include the distinctively shaped "backed blade" implement. Associated blade cores and blade manufacturing debris support the identification of the Aboriginal sites discovered as being younger than 4,500 years (and probably younger than 3,500 years). Artefacts were found across all three areas tested in low densities with marked "hot spots" where high densities occur. Evidence from the Woods Gully suggests that the lower relief and different faunal creek resources facilitated camping immediately adjacent to the waterlines. Camping in such location allowed immediate access to the ribbon lily, and other faunal resources of the creek (eg. Tortoise and eel) without compromising visibility and access to the other more mobile prey such as macropod. Concentrations of archaeological material form Aboriginal camping activities built up due to revisitation targeted on the creek. Prehistoric activity and artefact discard also occurs further away from the creek than envisaged by Steel in her earlier delineation of the archaeologically sensitive areas. For most part there is no evidence that such evidence is different close to and away from the creek, except for the evidence of heat treatment and backed blade production.
Effenberger & Baker (1996)	Two sites along the F3 Freeway – Woods Gully & Black Hill Road -	Effenberger & Baker (1996) carried out a program of Aboriginal archaeological survey, assessment & test excavation which resulted in the excavation of 66 test pits which yielded extremely high density of stone artefacts, particularly at Woods Gully. Majority were silcrete, with some Nobbys Tuff, and small amounts of quartz and quartzite.
ERM Mitchell McCotter (1996)	Lot 422 DP 791776 No 21A Forsythe Parade Black Hill	One artefact scatter located on the surface comprising yellow mudstone flakes, red mudstone flakes, grey silcrete flake and core and a piece of bone

Author / Date	Report Study area	Results
HLA Envirosciences (1996)	The same as the previous HLA Envirosciences (1995).	Subisurface testing program identified no evidence of Aboriginal occupation.
CH2M Hill Australia (1997)	Maryland to Shortland Rising Main, Hexham Swamp	Archaeological survey which did not locate any Aboriginal archaeological sites.
Mills (1998)	The same study area as the previous Mills & Associates (1995).	The sub-surface testing program focused on Nikkinba Ridge and test pits were excavated at given locations adjacent to Wentworth Creek. Artefacts were found at all 5 locations (Mills 1998:10). A total of 104 artefacts were recovered. The dominant raw material type was locally obtained pink-red, cream and grey silcrete. Mills conclusions was that "Aboriginal occupation of the terraces adjacent to Wentworth Creek, certainly did occur and that occupation was not confined to Wentworth Creek but also occurred at a reduced level along terraces adjacent to ephemeral tributaries of Wentworth creek" (1998:11).
AMBS (1999)	The current study area and land immediately to the east.	Archaeological survey which identified four archaeological sites including an isolated silcrete stone flaked piece, three grinding groove sites and a potential archaeological deposit.
Umwelt (2002)	Tasman Mine Surface Facilities - 8ha 2km east of Mt Sugarloaf	Aboriginal archaeological survey which did not locate any Aboriginal archaeological sites.
ERM (2003a)	The 'kingfisher park estate' to the east of the current study area and south of Minmi Road.	An archaeological survey identified a series of grinding grooves were recorded along a minor creek and a stone artefact was recorded on slope 400 m from the grinding grooves.
ERM (2003b)	The current study area plus an additional 100m buffer zone.	An archaeological survey identified a single grinding groove but failed to relocate a previously identified isolated find, M-IF-1 (AHIMS site # 38-4-0555). The single grinding groove (referred to as Site F3) was identified within the 100 m buffer zone on the western boundary of the study area.
Mills (2003)	North side of Minmi Road	Archaeological survey which located four open artefact scatters. Artefact scatters were located on a ridgeline, a spur and crest above a steeply incised creek.
Austral Archaeology (2005)	221 Minmi Road, Fletcher	Archaeological survey which identified a PAD located in proximity to Wentworth Creek.
Austral Archaeology (2006)	221 Minmi Road, Fletcher	Test Excavation which identified a low density concentration of artefacts which decreases with distance from Wentworth Creek.
Insite Heritage (2007)	272 Minmi Road, Fletcher	Archaeological survey which identified an area considered to be an extension of PAD recorded by Umwelt (2002). PAD consisted of a spur of higher land running into Hexham Swamp.

Author / Date	Report Study area	Results
Kuskie (2006)	Two areas on north & south (2750 hectares) of John Renshaw Drive	Aboriginal heritage assessment for Abel Underground Mine which identified 38 sites comprising stone artefact scatters, grinding groove sites and a scarred tree. 21 of these occur in the southern area, none of which occur in the study area. Only targeted field survey undertaken.
ERM (2011)	Minmi – Link Road Estate	Survey revealed 4 artefact scatters, 1 grinding groove and 1 isolated artefact. Majority of sites located on ridgelines, with the exception of grinding groove. Some major ridgelines considered to have a high level of archaeological potential to yield further Aboriginal objects/sites.

4.4 LOCAL ARCHAEOLOGICAL CONTEXT

This section provides a brief summary of archaeological assessments carried out within the study area and the immediate locality. Each report is summarised below:

Umwelt – Blue Gum Vista (2002)

Umwelt carried out an assessment of Aboriginal cultural heritage values in the Blue Gum Vista Estate. This report was carried out due to the proposed residential subdivision of the study area for Landcom. The site assessed was located on a gently sloping ridge landform that "forms part of the western site catchment and foreshore of Hexham Swamp" (Umwelt 2002:1). The study area had been a working farm for at least 150 years prior to its acquisition by Landcom (Umwelt 2002:1). The report was required as a surface archaeological survey had been undertaken in 1993 with the Awabakal LALC and no evidence of Aboriginal occupation had been identified. However, Newcastle City Council provided a development consent condition which required written confirmation from the Awabakal LALC and the NSW NPWS that they were satisfied with Landcom managing the Aboriginal cultural heritage values of the study area. NPWS considered that in the "regional context of other Aboriginal heritage information…the proposed estate was located within an area of high cultural heritage sensitivity, and therefore required subsurface investigations to clarify the nature and distribution of Aboriginal cultural heritage material on the land" (Umwelt 2002:1).

Umwelt carried out physical investigations into the study area under two Preliminary Research Permits (PRPs) issued by NPWS in 1999 and 2000. The outcomes of this work included the following results:

- 3001 individual flaked stone artefacts recovered from 316 square metres of subsurface sampling investigations at 20 locations, distributed across the 21 local terrain units (in seven categories) represented in the study area;
- large numbers of fragments of the same stone raw materials as the artefacts were recovered;

- many of these fragments displayed diverse evidence of heat impacts and were interpreted as the result of post discard taphonomic processes such as bushfire and stump burning associated with land clearing. They were not classified as artefacts;

- culturally flaked stone was recovered from all terrain units;

- analysis of the variability of artefact numbers and the diversity of artefact type and character between sampling transects and between local terrain units, indicates that the complexity of evidence is strongly influenced by sample size;

- samples from different terrain units reflect aspects of the same broad land use strategy by Aboriginal people, and no sites representing specific different activities (such as ceremonies) could be differentiated; and

- no evidence of human burials was identified. Although there are general references to the possible presence of burials to the south of Hexham Swamp, the negative result is consistent with the nature of local soils and the extent of past disturbance of the study area.

The results of the investigations and analysis suggested the following conclusions about the past Aboriginal occupation of the study area:

- flaked stone artefacts that were present represented only a small proportion of the total Aboriginal technology that was used in wetland contexts, because many Aboriginal implements utilised organic materials and do not survive archaeologically in open sites;

- flaked stone assemblage had been significantly affected by a range of post discard processes that have affected its structure and composition including uncontrolled heat impacts, bioturbation, cultivation and other forms of disturbance;

- proximity to the margin of the wetland is not, by itself, sufficient to explain the variation in density and complexity of occupation evidence. Other important landscape attributes affecting choices about the location of occupation activities included access to fresh water supplies, gentle gradients, direct access to particular habitat types on the wetland margin, seasonal shelter, aspect and outlook;

- the stratigraphic integrity of the artefact clusters is not sufficient to differentiate a temporal sequence, due to the absence of diagnostic mid to late Holocene implements such as an edge ground axe fragments and backed blades; and

- two main types of raw material present in the study area were tuff (various tuffs are grouped as fine grained siliceous in the artefact analysis) and silcrete.

The significance of the study area was assessed by the Awabakal LALC as having high Aboriginal significance, although three areas were considered to have outstanding value including the area overlooking the Knob (Umwelt 2002:3). The archaeological significance was assessed overall as very high significance when including "Transect 1 (hillock/headland), Transect 4 (open spur crest) and Transect 13 (sheltered spur crest)" (Umwelt 2002:4) due to direct education potential and also due to the rarity of "wetland margin areas containing Aboriginal heritage material" in the lower Hunter Valley (Umwelt 2002:4).

HLA Envirosciences Pty Ltd - Stuart (1995)

Stuart carried out a survey which included land east of the current study area for a proposed housing subdivision for County Projects Pty Ltd in Lot 2 DO 84471 Minmi Road, Fletcher. The study area appears to be partly in Beresfield and partly in the Eldrington land systems as defined by Storey et al (1996:25, 32). The topography in the study area being uniformly undulating slopes, steepening at the heads of gullys, with wider stream valleys possibly filled by aluminium (sic – possibly 'alluvium') (this may have derived from mining) (cited from Stuart 1995:1).

Stuart assessed that the study area was "not considered likely that axe grinding grooves would occur within the study area as there were no sandstone outcrops in the upper reaches of the creeks" (1995:3). Stuart covered the study area by foot but found that "the study area was covered with dense vegetation which basically made these areas unsuitable for surveying due to no ground surface being visible. Accordingly the author attempted to use the inevitable trail bike tracks through the area which created areas of clear exposure suitable for examination… the vegetation along Wentworth creek was impenetrable" (Stuart 1995:3). The effectiveness of the archaeological survey was assessed as being poor at only 10% of the survey area being effectively surveyed (Stuart 1995:5).

The management recommendations for the proposed development state the following:

> *"While there are no archaeological grounds for preventing the development proceeding or being modified it is likely that with the clearing of vegetation archaeological sites may become visible and it would then be the developers obligation under the NPW Act to avoid them unless a suitable permit is obtained.*
>
> *In order that the developer fulfils their obligation it is recommended that once vegetation clearance has been undertaken a second survey be commissioned to verify that no archaeological sites are affected by the proposed development and if archaeological sites are located that the developer obtains the appropriate permission under the National Parks and Wildlife Act.*

> *Such as survey should be undertaken in consultation with the Awabakal LALC. The optimum time for such a survey to be effective would be one or two weeks after clearing to allow time for the ground to stabilise" (1995:8).*

Stuart's (1995) survey did not identify the grinding grooves or sandstone outcrops that were later identified within the same area by AMBS (1999).

AMBS (1999)

AMBS was commissioned by Carman Surveyors to survey an area for residential subdivision, which includes the current study area and land immediately to the east, including land previously surveyed by Stuart (1995). The AMBS study identified four archaeological sites within their study area. One of these sites, indicated as M-IF-1 in the AMBS report, occurs within the current study area. The sites that AMBS identified within their study area are summarised in *Table 4.3*:

Table 4.3 Summary of sites located by AMBS (1999) including M-IF-1 which is located within the study area

Site No.	Site Contents	Site description
M-IF-1	Single red silcrete flaked piece measuring 2-3 cm maximum dimension.	Located on western edge of an eroded vehicle track approximately 40m north upslope of an ephemeral water source. Topsoil removed entirely along the track .
M-GG-1	11 elongate grinding grooves. Eight visible on sandstone platform. Three grooves were partially submerged in water.	Located on landform pattern comprised of steep slopes to moderately undulating hills. The land form the site was located on was an exposed sandstone ledge in a creek bed (AMBS 1999:25).
M-GG-2	Five elongate grinding grooves observed on a sandstone platform of approximately 3.5 m by 2.5 m.	Eastern edge of the sandstone platform dropped down about 60 cm to a water hole. The site was located on a wider sandstone exposure in a landform pattern with steep slopes and moderately undulating hills within a creek bed (AMBS 1999:26).
M-GG-3	Five elongate grooves on a sandstone platform approximately 4m by 3m. The eastern edge of the sandstone platform dropped down approximately 3 m to a waterhole.	The site was located in a landform pattern of steep slopes to moderately undulating hills within a creek bed. The limit of the grinding grooves was within a larger sandstone exposure.
PAD	The area of highest potential for artefacts is along the more permanent water sources and terraces, such as Wentworth Creek and the main tributary (where the grinding groove sites were found). Lower densities of artefacts can be exposed to occur on the higher flat ground such as the spur crests.	

All of the sites assessed by AMBS were considered to be of "low local" archaeological significance (1999:29). This assessment was based on the sites being of low integrity, low research potential and in the case of the grinding grooves "not rare in the locality, similar in nature to others of this type in the locality" (AMBS 1999:29).

Potential Archaeological Deposits (PADs) were also argued to be of "low local" archaeological significance based on "moderate integrity but little research potential" (AMBS 1999:29). This significance rating was based on previous land uses and potential for intact sub-surface archaeological materials. The area of highest archaeological potential was assessed as being "along more permanent water sources and terraces, including Wentworth Creek and in proximity to where the grinding groove sites were found. Previous excavation east of the AMBS study area along Wentworth Creek identified a low density of artefactual material on creek terraces (Mills 1998). Similar potential was identified by AMBS in the central and eastern sections of their study area. One site on the east of Wentworth Creek had previously been identified for conservation (Mills 1998)" (cited in AMBS 1999:30).

AMBS noted that areas of Potential Archaeological Deposits (PADs) within their study area are likely to contain intact sub-surface archaeological materials. However, AMBS suggested that they have little research potential. While site integrity is likely to be good, at most, a low density of artefacts is expected, based on the regional and local model and results of previous sub-surface excavations" (cited in AMBS 1999:31).

Potential archaeological deposit was not assessed by AMBS as an issue for spur crests away from the drainage lines. The hill slope and spur crest areas were not expected to contain dense archaeological deposit, on the basis of previous archaeological sub-surface testing and the regional and local models. At most, these areas potentially contain a low-density spread of artefacts. Sub-surface testing is likely to find a low density of artefacts (or no artefacts) on the higher ground away from the drainage lines, on the basis of regional/local models and previously recorded sites and sub-surface testing in the area (AMBS 1999:32). While higher densities of artefacts have been recorded on ridges in the area surrounding Hexham Swamp, such as at Black Hill, these are on the immediate margins of the wetlands. The current study area is further away from the wetlands and does not have visual contact with the swamp. Previous sub-surface excavations on higher ground close to the current study area did not recover any artefacts (Everett 1996). Therefore, sub-surface excavation of these areas was not recommended as warranted by AMBS.

AMBS located an isolated artefact on a gentle slope within the current study area. The AMBS predictive model suggested that lower densities of artefacts can be expected to occur on the higher flat ground such as the spur crests. Previous excavation in the north of Lot 2 for the "Highland County" residential development (Everett 1996) found no artefacts although it examined higher flatter ground and crossed a minor drainage line. Therefore, there could be either no artefacts or a very low density of artefacts on the hill slopes and crests within the current study area.

The AMBS report recommended that Section 90 consent to destroy needed to be obtained for M-IF-1.

HLA Envirosciences Pty Ltd (1996) – Everett

Everett conducted a program of sub-surface testing for archaeological remains to the east of the current study area (1996:1). This testing was a NPWS requirement after the results of Stuart's surveyed the area and found no sites due to poor surface visibility (Everett 1996:1).

The aims of the test excavation undertaken by Everett were to:

- "Ascertain whether there was any archaeological material within the study area;

- if so, to analyse the sample of the material in order to establish the size of the site(s) and the nature and range of activities that occurred on the site(s); and

- if no archaeological material was located, to examine the implications of this absence for the model of regional settlement patterns" (1996:3).

Everett argued in her research design for the testing program that "the flat area of the site could contain Aboriginal sites" based on review of background literature in the area (1996:3). Everett predicted that "if sites were present that they were likely to be small camp sites displaying evidence of a narrow range of activities" (1996:3). In an area where a proposed water pipeline which would bring water in from the main of Minmi Road "it was predicted that no sites would be located along the sections of the proposed route which had slopes ranging from greater than 5% to 25%" (Everett 1996:4).

A sub surface testing program outlined by Everett involved systematic testing of "the flat area in Stage 1A" and "along the route of the water pipeline" (1996:4).

Everett excavated test pits in a 20 m grid pattern across the flat area in Stage 1a which was approximately (260 m x 220 m x 170 m). This resulted in 59 test pits (1996:5). The water pipeline which was approximately 640 m and 1 m wide, "pits were excavated 20m intervals resulting in 15 test pits" (Everett 1996:5). Everett also excavated two test pits and dug into the gully floor to locate potential artefacts that had washed down into the gully floor (1996:5).

The pits within the flat area were excavated by machine to a variety of depths (depending upon how deep the top layer of soil was and at what depth the B horizon appeared) and to dimensions of approximately 1200 x 8000 mm (Everett 1996:5). Test pits 75-76 were dug by hand with a shovel and measured approximately 300 x 300 mm (Everett 1996:5). Soil was sieved using nested screens with a mesh size of 5 and 2 mm (Everett 1996:5).

Everett located no evidence of Aboriginal occupation during test excavation across the site (1996:6). Everett's interpretation of how soil profiles change across the site was a "greater depth of soil along the level part of the site than at the point where it begins to slope down into the gully. This is not surprising when the erosion profile of the site is taken into account. In this instance it appears that the flat part of the site, characterised by the profile seen in pits 33 and 44 have quite a deep A horizon (approximately 120 mm in the case of Test Pit 44), although as noted above, Test Pit 33 is considerably shallower, having been truncated) which suggests a long, continuous sequence of soil deposition and formation. This contrasts quite strongly with the profile in Test Pit 4, which is "bare" soil with minimal grass cover and no topsoil to speak of. It appears that any topsoil that may have formed on the surface in this area of the site has been washed down into the gully below" (Everett 1996:6).

Test Pits 1-59 showed a high silt content in the soils indicating very strongly "that they are being built up by soil washing down the slope and being deposited there, quite different from the highly organic loamy soils found on the flat" (Everett 1996:6).

ERM (2003a)

ERM (2003a) conducted a survey of an area to the east of the study area (now "Kingfisher Park Estate"). A series of grinding grooves were recorded along a minor creek and a stone artefact was recorded on slope 400 m from the grinding grooves.

The series of grinding grooves identified along a minor creek line (a tributary of Wentworth Creek) were previously recorded by AMBS (1999) as three distinct sites (M GG 1, M GG 2 and M GG 3) comprising 21 individual grinding grooves. ERM identified a total of 40 individual grooves at seven locations along the creek. ERM noted that it is difficult to distinguish the grooves previously recorded by AMBS from the grooves recorded during their study as no site map or photographs were provided in the AMBS report. ERM state that given the frequency of grooves along the creek line and short distances between the locations of the grooves, it was considered appropriate to record all grooves as being contained in one site, referred to in the ERM report as Site F2, incorporating the three AMBS sites.

Site F2 is quite large in comparison with other axe grinding groove sites in the region. Nearby axe grinding grooves sites have been recorded as comprising nine and 32 grinding grooves in nine locations outside the study area and within the NPWS AHIMS search area. The site's size may reflect a greater intensity of use than occurred at other sites in the region, or it may be that soil deposits, water or vegetation obscures grooves at other sites (as may have been the case at Site F2 at the time of the AMBS recording). ERM assessed Site F2 as having moderate archaeological significance.

ERM also identified a Site F1, a single isolated artefact located at the edge of a cleared area associated with a recently constructed dam. The levels of disturbance recorded within the vicinity indicate that the artefact may have been displaced from its original place of discard. ERM assessed Site F1 to be of low archaeological significance.

ERM assessed the study area as potentially containing large numbers of artefacts (both surface and sub-surface), which were not detected during the survey. They suggested that stone artefacts occur as low density scatters on slopes and hill crests and higher density scatters along creek lines. Potential Archaeological Deposits (PADs) were identified along Wentworth Creek and the tributary along the northern boundary of the study area.

ERM (2003a) provided the following recommendations for the management of the study area:

- Site F1: no further archaeological investigation is required in regards to site F1, an isolated find. If this site is to be impacted by the proposed development it is recommended that a Section 87 Permit is applied for with NPWS / DEC and the artefact collected by a representative of the Awabakal LALC;

- Site F2, a grinding groove site, occurs on a creek line running along the northern boundary of the study area. This site should be conserved within a 100 m wide riparian buffer zone (50 m either side of the creek centre line). Where it falls within the study area, this buffer zone should extend along the creek line to the point where it flows into the dam immediately south of the Highland County residential development.

Site F2 was considered susceptible to damage and disturbance from two distinctive phases of the proposed residential subdivision. These were:

- the construction phase; and

- the long term affects associated with residential occupation of the subdivision.

- For the construction phase, the following measures are recommended during the construction phase to minimise the potential for damage and destruction of site F2:

- fencing off the riparian buffer zone with high visibility para-webbing during all construction work;

- alerting all site workers to the legal implications of damaging Aboriginal sites and the sensitivity of the creek area without specifically identifying the grinding groove location and; and

- ensuring that no construction waste is deposited within the riparian buffer zone.

For the residential occupation a Plan of Management should be prepared and implemented in consultation with the Awabakal LALC. This plan of management had to consider the long term effects of the proposed residential development on site F2 and had to include:

- storm water outlet design considerations for the residential subdivision to minimise disturbance of the creek line, including the placement of outlets away from the creek line with energy dissipaters and small channels to disperse the water into the creek line;

- eliminate silt / soil run-off and siltation of channel; and

- management of the exposure of site F2 to potential side effects of the residential subdivision, such as rubbish dumping.

- a 100 m wide riparian buffer zone (50 m either side of the creek centre line) be implemented along Wentworth Creek to conserve Potential Archaeological Deposit.

ERM proposed further management recommendations in the event of the discovery of additional Aboriginal sites and objects within the study area:

- all staff, contractors and others involved in the development should be made aware of the statutory legislation protecting Aboriginal sites and objects;

- upon discovery of the site or object, work must cease immediately NPWS / DEC and the Awabakal LALC are contacted; and

- Aboriginal sites and objects can only be disturbed following the issue of a Section 90 Consent to Destroy from NPWS / DEC. Applications for Section 90 Consents are determined on the basis of an assessment of significance, the need for site destruction and consideration of any mitigation measures that may be warranted.

ERM (2003b)

ERM (2003b) conducted a survey of the current study area and an additional 100m buffer zone (outside of the current study area). As part of the archaeological survey undertaken for the assessment ERM identified a single grinding groove but failed to relocate M-IF-1 (AHIMS site # 38-4-0555).

The single grinding groove (referred to as Site F3) was identified within the 100 m buffer zone on the western boundary of the study area. No grinding grooves were identified in the current study area. Further north from site F3 a number of small tributaries joined this creek line from the east. Outcropping bedrock along these tributaries was also investigated for grinding grooves. The area surrounding site F3 exhibited few signs of disturbance. The 100 m buffer zone to the east of the drainage channel appears to have been extensively cleared, with limited mature trees and undergrowth. There is a dam located on this creek line upstream of site F3 and on the southern boundary of the 100 m buffer zone. ERM assessed Site F3 as having moderate archaeological significance.

ERM (2003b: 40) assessed the study area as having the potential to contain unidentified surface and subsurface deposits. They suggested that stone artefacts occur as low density scatters on slopes and hill crests and higher density scatters along creek lines. It was suggested that the isolated artefact M-IF-1 is possibly a representation of the low background scatter of stone artefacts along the crest and simple slope landforms. ERM (2003b) stated that whilst it is possible for artefacts to occur across the landscape, based on previous archaeological investigations within the region there was potential for high concentrations of artefacts to occur along the unnamed drainage channel that flows through the south-western corner of the study area. This area was identified as an area of PAD.

ERM (2003b) provided the following recommendations for the management of the study area:

- AHIMS Site # 38-4-0555: no further archaeological investigation is required in regards to AHIMS Site # 38-4-0555, an isolated artefact identified by AMBS (1999). If this site is impacted by rezoning and development it is recommended that a Aboriginal Heritage Impact Permit is applied for with NPWS / DEC;

- Site F3, a grinding groove site, occurs on a creek line running through the south-western corner of the study area. This site and the identified Potential Archaeological Deposit (PAD) should be conserved within a 100 m wide riparian buffer zone (50 m either side of the creek centre line);

- In the event that this riparian buffer zone is not conserved test excavation of the PAD should occur in order to assess whether a Section 90 Consent to Destroy should be applied for without further archaeological salvage excavation;

- Site F3 is located within the 100 m buffer zone around Lot 1 DP 84711 and will not be directly subject to residential subdivision should Lot 1 DP 84711 be zoned Residential. The following measures should be taken to ensure that site F3 is not disturbed indirectly from potential residential subdivision within Lot 1 DP 84711:

- fencing off the riparian buffer zone with high visibility para-webbing during all construction work;

- alerting all site workers to the legal implications of damaging Aboriginal sites and the sensitivity of the creek area without specifically identifying the grinding groove location and; and

- ensuring that no construction waste is deposited within the riparian buffer zone; and

- in the event that Site F3 will be disturbed or impacted from potential rezoning and development of Lot 1 DP 84711, a Section 90 Consent to Destroy should be applied for with NPWS / DEC.

ERM (2003b) contained recommendations for further management of Aboriginal sites; these were identical to ERM (2003a).

5 PREDICTIVE MODEL

The environmental context outlined above has a number of implications for archaeology in the study area. Surveys and recordings undertaken in the local area indicate that there is some likelihood of artefacts occurring in the study area, particularly in the vicinity of the creek lines and along the ridge lines. Scarred or carved trees may occur in the less disturbed parts of the study area depending on the maturity of some of the trees. In addition, given the number of axe grinding grooves recorded in the local area it is also possible that these sites may occur in the study area along creek lines.

Stone arrangements and ceremonial grounds (including bora rings) are not anticipated to occur within the study area (these appear to be connected with land to the west). A lack of stone outcrops within the local area indicates that stone quarry sites, shelter sites and rock art/engravings will also not occur.

The level of disturbance associated with the impact of coal mining and timber industries in the area (including settlement, clearing and mining activity) is extremely high and has affected the archaeological integrity of the Minmi area. The likelihood of intact Aboriginal sites occurring within disturbed contexts is considered very low.

A summary of these archaeological site types, their key characteristics and their likelihood of occurrence (most likely listed first) is presented in *Table 5.1* below.

Table 5.1 Aboriginal Archaeological Site Types (in order of likely occurrence)

Site types	Definition
Open sites [stone artefact scatters]	Open sites, also known as open campsites, are usually indicated by surface scatters of stone artefacts and sometimes fire blackened stones and charcoal. Where such sites are buried by sediment they may not be noticeable unless exposed by erosion or disturbed by modern activities. The term campsite is used as a convenient label which, in the case of open sites, does not necessarily imply that Aboriginal people actually camped on the sites; rather it indicates only that some type of activity was carried out there.
Scarred trees	Scarred trees bear the marks of bark and wood removal for utilisation as canoes, shields, boomerangs or containers. It is commonly very difficult to confidently distinguish between Aboriginal scars and natural scars or those made by Europeans.
Grinding grooves	Grooves resulting from the grinding of stone axes or other implements are found on flat areas of suitable sandstone. They are often located near waterholes or creek beds as water is necessary in the sharpening process. In areas where suitable outcrops of rock were not available, transportable pieces of sandstone were used.
Shelter sites	Sandstone shelters and overhangs were used by Aboriginal people to provide campsites sheltered from the rain and sun. The deposits in such sites are commonly very important because they often contain clearly stratified material in a good state of preservation.
Burial sites	Burials may be of isolated individuals, or they may form complex burial grounds.

Site types	Definition
Quarries	These are areas where stone was obtained for flaked artefacts or ground-edge artefacts, or where ochre was obtained for rock paintings, body decoration or decorating wooden artefacts.
Middens	Middens consist of accumulations of shell that represent the exploitation and consumption of shellfish by Aboriginal people. Shell species may be marine, estuarine or freshwater depending on the environmental context and middens may also include other faunal remains, stone artefacts, hearths and charcoal.
Art sites	Aboriginal paintings, drawings and stencils are commonly to be found where suitable surfaces occur in sandstone shelters and overhangs. These sites are often referred to as rock shelters with painted art. Rock engravings, carvings or peckings are also to be found on sandstone surfaces both in the open and in shelters. These are referred to as rock engraving sites.
Stone arrangements, carved trees and ceremonial grounds	These site types are often interrelated. Stone arrangements range from simple cairns or piles of rocks to more elaborate arrangements; patterns of stone laid out to form circles and other designs, or standing slabs of rock held upright by stones around the base. Carved trees are trees with intricate geometric or linear patterns or representations of animals carved into their trunks. Ceremonial grounds and graves were often marked by such trees. Bora grounds are a common type of ceremonial site and they are generally associated with initiation ceremonies. They comprise two circles, generally edged with low banks of earth but sometimes of stone, a short distance apart and connected by a path.

6 FIELD METHODS

6.1 ARCHAEOLOGICAL SURVEY

6.1.1 Sampling strategy

The landscape assessment has identified the presence of three distinct landform units represented in the study area, as discussed in *Section 4.3.* These landforms are:

- crest/ridge;
- drainage channel; and
- simple slope.

The survey involved a pedestrian methodology designed to locate and examine each of these landform units (or survey units). The regional and local research conducted for this project indicated that the following factors should be noted during the archaeological survey:

- that outcropping bedrock within the study area was confined to the drainage channel landform. AMBS (1999) and ERM (2003a; 2003b) identified grinding groove sites in areas of exposed bedrock located within drainage channels immediately east, south and west of the study area; and
- within the simple slope and crest landforms it was important to identify where surface visibility and exposure were greatest. Within the crest landform AMBS (1999) identified an isolated silcrete artefact within the current study area on the boundary of an unsealed track in a large clearing.

6.1.2 Methodology

The study area was surveyed by Alister Bowen (ERM Archaeologist) and Aboriginal representative Peter Townsend (of the Awabakal Local Aboriginal Land Council) on 17 June 2013. The pedestrian survey was conducted according to *Requirements 5 – 9* of the COPAI. The archaeological survey aimed to assess the entire impact footprint of the development, inspecting all soil exposures and zones with low vegetation that contained any tracks and paths (see *Annex C* for route taken during the archaeological survey). The methodology for the field survey was established based upon the Aboriginal heritage predictive statement, known Aboriginal site patterning, existing disturbances across the study area and consultation with Peter Townsend. It was decided that the survey should encompass a walkover of the entire study area, with a particular focus on the creeks areas, any raised, flat or low gradient regions (especially on crests/ridgelines), and any exposures of bedrock.

Prior to entering the field, an approximate survey route was devised based upon current aerial photography (showing existing ground exposures and areas of disturbance i.e. creeks, tracks, ground disturbing activities, and paths) and terrain modelling from Google Earth. This route was discussed with the Aboriginal representative – Peter Townsend – who agreed with the predictive model and the most likely locations for identifying Aboriginal sites. Peter Townsend also provided anecdotal evidence for past surveys that had identified Aboriginal sites within the region. Weather on the day of the site survey was sunny with a very slight wind from the east.

Areas of ground exposure were sporadic, with ground visibility recorded at between 0% and 5%. The survey was completed within six hours. Soil exposures and erosion zones and areas of likely Aboriginal occupation were inspected for Aboriginal heritage sites. Mature trees were inspected for Aboriginal cultural modification.

Where archaeological sites or PAD areas were identified they were recorded by the survey team for content including the GPS location, and digitally photographed. Notes were made of soil conditions, evidence of disturbance and possible extent of sites.

Visibility refers to the amount of ground exposure upon which artefacts could be seen. The presence of vegetation, leaf litter and other variables can obscure visibility, which is expressed as a percentage. An exposure is defined as an area in which ground surface disturbance (usually in the form of erosion) results in the removal of surface vegetation and soils which then permits the detection of archaeological material contained within a surface or sub-surface context. The level of exposure is determined as a percentage.

The calculation of effective coverage provides a means with which to describe the proportion of the study area in which it is possible to assess the presence or absence of archaeological material. For this study, effective coverage was calculated by multiplying the area surveyed by the percentage of exposure and visibility within the survey unit. The area of effective coverage was then expressed as a percentage of the whole survey unit.

Table 6.1 Description of Landforms Surveyed

Survey unit	Landform	Description
1	Crest/Ridge	The survey witnessed very low visibility with low rates of exposure. The crests and ridge lines were situated approximately within an SE-NW orientation which runs through the study area with two open drainage depressions on either side. Minor disturbance was visible in the form of bike tracks and walking paths. Moderate Archaeological Potential.
2	Drainage channels	Survey noted very low visibility and low level of ground exposures. The survey followed the drainage lines in a SE-NW orientation (between the study areas ridgelines). The drainage lines represent open drainage depressions associated with the ridgeline alignment. Minor disturbance was noted in the form of erosion. Moderate Archaeological Potential.
3	Simple Slope	The survey noted several areas of simple slope. Very low visibility and very low exposure existed in these areas. Minor disturbance was visible in the form of bike tracks and walking paths. Moderate Archaeological Potential.

Table 6.2 Archaeological Survey Coverage

Survey Unit	Landform	Survey Unit Area (m²)	Visibility	Exposure	Area Available for Detection (m²)	Effective Coverage (%)
Survey	Crest/ Ridge	2288	5%	2%	0.44	1%
Survey	Drainage channel	2320	3%	1%	0.7	3%
Survey	Simple slope	7248	2%	1%	0.96	2%
Average	**-**	**3952**	**3.3%**	**1.3%**	**0.71**	**2%**
Minimum	**-**	**2280**	**2%**	**1%**	**0.44**	**1%**
Maximum	**-**	**7248**	**5%**	**35%**	**0.96**	**3%**

Table 6.3 Landform Summary – Sampled Areas

Landform	Landform Area (m²)	Area Effectively Surveyed (m²)	Landform Effectively Surveyed	Number of Sites	Number of PAD areas
Crest/Ridge	2288	0.08	.5%	0	3
Drainage channel	2320	1.83	4.5%	0	0
Simple Slope	7248	5.22	8%	0	0
Total	**11.856**	**7.13**	**13**	**0**	**3**

6.1.3 *Archaeological Potential*

Archaeological site formation is a complex combination of factors, such as bioturbation (the reworking of soils and sediments through animal or other factors such as expansion and contraction), and environmental factors, such as erosion or burial through soil movement. Once discarded on the ground surface, artefacts are often readily incorporated into the topsoil horizons through the process of bioturbation. Most commonly, dense artefact deposits exist hidden beneath the upper surface, unobservable by the casual observer (c.f. Wandsnider and Camilli 1992; Fanning and Holdaway 2001). Archaeological assessments that do not employ appropriate methods for prediction cannot reliably define an area's archaeological content. Most frequently, the eroded component of a larger subsurface deposit is detected and recorded as a site. Where soils are sandy, loamy or clayey, artefacts can occur at greater depths and erosion may frequently expose artefacts. Therefore it is crucial that soils, sands and geomorphology of an area are defined in an archaeological assessment and the resulting archaeological implications identified. An understanding of these factors, linked further to the notions of site integrity and condition, yield an understanding of an area or site's archaeological potential.

The level of archaeological potential relates to the likelihood of discovering an Aboriginal object or site within a location. Further description should then be made as to the potential condition and integrity of the soil matrix and potential site itself. Only once all these factors have been considered, can scientific value start to be assessed for an area with potential. Therefore, whilst scientific value and potential are linked, it must be noted that these values and potentials are not the same and can differ substantially for any single site or area with potential. Areas with archaeological potential were identified according to the definitions in *Table 6.4*.

Table 6.4 Definitions of Archaeological Potential

Rank	Definition	Example
Very Low potential	Artefacts are very unlikely to occur in situ.	Eroded landforms, reconstructed landscapes, hazardous landscape, developed areas.
Low potential	Artefacts are not normally found in comparable contexts but could occur in low densities making detection unlikely.	Landforms with no specific focus for use, i.e. with water sources or undifferentiated slopes.
Moderate potential	Artefacts are known to occur in comparable landforms in detectable densities (~1artefact/m^2) and there is an unknown possibility for detection.	Landforms with an environmental focus which may have seen seasonal visitation.
High potential	Artefacts are consistently found in comparable landforms or similar environmental contexts and thus will certainly be found in any ground breaking works.	Landforms with known environmental focus encouraging repeat visitation to specific locale, i.e. margins of swamp or near high order creeks.

6.1.4 Results

During this survey the isolated stone artefact (AHIMS site 38-4-0555) was carefully searched for but not relocated. The previously identified PAD 1 (within the study area) was located and re-inspected as was the previously identified Grinding Groove (outside of the study area) (AHIMS site 38-4-0553). In addition, two new PAD areas were identified within the study area, recorded as – PAD 2 and PAD 3. Two further PAD areas were identified immediately outside of the study area – PAD 4 and PAD 5 (see *Figure 2.1*). Each of the PAD locations show little evidence of ground disturbance (acknowledging the area has previously been subjected to timber extraction and underground mining activities). Additionally, a small portion of PAD 3 has been disturbed through the actions of dirt bike riding activities. The locations and approximate size of the study area's three PAD areas can be seen in *Figure 6.1*.

Client:	ADW Johnson	
Drawing No:	0203956m_G002_R0.mxd	
Date:	21/06/2013	Drawing Size: A4
Drawn By:	JC	Reviewed By: AB

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

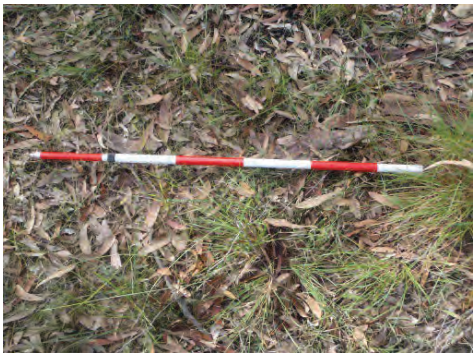
Figure 6.1 - Showing areas where sub-surface testing is required

Aboriginal Cultural Heritage Assessment
505 Minmi Rd, Fletcher, NSW

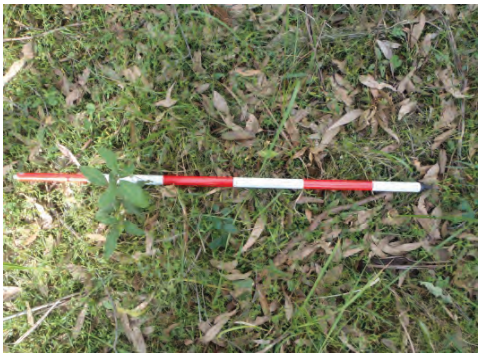
Environmental Resources Management ANZ

Auckland, Brisbane, Canberra, Christchurch, Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney

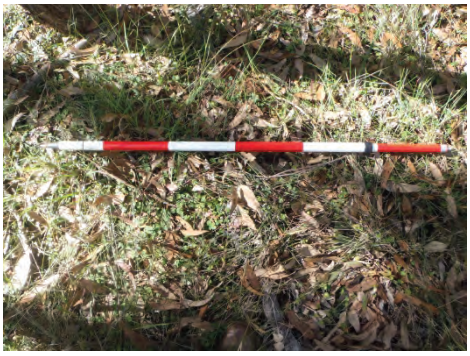
ERM



Photograph 6.1 *Showing broad landscape at PAD 1 (facing east) and indication of ground visibility.*



Photograph 6.2 *Showing broad landscape at PAD 2 (facing east) and indication of ground visibility.*



Photograph 6.3 *Showing broad landscape at PAD 3 (facing east) and indication of ground visibility.*

Photograph 6.4 ***Showing location of recorded isolated artefact 38-4-0555 (facing north).***

Soil Conditions

Soils across the study area (where visible) matched those identified from the background research. The soils consisted of a light brown granular sandy-silty material formed through in situ weathering of the area's natural shale, mudstone, coal and sandstone. Bedrock outcrops within the study area were most often observed as outcropping in the upper reaches of the drainage channels, but were also present in the middle and lower channel reaches.

Exposures and Visibility

The majority of the study area was covered by gum trees (and their litter) and remnant native and exotic low level bush, grass species and weed, with several areas of dense tea tree noted. However, several animal and vehicle tracks, areas of disturbance and natural erosion afforded some level of ground visibility across the study area (see *Table 6.4*). Upper slopes had much thinner vegetation covering (due to the actions of wind and rain erosion) and could be more accurately surveyed.

The survey targeted locations with good ground exposure and moved quickly over areas where the density of vegetative ground cover prohibited a visual observation of the study area's soils.

Table 6.5 ***Survey visibility and exposures for the various landforms***

	Landform	Visibility	Exposure
1	Crest/ridge	5%	2%
2	Drainage channel	3%	1%
3	Simple slope	2%	1%

6.2 *ABORIGINAL ARCHAEOLOGICAL POTENTIAL ACROSS THE STUDY AREA*

One isolated stone artefact and three areas of PAD were located during the field survey. The low number of Aboriginal archaeological deposits identified during the field survey is likely a result of poor visibility, rather than a reflection of the archaeological deposits in the project area. Therefore, areas of potential have been identified to ensure that sub surface archaeological deposits and sites that are not visible are protected.

A basic ranking system can be applied - high, moderate, low or no potential. These rankings can be used to provide management guidance for the future use of the study area. This archaeological potential is based upon three measures:

- the statistical likelihood of finding a site (based upon a background understanding i.e. predictive modelling);
- the condition of any area (the condition of the natural materials within the study area); and
- the integrity of any sites (how much the study area has been disturbed). ERM notes however that the disturbance of sites may not alter their cultural significance to Aboriginal people.

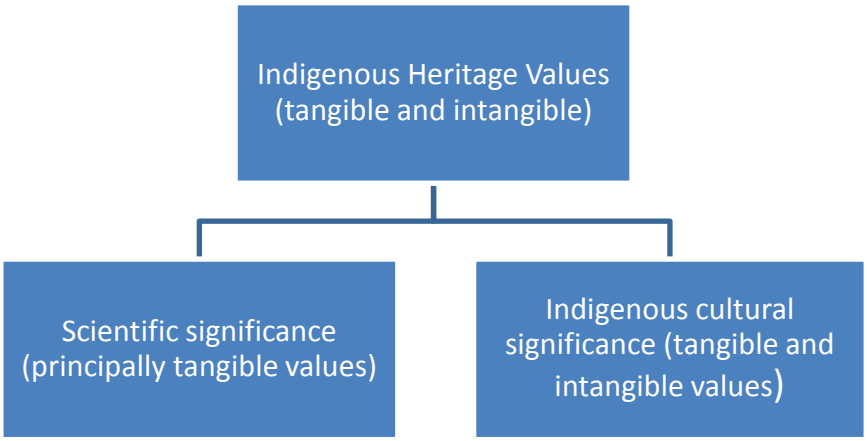
The results of the field survey, coupled with an understanding of local and regional Aboriginal site patterning, suggests that the isolated stone artefact site and the three areas of PAD hold a moderate potential to contain sub-surface Aboriginal archaeological deposits.

7 CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

7.1 PREAMBLE

Aboriginal heritage sites, objects and places hold value for communities in many different ways. The nature of those heritage values is an important consideration when deciding how to manage a heritage site, object or place and balance competing land-use options.

ERM approach to the Aboriginal heritage assessment is based upon identifying the key Aboriginal heritage values; values that are likely to be both tangible and intangible. This approach needs to consider the values assessment from the scientific and Aboriginal community perspectives, in accordance with Australian best practice documents.



The NPWS Aboriginal Cultural Heritage Standards and Guidelines Kit (1997) states:

> While Aboriginal sites and places may have educational, tourism, and other values to groups in society their two principal values are likely to be in terms of their cultural/social significance to Aboriginal people and their scientific significance to archaeologists. It is thus possible to identify two main streams in the overall significance assessment process: the assessment of cultural/social significance to Aboriginal people and the assessment of scientific significance to archaeologists… (1997: PDF page 92)

Therefore this assessment focuses upon the scientific significance assessment of the sites observed and recorded during the survey. The Aboriginal community has provided input into the survey and assessment and has been afforded the opportunity to comment on this report for a cultural and social significance assessment of the sites recorded.

7.2 BACKGROUND: SCIENTIFIC SIGNIFICANCE ASSESSMENT

The primary guide to management of heritage places is the Australia ICOMOS Burra Charter 1999. The Burra Charter defines cultural significance as:

> *Cultural significance* means aesthetic, historical, scientific, social or spiritual value for past, present or future generations.
>
> Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.
>
> Places may have a range of values for different individuals or groups.

This assessment has sought to identify Aboriginal heritage objects and sites within the study area and obtain sufficient information to allow the values of those objects and sites to be determined. NPWS (1997:93) have stated that *'while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential'*. As such, six key criteria may be used to examine the scientific value/significance of a site. These are:

- Rarity: whether any or all aspects of a site (type, location, integrity, content and archaeological potential) can be considered common or rare within a local, regional or national context;

- Representativeness: the comparative rarity of the site when considered and contrasted against other similar sites conserved at the local and/or regional level;

- Archaeological landscapes: the study of the cultural sites relating to Aboriginal peoples within the context of their interactions in the wider social and natural environment they inhabited. Landscapes can be large or small depending upon specific contexts (i.e. local or regional conditions); they may also may be influenced by Aboriginal social and demographic factors (which may no longer be apparent);

- Connectedness: whether the site can be connected to other sites at the local or regional level through aspects such as type, chronology, content (i.e. materials present, manufacturing processes), spatial patterning or ethno-historical information;

- Integrity & condition: integrity refers to the level of modification a site has been subject to (the cultural and natural formation process) and whether the site could yield intact archaeological deposits, which could be spatially meaningful. Condition takes into account the state of the material, which is especially relevant for organic materials;

- Complexity: the demonstrated or potential ability of a site to yield a complex assemblage (stone, bone and/or shell) and/or features (hearths, fire pits, activity areas); and

- Archaeological potential: the potential to yield information (from sub-surface materials which retain integrity, stratigraphical or not) that will contribute to an understanding of contemporary archaeological interest, or which could be saved for future research potential.

7.3 *SCIENTIFIC SIGNIFICANCE ASSESSMENT*

The areas of archaeological interest occurring in the study area are common site types within the region. Stone artefact scatters, isolated finds and grinding grooves are the most common regional sites types, and that is reflected in the results of the field survey undertaken for this project.

The isolated stone artefact site within the study area may be considered as representative of the types of sites (along with stone artefact scatters), behaviours and patterning that are expected locally and regionally. The description of the isolated artefact does not place it as an exceptionally high standard in terms of condition or content.

Low rises and elevated slightly sloping areas near water sources would have been attractive camping locations. Such landscape zones within the study area were identified during the fieldwork stage for this project (i.e., the three PADs) and are considered to be archaeologically, scientifically and culturally significant. The PAD areas within the study area have been identified as having moderate potential for containing intact archaeological deposits. Several of these archaeologically sensitive areas within the surrounding region to the study area have been associated with stone artefact sites. The areas identified as PADs within the study are likely to contain stone artefacts. However, no significance assessment of these artefacts – if any exist – can be made until after sub-surface investigations have been conducted.

Due mainly to their commonness within regions landscape and the currently unknown contents of the PAD sub-surface layers, the isolated artefact and PAD areas within the study area have been assessed as having low archaeological/scientific significance.

7.4 *CULTURAL SIGNIFICANCE ASSESSMENT*

During the archaeological site survey and the consultation meeting each of the Aboriginal representatives indicated that the study area holds cultural significance to them as it is situated within areas that were used for hunting, gathering and camping by past Aboriginal groups. The Aboriginal representatives also indicated that the wider landscape, particularly the flora, fauna and water courses associated with the study area are significant to them and other past and present Aboriginal people as they formed part of an economic resource environment.

7.5 STATEMENT OF HERITAGE SIGNIFICANCE

The study area is in a landscape associated with the Hexham Swamp (an area of known Aboriginal occupation) and therefore has cultural significance to local Aboriginal groups. The recorded isolated artefact represents an identifiable Aboriginal site and three PAD areas represent prominent features located within the study area likely to contain Aboriginal sites. These attributes are tangible values to the study area. Until further archaeological examinations are conducted to assess the size and nature of archaeological deposits, they represent a low level of heritage significance.

8 THE PROPOSED ACTIVITY

The proposed activity has been outlined in *Section 1.1* of this report. This study forms part of the documentation to support a planning proposal to rezone the land for a proposed development application to be lodged with Newcastle City Council. The initial step is to have the 26.4 hectare site's zoning changed from its present E4 Environmental Living under the Newcastle Local Environmental Management Plan 2012, to a part R2 Low Density Residential and part E2 Environmental Conservation. This rezoning will allow a proposed low density residential development to occur, subject to obtaining a development contract. The current proposal comprises approximately 110 residential lots and including a 12 hectare environmental conservation area in the central portion of the study area (see *Annex A*).

8.1 POTENTIAL HARM TO ABORIGINAL OBJECTS

The proposed works will involve the following actions that have the potential to impact on Aboriginal heritage sites and values:

- the construction of roads;
- the laying of underground cables and pipe lines for services such as electricity, telecommunications, water, stormwater and sewerage; and
- the construction of residential dwellings including the digging of footings and landscaping activities.

The recorded isolated artefact and identified areas of PAD will be impacted upon through the works outlined above. It has been advised that an avoidance of the isolated artefact and PAD areas is not a viable option. Therefore, the Aboriginal sites and areas of moderate PAD will be subject to impact by the proposed works. In addition, the recorded Aboriginal grinding groove and areas of PAD identified immediately outside of the study area (shown in *Figure 2.1*) may also be impacted by the proposed development through increased soil runoff and human visitation to the area. Impact reduction and mitigation requirements for each site and PAD have been developed to ensure a sound heritage outcome for the study area and a reduction in the damage to heritage values. These are outlined in *Section 9* of this report.

8.2 JUSTIFICATION

The development proposal plan (shown in *Annex A*) shows the location of the proposed housing development and environment conservation area. This context plan demonstrates that significant areas of bushland will be preserved within the development corridor surrounding the study area.

The development of the study area will allow the completion of essential transport links into and from the adjoining residential developments. The adjoining developments have also been designed on the understanding that the wider region will eventually be developed and planning for bus routes and open space are under consideration.

9 AVOIDING AND MINIMISING HARM

Seven areas exist that require measurers designed to minimise harm to Aboriginal places through the proposed housing development.

Within the study area, these places are:

- PAD 1: approximately 100 metres by 100 metres.
- PAD 2: approximately 100 metres by 55 metres.
- PAD 3: approximately 100 metres by 100 metres.
- Isolated artefact site AHIMS 38-4-0555.

The three PAD areas proposed for test excavations are flat crest and simple slope ground of moderate incline and are associated with the erosion of three open drainage depressions which drain to the Hexham Swamp. A sub-surface testing program will add to the understanding of Aboriginal occupation in the region and is necessary to adequately assess the Aboriginal cultural heritage significance of the study area. The evidence gained will then be used to determine the potential impact of the proposed housing development to Aboriginal cultural heritage and to produce relevant managing strategies.

The isolated artefact should again be searched for and if located, its position should be recorded and the artefact collected and redeposited in a suitable and recorded safe location. PAD areas 1, 2, and 3 should undergo sub-surface archaeological investigations before the construction phase (or any ground disturbances) of the housing development occurs.

The areas outside of the study that require measurers to be taken to minimise harm to Aboriginal places are:

- PAD 4.
- PAD 5.
- Grinding Groove site AHIMS 38-4-0553.

These areas should undergo protection mediation measurers (through the use of silt traps and hemp bunting) to minimise the effects of increased silt run off from ground disturbance during the construction phase of the housing development. Aboriginal site disturbance through an increase in human visitation to the area should also be limited at the PADs and Grinding Groove sites. It is recommended that signage, fencing and protective native vegetation be planted around these areas – in the form of Native Raspberries – to minimise human access. An added advantage to establishing such vegetation is that 'bush tucker' program can be run by the local Land Management team to help inform interested members of the public about Aboriginal culture. This program has been undertaken in the past by the local land council in conjunction with the Awabakal people (pers. comm Shane Frost). .

9.1 CARE AND CONTROL FOR ABORIGINAL OBJECTS

In accordance with Requirement 26 of the COPAI, artefactual material recovered through the test excavation procedure will be collected, interpreted and catalogued, then reburied within a portion of the study area (or nearby region such as the development at Sanctuary) that is to be conserved and not impacted during the proposed or future development. Artefacts for reburial will be placed in a closed container and the reburial location recorded with all information forwarded to the OEH.

9.2 SUB-SURFACE SAMPLING STRATEGY

It is proposed that 100 metre long transect lines be set out across the areas defined as holding moderate archaeological potential. PADs 1 and 3 should be tested through the use of three transects lines and PAD 2 should be tested through the use of two transect lines (see *Figure 9.1*). Test pits 1 metre by 1 metre in size should then be excavated at twenty metre intervals along each transect line. Therefore, starting at 0 metres and ending at 100 metres, six test pits would be excavated along each transect line. Smaller 0.5 metre by 0.5 metre test pits may be excavated to define an identified archaeological site boundary. It is also proposed that up to ten 0.5 metre by 0.5 metre test pits may be excavated randomly at the discretion of the excavation team – undertaken to capture archaeological samples of specific landforms within the study area.

This technique will ensure that the landforms identified as potentially holding archaeological deposits are adequately tested as part of the sub-surface investigation program. To obtain an appropriate sample of the identified PAD areas the proposed testing strategy should excavate a minimum of 48, 1 metre by 1 metre test pits along 8 transect lines, as well as the random pits. This equates to approximately 0.01% of the overall study area.

Client:	ADW Johnson	
Drawing No:	0203956m_G003_R0.mxd	
Date:	21/06/2013	Drawing Size: A4
Drawn By:	JC	Reviewed By: AB

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Figure 9.1 - Showing approximate locations for the excavation transect lines within each PAD area.

Aboriginal Cultural Heritage Assessment
505 Minmi Rd, Fletcher, NSW

Environmental Resources Management ANZ

Auckland, Brisbane, Canberra, Christchurch, Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney

ERM

10 RECOMMENDATIONS

This section provides the recommendations from the Aboriginal Cultural Heritage Assessment undertaken as part of proposed housing development at 505 Minmi Road, Fletcher, NSW. Avoidance of archaeological sites represents the best heritage outcome as it means no impact on the identified heritage features.

The management recommendation statements are made in light of:

- the results of background documentary investigation and archeological field inspection as outlined in this report;
- predictive modelling;
- a heritage significance assessment;
- legislative requirements as outlined in this report;
- the results of the field survey;
- consultation with the relevant Aboriginal organisations; and
- the premise that the proposed development of the study area will impact on the study area's archaeology.

10.1 ABORIGINAL HERITAGE

The study area holds Aboriginal heritage significance as it contains landforms that have the potential to display evidence of a distinctive way of life, tradition, land use, custom, and process or function no longer practised. The results of previous archaeological studies relevant to the study area show Aboriginal sites present within the study area, within close vicinity to the study area and within the surrounding region (i.e. within 400 m of permanent water sources; on flat or slightly undulating landforms; on the crest or immediate slopes of low level rises; at natural outcroppings of bedrock; and along small river tributaries [minor water courses]).

Due to vegetation ground cover (in the form of plants and leaf litter) over the majority of the study area, a complete assessment of its Aboriginal heritage values could not be adequately conducted, particularly in regard to the three identified areas of PAD. Therefore, following from the field survey and consultation with the local Aboriginal community, the following recommendations have been developed:

- the three PAD areas of relatively undisturbed ground within the study area that have been identified (and shown in *Figure 9.1*) as having moderate potential to reveal Aboriginal cultural heritage, should undergo a sub-surface testing program before ground disturbing elements of the proposed housing development proceeds. Most appropriately this would occur as part of documentation for a development application;

- during works, all known and recorded sites should be clearly marked and avoided;

- no archaeological constraints exist for sections within the study area identified as existing outside of the areas of archaeological significance identified in *Figure 2.1 and 9.1*);

- areas outside of the study area identified in this report as holding Aboriginal significance (i.e., the grinding grooves and PADs 4 and 5) require protective measures to be undertaken before ground disturbing elements of the proposed housing development can proceed;

- no ground disturbing components of the proposed housing development should take place until the sub-surface archaeological investigations outlined in this report have been undertaken and reported on;

- it is recommended that regular meetings are established with the local Aboriginal community to discuss the progress of the proposed works;

- where possible, and in consultation with Aboriginal stakeholders, conservation areas could be established where artefacts may be relocated and interpretive strategies be established for the past use of the landscape by Aboriginal people;

- a copy of this report should be provided to each of the Aboriginal organisations who expressed an interest in the project; and

- a copy of this report should be provided to the relevant office of Environment and Heritage.

10.2 CULTURAL AWARENESS TRAINING

In order to comply with best practice principles, it is recommended that any personnel involved with ground breaking activities in the study area undertake a cultural awareness training programme. This programme should:

- include information on the Aboriginal archaeological and cultural heritage values of the study area;

- outline potential archaeological sites that may be found during works;

- include training on how to identified stone tools and other Aboriginal heritage sites; and
- should be prepared and delivered in consultation with Aboriginal stakeholder groups.

10.3 CHANCE FIND PROCEDURE

- If any heritage objects and/or relics, as protected under NSW legislation, are uncovered during the Project, then the following steps should be followed: all building activity in the immediate area should cease;
- and an appropriately qualified heritage professional consulted;
- the Office of Environment and Heritage should be immediately contacted;
- local Aboriginal stakeholder groups should be notified; and
- an appropriately qualified heritage professional should be contacted to record the location and attributes of the site and to determine the significance of the find.

In the event of the discovery of human skeletal material (or suspected human skeletal material) during project activities in the study area the following steps should be followed:

- all activities and/or works in the immediate area must cease;
- the State Police or State Coroner must be contacted along with the Office of Environment and Heritage ; and
- any sand/soils removed must be identified and set aside for assessment by the investigating authorities.

10.4 ABORIGINAL COMMUNITY ENDORSEMENT AND RECOMMENDATIONS

As a component of the archaeological survey, a discussion concerning the Aboriginal cultural heritage values of the study area took place in the field (on 17 June 2013) between ERM archaeologist Alister Bowen and Peter Townsend of the Awabakal Local Aboriginal land Council. Additional discussions took place at the study area on 18 June 2013, concerning the Aboriginal cultural heritage values of the study area, between ERM archaeologist Alister Bowen and Shane Frost of the Awabakal Descendants Traditional Owners Aboriginal Corporation, Kerrie Brauer of the Awabakal Traditional Owners Aboriginal Corporation, Suzie Worth of the Wonn1 (Kawul Pty Ltd), and Les Ahoy (David) of the Lower Hunter Aboriginal Incorporated. It was agreed during these discussions that PAD areas were present within the study area, these areas were significant to Aboriginal people, and that sub-surface

investigations were required to properly assess the Aboriginal cultural heritage of the area before ground disturbing elements of the proposed housing development occur.

Following review of this report several additional recommendations relating to the Aboriginal cultural heritage values within the project area were provided by Aboriginal stakeholder groups. These recommendations are outlined below. These stakeholder comments and ERM's responses are included within *Annex D*.

The LHAI has requested that:

- Aboriginal stakeholders involved in salvage excavations within the study area be appropriate qualified;
- that local knowledge holders be included in future surveys; and that
- artefacts recovered in the study area shuld be reburied on site or stored at the Awabakal LALC.

The ADTOAC has requested that:

- initial ground disturbing works in the study area be monitored by Aboriginal Stakeholders to facilitate the collection of any artefacts within the impact area;
- prior to any ground disturbances within the project area, test pits should be undertaken within 50m and 100m of watercourses;
- AHIMS Site # 38-4-0555 should be subjected to sub surface testing prior to impact;
- topsoil from within the project area should not be removed from site;
- cultural awareness training should be delivered by the Awabakal Traditional Owners with an archaeological consultant; and that
- a Cultural Heritage Management Plan be prepared for sub surface cultural heritage contained in the outer margins of the creek line.

The ATOAC has requested that:

- an Aboriginal Cultural Heritage Management Plan should be prepared and implemented;
- if an AHIP is applied for an Aboriginal Cultural Heritage Management Plan should include a monitoring process for artefacts by registered Aboriginal stakeholders; and that
- no topsoil should be removed from the project area.

11 REFERENCES

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Annex A

Development Plan


Plan of: Proposed Subdivision Lot 1 D.P.844711
Location: Minmi Road, Fletcher Newcastle
Council:
Datum: A.H.D.
Origin: Lidar (LPI)
Projection: MGA
Origin: n/a
North Direction: Grid
Contour Interval: 1.0m
Date: 17th February 2010
Sheet: 1 of 1
Plan By: RC
Project Manager: BS
Office: Hunter
Plan Purpose: Concept
Version: H (24/09/2012)
Client: Kingston Minmi Pty. Ltd.
Survey: N/A
AutoCAD: Dwg\11813-SUB-007-H
Our Ref: 11813
MINMI ROAD
ROAD
25m WIDE
APZ 40m WIDE
APZ 20m WIDE
TEMPORARY APZ 40m WIDE
DEVELOPMENT SUBJECT TO MP.08 / 0125 (INDICATIVE LAYOUT ONLY)
EXTENT OF MINE WORKINGS
adw johnson
LEGEND
MAJOR CONTOUR
MINOR CONTOUR
MINE SUBSIDENCE
FOOTPATH
ROAD PAVEMENT
OPEN SPACE 10.54Ha (40%)
DEVELOPABLE AREA 15.67Ha (60%)
TOTAL AREA 26.21Ha
ASSET PROTECTION ZONES
H 24/09/2012 Amend Layout to Roundabout
G 04/04/2012 Amend Layout / Hatch Layout
F 14/07/2010 Amend Asset Protection Zones
E 6/07/2010 Amend Road Alignment
Ver. Date Comment
adw johnson pty. ltd. unit 7, building 2, 335 hillsborough road, warners bay 2282 ph: (02) 49785100 fax: (02) 49785199 hunter@adwjohnson.com.au abn 62 129 445 398

Annex B

AHIMS Extensive Search Record

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : 0203953

Client Service ID : 102502

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
38-5-0189	NL-IF-1	AGD	56	369839	6358948	Open site	Valid	Artefact : -	Isolated Find	98458,98459
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists,Mrs.Robynne Mills,Mr.Paul Irish					**Permits**	3602	
38-4-0530	Blue Gum Hills 1	AGD	56	373240	6362240	Open site	Valid	Artefact : -	Open Camp Site	101128
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**	2332,3009	
38-4-0493	NR-OCS-1	AGD	56	373000	6361110	Open site	Valid	Artefact : -	Open Camp Site	97813
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**		
38-4-0494	NR-OCS-2	AGD	56	373470	6361210	Open site	Valid	Artefact : -	Open Camp Site	97813
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**		
38-4-0495	NR-OCS-3	AGD	56	373270	6360820	Open site	Valid	Artefact : -	Open Camp Site	97813
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**		
38-4-0496	NR-0CS-4	AGD	56	373040	6361900	Open site	Valid	Artefact : -	Open Camp Site	101128
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**	1722,2332,3009	
38-4-0497	NR-OCS-5	AGD	56	373190	6361260	Open site	Valid	Artefact : -	Open Camp Site	97813
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**		
38-4-0451	Maryland Creek;	AGD	56	372450	6358700	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	1333
	Contact	**Recorders**	Warren Bluff,R Miller					**Permits**		
38-4-0086	Minmi;Windy Hill;	AGD	56	373370	6361420	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Helen Brayshaw					**Permits**		
38-4-0404	Minmi Road;	AGD	56	373250	6360510	Open site	Valid	Artefact : -	Open Camp Site	3149
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**		
38-4-0405	Minmi Road Site 1;	AGD	56	373450	6361710	Open site	Valid	Artefact : -	Open Camp Site	3149
	Contact	**Recorders**	K Wilkinson					**Permits**		
38-4-0409	Minmi Road IF;	AGD	56	373410	6360550	Open site	Valid	Artefact : -	Isolated Find	3149
	Contact	**Recorders**	K Wilkinson					**Permits**		
38-4-0557	M-GG-2	AGD	56	372240	6361140	Open site	Valid	Grinding Groove : -		
	Contact	**Recorders**	Gavin Martin					**Permits**		
38-4-0553	M-GG-1	AGD	56	372190	6361120	Open site	Valid	Grinding Groove : -		
	Contact	**Recorders**	Australian Museum Business Services (AMBS)					**Permits**		
38-4-0555	M-1F-1	AGD	56	371840	6361170	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Australian Museum Business Services (AMBS)					**Permits**		
38-4-0556	M-GG-3	AGD	56	372310	6361140	Open site	Valid	Grinding Groove : -		
	Contact	**Recorders**	Australian Museum Business Services (AMBS)					**Permits**		
38-4-0683	Blue Gum Vista Estate (BGV)	AGD	56	373150	6361850	Open site	Valid	Artefact : 3000		98383,98384,101128,101177

Report generated by AHIMS Web Service on 31/05/2013 for Alexander Beben for the following area at Datum :GDA, Zone : 56, Eastings : 369325 - 374169, Northings : 6358899 - 6363666 with a Buffer of 50 meters. Additional Info : Aboriginal Cultural Heritage Assessment, Archaeological Report and AHIP Application. Number of Aboriginal sites and Aboriginal objects found is 35

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : 0203953

Client Service ID : 102502

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact Awabakal LALC	**Recorders**	Umwelt (Australia) Pty Limited					**Permits**	1630,2332,2938,2939,3009	
38-4-0792	MR-05-1	AGD	56	371869	6361638	Open site	Valid	Artefact : -		98834,100793
	Contact T Russell	**Recorders**	Mrs.Robynne Mills					**Permits**	2252	
38-4-0793	MR-05-3	AGD	56	372238	6361771	Open site	Valid	Artefact : -		98834
	Contact T Russell	**Recorders**	Mrs.Robynne Mills					**Permits**	2252	
38-4-0794	MR-05-4	AGD	56	372531	6361473	Open site	Valid	Artefact : -		98834,100793
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**	2252	
38-4-0795	MR-0S-2	AGD	56	372030	6362002	Open site	Valid	Artefact : 15		100793
	Contact T Russell	**Recorders**	Mrs.Robynne Mills					**Permits**		
38-4-0855	Fletcher PAD	AGD	56	373340	6361300	Open site	Valid	Artefact : 60, Potential Archaeological Deposit (PAD) : -		99842
	Contact Searle	**Recorders**	Austral Archaeology Pty Ltd,Ms.Lucy McNicol,Mr.David Marcus					**Permits**	2329,2407,3479	
38-4-0960	Bishop Tyrell 1	AGD	56	373230	6361700	Open site	Valid	Artefact : -		
	Contact T Russell	**Recorders**	Mrs.Angela Besant					**Permits**	2503,2808	
38-4-0968	Bishop Tyrell 1A	AGD	56	373230	6361700	Open site	Valid	Artefact : 5, Potential Archaeological Deposit (PAD) : -		100049
	Contact Searle	**Recorders**	Mrs.Angela Besant					**Permits**		
38-4-1029	Kingston-Wentworth Creek	AGD	56	372785	6361016	Open site	Valid	Artefact : -		
	Contact S Scanlon	**Recorders**	Pam Dean-Jones					**Permits**	2829	
38-4-1072	NR-OCS-4	GDA	56	373040	6361900	Open site	Valid	Artefact : -		97813
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**		
38-4-0070	Minmi Road	AGD	56	370266	6363377	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Helen Brayshaw					**Permits**		
38-4-1161	Balarang Street 1	GDA	56	373675	6362249	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : 1, Artefact : 1673, Grinding Groove : 1		102654
	Contact	**Recorders**	Hunter Water Corporation,Mr.Alan Williams					**Permits**	3158,3289	
38-4-1338	MLR 1	GDA	56	371228	6359357	Open site	Valid	Grinding Groove : -		
	Contact	**Recorders**	Doctor.Tim Owen,ERM Australia Pty Ltd-Pyrmont					**Permits**		
38-4-1339	MLR 2	GDA	56	372124	6359288	Open site	Valid	Artefact : 12		
	Contact	**Recorders**	Doctor.Tim Owen,ERM Australia Pty Ltd-Pyrmont					**Permits**		

Report generated by AHIMS Web Service on 31/05/2013 for Alexander Beben for the following area at Datum :GDA, Zone : 56, Eastings : 369325 - 374169, Northings : 6358899 - 6363666 with a Buffer of 50 meters. Additional Info : Aboriginal Cultural Heritage Assessment, Archaeological Report and AHIP Application. Number of Aboriginal sites and Aboriginal objects found is 35

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : 0203953

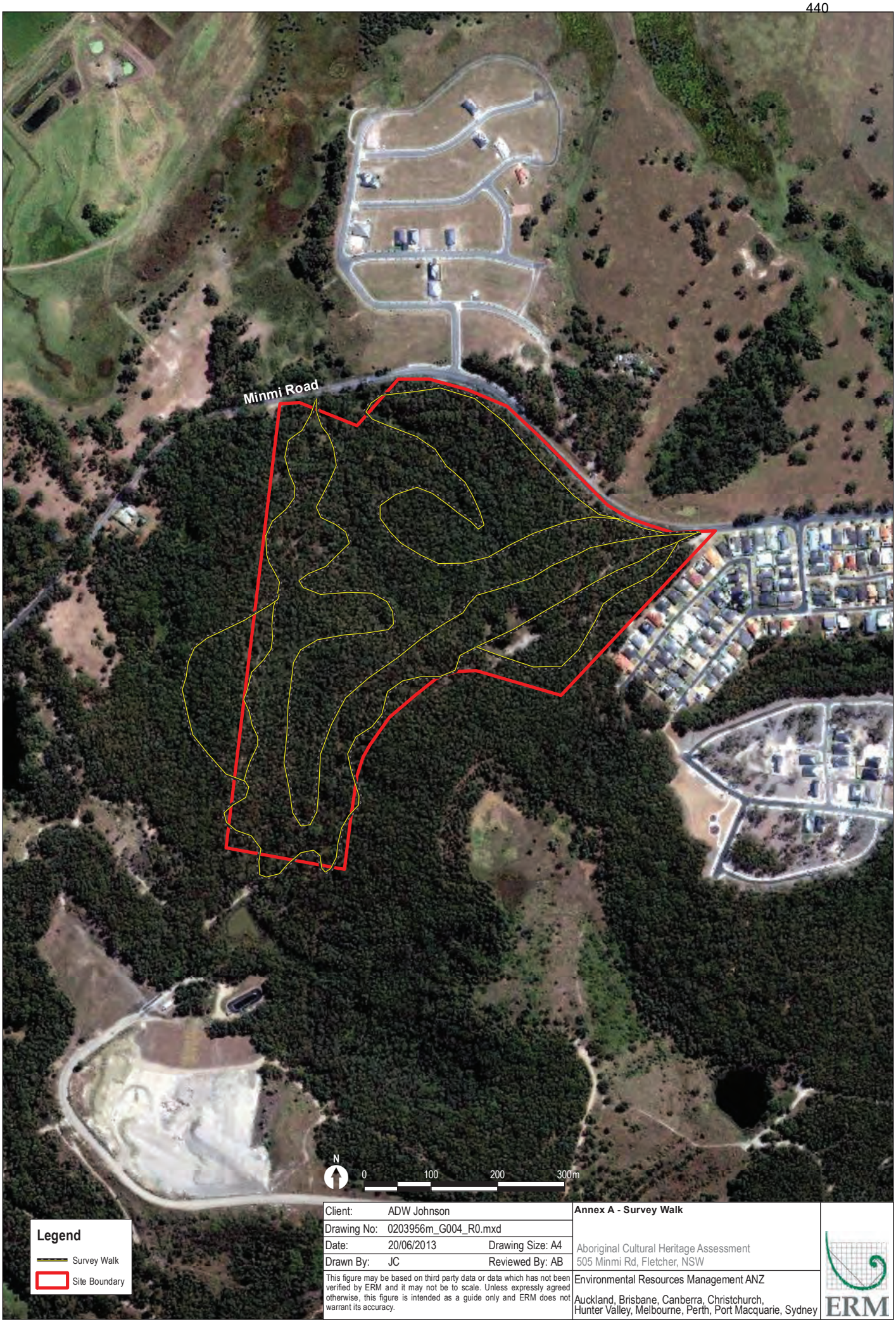
Client Service ID : 102502

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
38-4-1344	RPS MF1	GDA	56	372101	6363724	Open site	Valid	Artefact : 2, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Ms.Tessa Boer-Mah,RPS Australia East Pty Ltd -Hamilton					**Permits**	3452	
38-4-1587	Fletcher Repat 01	GDA	56	373371	6361655	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Austral Archaeology Pty Ltd					**Permits**		
38-4-1519	SANCTUAARY - ESTATE STAGE4B FLETCHER NSW	GDA	56	372744	6362863	Open site	Valid	Artefact : 1, Non-Human Bone and Organic Material : 1, Shell : 1		
	Contact	**Recorders**	Awabakal LALC					**Permits**		
38-4-1377	Lenaghans AS1	GDA	56	372199	6363630	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Ms.Mary-Jean Sutton,Hunter Water Australia Pty Limited					**Permits**	3452	
38-4-1378	Lenaghans AS2	GDA	56	372246	6363538	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Ms.Mary-Jean Sutton,Hunter Water Australia Pty Limited					**Permits**	3452	

Report generated by AHIMS Web Service on 31/05/2013 for Alexander Beben for the following area at Datum :GDA, Zone : 56, Eastings : 369325 - 374169, Northings : 6358899 - 6363666 with a Buffer of 50 meters. Additional Info : Aboriginal Cultural Heritage Assessment, Archaeological Report and AHIP Application. Number of Aboriginal sites and Aboriginal objects found is 35

Annex C

Survey Route



Client:	ADW Johnson	
Drawing No:	0203956m_G004_R0.mxd	
Date:	20/06/2013	Drawing Size: A4
Drawn By:	JC	Reviewed By: AB

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Annex A - Survey Walk

Aboriginal Cultural Heritage Assessment
505 Minmi Rd, Fletcher, NSW

Environmental Resources Management ANZ

Auckland, Brisbane, Canberra, Christchurch,
Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney

ERM

Annex D

Aboriginal Communications Log

National Native Title Tribunal

Registration test decision

Application name	Awabakal and Guringai People
Name of applicant	Kerrie Brauer, Trevor Powell, Wayne Hawken, Shane Frost, Peter Leven, Wayne Saxby, Tracey-Lee Howie, Trudy Smith, Laurie Bimson
State/territory/region	New South Wales
NNTT file no.	NC2013/002
Federal Court of Australia file no.	NSD780/2013
Date application made	13 May 2013 Amended application filed 7 June 2013
Date of Reasons	**9 July 2013**

I have considered this claim for registration against each of the conditions contained in ss. 190B and 190C of the *Native Title Act 1993* (Cwlth).

For the reasons attached, I am satisfied that each of the conditions contained in ss. 190B and C are met. I accept this claim for registration pursuant to s. 190A of the *Native Title Act 1993* (Cwlth).

Date of decision: 13 June 2013

_____

Lisa Jowett

Delegate of the Native Title Registrar pursuant to
sections 190, 190A, 190B, 190C, 190D of the *Native Title Act 1993* (Cwlth) under an instrument of delegation dated 12 October 2012 and made pursuant to s. 99 of the Act.

Reasons for decision

Table of contents

Introduction

This document sets out my reasons, as a delegate of the Native Title Registrar (the Registrar), for the decision to accept the application for registration pursuant to s. 190A of the Act.

Note: All references in these reasons to legislative sections refer to the *Native Title Act 1993* (Cwlth) which I shall call 'the Act', as in force on the day this decision is made, unless otherwise specified. Please refer to the Act for the exact wording of each condition.

Registration test

The Registrar of the Federal Court of Australia (the Court) gave a copy of the Awabakal and Guringai People claimant application to the Native Title Registrar (the Registrar) on 13 May 2013 pursuant to s. 63 of the Act. This triggered the Registrar's duty to consider the claim made in the application under s. 190A of the Act. Before the test was applied, an amended application was filed in the Court on 7 June 2013 and referred to the Registrar on 11 June 2013 pursuant to s. 64(4). The amendments related to small technical amendments at Schedules B and E and the provision of affidavits sworn by the persons comprising the applicant in accordance with the requirements of s. 62(1)(a).

Given that the claimant application was made on 13 May 2013 and its subsequent amendment was filed prior to the application of the registration test, I am satisfied that neither subsection 190A(1A) nor subsection 190A(6A) apply.

Therefore, in accordance with subsection 190A(6) I must accept the claim for registration if it satisfies all of the conditions in 190B and 190C of the Act. This is commonly referred to as the registration test.

Section 190B sets out conditions that test particular merits of the claim for native title. Section 190C sets out conditions about 'procedural and other matters'. Included among the procedural conditions is a requirement that the application must contain certain specified information and documents. In my reasons below I consider the s. 190C requirements first, in order to assess whether the application contains the information and documents required by s. 190C *before* turning to questions regarding the merit of that material for the purposes of s. 190B.

Pursuant to ss. 190A(6) and (6B), the claim in the application must be accepted for registration because it does satisfy all of the conditions in ss. 190B and 190C. A summary of the result for each condition is provided at Attachment C.

Application overview

A notice has been issued by the State of New South Wales in relation to the grant of a mining lease (MLA444) in accordance with s. 29 of the Act with a notification day of 13 February 2013. The original application was filed within the statutory three month timeframe over the area affected by the future act notice and this has required me to use my best endeavours to finish considering the claim by the end of 4 months after the notification day (that is, 13 June 2013)—see s. 190A(2).

The area of the Awabakal and Guringai People application covers some 3951[2] kms of the central coast of NSW from Newcastle in the north to Broken Bay in the south, extending some 60kms inland.

Information considered when making the decision

Subsection 190A(3) directs me to have regard to certain information when testing an application for registration; there is certain information that I *must* have regard to, but I *may* have regard to other information, as I consider appropriate.

I am also guided by the case law (arising from judgments in the courts) relevant to the application of the registration test. Among issues covered by such case law is the issue that some conditions of the test do not allow me to consider anything other than what is contained in the application while other conditions allow me to consider wider material.

The following lists all documents and other information that I have considered in coming to my decision about whether or not to accept the application for registration.

- Awabakal and Guringai People native title determination application, as filed in the Court on 13 May 2013;
- The Tribunal's Geospatial Services 'Geospatial Assessment and Overlap Analysis' (the geospatial report) of 27 May 2013, being an expert analysis of the external and internal boundary descriptions and mapping of the application area and an overlap analysis against the Register, Schedule of Applications, determinations, agreements and s. 29 notices and equivalent;
- Awabakal and Guringai People native title determination application, as amended and filed in the Court on 7 June 2013;
- Schedule entry in respect of Wonnarua Traditional Custodians (NSD781/2013); and
- Schedule entry in respect of Plains Clans of the Wonnarua People (NSD788/2013).

I note that the only additional material I have received in relation to the application was an affidavit (filed on 22 May 2012) of Nathan Robert James Woolford (sworn 20 May 2013) on the subject of the process to authorise the applicant. This subsequently also accompanied the amended application filed in the Court on 7 June 2013.

I have *not* considered any information that may have been provided to the Tribunal in the course of the Tribunal providing assistance under ss. 24BF, 24CF, 24CI, 24DG, 24DJ, 31, 44B, 44F, 86F or 203BK, without the prior written consent of the person who provided the Tribunal with that information, either in relation to this claimant application or any other claimant application or any other type of application, as required of me under the Act.

Also, I have *not* considered any information that may have been provided to the Tribunal in the course of its mediation functions in relation to this or any other claimant application. I take this approach because matters disclosed in mediation are 'without prejudice' (see s. 136A of the Act). Further, mediation is private as between the parties and is also generally confidential (see also ss. 136E and 136F).

Procedural fairness steps

As a delegate of the Registrar and as a Commonwealth Officer, when I make my decision about whether or not to accept this application for registration I am bound by the principles of administrative law, including the rules of procedural fairness, which seek to ensure that decisions are made in a fair, just and unbiased way. I note that the common law duty to afford procedural fairness may be excluded by express terms of the statute under which the administrative decision is made or by any necessary implication—*Hazelbane v Doepel* [2008] FCA 290 at [23] to [31].

In my view, the State of New South Wales (the state government) is a person to whom procedural fairness is owed if it appears that the application may be accepted for registration—see *Western Australia v Native Title Registrar and Belotti* (1999) 95 FCR 93; [1999] FCA 1591 (*WA v Registrar*) at [29], [31]–[38]. The state government's right to procedural fairness is supported by provisions of the Act, particularly s. 190A(3)(c) which requires the Registrar to have regard to information supplied by the state/territory government to the extent it is reasonably practicable to do so.

On 14 May 2013, the state government was informed of the proposed decision timeframe and invited to comment in relation to the registration testing of the application. The state government confirmed on 11 June 2013 that it would not make any submissions or comment in relation to the claim.

Unsolicited third party submissions

The Registrar has received submissions from two third parties in relation to the registration testing of the claim made in this application, by email date dated 27 May 2013 and 10 June 2013.

As referred to above, s. 190A(3) provides that the Registrar 'may have regard to such other information as he or she considers appropriate'. In my view, it was necessary for me to read each of the submissions in order to ascertain on what basis they had been provided, prior to deciding whether it was appropriate for me to have regard to them in relation to my consideration of the Awabakal and Guringai application. Both submissions are made by persons asserting membership of other Indigenous groups and refer to the authorisation process of the Awabakal and Guringai applicant.

As is discussed further below in respect of the condition at s. 190C(3), the Awabakal and Guringai application overlaps the area covered by two other native title determination applications made over the area that comprises MLA444. Both persons refer to their identification with the Worimi Nation and whilst it is not absolutely clear to me on the face of the submissions, they may also identify as persons belonging to the Wonaruah Peoples (on whose behalf the overlapping applications are filed). In any event the submitters appear to be asserting some interest in relation to the region of the Awabakal and Guringai claim.

I formed the view that it would not be appropriate to have regard to the content of the submissions for two reasons.

Firstly, the submissions are lacking in any sufficient detail or cogent factual information upon which, in my view, I can discern the basis for their submission. As a consequence, I am of the view that I cannot afford them sufficient weight such that I could usefully consider them against the authorisation condition at s. 190C(4).

Secondly, the submissions potentially come from persons who claim competing interests in relation to a part of the same land and waters as the Awabakal and Guringai application. In my view, even had I been able to afford the submissions any weight, it is not my role to test the claims made out in such submissions against the claim made in the application before me. I base this view on the decision by Mansfield J in *Northern Territory v Doepel* (2003) 133 FCR 112; (2003) 203 ALR 385; [2003] FCA 1384 (*Doepel*) that:

- the Registrar's 'function under s 190A is to determine whether the requirements of ss. 190B and 190C are satisfied according to their terms, rather than generally to consider the accuracy of the information in the application' it not being appropriate to 'note the inconsistency of information in different documents, and so simply not be satisfied of the accuracy of the information in the application or of the other applications'—[47]; and
- '[t]he purpose of the 1998 amendments to Part 7 of the NT Act was to impose a gateway to the statutory benefits which registration provides by identifying `only those people with a credible native title claim': Second Reading Speech of the Attorney-General, Hansard, House of Representatives, 9 March 1998, p 784. The second reading speech does not indicate a legislative intention that the Registrar should embark upon some general fact finding exercise, balancing and weighing conflicting evidence, to determine whether to accept a claim for registration'—[47].

Once I formed the view that the application would be accepted for registration, in my view there were procedural fairness obligations to be afforded to the state government because I had accepted receipt of and read the above submissions and decided that it was not appropriate to have regard to them. A copy of each submission was provided to the state government along with an opportunity to comment. As mentioned earlier, the state government confirmed on 11 June 2013 that it would not be making any submissions or comment in relation to the registration testing of the application.

Given that I accepted receipt of the submissions and given their broad contentions which are adverse to the Awabakal and Guringai application I decided that it was appropriate to provide the information also to the applicant. In so doing, I advised the applicant that I would not be affording the submissions any weight in my application of the registration test and did not therefore invite any submissions in reply.

Procedural and other conditions: s. 190C

Subsection 190C(2)
Information etc. required by ss. 61 and 62

> The Registrar/delegate must be satisfied that the application contains all details and other information, and is accompanied by any affidavit or other document, required by sections 61 and 62.

The application **satisfies** the condition of s. 190C(2), because it **does** contain all of the details and other information and documents required by ss. 61 and 62, as set out in the reasons below.

In reaching my decision for the condition in s. 190C(2), I understand that this condition is procedural only and simply requires me to be satisfied that the application contains the information and details, and is accompanied by the documents, prescribed by ss. 61 and 62. This condition does not require me to undertake any merit or qualitative assessment of the material for the purposes of s. 190C(2)—*Doepel* (2003) at [16] and also at [35]–[39]. In other words, does the application contain the prescribed details and other information?

It is also my view that I need only consider those parts of ss. 61 and 62 which impose requirements relating to the application containing certain details and information or being accompanied by any affidavit or other document (as specified in s. 190C(2)). I therefore do not consider the requirements of s. 61(2), as it imposes no obligations of this nature in relation to the application. I am also of the view that I do not need to consider the requirements of s. 61(5). The matters in ss. 61(5)(a), (b) and (d) relating to the Court's prescribed form, filing in the Court and payment of fees, in my view, are matters for the Court. They do not, in my view, require any separate consideration by the Registrar. Paragraph 61(5)(c), which requires that the application contain such information as is prescribed, does not need to be considered by me under s. 190C(2), as I already test these things under s. 190C(2) where required by those parts of ss. 61 and 62 which actually identify the details/other information that must be in the application and the accompanying prescribed affidavit/documents.

Below I consider each of the particular parts of ss. 61 and 62 which require the application to contain details/other information or to be accompanied by an affidavit or other documents.

Native title claim group: s. 61(1)

> The application must be made by a person or persons authorised by all of the persons (the native title claim group) who, according to their traditional laws and customs, hold the common or group rights and interests comprising the particular native title claimed, provided the person or persons are also included in the native title claim group.

The application **contains** all details and other information required by s. 61(1).

The nature of the task at s. 190C(2) is limited to a consideration of whether the application sets out the native title claim group in the terms required by s. 61(1) and as such, the task does not require me to look beyond the contents of the application itself. In assessing the application and whether it contains the details and information required by s. 61(1), I am not entitled to undertake

a merit assessment to determine if I am satisfied whether the native title claim group described in the application before me is the correct native title claim group. That said, in seeking to verify that an application contains all the details and information required by ss. 61 and 62, I do ensure that a claim 'on its face, is brought on behalf of all members of the native title claim group' as that term is defined in s. 61(1)—*Doepel* at [35] to [37], [39] and [47].

Part A of the application contains the information regarding persons authorised to make this application, listing the names of the applicants, and providing details regarding their authorisation by the native title claim group. Schedule A of the application contains a description of the native title claim group which lists 11 apical ancestors (5 Awakabal and 6 Guringai) from whom the claim group is said to be descended.

There is nothing on the face of the application that leads me to conclude that the description of the native title claim group may exclude any persons from the group. The description does not otherwise indicate that this may be a subgroup of the native title claim group.

Name and address for service: s. 61(3)

> The application must state the name and address for service of the person who is, or persons who are, the applicant.

The application **contains** all details and other information required by s. 61(3).

Part B of the application states on page 12 the name and address for service of the persons who are the applicant.

Native title claim group named/described: s. 61(4)

> The application must:
> (a) name the persons in the native title claim group, or
> (b) otherwise describe the persons in the native title claim group sufficiently clearly so that it can be ascertained whether any particular person is one of those persons.

The application **contains** all details and other information required by s. 61(4).

Schedule A provides a description of the persons in the group which includes a list of the apical ancestors from which the claim group is said to descend.

Affidavits in prescribed form: s. 62(1)(a)

> The application must be accompanied by an affidavit sworn by the applicant that:
> (i) the applicant believes the native title rights and interests claimed by the native title claim group have not been extinguished in relation to any part of the area covered by the application, and
> (ii) the applicant believes that none of the area covered by the application is also covered by an approved determination of native title, and
> (iii) the applicant believes all of the statements made in the application are true, and
> (iv) the applicant is authorised by all the persons in the native title claim group to make the application and to deal with matters arising in relation to it, and
> (v) setting out details of the process of decision-making complied with in authorising the applicant to make the application and to deal with matters arising in relation to it.

The application **is accompanied** by the affidavit required by s. 62(1)(a).

The application as amended 7 June 2013 is accompanied by affidavits from each of the six persons who comprise the applicant. The affidavits are signed by each deponent and witnessed and make all the statements required of this section.

Application contains details required by s. 62(2): s. 62(1)(b)

> The application must contain the details specified in s. 62(2).

The application **contains** all details and other information required by s. 62(1)(b).

The application does contain the details specified in ss. 62(2)(a) to (h), as identified in the reasons below.

Information about the boundaries of the area: s. 62(2)(a)

> The application must contain information, whether by physical description or otherwise, that enables the following boundaries to be identified:
> (i) the area covered by the application, and
> (ii) any areas within those boundaries that are not covered by the application.

The application **contains** all details and other information required by s. 62(2)(a).

Schedule B lists those areas not covered by the application and refers to Attachment B to the application which contains a description of the external boundaries of the area covered by the application.

Map of external boundaries of the area: s. 62(2)(b)

> The application must contain a map showing the boundaries of the area mentioned in s. 62(2)(a)(i).

The application **contains** all details and other information required by s. 62(2)(b).

Schedule C refers to Attachment C being a map showing the boundary of the area covered by the application.

Searches: s. 62(2)(c)

> The application must contain the details and results of all searches carried out by or on behalf of the native title claim group to determine the existence of any non-native title rights and interests in relation to the land and waters in the area covered by the application.

The application **contains** all details and other information required by s. 62(2)(c).

Schedule D states that the applicant has not undertaken any searches to determine the existence of non-native title interests in the area covered by the application.

Description of native title rights and interests: s. 62(2)(d)

> The application must contain a description of native title rights and interests claimed in relation to particular lands and waters (including any activities in exercise of those rights and interests), but not merely consisting of a statement to the effect that the native title rights and interests are all native title rights and interests that may exist, or that have not been extinguished, at law.

The application **contains** all details and other information required by. 62(2)(d).

A description of the native title rights and interests claimed in relation to the area covered by the application is contained in Schedule E. This description (included as an excerpt within my reasoning at s. 190B(4)) consists of more than a statement to the effect that the native title rights and interests are all native title rights and interests that may exist, or that may not have been extinguished, at law.

Description of factual basis: s. 62(2)(e)

> The application must contain a general description of the factual basis on which it is asserted that the native title rights and interests claimed exist, and in particular that:
> (i) the native title claim group have, and the predecessors of those persons had, an association with the area, and
> (ii) there exist traditional laws and customs that give rise to the claimed native title, and
> (iii) the native title claim group have continued to hold the native title in accordance with those traditional laws and customs.

The application **contains** all details and other information required by s. 62(2)(e).

Schedule F refers to Attachment F and three affidavits made by members of the claim group which together are relied upon to provide the factual basis for the claim made in the application.

Activities: s. 62(2)(f)

> If the native title claim group currently carries out any activities in relation to the area claimed, the application must contain details of those activities.

The application **contains** all details and other information required by s. 62(2)(f).

Schedule G lists the activities the claim group currently carries out in relation to the area covered by the application.

Other applications: s. 62(2)(g)

> The application must contain details of any other applications to the High Court, Federal Court or a recognised state/territory body of which the applicant is aware, that have been made in relation to the whole or part of the area covered by the application and that seek a determination of native title or of compensation in relation to native title.

The application **contains** all details and other information required by s. 62(2)(g).

Schedule H identifies one application as being on the Schedule of Applications: NN2007/003—Johnson Property Group Pty Ltd & Kendall Grange Properties Pty Ltd—NSD729/07 (non claimant application).

Section 24MD(6B)(c) notices: s. 62(2)(ga)

> The application must contain details of any notification under s. 24MD(6B)(c) of which the applicant is aware, that have been given and that relate to the whole or part of the area covered by the application.

The application **contains** all details and other information required by s. 62(2)(ga).

Schedule HA states that the applicant is not aware of any such notices.

Section 29 notices: s. 62(2)(h)

> The application must contain details of any notices given under s. 29 (or under a corresponding provision of a law of a state or territory) of which the applicant is aware that relate to the whole or a part of the area covered by the application.

The application **contains** all details and other information required by s. 62(2)(h).

Schedule I refers to Attachment I which provides a list of such notices previously and currently advertised. The State government's notice and map for the current s. 29 notification also forms part of the attachment.

Subsection 190C(3)
No common claimants in previous overlapping applications

> The Registrar/delegate must be satisfied that no person included in the native title claim group for the application (the current application) was a member of the native title claim group for any previous application if:
> (a) the previous application covered the whole or part of the area covered by the current application, and
> (b) the previous application was on the Register of Native Title Claims when the current application was made, and
> (c) the entry was made, or not removed, as a result of the previous application being considered for registration under s. 190A.

The application **satisfies** the condition of s. 190C(3).

The requirement that the Registrar be satisfied in the terms set out in s. 190C(3) is only triggered if all of the conditions found in ss. 190C(3)(a), (b) and (c) are satisfied—see *Western Australia v Strickland* (2000) 99 FCR 33; [2000] FCA 652 (*Strickland FC*) at [9]. Section 190C(3) relates to ensuring there are no common native title claim group members between the application currently being considered for registration ('the current application') and any overlapping 'previous application'.

The Awabakal and Guringai People application (the current application) was made when it was filed in the Court on 13 May 2013—see *Strickland FC*—at [44] and [45]. Therefore, any overlapping previous applications would need to have been on the Register on this date for it to become necessary to consider whether there are any common claimants in any previous overlapping applications and the current application.

The Tribunal's geospatial assessment and overlap analysis of 27 May 2013 (the geospatial report) identifies two native title determination applications which are wholly overlapped by the current application:

- NC2013/003—Wonnarua Traditional Custodians—NSD781/2013 filed in the Court (made) on 13 May 2013
- NC2013/004—Plains Clans of the Wonnarua People—NSD788/2013 filed in the Court (made) on 13 May 2013

Schedule O states that members of the claim group are not included in any other applications that cover the claim area.

In any event, neither of the above applications was on the Register of Native Title Claims as at the date this current application was made. Therefore the requirement to consider the issue of common claim group members between the current Awabakal and Guringai People application and the other two applications is not necessary.

Subsection 190C(4) Authorisation/certification

Under s. 190C(4) the Registrar/delegate must be satisfied that either:

(a) the application has been certified under Part 11 by each representative Aboriginal/Torres Strait Islander body that could certify the application, or

(b) the applicant is a member of the native title claim group and is authorised to make the application, and deal with matters arising in relation to it, by all the other persons in the native title claim group.

Note: The word ***authorise*** is defined in section 251B.

Section 251B provides that for the purposes of this Act, all the persons in a native title claim group authorise a person or persons to make a native title determination application . . . and to deal with matters arising in relation to it, if:

a) where there is a process of decision–making that, under the traditional laws and customs of the persons in the native title claim group, must be complied with in relation to authorising things of that kind—the persons in the native title claim group . . . authorise the person or persons to make the application and to deal with the matters in accordance with that process; or

b) where there is no such process—the persons in the native title claim group . . . authorise the other person or persons to make the application and to deal with the matters in accordance with a process of decision–making agreed to and adopted, by the persons in the native title claim group . . . in relation to authorising the making of the application and dealing with the matters, or in relation to doing things of that kind.

Under s. 190C(5), if the application has not been certified as mentioned in s. 190C 4(a), the Registrar cannot be satisfied that the condition in s. 190C(4) has been satisfied unless the application:

(a) includes a statement to the effect that the requirement in s. 190C(4)(b) above has been met, and

(b) briefly sets out the grounds on which the Registrar should consider that the requirement in s. 190C(4)(b) above has been met.

For the reasons set out below, I am **satisfied** that the requirements set out in s. 190C(4)(b) are met.

I must be satisfied that the requirements set out in either ss. 190C(4)(a) or (b) are met, in order for the condition of s. 190C(4) to be satisfied. As the application is not certified pursuant to s. 190C(4)(a), it is necessary to consider if the application meets the condition in s. 190C(4)(b): that is, the applicant is a member of the native title claim group and is authorised by all the other persons in the claim group to make the application and deal with matters arising in relation to it.

It is also necessary to consider the requirements as set out in s. 190C(5), the terms of which are set out above. In *Doepel*, Mansfield J discusses the interaction between s. 190C(4)(b) and s. 190C(5) and how the Registrar is to be satisfied as to these conditions of the registration test:

> In the case of subs (4)(b), the Registrar is required to be satisfied of the fact of authorisation by all members of the native title claim group. Section 190C(5) then imposes further specific requirements before the Registrar can attain the necessary satisfaction for the purposes of s. 190C(4)(b). The interactions of s. 190C(4)(b) and s. 190C(5) may inform how the Registrar is to be satisfied of the condition imposed by s. 190C(4)(b), but clearly it involves some inquiry through the material available to the Registrar to see if the necessary authorisation has been given—at [78].

Even if the requirements of s. 190C(5) are met by the terms of the application, it is still necessary for me to consider whether I am satisfied that the applicant is authorised pursuant to s. 190C(4)(b), noting that I am not limited to what is in the application on the issue in my consideration at that condition.

Information considered

In my consideration of the authorisation of the applicant to make the application and to deal with matters arising in relation to it, I have had regard to the following information:

- Affidavits of Shane Michael Frost, Managing Director of the Awabakal Descendants Traditional Owners Aboriginal Corporation and Awabakal elder (5 May 2013), Michael John Owens, Solicitor (9 May 2013), Joshua Creamer, Barrister (10 May 2013)
- Anthropological Report of Nathan Woolford, 10 May 2013
- Affidavits of those persons comprising the applicant provided pursuant to s. 62(1)(a)
- Affidavit of Nathan Woolford, affirmed 20 May 2013

The key information going to authorisation of the applicant to make and deal with the application can be found in the affidavits of Mr Frost, Mr Owens and Mr Creamer.

The requirements of s. 190C(5)

To meet the requirements of s. 190C(5)(a), the application must contain a statement to the effect that the requirement set out in paragraph (4)(b) has been met. Consideration of this requirement is confined to information contained in the application and, in my view Schedule R (and its attachments) provides the relevant information. It makes the statements:

- that the persons who constitute the applicant are members of the claim group and are authorised to make the application, and deal with matters in relation to it by all the other persons in the group', and
- setting out the grounds on which the Registrar is to consider that the above statement is met by reference to the decision-making process agreed to and adopted for the purpose of authorisation and refers to attachments R and R1 for further detail of that process.

I am therefore satisfied that the application meets the requirements of s. 190C(5).

First limb of s. 190C(4)(b) – the applicant is a member of the native title claim group

There are nine [9] persons named in the application who jointly comprise the applicant, being Kerrie Brauer, Trevor Powell, Wayne Hawken, Shane Frost, Peter Leven, Wayne Saxby, Tracey-Lee Howie, Trudy Smith, Laurie Bimson. Each of these persons has sworn in an affidavit

provided for the purposes of s. 62(1)(a) that he or she is a member of the native title claim group. The fact that there is no information to support the assertions made in the affidavits is not a relevant consideration in determining authorisation matters—*Doepel* at [86] to [87].

I am therefore satisfied that the applicant (jointly comprising the above named persons) is a member of the native title claim group.

Second limb of s. 190C(4)(b)—the applicant is authorised by all the other persons in the native title claim group

As referred to and quoted above, Schedule R briefly states the grounds on which the applicant's asserted authority is based. Each of the persons comprising the applicant depose in their affidavit that the 'Applicant was authorised by all of the persons in the native title claim group to make the claim on behalf of the Awabakal and Guringai People native title claim group and to deal with all matters arising in relation to it'—at [6].

How the native title claim group was notified and informed of the authorisation meetings

A meeting proposing to authorise an applicant to make and deal with an Awabakal and Guringai application for determination of native title was held on 5 May 2013.

Public notices for the meeting were placed in seven local and regional papers, as well as the Koori Mail in the two weeks that preceded the meeting, copies of which are attached to Mr Frost's affidavit. The notice included the same list of apical ancestors which now appear at Schedule A and a small map of the proposed claim area including key localities. The notice included a statement that 'Relevant documentation as to the basis upon which descent and/or rights and interest are claimed must (if requested) be produced at the authorisation meeting for review by the Anthropologist'. The notice clearly stated the purpose of the meeting – to authorise the filing of a native title determination application and provided the agenda items to be covered at the meeting.

Notice of the meeting was also placed on a large number of local community and media websites, TV station notice boards with the meeting also advertised on six radio stations. Notifications were sent to the families of three descent lines and a copy of the notice posted or emailed to Awabakal and Guringai family members listed on a database maintained by the Awabakal Traditional Owners Aboriginal Corporation, Awabakal Descendants Traditional Owners Aboriginal Corporation and Guringai Tribal Link Aboriginal Corporation (lists of which are annexed to Mr Frost's affidavit).

Having regard to this information, I am satisfied that the 5 May 2013 meeting was sufficiently notified to allow every opportunity for members of the Awabakal and Guringai native title claim group to attend and participate in decisions about a proposed claim, and to authorise an applicant to make and deal with the proposed application.

How the meeting was attended and conducted

The meeting was held at a Community Centre in Cameron Park, some 18km inland from Newcastle.

Completion of an attendance register was supervised by Mr Nathan Woolford and Mr Owens expands in his affidavit upon the rules set for people's participation in the meeting. He states that only attendees who were accepted as being descendants of the apical ancestors named in the

Notice of Meeting were entitled to participate in decision making—at [14]. The attendance list attached to Mr Frost's affidavit shows 105 people attended the meeting. Mr Woolford attests in his report that the meeting was attended by 80 Awabakal and Guringai people 18 years and older and 25 non-Awabakal and Guringai people who were not entitled to participate (some of which were those associated with the legal of representation of the group and another family who did 'not consider themselves Awabakal')—at 5.2.6.

Pre prepared agenda, attendance sheets, meetings rules, draft resolutions, Form 1 and affidavits were provided to attendees at the meeting as well as projected throughout discussions. Mr Creamer chaired the meeting, Mr Woolford provided an overview of his anthropological research and findings, Mr Owens provided legal advice and spoke in relation to the requirements to file a native title determination application, the consequent registration test process and the role and responsibilities of the applicant.

Minutes were taken of the meeting, about which Mr Frost, Mr Owens and Mr Creamer attest to being a true and accurate recording of the meeting. A copy of the minutes is annexed to each affidavit.

Each of the affidavits refers to people who sought to participate in the meeting and the ensuing discussions between them and Mr Woolford which resulted in the acceptance of one of the groups to participate in the meeting. Mr Woolford in a separate affidavit, dated 20 May 2013, provides in detail the circumstances and discussions in relation to their entitlement to participate, some of which are also referred to by Mr Owens in his affidavit. I understand that the refusal to grant entry to one of the groups caused some consternation and difficulty, but the information in the application and Mr Wooldford's later affidavit does not alert me to any possibility of irregularities in the process used to ensure persons were entitled to participate in the meeting. Mr Frost also attests in his affidavit to observing no irregularities in the conduct of the meeting.

Having regard to this information, I am satisfied that the native title claim group was provided sufficient opportunity to participate in the process of authorisation of the applicant to make and deal with the application. People were sufficiently informed to make decisions about their proposed native title determination application and this allowed for the authorisation process that ensued.

Decision-making process to authorise

The minutes set out the process of decision-making used by the native title claim group to, amongst other related matters, authorise the persons comprising the applicant. The matter of decision-making 'was discussed fully by the members of the Awabakal and Guringai People present. The minutes reflect the confirmation by the group that there is no traditionally mandated process of decision-making and discussion followed that resulted in participants agreeing to and adopting a process of decision-making. This process is described in the minutes as:

- The decision to be made will be put in the form of a clearly worded written motion
- The motion will be read out to the meeting
- The motion must be moved and seconded by those present before it is decided on
- The decision will then be made by those present by a show of hands;
- If there is any doubt about the result of the show of hands, a ballot may be conducted at the discretion of the Chairperson

Those persons in attendance who were not identified as Awabakal or Guringai People were not entitled to speak or participate in the decision-making process. It was resolved that a majority decision of those present at the meeting would be held as a decision of all Awabakal Guringai People in relation to the land and waters covered by the proposed claim.

Participants of the meeting were apprised of draft resolutions prior to the commencement of the meeting and the minutes of the meeting show them to have been moved, seconded and carried unanimously.

It is clear to me that, in accordance with the provisions of s. 251(b), the native title claim group in attendance at the meeting resolved that there was no traditional decision-making process that must be complied with in relation to native title matters and that the group agreed to and adopted a particularly defined process and decisions made at the authorisation meeting were as a result of this process.

Unsolicited third party submissions in relation to the authorisation process

On 27 May 2013 and 10 June 2013, the Tribunal case manager for the application received submissions from two separate third parties setting out their concerns in relation to the Awabakal and Guringai People application. These were provided to me to me on 4 and 10 June 2013 respectively.

The information in the affidavits at Attachment R and in Mr Woolford's affidavit of 20 May 2013 would appear to be pre-empting the contentions raised in these submissions in relation to the process used to authorise the Awabakal and Guringai applicant. Mr Woolford states in his preliminary report that in his opinion, the material provided by a party at the authorisation meeting 'was not sufficient to support their assertion to rights and interests in the claim area ... which consisted of sections of material from Threlkeld, Enright and Fraser ... that [he] had previously considered'—at 5.4.2.

It is difficult to afford any weight to the issues raised in these submissions. It is not clear to me whether the submitters assert membership of the native title claim group for the Awabakal and Guringai native title determination application or that the claim group description for the application is wrongly construed or whether they contest the area claimed. The submissions both contend that they were disallowed participation in the authorisation process but do not state the basis on which they believe they should have participated.

A purported confusion in relation to the research on which the application relies, is not a sufficient basis on which I am prepared to consider that irregularities may have occurred in the authorisation process such as to question the proper authorisation of the applicant. I acknowledge that authorisation is 'a matter of considerable importance and fundamental to the legitimacy of native title determination applications' as commented on by the then Justice French in *Strickland v Native Title Registrar* [1999] FCA 1530—at [57]. However, in my view, the submissions do not provide any relevant, cogent or clear facts on which to base an inquiry into whether the authorisation process was defective.

In any event, it is my view that my role is not to embark upon some general fact finding exercise, balancing and weighing conflicting evidence, to determine whether to accept a claim for registration' (refer also to my comments in relation to procedural fairness)—*Doepel* at [47]. As

such, given that I am of this view and that I cannot afford the submissions any weight, I have found that it is not appropriate to have regard to them.

Conclusion

The Court has considered in various instances what may be required to satisfy the Registrar that an applicant has been authorised by all the persons in the native title claim group, in accordance with s. 251B(b). It is well settled in law, that the word 'all' in the context of authorisation pursuant to s. 251B, has 'a more limited meaning than it might otherwise have.' In *Lawson v Minister for Land and Water Conservation* (NSW) [2002] FCA 1517 (*Lawson*), Stone J held in relation to s. 251B(b) that it is not necessary for each and every member of the native title claim group to authorise the making of an application, but rather '[i]t is sufficient if a decision is made once the members of the claim group are given every reasonable opportunity to participate in the decision-making process'—*Lawson* at [25].

I have not considered it appropriate to have regard to the third party submissions asserting concerns about the composition of the native title claim group and irregularities in the process to authorise the applicant. Mr Woolford and Mr Owens set out in their affidavits in some detail discussions with people who proposed to participate in the meeting, and it is my view that these details sufficiently address the process employed as regards persons' eligibility to participate in the authorisation process.

In my view, I am satisfied as to the representativeness of the native title claim group at the authorisation meeting held on 5 May 2013 and to the extending of every reasonable opportunity to the persons in the native title claim group to attend and participate in the processes of authorisation. The information in the application and accompanying affidavits clearly sets out the decision-making process and the minutes show that the members of the native title claim group who participated in the meeting followed this agreed to and adopted process in order to authorise the applicant.

I am therefore satisfied that all reasonable steps have been taken for all of the persons of the native title claim group to be provided an opportunity to participate in the decision-making process. I am satisfied that each of the persons who comprise the applicant is a member of the native title claim group and that all the material before me demonstrates that the applicant is duly authorised in accordance with s. 251B(b) to make this application and to deal with all matters arising in relation to it.

Merit conditions: s. 190B

Subsection 190B(2)
Identification of area subject to native title

> The Registrar must be satisfied that the information and map contained in the application as required by ss. 62(2)(a) and (b) are sufficient for it to be said with reasonable certainty whether native title rights and interests are claimed in relation to particular land or waters.

The application **satisfies** the condition of s. 190B(2).

In assessing the current application against s. 190B(2), I am required to be satisfied that the information provided by the applicant for the purposes of ss. 62(2)(a) and 62(2)(b) is sufficient for the particular land and waters, over which native title rights and interests are claimed, to be identified with reasonable certainty. In reaching the required level of satisfaction, it is to the terms of the application itself that I am to direct my attention—*Doepel* at [16] and [122].

Description of the area covered by the application

Schedule B refers to Attachment B which is titled "Area of land and waters covered by the application – Awabakal and Guringai People", prepared by the Tribunal's Geospatial Services (dated 10 May 2013). It is a description of the area in metes and bounds referencing roads and river banks, Local Government Authority boundaries, high water mark, and coordinate points (referencing the Geocentric Datum of Australia (GDA94) shown to 6 decimal places). Attachment B notes that the area covered by the application specifically excludes from the area of the application Ash Island, the Awabakal People (NSD951/2012—NC2012/003) native title determination application; and 11 native title determinations of 11 non-claimant applications.

Attachment B also provides a list of general exclusions to define other areas not covered by the application.

Map of the area covered by the application

Schedule C refers to Attachment C which is a scanned copy of an A3 map titled "Native Title Determination Application - Awabakal and Guringai People" prepared by Geospatial Services (dated 3 May 2013) and includes the following:

- The application area depicted as a bold dark blue outline;
- Native title determination application NSD951/2012 depicted with pink outline and text;
- Native title determinations depicted with green outline and text;
- Topographic background image;
- Scalebar, northpoint, coordinate grid;
- Notes relating to the source, currency and datum of data used to prepare the map.

Consideration

The information in relation to the external boundaries of the area covered by the application allows me to identify the location of those external boundaries on the surface of the earth. In respect of those areas not covered by the application and described by general exclusion

statements, a generic or class formula to describe the internal boundaries of an application is acceptable if the applicant has only a limited state of knowledge about any particular areas that would so fall within the generic description provided— see *Daniels & Ors v State of Western Australia* [1999] FCA 686—at [32]. For the purposes of meeting the requirements of this section the general exclusion statements at Attachment B(2) are, in my view, sufficient to offer an objective mechanism by which to identify areas that would fall within the categories described.

The geospatial report makes the assessment that the description and the map are consistent such that the area covered by the application is readily identifiable. I agree with that assessment.

I am therefore satisfied that the external boundary is reasonably identifiable and, along with the general exclusion clauses that set the internal boundary, that it can be said with reasonable certainty whether native title rights and interests are claimed in relation to particular land or waters.

The application satisfies the condition of s. 190B(2).

Subsection 190B(3)
Identification of the native title claim group

> The Registrar must be satisfied that:
> (a) the persons in the native title claim group are named in the application, or
> (b) the persons in that group are described sufficiently clearly so that it can be ascertained whether any particular person is in that group.

The application **satisfies** the condition of s. 190B(3).

Under this condition, I am required to be satisfied that one of either s. 190B(3)(a) or (b) has been met. The application does not name the persons in the native title claim group but contains a description, and it is therefore necessary for me to consider whether the application satisfies the requirements of s. 190B(3)(b).

I note the comments of Mansfield J in *Doepel* at [51] and [37], respectively, that the focus of s. 190B(3)(b) is:

- whether the application enables the reliable identification of persons in the native title claim group; and
- not on 'the correctness of the description . . . but upon its adequacy so that the members[sic] of any particular person in the identified native title claim group can be ascertained'.

Carr J in *State of Western Australia v Native Title Registrar* (1999) 95 FCR 93 (*Western Australia v Native Title Registrar*) was of the view that 'it may be necessary, on occasions, to engage in some factual inquiry when ascertaining whether any particular person is in the group as described. But that does not mean that the group has not been described sufficiently'—at [67].

Schedule A of the application contains the following description of the persons in the native title claim group:

> The claim group are persons:
> 1. who are recognised by other members of the claim group as being descended (which may include by adoption) from a deceased person who they recognise as having been a member of

> the aboriginal landholding group for the application area depicted in Attachment "C" ("an apical ancestor"); and
>
> 2. who identifies himself or herself as being a descendant of an apical ancestor.
> It is accepted that adoption may take place and where adoption has occurred it confers upon the adoptee the right to identify as a member of the claim group.
> The following deceased persons are recognised as having been apical ancestors from whom claim group members are descended:
>
> **The Awabakal People:**
> - Margaret (known as Queen Margaret/Old Margaret)
> - Ned (known as King Ned/King Molly/Black Ned/Old Ned)
> - Flathead (Father of King Ned/Black Ned/Old Ned)
> - Mahrahkah (Known as Molly/Molly Morgan/Maria Morgan)
> - Charlotte Preston (Daughter of Molly/Molly Morgan/Maria Morgan)
>
> **The Guringai Peoples:**
> - Bungaree (Known as King Bungaree)
> - Bowen Bungaree
> - Matora
> - Gooseberry (Known as Cora)
> - Charlotte Ashby
> - Biddy Salamander

The description of the native title claim group is a descent model description based on ancestral lines and includes certain rules or principles which operate under Awabakal and Guringai traditional laws and customs to regulate identification and acceptance of members of the native title claim group.

I am of the view that the native title claim group is described sufficiently clearly to enable identification of any particular person in that group and am therefore satisfied that the native title claim group has been sufficiently described.

Subsection 190B(4)
Native title rights and interests identifiable

> The Registrar must be satisfied that the description contained in the application as required by s. 62(2)(d) is sufficient to allow the native title rights and interests claimed to be readily identified.

The application **satisfies** the condition of s. 190B(4).

Section 190B(4) requires the Registrar to be satisfied that the description of the claimed native title rights and interests contained in the application is sufficient to allow the rights and interests to be identified—*Doepel* at [92]. In *Doepel*, Mansfield J refers to the Registrar's consideration:

> The Registrar referred to s. 223(1) and to the decision in *Ward*. He recognised that some claimed rights and interests may not be native title rights and interests as defined. He identified the test of identifiability as being whether the claimed native title rights and interests are understandable and have meaning. There is no criticism of him in that regard—at [99].

On this basis, for a description to be sufficient to allow the claimed native title rights and interests to be readily identified, it must describe what is claimed in a clear and easily understood manner.

Schedule E of the application contains the description of native title rights and interests claimed in relation to the application area, as required by s. 62(2)(d):

> 1. Over areas where a claim to exclusive possession can be recognised (such as areas where there has been no prior extinguishment of native title or where s. 238, ss. 47, 47A or 47B apply), the claim group claims the right to possess, occupy, use and enjoy the lands and waters of the application area as against the whole world, pursuant to the traditional laws and customs of the claim group.
>
> 2. Over areas where a claim to exclusive possession cannot be recognised, the claim group claims the non-exclusive right to:
>
> (a) live and be present on the application area;
> (b) take, use, share and exchange Traditional Natural Resources for personal, domestic and non-commercial, communal purposes;
> (c) conduct burial rites;
> (d) conduct ceremonies;
> (e) teach on the area about the physical and spiritual attributes of the area;
> (f) maintain places of importance and areas of significance to the native title holders under their traditional laws and customs and protect those places and areas from physical harm;
> (g) light fires for domestic purposes including cooking but not for the purposes of hunting or clearing vegetation;
> (h) be accompanied into the claim area by non claim group members being people required;
> (1) by traditional law and custom for the performance of ceremonies or cultural activities; and
> (2) to assist in observing and recording traditional activities on the claim area; and
> (i) In relation to Water, take and use:
> (1) Traditional Natural Resources from the Water for personal, domestic and non-commercial communal purposes; and
> (2) for personal, domestic and non-commercial, communal purposes.
>
> 3. For the purposes of 2. above,
>
> "Live" means to reside and for that purpose erect shelters and temporary structures but does not include a right to construct permanent structures;
>
> "Traditional Natural Resource" means:
> (1) "animals" as defined in the National Parks and Wildlife Act 1974 (NSW)
> (2) "plants" as defined in the National Parks and Wildlife Act 1974 (NSW)
> (3) charcoal, shells and resin; and
> (4) clay, soil, sand; ochre; gravel or rock on or below the surface.
>
> "Water" means water source as defined by the Water Management Act 2000 (NSW).

I am satisfied that the description of the claimed native title rights and interests is sufficient to allow them to be readily identified in the sense that they are described in a clear and easily understood manner.

Subsection 190B(5)
Factual basis for claimed native title

> The Registrar must be satisfied that the factual basis on which it is asserted that the native title rights and interests claimed exist is sufficient to support the assertion. In particular, the factual basis must support the following assertions:
> (a) that the native title claim group have, and the predecessors of those persons had, an association with the area, and
> (b) that there exist traditional laws acknowledged by, and traditional customs observed by, the native title claim group that give rise to the claim to native title rights and interest, and
> (c) that the native title claim group have continued to hold the native title in accordance with those traditional laws and customs.

The application **satisfies** the condition of s. 190B(5) because the factual basis provided is **sufficient** to support each of the particularised assertions in s. 190B(5), as set out in my reasons below. I have considered each of the three assertions set out in the three paragraphs of s. 190B(5) in turn before reaching this decision.

For the application to meet this merit condition, I must be satisfied that a sufficient factual basis is provided to support the assertion that the claimed native title rights and interests exist and to support the particularised assertions in paragraphs (a) to (c) of s. 190B(5). In *Doepel* (and this was approved by the Full Court in *Gudjala FC* at [82] to [85]), Mansfield J states that:

> Section 190B(5) is carefully expressed. It requires the Registrar to consider whether the `factual basis on which it is asserted' that the claimed native title rights and interests exist `is sufficient to support the assertion'. That requires the Registrar to address the quality of the asserted factual basis for those claimed rights and interests; but only in the sense of ensuring that, if they are true, they can support the existence of those claimed rights and interests. In other words, the Registrar is required to determine whether the asserted facts can support the claimed conclusions. The role is not to test whether the asserted facts will or may be proved at the hearing, or to assess the strength of the evidence which may ultimately be adduced to establish the asserted facts—at [17].

The test in s. 190A involves an administrative decision—it is not a trial or hearing of a determination of native title pursuant to s. 225, and therefore it is not appropriate to apply the standards of proof that would be required at such a trial or hearing. It is not the task of the delegate to make findings about whether or not the claimed native title rights and interests exist. It is not the role of the delegate to reach definitive conclusions about complex anthropological issues pertaining to the applicant's relationship with their country as that is a judicial enquiry.

Information considered

Schedule F refers to Attachment F, Preliminary Anthropological Report of Nathan Woolford (the report), dated 10 May 2013 and three affidavits affirmed by members of the native title claim group, all dated 5 May 2013. Schedule G lists the activities the native title claim group currently undertakes in relation to the lands and waters covered by the application.

Reasons for s. 190B(5)(a)

I am **satisfied** that the factual basis provided is sufficient to support the assertion described by s. 190B(5)(a).

This subsection requires me to be satisfied that the factual material provided in relation to the application is sufficient to support the assertion that the native title claim group has, and its predecessors had, an association with the area of the application. While it is not necessary for the factual basis to support an assertion that *all* members of the native title claim group have an association with the area *all* of the time, it is necessary to show that the claim group *as a whole* has an association with the area—*Gudjala 2007* at [51] and [52].

This application is brought on behalf of two the Awabakal and Guringai groups, the basis on which I am to understand is explained in Mr Woolford's report:

> ...the linguistic evidence supports the conclusion that a group known as Wannungine was a group speaking one language, composed of at least two dialects, covering the coastal and adjacent country from the Hunter River to the southern Broken Bay and covering the groups today known as Awabakal and Guringai. This group was closely related socially and linguistically to the adjacent upland country groups on the Hunter and Hawkesbury drainages known as Darkinung and Wannarua today—at 2.2.13.

The report sets out some of the evidence that locates the language and local-territory groups between the north head of Port Jackson to the Hunter River and inland 60 miles (at 2.4.1). The historical records evidence the group named Wannungine that occupied the country from Broken Bay to the Hunter River (at 2.3.2.5) which largely accords with the extent of the area covered by this application. The report's assessment of the contemporary grouping is that 'only three families appear to be descendants who identify as Awabakal and Guringai' (at 3.1.2) and this would appear to be borne out by genealogies provided in the report. Indeed, the report states that 'not all the listed people are strictly speaking apicals but are included to clarify the ancestral record' and the apical thus 'form three main clusters'—at 3.1.4.

The list of Guringai apical ancestors is principally a line of descent from Bungaree (b. 1775), naming his two wives, their children and grandchildren. Two of the Awabakal apical ancestors are the parents of another of the named ancestors with the list also including his wife. One other of the named ancestors and her named daughter would appear to represent another descent line. Without examining the information forensically, my broad understanding is that the description of the native title claim group represents three principle lines of descent which together comprise the contemporary native title claim group.

Association of the predecessors of the native title claim group with the application area

From a number of ethnographic and historical sources, in addition to the recorded observations of settlers in the area, Matthews (1903) and Haslam (early 20th century), and later linguists, Ford (2010, 2013), the anthropological report reaches conclusions about the extent of Awabakal and Guringai country, as well as their territory relative to the neighbouring Wonarua, Worimi and Darkinung tribes. In particular, the report relies on the observations and records of Reverend L.E. Threlkeld who carried out missionary work at Bahtahbah near Lake Macquarie, between 1826 and 1841, in which time he learned the local Aboriginal language.

Mr Woldford's analysis of the early linguistic research points to the Wannungine being coastal people allied with the mountain Wallambine ("Wollombi) and in occupation of the estuarine arms of Broken Bay (at 2.3.1.5). In his view there is evidence supporting occupation of a group named Wannungine from Broken Bay to the Hunter River, with 'Blanket distribution lists' from the 1820s and 1830s recording Awabakal association with areas that included Newcastle and swamp country from the south Hunter (at 2.3.2.5).

The report considers the western, northern and southern boundaries of Awabakal and Guringai territory, and reviews the research in the context of neighbouring groups. The report concludes that there is evidence to support:

- Awabakal country encompassing the Wallis Creek drainage at the western boundary;
- that the Awabakal (Wannungine) occupied the country on the south side of the Hunter, including islands in the river from Ash Island west to Maitland;
- the southern boundary following the ridgeline, that separates the Port Jackson drainage from the Broken Bay drainage, running along Mona Vale Road and meeting Canoeland Ridge in the east.

The report's conclusions relating to Awbakal and Guringai territory and country is based on the analysis of the linguistic evidence for the region, ethnographic evidence, drainage and ecological data. Mr Woolford concurs with the research and conclusions of MacDonald (2012) that identify 'Awabakal country as comprising the Lake Macquarie Catchment as well as well as the adjacent southern side of the lower Hunter River Valley catchment and Brisbane Waters which makes up the most northern section of the Broken Bay catchment'—at 2.1.2.

Establishing the extent of Awabakal and Guringai country is also assisted by information about the occupation of the neighbouring groups:

- the Worimi occupied the country of the northern side of the Hunter River from Maitland and to Port Stephens (2.3.2.8);
- Darkinung is associated with people to the west inland from Broken Bay; and
- Wonnarua country starting approximately 10 miles west of Maitland with the boundary extending south to Wollombi Brook and Putty Creek to the Hawkesbury River (2.3.1.6).

The report's view is that there is evidence that Bungaree and his families settled on the north shore of Port Jackson, with further research confirming that Wannungine country extended to the southern side of Broken Bay—2.3.4.1. Mr Woolford states that Bungaree is well attested to in the early records, that substantial historical material exists because 'he was a well known Aboriginal identity in the early settlement of Sydney to the Hunter region' (3.1.1) and known 'as the Chief of the Broken Bay Tribe' (at 3.1.7). Ms Howie traces her descent from Bungaree through his granddaughter [text removed] who was born in 1823 and died in 1913 (affidavit of 5 May 2013 at [2]). Her great grandmother lived at Chittaway, in the central part of the claim area—at [10]. Mr Frost traces his descent from the named apical ancestor Molly (Mahrahkah)—at [2]. [text removed]. Mr Frost refers to the places in the claim area where his predecessors have lived their lives:

- his grandparents spent their lives at Lake Macquarie, Newcastle and the Central Coast—at [4];

- his father lived as a boy around Lake Macquarie, his grandmother taking him into the bush [text removed].

There is, in my view, a factual basis that goes to showing the history of association that those members of the claim group have, and that their predecessors had, with the application area—see *Gudjala 2007* at [51]. It is supported by the information in the report that sets out some of the historical record as it pertains to the ancestors of the claim group and to the extent of country as understood and recognised by members of the claim group.

Current association of the native title claim group with the application area

The affidavits of three members of the native title claim group attest to the claim group's contemporary association with area covered by the application and its importance to the Awabakal and Guringai people:

- regularly fishing, crabbing and collecting shellfish around Lake Macquarie and the coastal areas of the application area;
- camping and accessing the area of the application;
- teaching younger generations the stories associated with significant sites along with the protection and preservation of areas of country; and
- the skills involved in gathering, hunting, preparing and cooking.

Ms Howie states that her 'family has always been associated with Broken Bay and Brisbane Waters'—at [3]. She speaks of:

- [text removed]—at [21];
- her family camping at Patonga, near Broken Bay—at [20]; and
- looking after country and protecting sites at the mouth of Broken Bay (Hawksbury River)—at [24].

Ms Brauer spent her childhood at Wyong (in the central part of the claim area) was taught to fish by an uncle at [text removed], prawning and collecting oysters [text removed]. Most of her family is buried on country, Sandgate, Jilliby near Wyong and Palmdale (all in the claim area)—at [17]. She refers to stories passed on to her by predecessors and cultural heritage protection in relation to [text removed].

Mr Frost states that his country is Newcastle, Lake Macquarie, Central Coast and the Coalfields, that the Guringai and Awabakal are one entity but responsible for different parts of country—at [9]. [text removed] and speaks throughout his affidavit of areas in the claim area to which he has a strong association:

- he and his extended family would go fishing and prawning [text removed] on Lake Macquarie—at [4];
- Lake Macquarie and the Watagan Mountains were central to the lives of he and his siblings where 'we have lived our lives generation after generation'—at [7];
- as a child he was told stories passed down from previous generations that explained the geographical features of his country—at [34].

Knowledge of boundaries and neighbouring groups is also attested to in the affidavits. Mr Frost refers to the northern neighbours being the Worimi, whose country is north of the Hunter River, the Wonnarua to the northwest and upper Hunter Valley and the Darkinjung to the southwest—

at [33]. Ms Howie refers to the Darug people as her southern and southwestern neighbours—at [23].

Conclusion

Each of the three persons can trace their lineage back through each generation to at least one of the named apical ancestors. To this extent, the material before me supports the existence of a link between the current claim group and its predecessors' and their association with the application area. The information is sufficient to support the claim group's asserted association with the land and waters of the application area and this appears to have its origins in the preceding generations' association with the area. I am therefore satisfied that the factual basis is sufficient to support the assertion that the native title claim group has and its predecessors had an association with the area.

Reasons for s. 190B(5)(b)

I am **satisfied** that the factual basis provided is sufficient to support the assertion described by s. 190B(5)(b).

This subsection requires that I be satisfied that the material before me provides a sufficient factual basis for the assertion that there exist traditional laws acknowledged and customs observed by the native title claim group and that these give rise to the native title rights and interests it claims.

Justice Dowsett again considered the requirements of s. 190B(5) when he addressed the adequacy of the factual basis underlying an applicant's claim in *Gudjala 2009*. He makes statements about the assessment of the adequacy of a general description of the factual basis of the claim at [29], which in summary mean that:

- assertions should not merely restate the claim; and
- there must be at least an outline of the facts of the case.

Relevant to assessing the application's assertions in relation to s. 190B(5)(b), in Dowsett J's view, there is a requirement for factual details concerning the pre-sovereignty society and its laws and customs relating to land and waters—at [29]. Therefore, the factual basis for the claim is required to address whether or not the relevant traditional laws and customs that give rise to the claim to native title rights and interests have their origin in a pre-sovereignty, normative system with a substantially continuous existence and vitality since sovereignty. In *Gudjala 2007,* which was not criticised by the Full Court in *Gudjala FC*—at [71], [72] and [96], Dowsett J considered that the factual basis materials for this assertion must demonstrate:

- the laws and customs currently observed by the claim group have their source in a pre–sovereignty society and have been observed since that time by a continuing society—at [63];
- the identification of a society of people living according to a system of identifiable laws and customs, having a normative content, which existed at the time of sovereignty—at [65] and see also at [66]; and
- the link between the claim group described in the application and the area covered by the application, 'identifying some link between the apical ancestors and any society existing at sovereignty'—at [66].

The report refers to other research that records:

- within the Awabakal and Guringai (Wannungine), there were local-territory groups, or clans, associated with various areas;
- the Awabakal had a tribal system of clans-groups of people who could number up to 150 or so; and
- they had their own hunting and food-gathering areas and places for camp sites, but were free to wander around all of the tribal territory (at 2.3.1.12).

Shane Frost, Kerrie Brauer and Tracey-Lee Howie each attest in their affidavit to their descent from an apical ancestor listed at Schedule A and refers to the presence of Awabakal and Guringai people throughout the claim area before and at first European contact.

Ms Howie traces her ancestry back to apical ancestor Bungaree (b.1775). The report provides supporting evidence of her association with the Broken Bay area, with Bungaree's life and family well documented in the historical record. The report then goes on to show the genealogical link of each of the persons who comprise the applicant to one of the three descent groups. The report sets out the (Guringai) genealogical line that followed Bungaree and his two wives and, as mentioned above, each generation that precedes the current one (as represented by Ms Howie) is clear to me. Mr Frost's (Awabakal) generation is also clear to me as his line of descent is traced back through each generation to Molly Morgan whose birth date is recorded in the report as c. 1800. Ms Brauer is a descendent of (Awabakal) Margaret and Ned whom the report records having been born c. 1815 ? and 1829 respectively, and whose daughter Ellen is her great grandmother—at 3.1.

The report also states:

> Membership of the claim group is composed of all those adult persons who are recognised as being descended, by either birth or adoption, from an apical ancestor who is known to have been a member of the Awabakal and Guringai land holding group at or near sovereignty—at 3.2.1.

Based on the fact that 'members of the claim group can demonstrate that they and their ancestors in each generation to their apical ancestors have had a continuing association with the claim area, the report makes the assertion that:

> The traditional laws and customs to which the claimants exert a right to claim native title include, at a minimum:
>
> - The right to identify as Awabakal or Guringai (Wannungine) by virtue of cognatic descent from and or serial filiation to an apical ancestor known to have rights and interests in the area.
> - The right to live within, come and go to, Awabakal and Guringai country (Wannungine country), according to Awabakal and Guringai (Wannungine) law and custom.
> - The right to visit and protect important places on Awabakal and Guringai country.
> - The right to hunt, fish and gather food, and gather resources on Awabakal and Guringai country.
> - The right to teach law and custom on country.
> - The right to control access, and use of, the Awabakal and Guringai country. This includes the right to invite guests who are not Awabakal or Guringai to engage in activities on Guringai activity (4.1.2)

Mr Woolford asserts that he can 'substantiate at length, that the native title claim group ... has continued to hold native title in accordance with their traditional laws and customs' (4.1.5). Each person speaks in their affidavit to the continuing exercise of rights and interests by the claim group, the practice of which has been passed down to them through previous generations.

This, in my view, would appear to 'permit an inference that the claim group is a modern manifestation of a pre-sovereignty society, and that its laws and customs have been derived from that earlier society'—*Gudjala [2009]* at [31]. The report and supporting affidavits, in my view, are together sufficient to establish that there is a factual basis for the assertion that at sovereignty there was a society, the members of which have continued to acknowledge and observe traditional laws and customs. The basis for my view is outlined below in a summary of the key elements of that information.

The affidavits provide information that illustrates aspects of Awabakal and Guringai traditional law and custom, in relation to:

- knowledge held by Awabakal and Guringai people that the land, rivers and coastal waters was and continue to be their traditional country;
- marriage restrictions and relationship structures between young people and their Elders;
- permissions, responsibilities and restrictions regarding access to Awabakal and Guringai country;
- Awabakal and Guringai totems and the importance of the spirits of ancestors;
- passing on of Awabakal and Guringai culture and knowledge, laws and customs through story telling— [text removed];
- obligations to share the resources of the area and to follow traditional Awabakal and Guringai rules and responsibilities in relation to the gathering, preparation and eating of food from the area.

The affidavits provide references to what appears to be a continuing body of traditional law and custom acknowledged and observed and by which Awabakal and Guringai people have been and are currently bound. It is clear in the affidavits that intrinsic to the activities of hunting and gathering is sharing and exchanging between members of the claim group, with much transmission of laws and customs, and knowledge about country occurring when people are fishing and hunting:

Mr Frost attests in his affidavit to having hunted, prepared and cooked from the lake and the bush all his life, that his father and grandmother taught him from the time he was a young boy and that he now teaches his own children what he was taught—at [12]. He was taught by his father to fish and gather oysters off the mangroves and rocks and collect other shellfish from the water's edge and the lake, just as his ancestors had—at [15]. Mr Frost refers to the stories passed down to him by his father and grandparents—at [34] to [39]. These are stories that relate to the formation of the landscape, responsibilities associated with protection of sites and country, warnings and portents and relationships between kin.

Each of the affidavits relates stories and experiences which pertain to the group's beliefs in spirits of the area. The beliefs translate to:

- restrictions placed on certain areas and at certain times (at night for example);
- adhering to obligations in relation to access to country and certain significant sites;

- signs of impending bad luck or good fortune; and
- supernatural and spiritual presences and forces that guide people's relationships to each other and to country.

The areas to which such beliefs are related are identified—beaches and waters (at Broken Bay, Lake Macquarie), significant sites and previous ceremonial and burial sites [text removed]:

> [text removed]

There is in my view a sufficient factual basis to support the assertion that traditional laws and customs are acknowledged and observed by the claim group. This is demonstrated in the affidavits by examples of physical and spiritual connection to country in the exercise of rights and interests by members of the group. When considered as a whole, the material before me provides a sufficient factual basis for the assertion that there exist traditional laws acknowledged and customs observed by the Awabakal and Guringai people and that these give rise to the native title rights and interests they claim.

Reasons for s. 190B(5)(c)

I am **satisfied** that the factual basis provided is sufficient to support the assertion described by s. 190B(5)(c).

This subsection requires that I be satisfied that there is sufficient factual basis to support the assertion that the native title claim group continues to hold native title in accordance with their traditional laws and customs. In order for a delegate to be satisfied that there is a factual basis for s. 190B(5)(c) there must be some material which addresses those matters outlined by Dowsett J in *Gudjala 2007* at [63], [65] and [66].

The report refers to Macdonald (2012) who identified that today members of the Awabakal and Guringai claim group can demonstrate that they and their ancestors in each generation to their apical ancestors have had a continuing association with the claim area—at 4.1.1.

The three affidavits provide examples of stories, experiences and knowledge passed down through generations of Awabakal and Guringai people and which continue to be passed onto the current younger generation—about places of spiritual significance, their stories and traditional customs and practices. Ms Brauer and Ms Howie both attest to being taught [text removed]. They now teach their own children, nephews and nieces about fishing and hunting, customs associated with food preparation, medicinal practices, sharing and kinship relationships, language and access to land protocols and obligations. Mr Frost also attests to the continuity of law and custom through the passing on of knowledge:

> We have done this all my life, my Father taught me how to hunt, catch, prepare and cook these animals. My Father and Grandma show us how to catch and collect for the lake and the bush. From the time I was a young boy both my Father and Grandma taught me and my siblings how to live from the lake and the bush as our ancestors did. I have taught my children and now teach my nephews and their children what I was taught—at [12].

As previously highlighted in the discussion of ss. 190B(5)(a) and (b), I have formed the view that the material before me does provide a sufficient factual basis to support the assertions mentioned in those paragraphs.

I am satisfied that the factual basis provided is sufficient to support the assertion described by s. 190B(5)(c).

Subsection 190B(6)
Prima facie case

> The Registrar must consider that, prima facie, at least some of the native title rights and interests claimed in the application can be established.

The application **satisfies** the condition of s. 190B(6).The claimed native title rights and interests that I consider can be prima facie established are identified in my reasons below.

Under s. 190B(6) I must be satisfied that at least one of the native title rights and interests claimed by the native title group can be established, prima facie. I refer to the comments made by Mansfield J in *Doepel* about the nature of the test at s. 190B(6):

- it is a prima facie test and 'if on its face a claim is arguable, whether involving disputed questions of fact or disputed questions of law, it should be accepted on a prima facie basis'—*Doepel* at [135].
- it involves some 'measure' and 'weighing' of the factual basis and imposes 'a more onerous test to be applied to the individual rights and interests claimed'—*Doepel* at [126], [127] and [132].

As mentioned above in relation to the requirements of s. 190B(5), the registration test involves an administrative decision—it is not a trial or hearing of a determination of native title pursuant to s. 225, and therefore it is not appropriate to apply the standards of proof that would be required at such a trial or hearing. It is not my role to draw definitive conclusions from the material before me about whether or not the claimed native title rights and interests exist, only whether they are capable of being established, prima facie.

I have examined the factual basis for the assertion that the claimed native title rights and interests exist against each individual right and interest claimed in the application to determine whether prima facie, they:

1. exist under traditional law and custom in relation to any of the land or waters under claim;
2. are native title rights and interests in relation to land or waters (see chapeau to s. 223(1)); and
3. are rights and interests that have not been extinguished over the whole of the application area.

I note that, in my view, as set out above at s. 190B(5), the application provides a sufficient factual basis to support the assertion that there exist traditional laws and customs acknowledged and observed by the native title claim group that give rise to some of the claimed native title rights and interests. The report at Attachment F to the application asserts that the rights and interests claimed by the native title claim group is supported by material sourced and interviews conducted by Mr Woolford. In my view, the facts contained in the three affidavits attached to the application are sufficient to demonstrate that some of the rights and interests can be established,

prima facie, because they illustrate and support that the claimed rights and interests exist under the traditional laws and customs acknowledged and observed by the native title claim group.

Exclusive rights

Over areas where a claim to exclusive possession can be recognised (such as areas where there has been no prior extinguishment of native title or where s. 238, ss. 47, 47A or 47B apply), the claim group claims the right to possess, occupy, use and enjoy the lands and waters of the application area as against the whole world, pursuant to the traditional laws and customs of the claim group.

Established

The majority decision of the High Court in *Western Australia v Ward* (2002) 191 ALR 1 (*Ward HC*) considered that '[t]he expression "possession, occupation, use and enjoyment ... to the exclusion of all others" is a composite expression directed to describing a particular measure of ***control over access to land***' [emphasis added]. Further, that expression (as an aggregate) conveys 'the assertion of rights of control over the land' which necessarily flow 'from that aspect of the relationship with land which is encapsulated in the assertion of a right to speak for country'—at [89] and [93]. *Ward HC* is authority that, subject to the satisfaction of other requirements, a claim to exclusive possession, occupation, use and enjoyment of lands and waters can be established, prima facie.

In *Griffiths v Northern Territory of Australia* [2007] FCAFC 178 (*Griffiths FC*) the Full Court explored the relevant requirements to proving that such exclusive rights are vested in a native title claim group, stating:

> . . . the question whether the native title rights of a given native title claim group include the right to exclude others from the land the subject of their application does not depend upon any formal classification of such rights as usufructuary or proprietary. *It depends rather on consideration of what the evidence discloses about their content under traditional law and custom*—at [71] (*emphasis added).*

The Full Court stressed that it is also:

> important to bear in mind that *traditional law and custom*, so far as it bore upon relationships with persons outside the relevant community *at the time of sovereignty*, would have been framed by reference to relations with indigenous people—at [127] (*emphasis added).*

As set out in relation to the factual basis for the claim, the overview report refers to the claim group's system of acquisition of rights and interests in the land and waters of the claim area and that this allows members of the group, under their traditional law and custom, free access to and exploitation of the area covered by the application. Inherent in this right is the obligation of those who are not Awabakal or Guringai to seek permission to access the area.

Each of the affidavits attests to matters pertaining to permission and access to Awabakal and Gurungai country. Each speaks of people from neighbouring groups needing to seek permission—Ms Brauer at [18]; [text removed]; and that they have rights and responsibilities to speak for their country—Mr Frost at [9].

In my view, together with the analysis and opinions provided in the report, the statements support the assertion that the right to exclusive possession exists (where it can be recognised) under the traditional laws and customs of the native title claim group.

I consider this right can be established, prima facie.

Non Exclusive rights

(a) live and be present on the application area;

"Live" means to reside and for that purpose erect shelters and temporary structures but does not include a right to construct permanent structures;

Established

This right is evidenced in the three affidavits, suggesting the rights exist under the traditional laws and customs of the native title claim group. Much of the material in support of the right is cited above under my consideration of the factual basis of the claim.

The affidavits provide numerous examples of activities to demonstrate that the claim group's past and current association with the application area has involved and currently involves this right. Such activities include fishing, camping, the collecting of marine and river resources, residing permanently in the claim area, attending gatherings and meetings, teaching young people about Awabakal and Guringai country and visiting and maintaining sites and areas of significance. It is clear that members of the claim group regularly spend time in the claim area and access the land, and that this is in pursuit of such activities.

Mr Frost attests to his father having shown him how to make bark shelters and to camping on country since he was a child—at [29] to [30]. Members of the claim group attest to having lived all their lives in the area covered by the application, have regularly camped in the area and younger generations are taken out on the claim area camping to fish and hunt and learn about Awabakal and Guringai country, law and custom.

I consider that this right can be established, prima facie.

(b) take, use, share and exchange Traditional Natural Resources for personal, domestic and non-commercial, communal purposes;

"Traditional Natural Resource" means:
(1) "animals" as defined in the National Parks and Wildlife Act 1974 (NSW)
(2) "plants" as defined in the National Parks and Wildlife Act 1974 (NSW)
(3) charcoal, shells and resin;
(4) clay, soil, sand; ochre; gravel or rock on or below the surface; and
(5) "fish" and "fishing"

(g) light fires for domestic purposes including cooking but not for the purposes of hunting or clearing vegetation;

Established

These rights are evidenced in the three affidavits, suggesting the rights exist under the traditional laws and customs of the native title claim group. Much of the material in support of these rights is cited above under my consideration of the factual basis of the claim.

The taking, using and sharing of the natural resources of the area covered by the application by members of the claim group is attested to in the affidavits in great detail. Knowledge and understanding of the plants, animals, fish and shellfish has been passed down to current members of the claim group through their parents, grandparents, aunts and uncles. Each of the

affidavits state that they have been taught by their parents and grandparents how to catch fish, prepare bush tucker and what not to take in accordance with their traditional laws and customs—Mr Frost at [14] to [15].

Each of the three affidavits set out numerous examples of activities undertaken by the claim group in exercise of the rights claimed above. Fishing, crabbing and collecting shellfish are integral to people's access to and relationship with country—Ms Howie at [8], Mr Frost at [10]. Plants and their products have been and continue to be collected and used for medicinal purposes, eating and as indicators for coming of certain seasons—Ms Howie at [15], Mr Frost at [16] and [28], Ms Brauer at [14]. Animals such as kangaroo, porcupines, wallabies, goannas [text removed]—Mr Frost at [10]. Particular plants and bush foods [text removed] are known to be collected only at certain times of the year and Mr Frost attests to being taught about these plants by his father and grandmother—at [19].

The claim group continues to make spears, tools, shields and shelters from materials gathered on country in accordance with their traditional laws and customs and this they have learnt from their parents and grandparents who were taught by their predecessors—Mr Frost at [19], [25], [27].

Fires are a necessary part of the activities undertaken in exercise of the right to take the traditional natural resources and travelling through country. This exercise of this right is evidenced in the three affidavits—Mr Frost at [20] to [22].

I consider that this right can be established, prima facie.

(c) conduct burial rites;

Established

This right is evidenced in the affidavits suggesting the right exists under the traditional laws and customs of the native title claim group. [text removed] and that the claim group continues to maintain and protect these sites—at [21]. She states that [text removed] and members of the claim group continue to be buried on their traditional country. Mr Frost and Ms Brauer both refer to particular people buried on country and the ongoing maintenance and protection of burial sites.

I consider that this right can be established, prima facie.

(d) conduct ceremonies

Not Established

In my view, there is not sufficient material in the application or the affidavits about the claim group's conduct of ceremonies, either currently or in the past. Potentially ceremonies may be involved in some of the activities listed at Schedule G and referred to in the affidavits; however, there is no direct reference to the conduct of or participation in ceremonies by members of the claim to establish this right, prima facie.

I consider that this right cannot be established, prima facie.

(e) teach on the area about the physical and spiritual attributes of the area;

Established

This right is evidenced in the affidavits suggesting the right exists under the traditional laws and customs of the native title claim group. Members of the claim group continue to take their children and grandchildren onto country and teach them about sites and areas of significance, the stories and traditional customs that have been passed down to them by preceding generations, their ancestors and neighbours—Mr Frost [44] to [45].

I consider that this right can be established, prima facie.

(f) maintain places of importance and areas of significance to the native title holders under their traditional laws and customs and protect those places and areas from physical harm;

Established

This right is evidenced in the affidavits suggesting the right exists under the traditional laws and customs of the native title claim group—Mr Frost [46] and [47].

Each of the affidavits refer to the responsibilities of members of the claim group to protect sites and areas of importance, traditional burial sites and geographical features—Mr Frost at [46]. Integral to this maintenance and protection is the cultural heritage work undertaken by members of the claim group which they do because this right has been passed down to them by their parents and grandparents—Ms Brauer at [27].

I consider that this right can be established, prima facie.

(h) be accompanied into the claim area by non claim group members being people required;

(1) by traditional law and custom for the performance of ceremonies or cultural activities; and
(2) to assist in observing and recording traditional activities on the claim area;

Not Established

There is no information in the material before me about the claim group's right to be accompanied by people who are not members of the claim group for the purpose of the two activities listed. Whilst there is information that goes to the vesting in senior Awabakal and Guringai people, under traditional law and custom, of the right to make decisions about access to country, there is nothing by way of evidence of the exercise of the right or that the right does in fact exist under the group's traditional law and custom.

I consider that this right cannot be established, prima facie.

(i) In relation to Water, take and use:

(1) Traditional Natural Resources from the Water for personal, domestic and non-commercial communal purposes; and
(2) for personal, domestic and non-commercial, communal purposes.
"Water" means water source as defined by the Water Management Act 2000 (NSW).

Not Established

There is no information in the material before me about the claim group's right to take and use water, as claimed at (2). There is significant detail in relation to the claim group's activities that

necessitate access to water courses and the coastal seas of the area covered by the application. However, taking and using the water itself, is not evidenced in the affidavits. The application does not provide such evidence of the exercise of this right or that the right does in fact exist under the group's traditional law and custom.

I understand that (1) refers to the right to take and use from the water resources that fall under the definition of 'Traditional Natural Resources' (as defined above). As I have found above that such a right can be established prima facie, there is evidence in the material before me that shows the right exists under the claim group's traditional laws and customs. However, the right is framed in conjunction with the right at (2) which I find cannot be established prima facie, and it is not for me to separate the two parts of the right as claimed. In any event the right is probably captured sufficiently in the right claimed at (b) which I have found can be established prima facie.

I consider that this right cannot be established, prima facie.

Conclusion

I have considered the rights claimed in the application against existing law in relation to whether or not they are capable of being recognised and whether the application provides sufficient information to establish, prima facie, their existence. I am satisfied, having considered the information before me, that some of the rights claimed in this application can be prima facie established. Therefore the rights to be registered on the Register of Native Title Claims are as follows:

1. Over areas where a claim to exclusive possession can be recognised (such as areas where there has been no prior extinguishment of native title or where s. 238, ss. 47, 47A or 47B apply), the claim group claims the right to possess, occupy, use and enjoy the lands and waters of the application area as against the whole world, pursuant to the traditional laws and customs of the claim group.

2. Over areas where a claim to exclusive possession cannot be recognised, the claim group claims the non-exclusive right to:

(a) live and be present on the application area;

(b) take, use, share and exchange Traditional Natural Resources for personal, domestic and non-commercial, communal purposes;

(c) conduct burial rites;

(e) teach on the area about the physical and spiritual attributes of the area;

(f) maintain places of importance and areas of significance to the native title holders under their traditional laws and customs and protect those places and areas from physical harm;

(g) light fires for domestic purposes including cooking but not for the purposes of hunting or clearing vegetation;

3. For the purposes of 2. above,

"Live" means to reside and for that purpose erect shelters and temporary structures but does not include a right to construct permanent structures;

"Traditional Natural Resource" means:

"animals" as defined in the National Parks and Wildlife Act 1974 (NSW)

"plants" as defined in the National Parks and Wildlife Act 1974 (NSW)

charcoal, shells and resin; and

clay, soil, sand; ochre; gravel or rock on or below the surface.

“fish” and “fishing”

"Water" means water source as defined by the Water Management Act 2000 (NSW).

Subsection 190B(7)
Traditional physical connection

> The Registrar must be satisfied that at least one member of the native title claim group:
> (a) currently has or previously had a traditional physical connection with any part of the land or waters covered by the application, or
> (b) previously had and would reasonably be expected to currently have a traditional physical connection with any part of the land or waters but for things done (other than the creation of an interest in relation to the land or waters) by:
> (i) the Crown in any capacity, or
> (ii) a statutory authority of the Crown in any capacity, or
> (iii) any holder of a lease over any of the land or waters, or any person acting on behalf of such a holder of a lease.

The application **satisfies** the condition of s. 190B(7).

Under s. 190B(7), I must be satisfied that at least one member of the native title claim group currently has or previously had a traditional physical connection with any part of the land or waters covered by the application. This condition ‘can be seen as requiring some measure of substantive (as distinct from procedural) quality control upon the application’—*Gudjala FC* at [84].

In *Doepel*, Mansfield J also considered the nature of the Registrar’s task at s. 190B(7):

> Section 190B(7) imposes a different task upon the Registrar. It does require the Registrar to be satisfied of a particular fact or particular facts. It therefore requires evidentiary material to be presented to the Registrar. The focus is, however, a confined one. It is not the same focus as that of the Court when it comes to hear and determine the application for determination of native title rights and interests. The focus is upon the relationship of at least one member of the native title claim group with some part of the claim area. It can be seen, as with s 190B(6), as requiring some measure of substantive (as distinct from procedural) quality control upon the application if it is to be accepted for registration—at [18].

Shane Frost, Tracey-Lee Howie and Kerrie Brauer provide numerous examples throughout their affidavits in relation to residing on and regularly travelling around, hunting, camping and fishing in the area of the application. They were taught by their grandparents, aunts and uncles and parents to fish in the rivers, estuarine and coastal waters and state that they continue to have a traditional connection with the land and waters covered by the area of the application.

I am satisfied that at least one member of that group currently has a traditional physical connection with parts of the application area.

Subsection 190B(8)
No failure to comply with s. 61A

The application and accompanying documents must not disclose, and the Registrar must not otherwise be aware, that because of s.61A (which forbids the making of applications where there have been previous native title determinations or exclusive or non-exclusive possession acts), the application should not have been made.

Section 61A provides:

(1) A native title determination application must not be made in relation to an area for which there is an approved determination of native title.

(2) If :

(a) a previous exclusive possession act (see s. 23B) was done, and

(b) either:

(i) the act was an act attributable to the Commonwealth, or

(ii) the act was attributable to a state or territory and a law of the state or territory has made provisions as mentioned in s. 23E in relation to the act;

a claimant application must not be made that covers any of the area.

(3) If:

(a) a previous non-exclusive possession act (see s. 23F) was done, and

(b) either:

(i) the act was an act attributable to the Commonwealth, or

(ii) the act was attributable to a state or territory and a law of the state or territory has made provisions as mentioned in s. 23I in relation to the act;

a claimant application must not be made in which any of the native title rights and interests confer possession, occupation, use and enjoyment of any of the area to the exclusion of all others.

(4) However, subsection(2) and (3) does not apply if:

(a) the only previous non-exclusive possession act was one whose extinguishment of native title rights and interests would be required by section 47, 47A or 47B to be disregarded were the application to be made, and

(b) the application states that ss. 47, 47A or 47, as the case may be, applies to it.

The application **satisfies** the condition of s. 190B(8). I explain this in the reasons that follow by looking at each part of s. 61A against what is contained in the application and accompanying documents and in any other information before me as to whether the application should not have been made.

Reasons for s. 61A(1)

Section 61A(1) provides that a native title determination application must not be made in relation to an area for which there is an approved determination of native title.

In my view the application **does not** offend the provisions of s. 61A(1). The geospatial report dated 27 May 2013 and a search that I made of the Tribunal's geospatial databases on the day of my decision reveals that there are no approved determinations of native title over the application area.

Reasons for s. 61A(2)

Section 61A(2) provides that a claimant application must not be made over areas covered by a previous exclusive possession act, unless the circumstances described in subparagraph (4) apply.

In my view the application **does not** offend the provisions of s. 61A(2). Schedule B, at paragraphs 1 and 2, excludes from the application area any land or waters that is or has been covered by previous exclusive possession acts as they are defined in the Act.

Reasons for s. 61A(3)

Section 61A(3) provides that an application must not claim native title rights and interests that confer possession, occupation, use and enjoyment to the exclusion of all others in an area where a previous non-exclusive possession act was done, unless the circumstances described in s. 61A(4) apply.

In my view, the application **does not** offend the provisions of s. 61A(3). Schedule B at paragraph 3 states that exclusive possession is not claimed in the application over areas where a non-exclusive possession act has been done.

Subsection 190B(9)
No extinguishment etc. of claimed native title

> The application and accompanying documents must not disclose, and the Registrar/delegate must not otherwise be aware, that:
> (a) a claim is being made to the ownership of minerals, petroleum or gas wholly owned by the Crown in the right of the Commonwealth, a state or territory, or
> (b) the native title rights and interests claimed purport to exclude all other rights and interests in relation to offshore waters in the whole or part of any offshore place covered by the application, or
> (c) in any case, the native title rights and interests claimed have otherwise been extinguished, except to the extent that the extinguishment is required to be disregarded under ss. 47, 47A or 47B.

The application **satisfies** the condition of s. 190B(9), because it **meets** all of the three subconditions, as set out in the reasons below.

Reasons for s. 190B(9)(a):

The application **satisfies** the subcondition of s. 190B(9)(a). Schedule Q contains the statement that 'the native title claim group does not claim ownership of minerals, petroleum or gas that are wholly owned by the Crown'

Reasons for s. 190B(9)(b)

The application **satisfies** the subcondition of s. 190B(9)(b).

Schedule P states that the application does not make a claim to exclusive possession over part, or all, of any offshore place.

Result for s. 190B(9)(c)

The application **satisfies** the subcondition of s. 190B(9)(c). Schedule B at paragraph 6 contains the statement that the application excludes land or waters where the native title rights and interests claimed have been otherwise extinguished.

[End of reasons]

Attachment A
Summary of registration test result

Application name	**Awabakal and Guringai People**
NNTT file no.	**NC2013/002**
Federal Court of Australia file no.	**NSD780/2013**
Date of registration test decision	**13 June 2013**

Section 190C conditions

Test condition	Subcondition/requirement	Result
s. 190C(2)		Aggregate result: Met
	re s. 61(1)	Met
	re s. 61(3)	Met
	re s. 61(4)	Met
	re s. 62(1)(a)	Met
	re s. 62(1)(b)	Aggregate result: Met
s. 190C(3)		Met
s. 190C(4)		Overall result: Met
	s. 190C(4)(a)	N/A
	s. 190C(4)(b)	Met

Section 190B conditions

Test condition	Subcondition/requirement	Result
s. 190B(2)		Met
s. 190B(3)		Overall result: Met
	s. 190B(3)(a)	N/A
	s. 190B(3)(b)	Met
s. 190B(4)		Met
s. 190B(5)		Aggregate result: Met
s. 190B(6)		Met
s. 190B(7)(a) or (b)		Met
s. 190B(8)		Aggregate result: Met
s. 190B(9)		Aggregate result: Met

"From the Mountains to the Sea"
AWABAKAL
Descendants Traditional Owners
Aboriginal Corporation
ICN:4500 ABN:20402046601

PO BOX 86
CLARENCE TOWN
NSW 2321

Date: 10 September 2013

Attention: Alister Bowen
ERM
Building C, 33 Saunders Street
Pyrmont, NSW 2009

Re: Review and Response-Draft Report-*Aboriginal Cultural Heritage Assessment*-Residential Development 505 Minmi Road, Fletcher NSW.

ALLA (Hello in Awabakal) Alister,

We have reviewed the document supplied to us by ERM regarding the above proposed development and herein provide our response regarding any concerns we have with the contents of the draft report document.

We would also like to see our comments addressed and added to the final report so that they can be considered in regard to their implementation to provide as much protection as possible to any Cultural Heritage sites that may be put at risk of impact within the proposed development area.

The **Draft Report- Draft Report-*Aboriginal Cultural Heritage Assessment*-Residential Development 505 Minmi Road, Fletcher NSW** will be hereafter referred to as the draft or draft report. Please find below the issues that we believe need to be addressed within the draft report and these are brought to your attention in the following dot points.

- On page 19 of the draft, section 4.2 Ethnohistory, there needs to be more recognition of Awabakal People. The Pambalong are acknowledged as being 'thought to be a sub group of the Awabakal people of Lake Macquarie'. The Awabakal People are not just from the Lake Macquarie area but also the Newcastle, Hexham Swamp, Sugarloaf, Central Coast and Coalfields areas. There is an enormous amount of ethno historical evidence and historical documentation that proves this as fact and therefore, this information needs to be addressed and updated in the Ethnohistory section of the draft report.

- On page 6 of the draft it talks about 'Section 90 consent to destroy'. Now it would be considered as an Aboriginal Heritage Impact Permit (AHIP) not Section 90! This needs to be addressed.

- Also on pages 6-7 and 53 it gives coordinates of sites. These also need to be removed from the document.

- Also on the top of page 54, instead of LALC and Awabakal LALC, it should read 'the Awabakal People'.

AHIMS Omissions and Lack of Information

- It needs to be remembered that the AHIMS Database is not an exhaustive list of Aboriginal sites but is only really a guide to what has been recorded. Therefore the following dot points are necessary in understanding that there are limitations when using AHIMS because of;

    a. The lack of information or recorded evidence of Cultural Heritage sites reported on the AHIMS Database does not in reality give a true indication of what is present.

    b. The AHIMS register is only useful in determining the location of Cultural Heritage sites that have already been recorded (known sites). As is stated by the OEH themselves within their own document (see excerpt below), when an AHIMS Web Services (AWS) Search Result is produced it contains a statement that says in the following;

    'Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.' [1]

[1] ***OEH AHIMS Web Services (AWS) Search Results document.***

c. Therefore, this information needs to be accessed appropriately and all facets of the available information (including the possibility of sites that have not been recorded previously and that remain undetected) need to be taken into account regarding the location of this proposed development. If one views a map of where this particular proposed development is to be situated, then one can see that it is in close proximity to creek lines with Grinding Grooves. Also it is in close proximity to Minmi Creek and Wentworth Creek and Hexham Swamp. Therefore, this location which has ample permanent water would be an area that is quite suitable to sustain our People for many and varied reasons.

d. Another factor to be taken into account in this regard is that if one is to look at the amount of sites that have been recorded on the AHIMS Database within a five (5) kilometre radius as stated on page 17 of the draft report being **35 (known)** sites which comprise a total of 40 archaeological features with five (5) sites having multiple features recorded. Also only 150 metres from the project area is seven (7) sets of Grinding Grooves in Wentworth Creek. Now, what about the '**unknown sites'** the '**yet to be discovered sites'**, this is what matters here because if we look at the bigger picture it gives us a better understanding of what the whole Cultural Landscape within this five (5) kilometre radius is. What is the majority of sites made up of? The answer is on page 17 of the draft report, yes 30 artefact scatters. Even though without the whole equation and having information that is lacking, it is still advantageous to look and see that the picture presented before us is one that is rich in our Cultural Heritage and this then presents not just the project area with sites in it but also shows that there is a Cultural Landscape to be considered here and this should be the way it is viewed so that it is assessed by what is presented around it also as it is all connected.

e. Therefore this should be the catalyst to make sure there is recommended during the initial ground disturbing a program by which the Aboriginal Stakeholders, monitor/observe and collect any artefacts that may be disturbed during the construction of the proposed development.

Ground Visibility, Surface Exposure and Subsequent Impacts to Aboriginal Cultural Heritage

- Due to the vegetation which covers most of the proposed project area it has produced minimal visibility. As can be expected, the result is then shown as minimal Cultural Heritage sites within the main body of the project/study area. This does not mean that there is no other Cultural Heritage present (as shown in the previous section); it only shows that it was not visible at the time.

- Many Aboriginal Cultural Heritage assessments suffer due to the poor visibility which very often presents itself when a field inspection is undertaken. It is expected that during a normal field inspection/assessment approximately 1-2 percent of the surface of the overall area to be surveyed will be clear of vegetation.

  It is suffice to say then that in nearly all of these field inspections the visibility plays, to a great extent, a pivotal role in what decisions will be arrived at concerning the existence of Aboriginal Cultural material present within the landscape (with some exceptions). Unfortunately the visibility question can be misleading and it is a common practise to assume that if there are little or no visible evidence/signs of Aboriginal Cultural Heritage, then it is ok to assume there is none or only a small amount present. Adopting this attitude could be no further from the truth.

  Below we have included a statement from OEH/DECCW that explains the problems associated with making assumptions based on lack of visibility;

  'Visibility is the amount of bare ground on the exposures which may reveal artefacts or other cultural materials, or visibility refers to 'what conceals'. Visibility is hampered by vegetation, plant or leaf litter, loose sand, stony ground or introduced materials (such as rubbish) On its own, visibility is not a reliable factor in determining the detectability of subsurface cultural materials (DECCW 2010/783:39).'

  It would be wrong even according to the OEH (DECCW) to conclude that, because of the lack of visibility or detection of Aboriginal Cultural Heritage in the location of the proposed project area, that there would be an assumption that no other Aboriginal Cultural Heritage values are present. On the contrary; the survey area and that surrounding it has been used by our People for thousands of years for a variety of purposes from procurement of resources to more complex uses of the landscape within and outside the project area. As already discussed, this area has major creeks and Hexham Swamp in close proximity to it where Aboriginal Cultural sites have been recorded. Thousands of artefacts have been recovered from the nearby Sanctuary Estate and other estates close by.

Historical and Natural Ground Disturbance

- Also using the excuse that due to historical ground disturbances attributed to such things as stock, ploughing, erosion, bioturbation and other historical and more contemporary factors within the soil profile is really not sufficient to assume that there are limited artefacts present or because of these disturbances they may have been disturbed from their original positions rendering them of no significance. **As for these disturbances, for us, there is no change to the Cultural significance of the artefacts as they still retain their conduit as a physical connection for us to our Ancestors no matter how in or out of situ they may be.**

- To demonstrate the possibility of what could be contained subsurface and subsequently disturbed during any excavations in the event of the proposed development of the project, provided is a quote which sums up the possibility of disturbing, or worse, destroying Aboriginal Cultural Heritage objects or sites;

  'Once discarded on the ground surface, artefacts are often readily incorporated into the topsoil horizons through the process of bioturbation. Most commonly, dense artefact deposits exist hidden beneath the upper surface, unobservable by the casual observer.' (c.f.Wandsnider and Camilli 1992; Fanning and Holdaway 2001).[2]

- Also another example demonstrates what can happen. There was a situation where an AHIP was obtained to excavate an area of which was believed may produce a minimal amount of artefacts. One of the sections chosen was believed to be nothing more than a couple of shells visible on the surface. After starting the excavation, attitudes were changed dramatically, the archaeologist admitting they would have stated beyond a shadow of doubt that it was only a couple of shells scattered on the surface. It was found we were within what would be considered quite a large midden site (but it was not visible) and what resulted from this excavation was the collection of many artefacts along with an undisturbed and virtually intact hearth surrounded by stones lying about 2 and a half feet below the surface underneath about 2 feet of midden shells. If we had employed the fact that what we could see is the extent of what we may find, then we would never have uncovered such an important and Culturally significant site as we did.

  *****We then must reiterate again that just because there is low visibility or a small quantity of Aboriginal Cultural Heritage located or none at all, it does not mean the area is not rich in Aboriginal Cultural Heritage sites, objects or significance!!!**

- For us, the Cultural significance/value is not necessarily determined by how many artefacts are present in a particular area because whether it be one (an isolated find) or many artefacts (a scatter), they are all significant to us as these are as previously mentioned, physical reminders of our People living within the context of this Cultural Landscape and they directly connect us physically to our Ancestors.

Aboriginal Stone Artefacts and Watercourses

- This is one detail that has been overlooked to a greater degree within the draft report. It is only touched on in a minimalistic approach and does not take into account that there is opportunity that artefacts will be more prevalent because of the creeks and Hexham Swamp. This is an area that needs to be clarified and not assumed.

- There is mention a couple of times within the draft report in regard to the creeks and Hexham Swamp but is overlooked and dismissed as a major factor in that there is always an increase in sites because of water sources.

  One accepted model is that;

  'the majority of sites are located within 50 metres of a water source with a drop of site number from 50-100 metres of water then an increase at over 100 metres;'[3]

  If this is the case, then the proposed construction site sits within this zone. This matter needs to be addressed wisely otherwise there is no way of knowing the probable impacts that may be thrust upon unknown Cultural Heritage sites within the proposed construction area.

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[2] ***Page 3, Hunter Water Stage 2 Aboriginal Heritage Assessment Shortland Street, Newcastle 5.1.1 Archaeological Potential. (ERM2009)***

[3] ***Draft Report-Hillsborough Retirement Village LGA: Lake Macquarie Aboriginal Heritage Impact Assessment-McCardle Cultural Heritage 2012***

These creek lines, as well as others in the area, would have been utilised by our People for fresh drinking water, therefore allowing for the opportunity for campsites to exist within close proximity to these creeks. The very fact that these creeks and especially Hexham Swamp (which had/has substantial water holes located within it) close to the proposed development area, is an indication that we should be aware that artefacts (apart from the one already found in this project area) may be hidden here by the vegetation or be located sub-surface. Based on a predictive model by Kohen in 1986 we have provided an example below which outlines his studies:

'His study showed that a large portion of artefact scatters occurred close to river and creek lines: 65% being within 100 metres of a permanent water supply (Kohen 1988 cited in Attenbrow 2002: 49-50). Kohen concluded that availability of water was the most important factor influencing the distribution of sites across the landscape (Kohen 1986: 292).'[4]

This is why it is imperative to make sure appropriate decisions are made and a suitable management and mitigation process put in place so as to afford the protection and preservation that the Cultural Heritage of our People deserves and that still exists within the very landscape of this proposed development area. It also goes without saying that this information reveals why it is imperative that more in-depth investigations are required. Without this protection and preservation, there will be little left for future generations to appreciate, therefore negating what we pride ourselves on and call today **Intergenerational Equity**.

a. Any proposed clearing and excavation works around or within close proximity to these areas (creeks and areas that had poor visibility and could not be adequately surveyed due to the overgrown nature of the vegetation), should be monitored by the Aboriginal Stakeholders.

b. Further ground disturbing works which include utility installations (roads and guttering, Telecom, water, electricity, sewer etc) should also trigger monitoring by the Aboriginal Stakeholders through an Aboriginal Cultural Heritage Management Plan (ACHMP) so that any potential disturbance or damage to the subsurface Cultural Heritage contained within the outer margins of the creek line and proposed development area are covered.

c. **Before any potential disturbances from sub-surface excavations or ground disturbances within the project area, there should be a series of test pits placed within the 50m and 100m+ areas to ascertain and establish what is the level of Cultural Heritage assemblage that is located within the areas considered to contain possible Cultural Heritage.**

<u>Isolated Artefact AHIMS Site #38-4-0555</u>

- On page 6 of the draft report it states that;

  'AHIMS Site # 38-4-0555: No further archaeological investigation is required in regards to AHIMS Site # 38-4-0555, an isolated artefact identified by AMBS (1999).'

  a. We disagree with this statement and it is our belief that this area should also have some test pitting to ascertain whether there is any other Cultural Objects present sub-surface.

<u>Excavations</u>/<u>Ground Disturbance-Necessity for Aboriginal Stakeholder Monitoring</u>

- It has been demonstrated there are identified/known Aboriginal Cultural Heritage sites within the surrounding area (and the proposed development area *AHIMS Site # 38-4-0555*) and that it is most likely that there will be more Awabakal Aboriginal Cultural Heritage sites (which were not discovered during the survey) that can and would be impacted/damaged or disturbed if excavations were to take place within this area without proper management recommendations and monitoring and observation by the registered Aboriginal Stakeholders.

  a. Therefore, as previously discussed, if there are to be any disturbances to the proposed project development area from any subsurface excavations or ground disturbance works (including vegetation clearance/removal of trees etc/grading or utilities) (which is expected) that could impact on Awabakal Aboriginal Cultural Heritage, we would suggest that it would be advantageous to the proponent for the Aboriginal Stakeholders to be on site to monitor/observe.

- It is evident through the AHIMS search that there are many Cultural Heritage sites that have been recorded within close proximity to this area. Contrary to popular belief, there are many sites that are located within this area and are not necessarily identified through a search of the AHIMS Data base.

[4] ***Aboriginal Archaeological & Cultural Heritage Assessment (Updated) – Hoxton Park 2008, Austral Archaeology Pty Ltd. page 21***

That is why it is imperative that there needs to be observance/monitoring by the registered Aboriginal Stakeholders of the entirety of the proposed development area during clearing and any subsurface excavations such as preparation for the roadways or services etc. This should be a priority.

Objections to Removal of Topsoil from the Proposed Development area and Construction Site

- We object to removal of any topsoil from the site. All topsoils disturbed by any excavations should be retained within the confines of the development footprint and not transported off the construction site due to the possible inclusions of Awabakal Cultural Heritage within the soil.

- If this is not possible, and topsoil is going to be removed from the proposed development area, then there needs to be a measure implemented into an Aboriginal Cultural Heritage Management Plan (ACHMP) that allows for the sieving of this soil by the Aboriginal Stakeholders prior to removal so as to recover any artefacts that may be present.

Aboriginal Cultural Heritage Management Plan (ACHMP)

- The draft report does not discuss the matter in regard to promoting the implementation of an ACHMP. This is an oversight within the draft report which needs to be rectified to say that the ACHMP needs to be prepared in consultation with the Aboriginal Stakeholders so that our concerns are addressed and the utmost protection afforded to our Cultural Heritage.

    a. It is imperative that there be the development and implementation of an ACHMP for this proposed development produce between the proponent and the Aboriginal Stakeholders to assist in the protection of Cultural Heritage.

Protection and Preservation of all Cultural Heritage Sites

- Therefore considering the implications that the above information presents, we believe that it is crucial that;

    a. All necessary steps should be taken to Locate, Protect and Preserve our Awabakal Cultural Heritage. As Awabakal Descendants, Traditional Owners and Registered Native Title Claimants, the Preservation and Protection of our Cultural Heritage is paramount and this extends to all of our Cultural Heritage whether visible or not. The Cultural Heritage of our People and everything attached to it is just that, **OURS!** This is our responsibility, it is a legacy passed to us and those to come to take care of it.

    b. There is the need for an ACHMP to be formulated and implemented in consultation with the Aboriginal Stakeholders prior to the works progressing past the initial stages so our Cultural Heritage is protected.

    c. Consideration should be given to the fact that if this area is developed, there will be subsurface excavations and disturbances to the study area. It has already been shown that this has the potential to disturb, damage or destroy as yet undetected Awabakal Cultural Heritage sites or objects that lay contained within the subsurface stratigraphy.

    d. In the event of the possible development of this project area, there should be ongoing consultation with the Aboriginal Stakeholders so as to formulate the best possible outcome for the Protection and Preservation of Awabakal Cultural Heritage within this project area. This could be achieved by procedures that address certain aspects and criteria of the proposed development using timeframes to formulate an investigation period (test excavations) which precedes excavation works so as to establish whether Awabakal Cultural Heritage is present subsurface and ultimately not compromise the expected completion date of each phase of the proposed development.

    e. We also believe (as already addressed) as an additional measure, an observance/monitoring and collection program should be instituted during all proposed clearing and subsurface excavations intended by the proponent and their contractors. This would involve a process in which the proponent engages the Aboriginal Stakeholders to monitor/observe all sections of the excavations (primary ground surface impacts) so as to afford collection of any artefacts that may be disturbed by the subsurface excavations. This would allow the Aboriginal Stakeholders to collect any Awabakal Cultural Heritage that would subsequently be uncovered during this phase of the process and allow for these artefacts to be reburied. We believe that if this monitoring and observation and collection process (as previously discussed) is not instigated and implemented during primary subsurface excavations and excavations for utilities etc by the proponent and their contractors, then our Cultural Heritage is being compromised and put at risk and could be considered as disrespectful and neglectful of Awabakal People and our Cultural Heritage.

f. Also, that in the event of future development of the area that there are conservation zones/areas set aside. These could serve as areas to deposit any artefacts retrieved through the subsurface testing or the known/existing artefacts within. Also they could serve as areas which could be utilised by residents as natural areas which could contain many native species of plants etc and interpretive signage which would identify the plants that have been used over thousands of years by our People.

g. The developer working in co-operation and liaising with the Awabakal Traditional Descendants to design and place interpretive signage or artworks in specified areas such as conservation zones and Awabakal words used for certain areas of the development such as streets, roadways and pathways and should be from words chosen from the Awabakal language for the streets so as to give recognition to Awabakal People and the unique Awabakal cultural heritage of the area.

h. That any future development of the site is to support and formalise the formation of an Aboriginal Advisory Committee made up of representatives from the Awabakal Traditional Descendants and other Aboriginal stakeholders. This Aboriginal Advisory Committee supported by and in conjunction with the developer, commit to the establishment (as already discussed) of an Aboriginal Cultural Heritage Management Plan (ACHMP) to manage the Aboriginal Cultural heritage issues and concerns regarding any future development of the area.

i. Any artefacts collected during this observation/monitoring and collection process should then be relocated and reburied on site by the Aboriginal Stakeholders at a location that would not place the artefacts in danger of being damage or disturbed in the future such as a conservation zone.

j. We believe there should be ***NO IMPACT*** whatsoever to any Cultural Heritage sites whether they are known or unknown. It is an offence to disturb or damage any Aboriginal Cultural Heritage site or object whether known or unknown without a permit or permission by the authorities to do so. Therefore, any proposed works or excavations that identify any Cultural Heritage sites further into the development, should trigger the specified management solution through the ACHMP and alert the developer/contractors to consult with the Aboriginal Stakeholders so as to mitigate and manage any disturbance or damage to these Cultural Heritage sites.

Aboriginal Stakeholder Notification by Proponent & Cultural Awareness Training for Construction Workers

- We would also like to see a commitment by the proponent which would require them to notify all the Aboriginal stakeholder groups in the event of any Aboriginal Cultural Heritage and archaeological evidence of any kind being uncovered or found during the course of the construction phase. We consider we have lost enough of our Cultural Heritage in the past and mitigation/management processes should be implemented and enforced so we don't lose any more of our Cultural Heritage.

- There should also be compulsory Cultural Awareness Training included in the induction process for all contractors and workers on site, particularly those undertaking any excavations within the footprint of the proposed development area. This would be developed and delivered by the Awabakal Traditional Owners and archaeological consultant to allow all workers and contractors some form of basic knowledge, recognition and detection of artefacts if uncovered during the excavation/construction phase of the site works. **Otherwise how do the construction workers know what an artefact looks like if they are not shown beforehand by those who know?**

Statement of Significance of this area to Awabakal Traditional Descendants

This area is part of our Traditional Awabakal Country and is considered by our People to be of great importance within our Cultural Heritage. There are a variety of reasons our People have benefited from using this location over thousands of years. Early accounts of the importance of this area around Hexham Swamp are attributed to the Rev. L.E. Threlkeld and Jonathon Warner.

This area has not just a physical presence within the Cultural Heritage of the Awabakal People but it is part of our oral history and a place of spiritual significance. The landforms and resources of this environment fulfilled not just the basic needs that underpinned our Peoples subsistence but also satisfied the many other aspects that made up what can be described here as being part of the very Cultural foundations of our People.

Our people have had a long history within this area which is unsurpassed. Our apical Ancestor Mahrahkah, an Awabakal woman, and her two daughters, were recorded by Threlkeld and Warner as living in and around these areas which all formed part of their Traditional Country. This apart from everything else makes it a very

important location for our family, knowing that Mahrahkah walked these areas before any white man was ever seen in the Newcastle and Lake Macquarie areas. She was intrinsically acquainted with her Land and she has left a legacy for us to carry on in this day and age and to pass onto our Descendants. As already stated, this area is of very high significance to our People and therefore it would be expected that after the many generations of our People that have walked the pathways of their Ancestors, it is obvious that there would be many areas that contain evidence of this connection, resulting from occupation on varying levels. Traditionally these areas were the supply of rich resources especially around the creeks and swamps, of which our people have depended on for thousands of years. There are physical reminders left by our Ancestors which provide us as Descendants of the Awabakal People an opportunity to make a physical connection through time with our Ancestors. This connection is one of those avenues that produce in us the sense of perception, appreciation, familiarity and recognition of who we are and where we belong as Awabakal People.

We thank you Alister for the opportunity to provide our comments for this draft report and would ask for these comments in the previous dot points and content to be added to the final report.

We look forward to your reply and if you need further clarification regarding the information we have provided please don't hesitate to contact us at your earliest convenience. Our contact details are as follows.

NGI NOA
Shane Frost-Managing Director: Awabakal Descendants Traditional Owners Aboriginal Corporation
Email:shanefrost@bigpond.com Phone: 49964325 Fax: 49964325 Mobile: 0428320671

Cultural Heritage Sites - Physical reminders of our Ancestors; once they are gone, they are gone forever and impossible to bring back!! THINK first and make WISE decisions last!!

ATOAC
Awabakal Traditional Owners Aboriginal Corporation

16 September 2013

Janene May
ERM
Locked bag 24
Broadway NSW 2007

Dear Janene,

Re: Review and Response Regarding the Draft Aboriginal Cultural Heritage Assessment Report for the Residential Development of 505 Minmi Road, Fletcher NSW.

With regard to the Draft Aboriginal Cultural Heritage Assessment Report for the Residential Development of 505 Minmi Road at Fletcher, we have reviewed the document supplied to us by ERM regarding the above proposal and herein provide our response regarding our comments and concerns.

We recommend that ERM may need to consider the value of 'place' within the Heritage and Cultural weighting, as this consideration is to insure the protection and conservation of Place & Objects which impact significantly on the spirituality, cultural, historic and general legacy needs of Aboriginal people to address inequalities in social and community well being.

Page 4, 2.1, With regard to the AHIMS search within this section of the Draft, we believe that the OEH AHIMS Database Sits Register may not necessarily have "up-to-date" or current information due to many unreported or unfinished site assessments pertaining to projects within close proximity to the project area.

The AHIMS is not a comprehensive list of all Aboriginal Heritage in NSW, rather it reflects information which has been reported to OEH. As such site co-ordinates in the database vary in accuracy depending on the method used to record their location.

It must be noted that there are many limitation with an AHIMS search. Firstly site coordinates are not always correct due to errors and changing of computer systems at OEH over the years that failed to correctly translate old coordinate systems to new systems. Secondly, OEH will only provide up to 100 sites per search, thus limiting the search area surrounding the study area and enabling a more comprehensive analysis and finally, few sites have been updated on the OEH AHIMS register to notify if they have been subject to an AHIP, and as such what sites remain in the local area and what sites have been destroyed is unknown.

We believe that this section of the Draft Report needs to include information on recorded sites around and within close proximity to the study area. These would include numerous recording that are missing from this section of the Draft, which indicates an area rich in Awabakal habitation and repeated traditional and cultural use.

We also believe that this section of the Draft Report fails to include a reference to the possibility of unknown sites, considering what has been recorded but not yet listed on the AHIMS Database. We consider that this aspect needs to be addressed.

We also have concerns that the Draft Report has not taken into consideration the impact on unknown sites due to the observation and information gathering process which presented minimal visible evidence due to the vegetated ground surface. Therefore, it should not be assumed that Cultural Material/Artefacts do not exist within the proposed project area.

Page 5, We believe that Figure 2.1 may be outdated, as it does not reflect the current development within the Outlook Estate outlined opposite the Study Area.

Page 4, 6, 53, Figure 2.1, We are concerned that the Draft Report contains specific site coordinates and consider that these need to be removed from the document, as we as Awabakal people believe that specific site coordinates information would be considered confidential.

Page 6, With regard to the reference to a "Section 90 Consent to Destroy", we highly suggest that this section should mention and make reference that an Aboriginal Heritage Impact Permit (AHIP) is the current process, as the reference to the "Section 90 Consent to Destroy" may be taken out of context.

Page 6, Second Last Paragraph, We believe that all the Registered Stakeholders that attended the site assessment held on the 18th June 2013 should be identified and named within this section of the Draft, as an element of the Consultation Process.

Page 11, 2.9, and Page 19 4.2, We believe that the reference to other groups of the Awabakal being referred to as “sub groups” is offensive to the Awabakal people and is a misleading assumption, as these groups are commonly called ‘clan groups. It would be appreciated if the reference to ‘sub group’ was changed to ‘clan groups’ within this and all future **Reports.**

Page 13, 3.1.1, We believe that this section of the Draft Report should also identify a Native Title Search which would identify that a Native Title claim was registered (13 June 2013) on behalf of the ‘Awabakal and Guringai People’ (NC2013/002). The Native Title claim included an area stretching from Broken Bay in the south to Newcastle and Maitland in the north and incorporates the proposed Project Area.

Page 16, 3.3.1, At this juncture we believe that this section of the Draft Report fails to include a holistic perspective, as this area has not just a physical presence within the Cultural Heritage of the Awabakal People, but it is part of our oral history and a place of spiritual significance. The landforms and resources of this locale fulfilled not just the basic needs that underpinned our Peoples subsistence but also satisfied the many other aspects that made up what can be described here as being part of the Cultural foundations of our People.

Therefore the Cultural Value and Significance remains high, which is attributed to our Cultural Heritage understanding of the connectivity and aspects of the regions holistic perspectives, thus emphasizing the importance of the whole, instead of a Scientific/Archaeological Value aspect of the independence of its site specific parts.

Page 17, Table 4.1, With regards to this section of the Draft Report, we believe that additional information regarding a bone feature recorded within the Sanctuary Estate would provide further context of the Draft Report and local area.

Page 25 - 35, 4.4, With regard to this section of the Draft Report, it is evident that many past Aboriginal Cultural Heritage and Archaeological assessments have proven to be insufficient due to the poor ground visibility which very often presents itself when a field inspection is undertaken.

Unfortunately the visibility question can be misleading and it is a common practice to assume that if there are no/or minimal visible surface evidence of Aboriginal Cultural Heritage, then it is assumed that there is non/or only a small amount present, and then graded as having low archaeological potential.

It has been our experience that proposed developments are continually underestimating the Awabakal Cultural Heritage context within the Fletcher region, which is repeatedly being poorly assessed.

Therefore we are greatly concerned that this Proposed Development may also prove to be culturally underestimated, although the area surrounding the Proposed Development Project has proven to be an area of High Cultural Heritage Sensitivity.

Page 36, 5, With regard to the Predictive Model within this section of the Draft Report, we consider that many of these assessments to-date have recorded large amounts of additional Aboriginal Cultural Heritage material and sites through an ongoing Consultation process with the Registered Aboriginal Stakeholders. Aboriginal Artefacts and sites are not made overnight which indicates significant habitation and continuing revisit within traditional boundary.

Consequently an incorrect Predictive Model will also have a compounding impact on the proposed Recommendation and Impact Assessment & Mitigation Measures within the Reports, and strongly recommend that these sections will need to reflect current data.

Page 51, 8 - 8.2, With regard to the Proposed Activity and Potential Harm to Aboriginal Objects outlined within this section of the Draft Report, it has been our experience and are greatly concerned that consideration regarding the planning and rezoning of land for development, that Aboriginal Cultural Heritage is normally excluded from certain project areas and services, and it does seem amazing that there is an assumption that Aboriginal Cultural Heritage would not be found within areas such as;

- the construction of roads
- water and sewerage/stormwater services
- gas, electricity and telecommunication services
- the construction of residential dwellings including digging of footings etc
- landscaping
- rehabilitation of the watercourse
- undertaking of minor earthworks as necessary

and therefore do hope that this would not be the case and would be extremely concerned if our Culture and Heritage is considered to be excluded from any area within the Proposed Development Project area.

It has been our experience that within residential developments there is a completely inappropriate learning perception from the impacts of all earthworks, as there is enough empirical evidence which demonstrates that the destruction/damage to our Awabakal Cultural Heritage occurs across a number of residential developments, as impacts are cumulative and is completely ignored.

Page 53, 9, With regard to avoiding and to minimise harm within this section of the Draft Report, we believe that there should be NO IMPACT whatsoever to any Aboriginal Cultural Heritage objects and/or sites within the proposed rezoning residential development area.

With regard to the suggestion of establishing a 'bush tucker program', we believe that these and other aspects should be discussed through the implementation of a Aboriginal Cultural Heritage Management Plan (ACHMP) and believe that this aspect may have been an oversight.

We therefore highly recommend that an ACHMP needs to be included and implemented in consultation between the Proponent, the Awabakal Traditional Descendants and other Registered Aboriginal Stakeholders, so that our concerns are addressed for appropriate Cultural Heritage management and protection outcomes.

Page 54, First Paragraph, "Typo" reads - in conjunction with the Awabakal LALC, and should read - in conjunction with the Awabakal People.

Page 54, 9.1, With regard to the Care and Control for Aboriginal Objects, to date we have had no conversation regarding the decision making process relating to the care and control of our Awabakal Cultural Heritage. As Awabakal Descendants, Traditional Owners and Registered Native Title Claimants, the preservation and protection of our Cultural Heritage is paramount, which is a legacy that has been passed down to us by our ancestors as caretakers for generations to come.

Accordingly as Awabakal People, we have both a physical and spiritual connection and a primary association with our cultural boundary. Therefore, any Artefacts and/or residual evidence of our people are held in high regard and are considered a cultural reminder that unites us with our land and sea country, our past and spirituality and provides us with a visual generational legacy.

Page 54, 9.2, With regard to the Sub-Surface Sampling Strategy within this section of the Draft Report, we agree that subsurface investigation are appropriate. However the testing strategy should also include a program in the event that the sampling excavations need to be adjusted and/or extended.

Page 56, 10 - 10.2, With regard to Recommendations, Aboriginal Heritage and Chance find Procedure within this section within the Draft Report, we believe that these statements address most of the aspects. However we further recommend that;

- all necessary steps should be taken to locate, protect and preserve our Awabakal Cultural Heritage;
- there should be NO IMPACT whatsoever to any known and/or unknown Aboriginal Cultural Heritage sites, as It is an offence to disturb and/or damage Aboriginal Cultural heritage without a permit or permission by the appropriate authorities;
- known and recorded sites are clearly marked and avoided;
- an Aboriginal Cultural Heritage Management Plan (ACHMP) should be developed and agreed upon between the Proponent and the Registered Aboriginal Stakeholders before any site works commences;
- the future residential development to support the formation of an Aboriginal Advisory Committee made up of representatives from the Awabakal Traditional Descendants and other Registered Aboriginal Stakeholders;
- if an application for an AHIP is applied for and approved, that the ACHMP include an observation and collection process for Cultural Material/Artefacts by the Registered Aboriginal Stakeholders within the proposed Development area;

- *all* artefacts collected during any subsurface, observation and collection process should be reburied within an appropriate location that would not place the Cultural Material/Artefacts in danger of being damage or disturbed in the future;

- a Cultural Heritage Awareness Training be implemented either through an Oral and/or PowerPoint presentation for staff and contractors involved in the project;

- no topsoil to be removed from the project area;

- the Awabakal Traditional Descendants to design and place interpretive signage, artworks, Awabakal words used within the development such as streets, roadways and pathways from words chosen from the Awabakal language in recognition of the Awabakal People of the region;

- It is important for the Awabakal Traditional Descendants of this land to assist with the management and strategy development process of conservation areas, as historically, our ancestral families have been disenfranchised of our cultural environment for over two centuries.

Annex D, Stage 2.2, We believe that this section of the Draft Report needs to include that the RAP's listed within Stage 2.3 also attended a "Field Survey or opportunity for RAP's to visit the proposed project site" which took place on the 18th June 2013. Otherwise this chapter will not provide an actual summary of the consultation process achieved with the Registered Aboriginal Parties.

The Fletcher area is part of our Traditional Awabakal Country and is considered by our People to be Culturally Significant and is of great importance within our Cultural Heritage.

As already previously stated, this area is of high significance to our People and therefore it would be expected that after the many generations of our People that have walked the pathways of their Ancestors, it is obvious that there would be many areas that contain evidence of this connection, resulting from occupation on varying levels.

There are physical reminders left by our Ancestors which provide us as Descendants of the Awabakal People an opportunity to make a physical connection through time with our Ancestors. This connection is one of those avenues that produce in us the sense of perception, appreciation, familiarity and recognition of who we are and where we belong as Awabakal People, which is our birthright.

We have been given the opportunity to read the written Review and Response by Shane Frost from ADTOAC, and after careful consideration we support and agree with all the comments contained within his document.

We would like for our response to be added to the final report, and look forward to your reply and If you require any further information please do not hesitate in contacting me.

Kind regards,

Kerrie Brauer
Director | Administration

Awabakal Traditional Owners Aboriginal Corporation
ABN: 90 203 408 390 | ICN: 4411
PO Box 253 Jesmond NSW 2299 Australia
T: 61 2 49 58 81 70 | E: info@awabakal.com.au | www.awabakal.com.au

Lower Hunter Aboriginal Incorporated

74 Hayden Brook Road
Booragul NSW 2284
Email – Lowerhunterai@gmail.com
ABN: 8192 4628 138

21/10/2013

Janene May
Heritage Consultant
Environmental Resources Management Australia
Building C, 33 Saunders Street
Pyrmont NSW 2009
Locked Bag 24, Broadway NSW 2007

Dear Janene,

Re: Proposed Draft Aboriginal Cultural Heritage and Archaeology Assessment for 505 Minmi Road, Fletcher, NSW.

On behalf of Lower Hunter Aboriginal Incorporated I would to state that the LHAI traditional owners and relevant members have been presented with the proposed Draft Aboriginal Cultural Heritage and Archaeology Assessment for the rezoning and development application of residential subdivision at Lot 1 DP 844711, 505 Minmi Road, Fletcher, NSW.

LHAI members agreed with the development and that all consultation and proposed methodology were presented in the proper manna with respect to Aboriginal Culture and Values.
LHAI members have been involved with many surveys in the past in the Fletcher area, such as supervising Outlook Estate and Sanctuary Estate we have also surveyed Hidden Waters which runs on to Wentworth Creek and is currently surveying on the other side at Bishop Tyrell Anglican School. The proposed area is close to Nobby's Head Sacred Site and the Hexham Swamp which was a major food source and camping grounds for the Awabakal tribe.
As the cultural significance of the area is very important to the LHAI members and the grinding grooves and the number of artefacts found as well as sites in surrounding areas we wish to be involved in all current and future works in the Hexham Swamp area.
LHAI members would like to recommend that a Stakeholder working party be established with regular meetings where the proposed works can be updated and discussed, ADW Johnson has already working parties with other Estates this area can be incorporated into the same meetings.

Lower Hunter Aboriginal Incorporated

LHAI members have the following requests:

- Stakeholders included in the salvage operations to have Aboriginal identified Site Officers with necessary qualifications (Cultural & Heritage Sites Certificate) to ensure best results for the protection of Culture and Heritage. The interests and obligations of Aboriginal people relate to the protection of Aboriginal cultural heritage. It is only Aboriginal people who can determine who is accepted by their community as being authorised to speak for Country and its associated cultural heritage. Where there is a dispute about who speaks for Country, it is appropriate for Aboriginal people, not OEH or the proponent, to resolve this dispute in a timely manner to enable effective consultation to proceed.
- LHAI would like to acknowledge and recommend local knowledge holders to be included in the survey process – LHAI (David Ahoy), ALALC (Peter Townsend), Murrawan (Bobby Smith), Kaumapondee (Jill Green), ATOAC (Kerrie Brauer), ADTOAC (Shane Frost).
- Potential significant features recorded and managed in a proper way with respect to Aboriginal Culture.
- Artefacts recovered to be reburied on site or stored at the Awabakal LALC.

Executive Summary

The Lower Hunter Aboriginal Incorporated (LHAI) has Site Officers and members of the Awabakal community.
Our Sites Officers have more than 30 years of experience and are properly certified with all the necessary qualifications.
The LHAI has a responsibility for ongoing protection and conservation of the Aboriginal Culture and Heritage in the Hunter region and recommends that all proposed projects and cultural heritage works to be assessed by a Lower Hunter Aboriginal Incorporated Cultural and Heritage Officer.

Yours sincerely

David Ahoy
Senior Sites Manager
LHAI
Mobile – 0411095249

Group	Comment	ERM Response
Awabakal Descendants Traditional Owners Aboriginal Corporation (ADTOAC)	'on page 19 Section 4.2 there needs to be more recognition of Awabakal people...the Awabakal people are not just from the Lake Macquarie area but also Newcastle, Hexham Swamp, Sugarloaf, Central Coast and Coalfields areas.	Section updated to include the Awabakal's wider geographic region
ADTOAC	Page 6 'Section 90 consent to Destroy' updated to an Aboriginal Heritage Impact Permit	Reference updated accordingly
ADTOAC	Remove site coordinates from pages 6-7 and 53	Site coordinates removed from document
ADTOAC	Page 54 reference to Awabakal LALC should read Awabakal people	Reference updated accordingly
ADTOAC	Note that the AHIMS database has various limitations.	Section 2.1 of report updated to include this
ADTOAC	Note that visibility was very poor in the study area and that this does not preclude Aboriginal sites from occurring within the study area	Section 6.2 updated to include this.
ADTOAC	Note that ground disturbances and movement of Aboriginal heritage sites does not lower their cultural significance	Section 6.2 updated to include that disturbances to sites may not alter their cultural significance.
ADTOAC	Note that watercourses have potential for Aboriginal sites. Request monitoring by Aboriginal stakeholders: • near creeks and areas of poor visibility during the survey be monitored during clearing and excavation works; and • for other ground disturbing works (roads and guttering, telecom, water, electricity, sewers etc).	Section 5 – ERM has considered that there is a likelihood for sites to occur within the vicinity of creek lines within the predictive model. ERM has recommended that test excavations occur within areas of PAD identified during the field survey, however ADTOAC's recommendation for Aboriginal Stakeholder monitoring has also been included in Section 10.4 and *Annex D* for consideration by the client.
ADTOAC	Request that a Cultural Heritage Management Plan be prepared for sub surface cultural heritage contained in the outer margins of the creek line.	As no cultural heritage material was found during field survey, ERM has not recommended that a Cultural heritage management plan be prepared. However, ADTOAC's recommendation is included in Section 10.4 and *Annex D* for consideration by the client.
ADTOAC	Page 6 –AHIMS site 38-4-0555 – do not agree with previous conclusion that no further investigation is required. ADTOAC request that sub surface testing is undertaken at this location.	Although ERM concurs with previous assessments that state that no further action is required at this site. It is noted that the site is protected and would require an Aboriginal Heritage Impact Permit prior to any impact. ERM has included ADTOAC's recommendation in Section 10.4 and *Annex D* for consideration by the client.

ADTOAC	No topsoil should be removed from site, and if it must be removed then a process by which Aboriginal stakeholders may sieve this soil should be included as part of the preparation of an Aboriginal Cultural Heritage Management Plan;	Sub surface testing within areas of archaeological potential should determine whether there are unknown archaeological deposits, and the Chance Find Procedure included in Section 10.3 will allow for any Aboriginal heritage sites found during works to be appropriately managed. ERM has included this recommendation in Section 10.4 and *Annex D* of the report for consideration by the client.
ADTOAC	There should be ongoing consultation with the Aboriginal Stakeholders (an Aboriginal Advisory Committee)	This has been included as a recommendation in Section 10.1 of the report, for consideration by the client.
ADTOAC	Conservation zones be set aside which can be used to redeposit artefacts and include interpretive strategies in consultation with the Awabakal	A recommendation for conservation areas with Awabakal interpretive strategies has been included within Section 10.1 of this report, for consideration by the client.
ADTOAC	Artefacts collected during observation/monitoring should be relocated on site.	ERM has outlined that artefacts should be reburied on site within Section 9.1 of the report.
ADTOAC	Aboriginal stakeholder groups should be notified when Aboriginal cultural heritage and archaeological evidence is uncovered or found during works.	This has been included as a recommendation within Section 10.3 of the report.
ADTOAC	A cultural heritage awareness training programme should be implemented for personnel working on this project.	This has been included as a recommendation in Section 10.2 of the report.
Lower Hunter Aboriginal Incorporation (LHAI)	LHAI recommends that a Stakeholder working party be established with regular meetings where the proposed works can be updated and discussed.	This has been included as a recommendation in Section 10.1 of the report, for consideration by the client.
LHAI	Stakeholders involved in the operations should have appropriate qualifications.	Registered Aboriginal stakeholder groups will be invited to attend sub surface testing at the discretion of the client.
LHAI	Local knowledge holders be included in the survey process – David Ahoy, Peter Townsend, Bobby Smith, Jill Green, Kerrie Brauer and Shane Frost.	Registered Aboriginal stakeholder groups will be invited to attend future survey work at the discretion of the client.
LHAI	Potential significant features be recorded and managed in a proper way with respect to Aboriginal culture.	Recommendations for the management of cultural heritage are provided in Section 10 of the report.
LHAI	Artefacts recovered to be reburied on site or stored at the Awabakal LALC.	ERM has outlined that artefacts should be reburied on site within Section 9.1 of the report.

Awabakal Traditional Owners Aboriginal Corporation (ATOAC)	Page 4 - Note that the AHIMS database has various limitations.	Section 2.1 of report updated to include this.
ATOAC	Information should be included on recorded sites around and in close proximity to the study area.	Sites recorded around and in the proximity of the project area are outlined in Section 4.1 of the report.
ATOAC	The report fails to include a reference to the possibility of unknown sites, in consideration of what is not listed on the AHIMS database.	Section 2.1 of report updated to include the limitations of the AHIMS database.
ATOAC	The report does not take into consideration unknown sites not found due to poor visibility.	Section 6.2 updated to include that where poor visibility occurs, the lack of sites identified does not necessarily preclude them from occurring in a particular area.
ATOAC	Page 5 –Figure 2.1 outdated.	Aerial is appropriate to view current conditions of the project area.
ATOAC	Page 4, 6, 53 – it is a concern that site coordinates are included.	Site coordinates removed.
ATOAC	Page 6 'Section 90 consent to Destroy' updated to an Aboriginal Heritage Impact Permit.	Reference updated accordingly.
ATOAC	Page 6 – Identify Registered stakeholders who attended the site assessment on 18 June 2013.	Section 3.3 of report updated to clearly outline RAP attendants of the field survey and subsequent information session. The RAPs who attended the site assessment on 18 June 2013 are outlined in *Table 3.3* of the report.
ATOAC	Pages 11, 19 – Reference to Awabakal being a 'sub-group' offensive.	Reference updated to read 'clan group'.
ATOAC	Page 13 – Report should identify a Native Title search (including a claim that was registered 13 June 2013 on behalf of Awabakal and Guringai People (NC2013/002).	The results of a search of the National Native Title Tribunal have been added to Section 3.1.1 and *Annex D* of the report.
ATOAC	Page 16 – fails to include the cultural values of the area –'the cultural value and significance remains high, which is attributed to our cultural heritage understanding of the connectivity and aspects of the regions holistic perspectives, thus emphasising the importance of the whole, instead of a scientific/archaeological value aspect of the independence of its site specific parts.	This note on the cultural significance of the study area has been incorporated into Section 3.3.1 of the report.
ATOAC	Page 17 – additional information regarding a bone feature recorded in the Sanctuary Estate should provide further context.	This feature is not included in the AHIMS search results, however bone features have been recorded in the AHIMS database and provide a context for this feature type occurring within the local area (Section 4.1 of the report).

ATOAC	Page 25 – assessments to date have not taken account of poor visibility	Section 6.2 updated to include that where poor visibility occurs, the lack of sites identified does not necessarily preclude them from occurring in a particular area.
ATOAC	Page 36 – Predictive Model to reflect current data	The predictive model outlined in Section 5 of the report has included information available to ERM such as through the AHIMS database, previous reports and consultation with Aboriginal stakeholders.
ATOAC	Page 51 – ATOAC are greatly concerned that it is assumed that aboriginal cultural heritage will not be found during the construction of roads, installation of services, landscaping, the construction of residential dwellings and undertaking minor earthworks.	Section 8.1 states that there is potential harm to Aboriginal objects through the construction of roads, the laying of services and the construction of residential dwellings.
ATOAC	Page 53 – ATOAC state that there should be no impact to Aboriginal cultural heritage objects.	ERM concur with this and have provided management recommendations in Section 10 of this report.
ATOAC	An Aboriginal Cultural Heritage Management Plan should be prepared and implemented.	As no cultural heritage material was found during field survey, ERM has not recommended that a Cultural heritage management plan be prepared. However, ATOAC's recommendation is included in Section 10.4 and *Annex D* for consideration by the client.
ATOAC	Page 54 – Reference to Awabakal LALC should read Awabakal People	Reference updated accordingly.
ATOAC	Page 54 – Care and control of Aboriginal artefacts – no conversation regarding the decision making process relating to this.	In accordance with Requirement 26 of the *Code of Practice for the Archaeological investigation of Aboriginal Objects in NSW*, artefactual material recovered through the test excavation procedure will be collected, interpreted and catalogued, then reburied within a portion of the study area. Further, responses received from the ADTOAC, the LHAI and also the ATOAC state that they wish for artefacts to be reburied within the study area.
ATOAC	Page 54 – The testing strategy should include a program in the event that sampling excavations need to be adjusted and/or extended.	This is allowed for within Section 9.2 of the report which states that 'smaller 0.5 metre by 0.5 metre test pits may be excavated to define an identified archaeological site boundary. It is also proposed that up to ten 0.5 by 0.5 metre test pits may be excavated randomly at the discretion of the excavation team – undertaken to capture archaeological samples of specific landforms within the study area'.
ATOAC	Necessary steps should be taken to locate, protect and preserve cultural heritage.	This Aboriginal cultural heritage assessment has aimed to locate Aboriginal cultural heritage and recommendations to protect Aboriginal cultural heritage have been provided in Section 10 of this report.

ATOAC	There should be no impact to cultural heritage sites.	ERM concurs with this and recommendations to prevent impacts have been provided in Section 10 of this report.
ATOAC	Known and recorded sites are clearly marked and avoided.	ERM concurs with this and recommendations to prevent impacts have been provided in Section 10 of this report.
ATOAC	An Aboriginal cultural heritage management plan be prepared.	As no cultural heritage material was found during field survey, ERM has not recommended that a Cultural heritage management plan be prepared. However, ATOAC's recommendation is included in Section 10.4 and *Annex D* for consideration by the client.
ATOAC	An Aboriginal advisory committee be established.	This has been included as a recommendation in Section 10.1 of the report, for consideration by the client.
ATOAC	If an AHIP is applied for an Aboriginal cultural heritage management plan should include a monitoring process for artefacts by registered Aboriginal stakeholders.	ATOAC's recommendation is included in Section 10.4 and *Annex D* for consideration by the client.
ATOAC	All artefacts should be reburied in an appropriate location.	ERM has outlined that artefacts should be reburied on site within Section 9.1 of the report.
ATOAC	A cultural heritage awareness training program be implemented.	This has been included as a recommendation in Section 10.2 of the report.
ATOAC	No topsoil should be removed from the project area.	Sub surface testing within areas of archaeological potential should determine whether there are unknown archaeological deposits, and the Chance Find Procedure included in Section 10.3 will allow for any Aboriginal heritage sites found during works to be appropriately managed. ERM has included this recommendation in Section 10.4 and *Annex D* of the report for consideration by the client.
ATOAC	An interpretive signage programme for Awabakal cultural heritage be established in the new development.	A recommendation for conservation areas with Awabakal interpretive strategies has been included within Section 10.1 of this report, for consideration by the client.
ATOAC	Report should include the registered aboriginal parties that attended a 'field survey or opportunity to visit the project site' that took place on 18 June 2013.	Section 3.3 of report updated to clearly outline RAP attendants of the field survey and subsequent information session. The RAPs who attended the site assessment on 18 June 2013 are outlined in *Table 3.3* of the report.

Annex E

Initial Letter To Aboriginal Reps

Environmental Resources Management Australia

Building C,
33 Saunders Street
Pyrmont NSW 2009

Locked Bag 24,
Broadway NSW 2007

Telephone +61 2 8584 8888
Facsimile +61 2 8584 8800

www.erm.com

12 June 2013

Peter Townsend
Awabakal Local Aboriginal Land Council
PO Box 101
Islington NSW 2296

Our Reference: *0203956*

Attention: ***Peter Townsend***

Dear Peter,

RE: 020359 – 505 MINMI ROAD, FLETCHER ABORIGINAL CULTURAL HERITAGE ASSESSMENT - INFORMATION PACKAGE

Thank you for registering as an Aboriginal stakeholder for the 505 Minmi Road, Fletcher Aboriginal Cultural Heritage Assessment. This letter provides the relevant information about the proposed project, the current known heritage values of the study area and upcoming project milestones.

1. PROPOSED DEVELOPMENT

ADW Johnson is managing the preparation of a rezoning and development application for the residential subdivision at Lot 1 DP 844711, 505 Minmi Road Fletcher (the study area). To support these applications ERM is preparing an Aboriginal Cultural Heritage Assessment (ACHA). Consultation with Aboriginal stakeholders for the ACHA is being undertaken in accordance with the *OEH Aboriginal Heritage Consultation Requirements for proponents 2010*.

The study area comprises an area of 26.4 hectares which is currently undeveloped and zoned as E4 Environmental Living under the Newcastle Local Environmental Management Plan 2012. ADW Johnson proposes to rezone the study area to part R2 Low Density Residential and part E2 Environmental Conservation to allow low density residential development while ensuring that significant environmental habitat is preserved. The proposed low density development will comprise approximately 110 residential lots with a 12 hectare environmental conservation area in the northern portion of the study area (see *Annex A*).

2. HERITAGE BACKGROUND

An extensive search of the Aboriginal Heritage Management System (AHIMS) database for an area of five kilometres around the study area was conducted on 31 May 2013 by Alexander Beben (see AHIMS Search ID#0203953). The AHIMS

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A.B.N. 12 002 773 248

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Search identified 35 Aboriginal sites and no Aboriginal places. One Aboriginal site (an isolated find) was identified within the study area AHIMS Site# 38-4-0555 (see *Figure 2.1*).

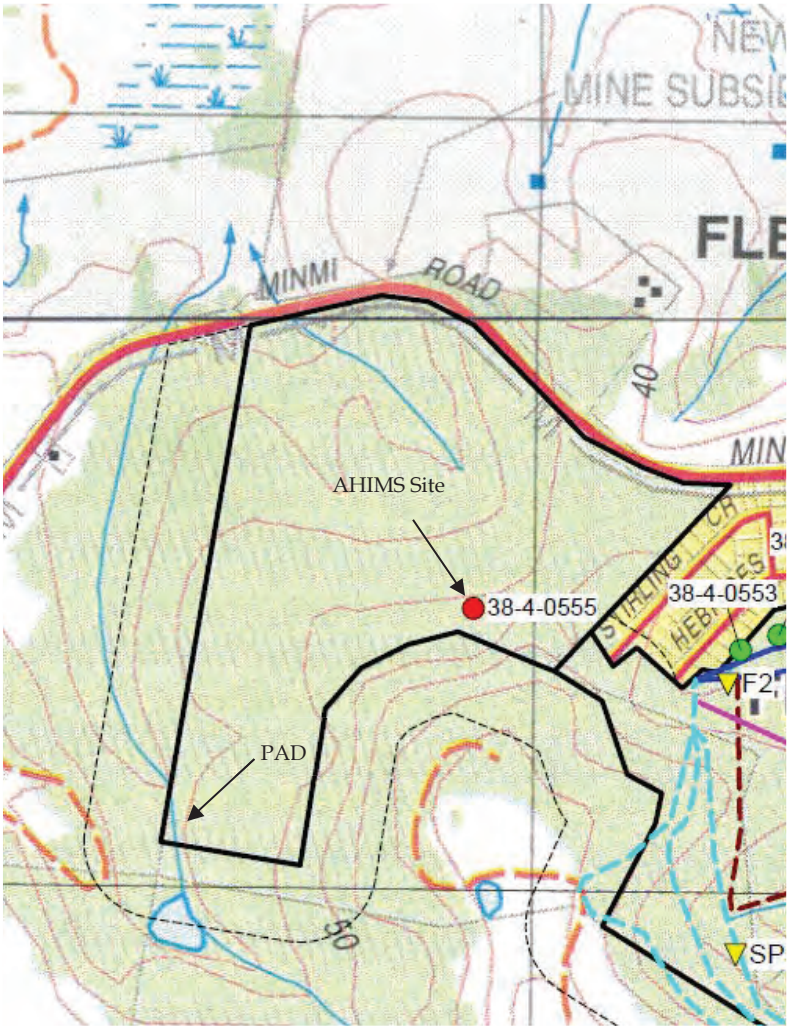
The study area has been subject to three previous Aboriginal heritage assessments:

- AMBS Consulting Services 1999. An Archaeological Assessment of Land Proposed for Residential Development at Fletcher, NSW. Report prepared for Carman Surveyors.
- ERM Australia 2003a. Fletcher Archaeological Assessment. Report Prepared for Kingston properties.
- ERM Australia 2003b. Fletcher Archaeological Assessment: Land Zoned 7(c) Environmental Investigation Zone. Report Prepared for Kingston Properties.

AHIMS Site # 38-4-0555 is located within the study area. The site consists of an isolated silcrete artefact measuring 20-30 mm (maximum dimension) and was recorded by AMBS (1999). The area where the isolated artefact was recorded consists of a clearing, a large fence and an unsealed road. Disturbance to the topsoil in the immediate vicinity has resulted from vegetation clearance, subsequent wash and the construction of the unsealed road. Subsequent surveys of the study area have failed to relocate the site (ERM 2003a; 2003b). In addition to AHIMS Site# 38-4-0555 ERM (2003a; 2003b) identified a Potential Archaeological Deposit (PAD) in the south-west corner of the study area associated with an unnamed drainage channel (see *Figure 2.1*).

ERM will be undertaking an archaeological survey with the Awabakal LALC which will confirm the results of the AMBS (1999) and ERM (2003a; 2003b) assessments. This will be undertaken in accordance with the *OEH Code of Practice for the investigation of Aboriginal Objects in NSW (2010)*, specifically Requirements 5 to 7.

Figure 2.1 Location of AHIMS Site and PAD (as per ERM 2003b)



3. CONSULTATION METHODOLOGY

ADW Johnson and ERM are proposing to undertake an information session at 505 Minmi Road, Fletcher on **Tuesday 18 June 2013 at 08:30am**. Attendees should meet at the entrance to 505 Minmi Road. The meeting place is a dirt track located on southern side of Minmi Road, approximately 75 metres west of junction with Highland Way (a map detailing the meeting location is located in *Annex B*).

The information session will provide stakeholders with an opportunity to visit the identified the Aboriginal site and area of Potential Archaeological Deposit (PAD) within the study area. The Stage 3 sub-surface testing methodology for the cultural heritage assessment of the study area will also be discussed. For the information session, each representative is responsible for providing their own PPE, including, sturdy walking boots, long pants and long sleeve shirts. Please ensure you wear sun protection and bring enough water for the day. ADW Johnson has advised that Aboriginal Stakeholders will not be paid for their attendance at this meeting.

ERM aims to provide Aboriginal stakeholders with a proposed methodology for the cultural heritage assessment for comment on **Friday 20 June 2013.** Aboriginal stakeholders will have until **18 July 2013** to provide feedback on this methodology.

If you hold any knowledge of sites within or near the study area or have any specific information concerning the cultural values of the study area, ERM would be grateful if you could let us know. Please provide any information to **Alister Bowen** on the following contact details:

Post: **Suite 3, Level 2,**

40 Brisbane Avenue, Barton, ACT, 2600

Phone: 02 62536888 or 0418 210 755

Fax: 02 62536899

Email: alister.bowen@erm.com

Yours sincerely,
for Environmental Resources Management Australia Pty Ltd

Alister Bowen
Senior Archaeologist

Annex F

Newspaper Advertisement

Notice of Aboriginal Consultation

505 Minmi Road, Fletcher, Newcastle

An Aboriginal heritage assessment is proposed for a rezoning and development application for a 26.4 hectare residential subdivision at Lot 1 DP 844711, 505 Minmi Road, Fletcher, NSW. Local Aboriginal parties wishing to be consulted for this assessment are invited to register a written expression of their interest within 14 days of the publication of this notice.

Please respond in writing to:

Attn: Alexander Beben

Notice of Aboriginal Consultation
505 Minmi Road, Fletcher, Newcastle
An Aboriginal heritage assessment is proposed for a rezoning and development application for a 26.4 hectare residential subdivision at Lot 1 DP 844711, 505 Minmi Road, Fletcher, NSW. Local Aboriginal parties wishing to be consulted for this assessment are invited to register a written expression of their interest within 14 days of the publication of this notice.
Please respond in writing to:
Attn: Alexander Beben

Environmental Resources Management Australia

Locked Bag 24 Broadway NSW 2007 Or by fax on (02) 8584 8800 or email at alexander.beben@erm.com

Locked Bag 24 Broadway NSW 2007 Or by fax on (02) 8584 8800 or email at alexander.beben@erm.com

Annex G

Letter To Interested Aboriginal Organisations

Environmental Resources Management Australia

Building C,
33 Saunders Street
Pyrmont NSW 2009

Locked Bag 24,
Broadway NSW 2007

Telephone +61 2 8584 8888
Facsimile +61 2 8584 8800

www.erm.com

12 June 2013

Peter Townsend
Awabakal Local Aboriginal Land Council
PO Box 101
Islington NSW 2296

Our Reference: *0203956*

Attention: ***Peter Townsend***

Dear Peter,

RE: 020359 – 505 MINMI ROAD, FLETCHER ABORIGINAL CULTURAL HERITAGE ASSESSMENT - INFORMATION PACKAGE

Thank you for registering as an Aboriginal stakeholder for the 505 Minmi Road, Fletcher Aboriginal Cultural Heritage Assessment. This letter provides the relevant information about the proposed project, the current known heritage values of the study area and upcoming project milestones.

1. PROPOSED DEVELOPMENT

ADW Johnson is managing the preparation of a rezoning and development application for the residential subdivision at Lot 1 DP 844711, 505 Minmi Road Fletcher (the study area). To support these applications ERM is preparing an Aboriginal Cultural Heritage Assessment (ACHA). Consultation with Aboriginal stakeholders for the ACHA is being undertaken in accordance with the *OEH Aboriginal Heritage Consultation Requirements for proponents 2010*.

The study area comprises an area of 26.4 hectares which is currently undeveloped and zoned as E4 Environmental Living under the Newcastle Local Environmental Management Plan 2012. ADW Johnson proposes to rezone the study area to part R2 Low Density Residential and part E2 Environmental Conservation to allow low density residential development while ensuring that significant environmental habitat is preserved. The proposed low density development will comprise approximately 110 residential lots with a 12 hectare environmental conservation area in the northern portion of the study area (see *Annex A*).

2. HERITAGE BACKGROUND

An extensive search of the Aboriginal Heritage Management System (AHIMS) database for an area of five kilometres around the study area was conducted on 31 May 2013 by Alexander Beben (see AHIMS Search ID#0203953). The AHIMS

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Search identified 35 Aboriginal sites and no Aboriginal places. One Aboriginal site (an isolated find) was identified within the study area AHIMS Site# 38-4-0555 (see *Figure 2.1*).

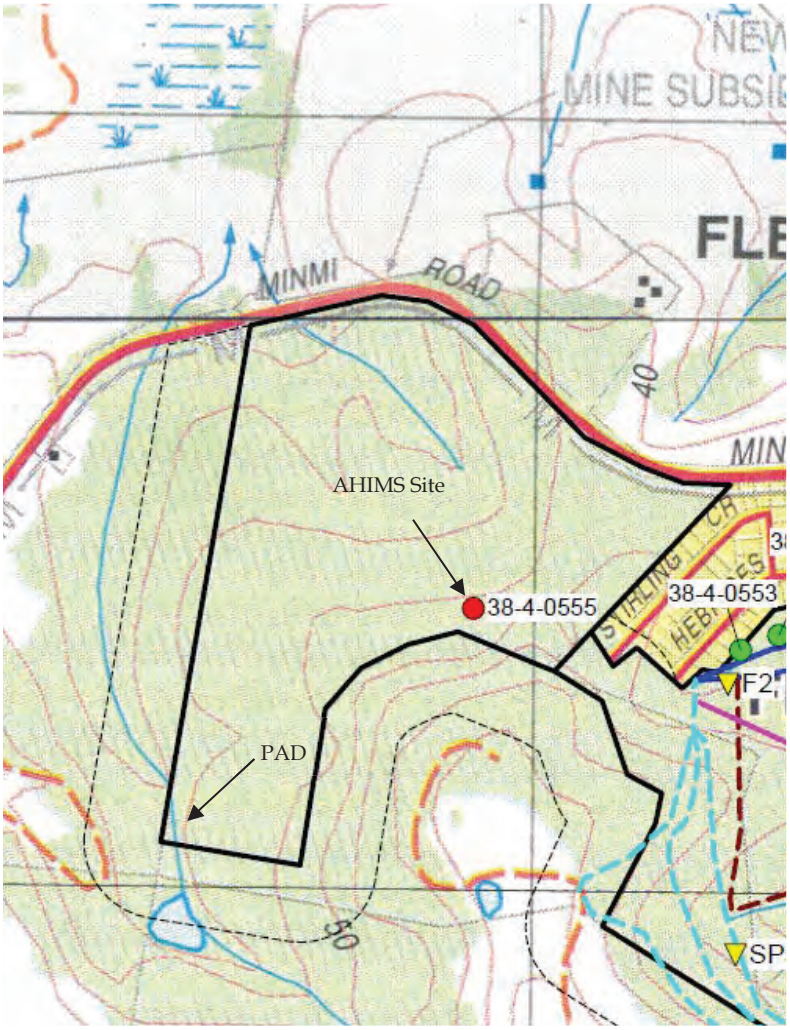
The study area has been subject to three previous Aboriginal heritage assessments:

- AMBS Consulting Services 1999. An Archaeological Assessment of Land Proposed for Residential Development at Fletcher, NSW. Report prepared for Carman Surveyors.
- ERM Australia 2003a. Fletcher Archaeological Assessment. Report Prepared for Kingston properties.
- ERM Australia 2003b. Fletcher Archaeological Assessment: Land Zoned 7(c) Environmental Investigation Zone. Report Prepared for Kingston Properties.

AHIMS Site # 38-4-0555 is located within the study area. The site consists of an isolated silcrete artefact measuring 20-30 mm (maximum dimension) and was recorded by AMBS (1999). The area where the isolated artefact was recorded consists of a clearing, a large fence and an unsealed road. Disturbance to the topsoil in the immediate vicinity has resulted from vegetation clearance, subsequent wash and the construction of the unsealed road. Subsequent surveys of the study area have failed to relocate the site (ERM 2003a; 2003b). In addition to AHIMS Site# 38-4-0555 ERM (2003a; 2003b) identified a Potential Archaeological Deposit (PAD) in the south-west corner of the study area associated with an unnamed drainage channel (see *Figure 2.1*).

ERM will be undertaking an archaeological survey with the Awabakal LALC which will confirm the results of the AMBS (1999) and ERM (2003a; 2003b) assessments. This will be undertaken in accordance with the *OEH Code of Practice for the investigation of Aboriginal Objects in NSW (2010)*, specifically Requirements 5 to 7.

Figure 2.1 Location of AHIMS Site and PAD (as per ERM 2003b)



3. CONSULTATION METHODOLOGY

ADW Johnson and ERM are proposing to undertake an information session at 505 Minmi Road, Fletcher on **Tuesday 18 June 2013 at 08:30am**. Attendees should meet at the entrance to 505 Minmi Road. The meeting place is a dirt track located on southern side of Minmi Road, approximately 75 metres west of junction with Highland Way (a map detailing the meeting location is located in *Annex B*).

The information session will provide stakeholders with an opportunity to visit the identified the Aboriginal site and area of Potential Archaeological Deposit (PAD) within the study area. The Stage 3 sub-surface testing methodology for the cultural heritage assessment of the study area will also be discussed. For the information session, each representative is responsible for providing their own PPE, including, sturdy walking boots, long pants and long sleeve shirts. Please ensure you wear sun protection and bring enough water for the day. ADW Johnson has advised that Aboriginal Stakeholders will not be paid for their attendance at this meeting.

ERM aims to provide Aboriginal stakeholders with a proposed methodology for the cultural heritage assessment for comment on **Friday 20 June 2013.** Aboriginal stakeholders will have until **18 July 2013** to provide feedback on this methodology.

If you hold any knowledge of sites within or near the study area or have any specific information concerning the cultural values of the study area, ERM would be grateful if you could let us know. Please provide any information to **Alister Bowen** on the following contact details:

Post: **Suite 3, Level 2,**

40 Brisbane Avenue, Barton, ACT, 2600

Phone: 02 62536888 or 0418 210 755

Fax: 02 62536899

Email: alister.bowen@erm.com

Yours sincerely,
for Environmental Resources Management Australia Pty Ltd

Alister Bowen
Senior Archaeologist

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CCL 08/12/2020 - ENDORSEMENT OF PLANNING PROPOSAL TO AMEND NEWCASTLE LOCAL ENVIRONMENTAL PLAN 2012 - 505 MINMI ROAD FLETCHER

ITEM-105 **Attachment B:** 'Review of Planning Proposal' report – October 2020

DISTRIBUTED UNDER SEPARATE COVER

Review of Planning Proposal

Lot 1 DP 844711, No. 505 Minmi Road, Fletcher

T820210691

Prepared for

Newcastle City Council

31 October 2020

Cardno®

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Manager Water and Environment

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Version	Effective Date	Description of Revision	Prepared by	Reviewed by
1	26.10.20	Draft for Internal Review	Nadine Page	Elaine Treglown
2	27.10.20	Draft for Client Issue	Nadine Page	Nadine Page
3	29.10.20	Final	Nadine Page	Nadine Page
4	31.10.20	Final 2, minor edit	Nadine Page	Nadine Page

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Appendices

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1 Introduction

1.1 Report Scope

Council has received a request to prepare a Planning Proposal (PP) for the rezoning of 505 Minmi Road, Fletcher (Lot 23 DP 1244350) to amend Newcastle Local Environmental Plan (NLEP) 2012 principally to rezone the land from **E4 Environmental Living to part E2 Environmental Conservation and part R2 Low Density Residential**. The PP was prepared by Barr Property and Planning Pty Ltd on behalf of Kingston Minmi Road Pty Ltd.

This report provides a background and history of the planning of the site, and an overview of reports submitted by the applicant against criteria outlined in the Department of Planning & Environment's *Guide to Preparing Planning Proposals* and *Guide to Preparing LEPs* and relevant legislative requirements.

1.2 Background

This is the fourth PP/'rezoning' application which has been lodged by the proponent in respect of the subject lands. The first (submitted in 2009) progressed through Gateway, was publicly exhibited, and in 2015 the Council Officer's report supported the PP, however the elected Council resolved that the Proposal should not proceed and was formally refused by Council in 2016.

The second PP was submitted in 2017, however the Council of the City of Newcastle ('CN') did not support the proposal on the basis that it was too similar to the first (refused) proposal. The PP was referred to the Hunter Region Joint Regional Planning Panel (HRJRPP) which considered the PP material, information provided at meetings and a site inspection, and on 2 November 2017 determined that the Proposal "*should not be submitted for a Gateway determination because the proposal…does not have site specific merit, and therefore should not proceed to Gateway.*" Reasons for the decision were provided (discussed later in this report).

A further Planning Proposal was lodged with Council on 17 November 2017. In May 2018 TCG Planning was engaged by CN to undertake an independent assessment of the PP, commencing with a review of the justification provided by the applicant and a review of the technical studies and supporting information (Task 1). Task 2 was the preparation of written correspondence (provided on 25 May 2018) that identified numerous matters that were unresolved and/or unsatisfactory that needed to be addressed (by Council and the proponent) prior to completing a report and making a recommendation in relation to the Planning Proposal. This letter concluded the following:

> *"Justification for Planning Proposal:*
>
> *Historically, justification appears to be provided for the Planning Proposal to proceed on a wider strategic basis, however, there appears to still be a number of outstanding issues which need to be justified through further detailed assessment or updated information relating to the subject site.*
>
> *Given the information required as detailed in this correspondence and it is understood Council's internal staff have not reviewed the current Planning Proposal application, it is requested that Council staff review all documentation once the required information is submitted by the applicant, and provide comments as relevant ie: environmental, traffic, etc. In addition, comments from Council's Urban Planning Department with respect to current lot yield analysis under the Local Strategy and meeting of residential lot yield targets set for the area would be of assistance in the assessment of the Proposal.*
>
> *It is anticipated that further discussions will need to occur with Council in relation to the outcome for the environmental lands within the site (noting previous discussions in relation to a Voluntary Planning Agreement with the Minister for the Environment and Council's position on land dedication). Consultations with relevant government agencies must occur once updated studies and assessments are prepared. The proposed onsite conservation area is significant and requires formal protection and a legally enforceable conservation measure is needed, based on previous comments from the Office of Environment and Heritage. It is noted that the Threatened Species Act and related legislation was repealed in August 2017, and replaced by the Biodiversity Conservation Act 2016 and its regulation. Hence updated consultation with OEH needs to occur with respect to the requirements under the new legislation in relation to Biodiversity offsets and potential conservation measures acceptable for the site.*
>
> *We recognise that this correspondence recommends the provision of additional detailed documentation for Council's consideration in the initial Planning Proposal stage (which might typically be deferred until*

the 'Gateway' stage). However, from our review of the history of this site and previous decisions of determining authorities and associated issues, in our opinion the additional justification/demonstration of certain matters through the provision of additional information is likely to be required at an earlier stage in order to receive Council's support for the Planning Proposal.

We therefore recommend that correspondence be forwarded to the applicant advising that additional information is required to address the above matters. Upon receipt of such information we recommend that referrals be forwarded to relevant Council Departments, as required. We will then undertake a further review of the application, prior to completing our report to Council."

Since this correspondence was provided, CN has advised of the following key recent milestones:

1 May 2020	Council formally accepted lodgement of an updated PP for the site, which Council indicated "address(ed) most of the items identified in correspondence prepared by TCG Planning dated 25 May 2018." This PP represents a new application. (*Cardno Note*: Key new documents include: Updated Planning Proposal report which addresses matters within TCG Planning letter; and inclusion of Biodiversity Inventory Report, Traffic Impact Statement, and Visual Impact Assessment as Appendices).
26 June 2020	'LEP Panel Meeting' was held and applicant provided with preliminary advice regarding key issues and documentation requirements. (*Cardno Note*: The following CN Senior Planning and relevant specialist staff were in attendance at this meeting who had the opportunity to review the amended documents lodged in May 2020: Manager Regulatory, Planning and Assessment, Urban Planning Section Manager, Engineering Asset Coordinator, Senior Community Planner, Senior Urban Planner, Senior Environmental Strategist, Development Coordinator, Asset Project Officer). Minutes of this meeting were prepared and CN planning staff have advised that this forum constituted the internal specialist staff review of and commentary on the proposal. The minutes have been reviewed for this assessment.
17 July 2020	CN issued a letter requesting additional information from the applicant in relation to key matters to be addressed pre and post-Gateway. (*Cardno Note*: A key assumption of this report is Council's position that the matters raised under Heading 2 'Post-Gateway' and Attachment A are matters which are not required to be addressed at this 'Pre-Gateway' stage. Only matters listed under Item 1 'Pre-Gateway' are required for this assessment).
23 September 2020	Updated planning proposal lodged addressing the Pre-Gateway matters identified in the letter of 17 July 2020. (*Cardno Note*: New information is limited to minor wording edits/updates to PP report, and inclusion of a new Strategic Bushfire Study within the Appendix, which has not been reviewed by specialist CN staff or been referred to the RFS. The current Planning Proposal documentation is listed in Section 3.2 below).

CN has requested former TCG Planning staff (now 'merged' with Cardno) re-commence the planning services as agreed under Contract No. 2018/449Q dated 8 May 2018 as per the following scope:

- Review of additional submitted information (NB. principally the Strategic Bushfire Study, Biodiversity Inventory Report, LSPS and Draft Housing Strategy, noting other matters reviewed via the LEP Panel Meeting process).
- Preparation of a report on the merits of the proposal with a recommendation as to whether the proposal should proceed.
- Preparation of a Planning Proposal (using Council's standard template) to be reported to Council for endorsement if the outcome is for a positive recommendation.

2 Description of Site and Surrounds

The subject land is known as No. 505 Minmi Road, Fletcher (Lot 23 DP 1244350) and is approximately 26.2 hectares in area. The site is a vacant and contains extensive vegetation across the whole site, comprising a varied quality of native bushland. The site also contains some unsealed tracks (used by motorcycles, bicycles) and some minor waste dumping adjacent to these disturbed areas. Refer to **Figure 2-1** (aerial photograph of site and surrounds).

Figure 2-1 Aerial photograph of site and surrounds (Source: Nearmaps)

The highest point of the subject land is at the eastern boundary at 53m ASL. The land falls steeply from the East (~20m ASL) until it reaches a watercourse (28m ASL) and elevates again towards the west to 38m ASL. The site is bounded to the north by Minmi Road.

To the north of the northern boundary (Minmi Road) is a recently developed low density residential estate (The Outlook). The remaining site boundaries also adjoin vegetated land. The southern portion is zoned E2 Environmental Conservation and forms a vegetated corridor with the remaining surrounding land zoned for urban residential development (R2 Low Density). This R2 zoned land is as yet undeveloped, except for the land to the south-east of the site which is a new subdivision (Waterside Drive). This is the first developed stage of an extensive area for the approved Part 3A State Significant Staged Concept Plan (Minmi Link Road, North and South Redevelopment, approved in 2013, refer to Figure 2).

To the immediate west of the subject site is a further approved development stage of this staged concept approval. It is understood from discussions with Council's Engineering Assessment Officer that development consent for the subdivision of the adjoining land has been issued (DA 2015/10393) and a Construction Certificate was issued for the works approximately one year ago, however works have not yet commenced. Refer to **Figure 2-2** below for key features of the surrounding area.

PAMBALONG

CESSNOCK

Winten Development

NEWCASTLE

Outlook Estate

Winten Development

BLUE GUM HILLS

Summerhill Waste Facility

Winten Development

LAKE MACQUARIE

505 MINMI RD, FLETCHER

PROPOSED AND EXISTING LAND USE ZONING

Legend

- Study Area
- 2km Buffer from Site
- Local Government Area

Proposed Zoning

- E2: Environmental Conservation
- R2: Low Density Residential

Adjacent Tenures

- DA04/2782
- Outlook Estate
- Summerhill Waste Facility
- Winten Development
- National Park Estate

Land Use Zoning

- B1
- B2
- E1
- E2
- E3
- E4
- IN1
- R2
- R3
- RE1
- RE2
- RU2
- SP2

0 285 570 1,140

Meters

1:17,000

MJD Environmental

N W E S

Aerial: NearMap (2020) | Base map: © Department of Customer Service 2020 | Data: MJD Environmental, NSW DPIE, NSW Spatial Services (2020) | Datum/Projection: GDA 2020 MGA Zone 56 | Date: 17/09/2020| Version 1 | GIS\19082 - Planning Proposal 505 Minmi Rd, Fletcher | This plan should not be relied upon for critical design dimensions.

3 The Planning Proposal

3.1 Intent of the Planning Proposal

The Planning Proposal states that:

"The objective of this Planning Proposal is to amend the Newcastle LEP 2012 to facilitate the future delivery of the land for low density residential development and environmental conservation purposes."

In summary, the Proposal seeks to amend Newcastle LEP 2012 to:

- Rezone the land from E4 Environmental Living to part R2 Low Density Residential (15.4 hectares) and part E2 Environmental Conservation (10.8 hectares). The R2 zone can potentially accommodate up to 150 lots;

The proposal also includes changing the development standards for the site including:

- Adopt a maximum 8.5m building height (currently no maximum building height applies);
- Amend the minimum lot size from 40 hectares to part 300m^2, and 1000m^2 (R2 portion) and retaining part 40ha (E2 portion);
- Identify the proposed R2 zoned portion of the site as an Urban Release Area;
- Future subdivision will be by way of Community Title and thus the E2 component of the site will be held as community association land;
- Amend the Land Zoning Map; Minimum Lot Size Map; Height of Building Map; Urban Release Area Map.

This report further discusses aspects of the PP under relevant headings throughout.

3.2 Planning Proposal Documents

The current Planning Proposal now comprises the following documents (package lodged September 2020):

Planning Proposal report document prepared by Barr Property and Planning on behalf of Kingston Minmi Road Pty Ltd (dated September 2020; Ref: 16NEW0091) and including the following Appendices:

A. NSW Subsidence Advisory correspondence (Ref: FN00---318N0 dated 12 June 2014);
B. Strategic Bushfire Study (prepared by MJD Environmental, Ref: 19082; Version V2 dated 18/9/2020);
C. Report on Preliminary Contamination Assessment (Prepared by Cardno Geotech Solutions; Ref: CGS1706; dated 24 March 2014)
D. Stage 1 and 2 Ecology Briefs (prepared by Barr Property and Planning) and relevant correspondence by Office of Environment and Heritage (17/1/2019) and Department of Planning, Industry and Environment (10/09/2019);
E. Biodiversity Inventory Report (prepared by MJD Environmental, Ref: 19082; Version V2 dated 7/1/2020)
F. Traffic Impact Assessment report (prepared by Barker, Ryan, Stewart; Project: CC190151, Rev 3, dated 20/12/2019)
G. Visual Impact Assessment (prepared by Barr Property and Planning; Ref: 16NEW0091, dated 17/1/2020);
H. Aboriginal Cultural Heritage Assessment (prepared by ERM; Ref 0203956; dated October 2013).

3.3 Planning Proposal Changes Since Submitted in November 2017

The overall PP has generally remained similar to that submitted in November 2017, with the following notable changes:

- Proposed land to be rezoned from E4 Environmental Living to part R2 Low Density Residential (increased from 11.7 to 15.4 hectares) and part E2 Environmental Conservation (reduced from 14.5 to 10.8 hectares);
- Removal of intended FSR Map;
- Removal of part of the site having a minimum lot size of 400m^2 (to 300m^2) (R2 portion);
- Amended Planning Proposal report (Barr Planning and Property) which addresses matters within TCG Planning letter dated 25 May 2018 and CN's letter dated 17 July 2020;
- Indicative subdivision layout provided (noting this is very preliminary); and

- Inclusion of: a 'Stage 1' Biodiversity Inventory Report (generally endorsed by former OEH/DPIE as consulted with by proponent); Traffic Impact Statement; Visual Impact Assessment; and Strategic Bushfire Study. The Strategic Bushfire Study has not been reviewed by Council staff.

Figure 3-1 below illustrates the land use zoning under NLEP 2012 of the site and surrounds. On the left is the current zoning (E4 Environmental Living). The middle map was the originally submitted zoning and boundaries in November 2017 (part E2 Conservation and part R2 Low Density Residential), now superseded. On the right is the current revised proposed site zoning (also E2 and R2 but with revised boundaries). The E2 area has been reduced and deletes the E2 linkage to the north-east corner, and reduces the width of E2 land at the southern edge.

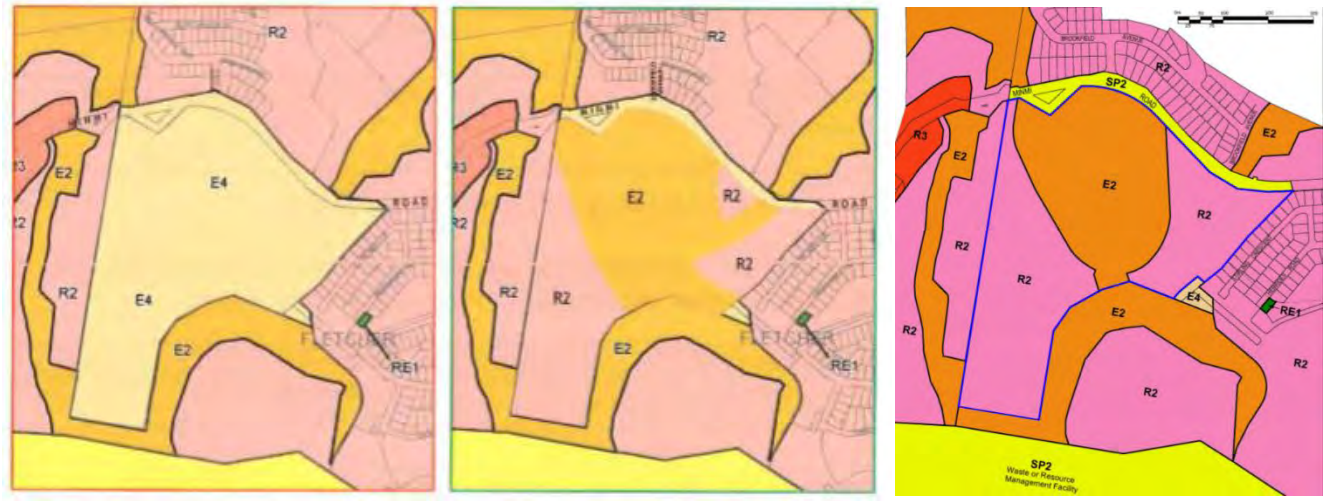

Figure 3-1 Left: current NLEP 2012 zoning; Middle: proposed zoning (submitted Nov 2017, superseded); Right: updated PP zoning map

Newcastle LEP 2012 – Current and Proposed Provisions

Consistency with NLEP 2012 and Land Use Zone Objectives:

As indicated above, the PP seeks to rezone the land from E4 Environmental Living to part R2 Low Density Residential and part E2 Environmental Conservation. The following table provides consistency of the proposal with the Aims of the LEP, Zone Objectives and amended provisions/maps.

Table 3-1 Consistency of the PP with NLEP 2012

Table 3-1: Consistency of the PP with NLEP 2012	
NLEP 2012 Provisions	Comment
Clause 1.2(2) Specific Aims of the NLEP 2012 *(a) To respect, protect and complement the natural and cultural heritage, the identity and image, and the sense of place of the City of Newcastle,* *(b) To conserve and manage the natural and built resources of the City of Newcastle for present and future generations, and to apply the principles of ecologically sustainable development in the City of Newcastle,* *(c) To contribute to the economic well-being of the community in a socially and environmentally responsible manner and to strengthen the regional position of the Newcastle city centre as a multi-functional and innovative centre that encourages employment and economic growth,*	Proponent's comment: *The Planning Proposal is consistent with these aims. In particular, the proposal will add to the diversity of housing types in the suburb of Fletcher, and will add to the viability of local shops and services as well as public transport. The proposal will contribute to the economic well-being of the community by increasing housing supply in a recognised growth corridor* (p60).

Table 3-1: Consistency of the PP with NLEP 2012	
(d) To facilitate a diverse and compatible mix of land uses in and adjacent to the urban centres of the City of Newcastle, to support increased patronage of public transport and help reduce travel demand and private motor vehicle dependency, *(e) To encourage a diversity of housing types in locations that improve access to employment opportunities, public transport, community facilities and services, retail and commercial services,* *(f) To facilitate the development of building design excellence appropriate to a regional city.*	
Objectives of E4 Environmental Living Zone (current) *To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values,* *To ensure that residential development does not have an adverse effect on those values,* *To conserve the rural or bushland character and the biodiversity or other conservation values of the land,* *To provide for the development of land for purposes that will not, or will unlikely to, prejudice its possible future development for urban purposes or its environmental conservation.*	Proponent's comment: *The current E4 zoning was applied to the site as a de-facto investigation zone, reflecting Council's intention that the land undergo a rezoning process to facilitate at least partial residential development of the site. It is considered that the best option for achieving an appropriate balance between conservation and development outcomes for the site is by way of a combination of R2 and E2 zonings (*p87).
Objectives of R2 Low Density Zone • *To provide for the housing needs of the community within a low density residential environment.* • *To enable other land uses that provide facilities or services to meet the day to day needs of residents.* • *To accommodate a diversity of housing forms that respects the amenity, heritage and character of surrounding development and the quality of the environment.*	PP seeks to amend the Land Zoning Map: Sheet LZN_001B & LZN_002A Proponent's response: *The proposed R2 Low Density Residential zoning within the site, of 15.4ha, provides an extension of the existing R2 zones located to the east and west of the site and thus provides continuity of zoning across property boundaries* (p18).
Objectives of E2 Environmental Conservation Zone • *To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.* • *To prevent development that could destroy, damage or otherwise have an adverse effect on those values.* • *To provide for the management of the majority of the Hunter River floodplain by restricting the type and intensity of development to that compatible with the anticipated risk to life and property.* • *To provide for the conservation, enhancement and protection of the Hexham Wetlands.*	PP seeks to amend the Land Zoning Map: Sheet LZN_001B & LZN_002A Proponent's response: *The proposed E2 Environmental Conservation zoning within the site, of 10.8ha, will conserve environmentally sensitive land within the site including bushland, riparian and habitat corridors. It will also provide strong physical linkages to already conserved E2 zoned land on the site's periphery and located to the north- west, south-west, south and east of the site. This is elaborated on at Section 10.7 Indicative Subdivision Layout* *The mechanism for future subdivision will be by way of Community Title and thus the E2 component of the site will be held as community association land. This is elaborated on at Section 10.6 Community Title Subdivision* (p18).
Clause 4.1 Minimum Subdivision Lot Size Objectives:	PP seeks to amend the Lot Size Map: Sheet LSZ_001B & LSZ_002A Proponent's comment:

Table 3-1: Consistency of the PP with NLEP 2012	
(a) To provide subdivision lot sizes that meet community and economic needs, while ensuring that environmental and social values are safeguarded, *(b) To facilitate greater diversity in housing choice,* *(c) To ensure that lots are of sufficient size to meet user requirements and to facilitate energy efficiency of the future built form,* *(d) To ensure that the subdivision of land in Zone E4 Environmental Living:* *I. Will not prejudice its possible future development for urban purposes or its environmental conservation, and,* *II. Will conserve the rural or bushland character, and the biodiversity values or other conservation values, of the land.*	*The entire site is currently mapped to have a minimum lot size of 40 hectares.* *This proposal includes the amendment to the minimum lot size for the proposed R2 Low Density portions of the site to 300m^2 and 1,000m^2 and will retain a minimum lot size of 40 hectares for the land proposed to be zoned E2 Environmental Conservation (*p19).
<u>Clause 4.3 Height of Buildings</u> Objectives: (a) to ensure the scale of development makes a positive contribution towards the desired built form, consistent with the established centres hierarchy, (b) to allow reasonable daylight access to all developments and the public domain	The PP seeks to amend the Height of Buildings Map, Sheet HOB_001B & HOB_002A Proponent's comment: *To facilitate future residential development of an appropriate bulk and scale…to allow the provision of an 8.5m maximum building height for the proposed R2 Low Density Residential Zones.* *The proposed height of buildings (8.5m) is consistent with the height of building controls already adopted for low density residential zoned areas of the Newcastle Local Government Area (LGA) and in particular adjoining sites approved and zoned for residential development in the immediate vicinity of the site* (p21).
<u>Part 8 Additional local provisions – urban release areas</u> *8.1 Arrangements for designated State public infrastructure* *(1) The objective of this clause is to require satisfactory arrangements to be made for the provision of designated State public infrastructure before the subdivision of land in an urban release area to satisfy needs that arise from development on the land, but only if the land is developed intensively for urban purposes.* *8.2 Public utility infrastructure* *(1) Development consent must not be granted for development on land in an urban release area unless the Council is satisfied that any public utility infrastructure that is essential for the proposed development is available or that adequate arrangements have been made to make that infrastructure available when it is required.* *8.3 Development control plan* *(1) The objective of this clause is to ensure that development on land in an urban release area occurs in a logical and cost-effective manner, in accordance with a staging plan and only after a development control plan that includes specific controls has been prepared for the land.*	The PP seeks to amend the Urban Release Area Map: Sheet URA_001B & URA_002A Proponent's comment: *This proposal seeks to designate the subject land as an urban release area.* *The NLEP2012 has not mapped the site as an Urban Release Area (URA). This proposal seeks to provide continuity with the NLEP2012 and the HRS2036 and other strategic based documents by mapping the proposed R2 Low Density Residential zones as an URA.* *This will enforce the recognition of the subject land as a vital area for the future provision of residential housing, in alignment with various strategic documents* (p22). The provisions will need to be satisfied for the development of the land

Existing and Proposed LEP Maps:

The proposed changes to the Minimum Lot Size, Height of Buildings and Urban Release Area maps of NLEP 2012 are shown in **Figures 3-2 to 3-4** below.

Figure 3-2 NLEP2012 Minimum Lot Size Map: Existing (left) and Proposed (right)

Figure 3-3 NLEP2012 Height of Buildings Map: Existing (left) and Proposed (right)

Figure 3-4 NLEP2012 Urban Release Area Map: Existing (left) and Proposed (right)

3.4 Assessment of the Planning Proposal

The Department of Planning and Environment's '*Guide to Preparing Planning Proposals'* (p5) outlines the information required for a PP before a Gateway determination is made as follows. This report assesses the merit of the PP in accordance with this approach.

> *"A planning proposal must demonstrate the strategic merit of the proposed LEP amendment.*
>
> *A planning proposal which is submitted for a Gateway determination must provide enough information to determine whether there is merit in the proposed amendment proceeding to the next stage of the plan making process. The level of detail required in a planning proposal should be proportionate to the complexity of the proposed amendment.*
>
> *A planning proposal relates only to a LEP amendment. It is not a development application nor does it consider specific detailed matters that should form part of a development application.*
>
> *The planning proposal should contain enough information to identify relevant environmental, social, economic and other site-specific considerations. The scope for investigating any key issues should be identified in the initial planning proposal that is submitted for a Gateway determination. This would include listing what additional studies the PPA considers necessary to justify the suitability of the proposed LEP amendment. The actual information/investigation may be undertaken after a Gateway determination has been issued and if required by the Gateway determination."*

As mentioned earlier in this report, the PP has comprised various older and more recent amended documents, some that have been reviewed by Council and already deemed sufficient to proceed to Gateway. In Part 2 and Attachment A of its letter dated 17 July 2020, Council also identified further information post-Gateway (should a Gateway Determination be issued by DPIE in addition to any matters to be addressed). It is noted that these matters may be subject to change following detailed assessment of the PP and any requirements identified by State agencies.

This report therefore focuses on whether the current updated information submitted with the PP satisfactorily addresses the matters listed under Item 1 'Pre-Gateway' of its letter dated 17 July 2020. **Table 3-2** below lists the matters that Council required to be addressed at this pre-Gateway stage, and how the proponent addressed these items (or not).

Table 3-2 CN Requirements for Proponent: Pre-Gateway Matters for further investigation

Table 3-2: Proponent's Response to CN letter of 17 July 2020 CN LEP Panel Requirements: Pre-Gateway Matters for further investigation	
CN LEP Panel Requirements	**Proponent Response/Cardno Comment**
Planning Proposal *General*	
a) The PP should address the matters raised by the Joint Regional Planning Panel (JRPP) in their Record of Decision dated 2 November 2017, demonstrating the site-specific merit of the new proposal.	
The VPA, Conservation Agreement and environmental offset package should be done with the OEH given lapses of time and legislative changes *Role of Council as a party to the VPA also needed to be clarified.*	"The proponent has conceded that the proposal will now be assessed in accordance with the NSW Biodiversity Offset Scheme under the Biodiversity Conservation Act 2016. The previously proposed Planning and Conservation Agreements relating to an off-site offset have been withdrawn." (Barr, p86) Addressed
Flora and Fauna and Threatened Species Assessment and Bushfire Threat Assessment reports should be updated	"A Biodiversity Inventory Report was prepared in late 2019 in accordance with the NSW government's new Biodiversity Assessment Methodology (BAM). A new Bushfire Threat Assessment (incorporating a strategic study) has been prepared by consultants MJD Environmental and is attached at Appendix B to this report." (Barr p86) Addressed

Table 3-2: Proponent's Response to CN letter of 17 July 2020 CN LEP Panel Requirements: Pre-Gateway Matters for further investigation	
The proposed layout did not reflect the findings from the ecological and archaeological research conducted for the site. Underlying concept plan needs significant change to be supported- will impact on zone boundaries:	'Significant change' has not occurred. Refer responses below. Also refer comments under this report heading 'indicative subdivision design'.
- *The proposed residential zoning in the SW section of the site imposed directly on the high value ecological areas including a significant cluster of habitat trees, and location of aboriginal sites. Pad 3 location should be a park reflected in zoning.*	"Since the JRPP's consideration of the proposal, a Biodiversity Inventory Report has been prepared using the government's new BAM. This report did not indicate that the south west of the site had particular values that would make it more worthy of conservation than other parts of the site. In fact, the majority of habitat (or hollow bearing trees) would be conserved within the area currently proposed to be set aside for environmental conservation." (Barr, p86-87) Addressed. Can be further confirmed in a Stage 2 Biodiversity Impact Assessment.
- *Continuity of biodiversity corridor linking Blue Gum hills to the Green Corridor disrupted to layout, esp. NE part of site.*	"Minmi Road already presents a significant barrier to fauna movement along the conceptual habitat corridor in the vicinity of Brookfield Avenue. A much more viable location for fauna to cross Minmi Road is to the north west of the site where mature canopy trees are present on both sides of the road. The proposal would facilitate retention of a corridor crossing in the north west part of the site." (Barr, p87) Addressed. Stage 1 Biodiversity Inventory submitted indicated current linkages limited by existing roads. Can be further confirmed in a Stage 2 Biodiversity Impact Assessment.
- *Existing E4 Zoning more appropriate zone, subject to minimum lot size.*	"The current E4 zoning was applied to the site as a de-facto investigation zone, reflecting Council's intention that the land undergo a rezoning process to facilitate at least partial residential development of the site. It is considered that the best option for achieving an appropriate balance between conservation and development outcomes for the site is by way of a combination of R2 and E2 zonings." (Barr, p87) This comment is not entirely concurred with as the E4 zoning is a valid 'standard' zone type and should not preclude consideration of its suitability regardless of apparent historical role as a 'de-facto investigation zone'. The proposed R2 zoning aligns with surrounding zoning and its suitability will be identified via further studies.
Strategic Planning Framework	
b) Section 7.1.2 'Greater Newcastle Metropolitan Plan' (page 36) – demonstrate consistency with Strategy 12 'Enhance the Blue and Green Grid and the urban tree canopy'. Identify the site in the context of the existing Blue and Green Grid and any opportunities to improve connections with the site.	Section 7.1.2 of the updated Final PP did not include any discernible changes in Final PP report from that reviewed by the CN LEP Panel.
c) Section 7.2 'Local Planning Strategy' (LPS) (page 43) – demonstrate consistency with the Newcastle Local Strategic Planning Statement (LSPS) which has superseded the LPS. Include a comprehensive review of the LSPS with specific focus on Planning Priority 8 – 'Plan for growth and change in Catalyst Areas, Strategic Centres, Urban Renewal Corridors and Housing Release Areas'.	The revised Section 7.1.2 (p43-45) of the Final PP report addresses Planning Priority 8 (and other relevant Planning Priorities).

Table 3-2: Proponent's Response to CN letter of 17 July 2020 CN LEP Panel Requirements: Pre-Gateway Matters for further investigation	
d) The draft Local Housing Strategy (LHS) was endorsed for public exhibition by Council on 23 June 2020. The PP is to demonstrate consistency with the draft LHS.	New Section 7.2.3 of the Final PP report (p48-49) addresses the draft LHS.
Statutory Framework	
e) Section 8.1 (pages 49-54) – update responses to Section 9.1 Ministerial Directions as required.	Addressed
f) Section 8.1.3 (page 51) – delete duplicated "8.1.3" in heading.	Duplicated text deleted.
g) Section 8.3.1 'Aims of LEP' (page 59) – provide additional commentary demonstrating consistency with the aims of the NLEP 2012.	Addressed (minor additional commentary provided).
Bushfire Risk	
h) Section 9.2 'Bushfire' (page 69) – The PP should, as a minimum, address the matters raised by the NSW RFS in their correspondence dated 13 June 2012, as they relate to the new proposal. The recommended way to address these matters is through the preparation of a Strategic Bushfire Study.	Section 9.2 of the Final PP report is updated to include outcomes of the Strategic Bushfire Study prepared by MJD Environmental dated September 2020 which accompanies the PP. RFS was not consulted and *"will be further consulted during further processing of this Planning Proposal."* The proponent was requested to address the matters in the 2012 RFS considerations (refer 'Bushfire Risk' heading in this report).
Specific matters required to be addressed	
i) Section 10.3 'Western Corridor Section 94 Contributions Plan' (pages 76, 89) – reference the updated 'Section 7.11 Western Corridor Local Infrastructure Contributions Plan 2013' which became effective on 27 February 2020.	Section 10.3 (p76) of the Final PP report addresses updated 'Section 7.11 Western Corridor Local Infrastructure Contributions Plan 2013'. No change to wording of page 89 (Section 11.2 Social Effects) which still references Western Corridor Section 94 Contributions Plan (now on p91 of Final PP report).
j) Section 10.6 'Community Title Subdivision' (page 78) – correct typographical error in the last sentence of the 2nd paragraph.	Typo corrected.
Economic and Social Effects	
k) Section 11.2 'Social Effects' (page 89) – update to include additional commentary (Social Impact Comment) prepared in accordance with Council's 'Social Impact Assessment Policy for Development Applications 1999', addressing the following matters: • *Impact on the capacity of local schools within the catchment of the site.* • *Pedestrian and cycle connectivity to local centres, schools, services and facilities.* • *Proposed options for the effective long-term management of E2 zoned land through the Community Title scheme.*	Final PP report addresses social and economic impacts including these points.

Table 3-2: Proponent's Response to CN letter of 17 July 2020 CN LEP Panel Requirements: Pre-Gateway Matters for further investigation	
Supporting Documentation - Heritage	
l) A new AHIMS search is to be completed and the PP updated to address any new findings.	Section 9.1 of Final PP (p66) report states: *"A basic AHIMS Report was conducted in September 2020 which found no known Aboriginal places and one known Aboriginal site. A previous Archaeological Assessment (by Environmental Resources Management Australia (ERM) in November 2013) noted that Aboriginal sites have been recorded on the site, but their significance is considered to be low.* *Whilst the ERM report is dated, the OEH comment (of 30 October 2015) is current. The recommendation of the OEH will be implemented…"* Refer to discussion under Aboriginal Cultural Heritage and Archaeology (Section 6.5).
Consultation	
It is recommended that early consultation be undertaken with the following stakeholders *m) NSW Biodiversity Conservation Division to:* *i. Confirm that the updated Biodiversity Inventory Report prepared by MJD Environmental dated January 2020, is consistent with relevant legislation and the 'Biodiversity Assessment Method Operational Manual – Stage 1' (NSW OEH, 2018).* *ii. Commence discussions regarding the matters raised in correspondence received from NSW OEH dated 17 January 2019 in relation to the Biodiversity Offset Scheme, retiring credits from the previous off-site offset and options for a new Biodiversity Stewardship Agreement* *n) Awabakal Local Aboriginal Land Council to assist with investigations of potential Aboriginal cultural heritage.*	No consultation undertaken. In response to this matter, the proponent has advised: *"Given the history of this project, our preference has been to await the outcome of both Council and DPIE's consideration of the Planning Proposal, noting that consultation and further investigation of various matters will need to occur post-Gateway."* Refer to Section 7 of this report regarding further discussions.

4 Strategic Planning Framework

4.1 Hunter Regional Plan (HRP) 2036

The Hunter Regional Plan (HRP) 2036 prepared by the Department of Planning and Environment in 2016, encompasses the five local government areas within the Hunter Region and aims to guide land use planning priorities and decisions over the next 20 years. The Plan is a framework to guide more detailed land use plans, and includes four overarching Goals ('*the leading regional economy in Australia; a biodiversity-rich natural environment, thriving communities, and greater housing choice and jobs'*), all with associated Directions and Actions. The PP is consistent with the following provisions of the HRP 2036:

- *Figure 4: Greater Newcastle 2036 (p13): mapped as within a 'Growth Area'*
- *Figure 11: Greater Newcastle Settlement Pattern (p52): within or adjacent to a Current Urban Release Area' and ''Existing Residential Land'.*
- *Local Government Narratives: Priorities for the Newcastle LGA (p68-69): Projected dwelling increase of 16,800 with an action to monitor residential development activity to assist with planning for 6,000 new dwellings.*
- *Direction 14: Protect and connect natural areas. Related Actions:*
    - *14.1 Identify terrestrial and aquatic biodiversity values and protect areas of high environmental value to sustain the lifestyle, economic success and environmental health of the region*
    - *14.2 Identify and strengthen biodiversity corridors as places for priority biodiversity offsets*
    - *14.4 Protect biodiversity by maintaining and, where possible, enhancing the existing protection of high environmental value areas; implementing appropriate measures to conserve validated high environmental value areas; developing local strategies to avoid and minimise the impacts of development on areas of high environmental value and biodiversity corridors; and identifying offsets or other mitigation measures for unavoidable impacts.*
- *Direction 21: Create a compact settlement. Related Actions:*
    - *21.1 Promote development that respects the landscape attributes and the character of the metropolitan areas, towns and villages*
    - *21.2 Focus development to create compact settlements in locations with Lake Macquarie Western Corridor growth area.*
    - *21.4 Create a well-planned, functional and compact settlement pattern that responds to settlement planning principles and does not encroach on sensitive land uses, including land subject to hazards, on drinking water catchments or on areas with high environmental values.*
    - *21.7 Promote new housing opportunities in urban areas to maximise the use of existing infrastructure.*
- *Direction 23: Growth centres and renewal*
    - *23.4 Investigate locations for new and expanded centres, including within the Newcastle-Lake Macquarie Western Corridor.*
- *Direction 25: Monitor housing and employment supply and demand.*
    - *25.3 Sequence new greenfield urban development that makes efficient use of infrastructure network capacity.*
- *Direction 26: Deliver infrastructure to support growth and communities*
    - *26.1 Align land use and infrastructure planning to maximise the use and capacity of existing infrastructure and the efficiency of new infrastructure.*
    - *26.5 Ensure growth is serviced by enabling and supporting infrastructure.*

4.2 Greater Newcastle Metropolitan Plan 2036 (Department of Planning and Environment 2018)

The Greater Newcastle Metropolitan Plan (GNMP) 2036 published by the Department of Planning and Environment in 2018 aligns with the vision and goals of the Hunter Regional Plan 2036 and will guide local planning across the five Greater Newcastle Council areas. Specific Strategies and Actions within this Plan of relevance to the PP are listed below:

Strategy 12 'Enhance the Blue and Green Grid and the urban tree canopy' aims for Greater Newcastle's Blue and Green Grid to create the connections and networks linking open spaces and waterways urban parks and the like. Figure 6: 'Blue and Green Grid' (p32) indicates the site to be located within a broad 'Biodiversity Corridor' across the Region, and also adjacent to a location for the improvement of Blue and Green Grid connections. The nearby Blue Gum Regional Park is a nominated feature of this Green-Blue network.

Action 12.1:Greater Newcastle councils with support from the Department of Planning and Environment, will:

- *improve access to open space, recreation areas and waterways so that 90% of houses are within a 10-minute walk of open space*
- *enhance Greater Newcastle's Blue and Green Grid by implementing the Green Infrastructure Outcomes of the Greener Places policy to integrate water sensitive urban design principles in local plans*

The proponent's report accompanying the PP asserts consistency with this Strategy and Action as: "*a large portion of the site is proposed to be conserved in its natural state, which will have strong connectivity to open space corridors external to the site. Every proposed residential lot on the site will be within a 10 minute walk to the proposed conservation land within the site, which may also be capable of supporting passive recreational usage."* While it is agreed that over half of the vegetation on the site will be retained and conserved, this is intended via a private community-title status, and the removal of the remainder of vegetation and introduction of new roads will both enhance resident access, and impact on the fauna linkages to wider green corridors. Careful consideration of this matter will be required should the PP proceed to Gateway.

Figure 8: 'Housing Opportunities': due to the small scale and lack of detail, it appears that the subject site is not mapped as either 'existing urban area', or 'housing release area', however is surrounded by these lands. Strategy: 16 of the GNMP 2036 is to "Prioritise the delivery of infill housing opportunities within existing urban areas." Given the land's current zoning and surrounding status, the land should be considered as an existing urban area and hence Strategy 16 should be applicable. The proponent's statement that "*this is an isolated vacant lot surrounded by established residential areas and areas zoned, development applications approved and currently under construction or proposed for construction presently and in the immediate future*" and hence is consistent with this Strategy is concurred with.

Strategy 17- Unlock housing supply through infrastructure coordination and delivery: The PP documentation indicates that public utility services including telecommunications, gas, electricity, sewer and water will be available to serve any development on the subject land. While the previously provided (2012) approval for water and sewer provision from Hunter Water has expired, the site appears to have capacity to be serviced (subject to confirmation from service authorities) in particular having regard to adjacent approved development within the catchment.

Action 17.4 The Department of Planning and Environment will pursue biodiversity certification of housing release areas in Greater Newcastle: the PP will include an (yet to be determined) offset strategy for the impacts of the removal of vegetation on the site to allow for residential development. Part of this will include the retention and conservation of some vegetation within the site.

4.3 Newcastle Local Strategic Planning Statement (LSPS)

The Newcastle Local Strategic Planning Strategy (LSPS) was adopted by CN in May 2020 and aims to guide CN's land use planning over the next 20 years.

The subject land is one of two sites mapped in the Urban Structure Plan (p17) within the LSPS as a "Housing Release Area". **Figure 4-1** below is an excerpt of this plan (Source: BPP p43).

Planning Priority 8 "Plan for growth and change in Catalyst Areas, Strategic Centres, Urban Renewal Corridors and Housing Release Areas" is therefore directly relevant to the PP, in particular Action 8.1, to "Work with stakeholders to plan and prioritise infrastructure delivery with future development of …Housing Release Areas". The subject site at Fletcher will facilitate the development of housing in alignment with this Action.

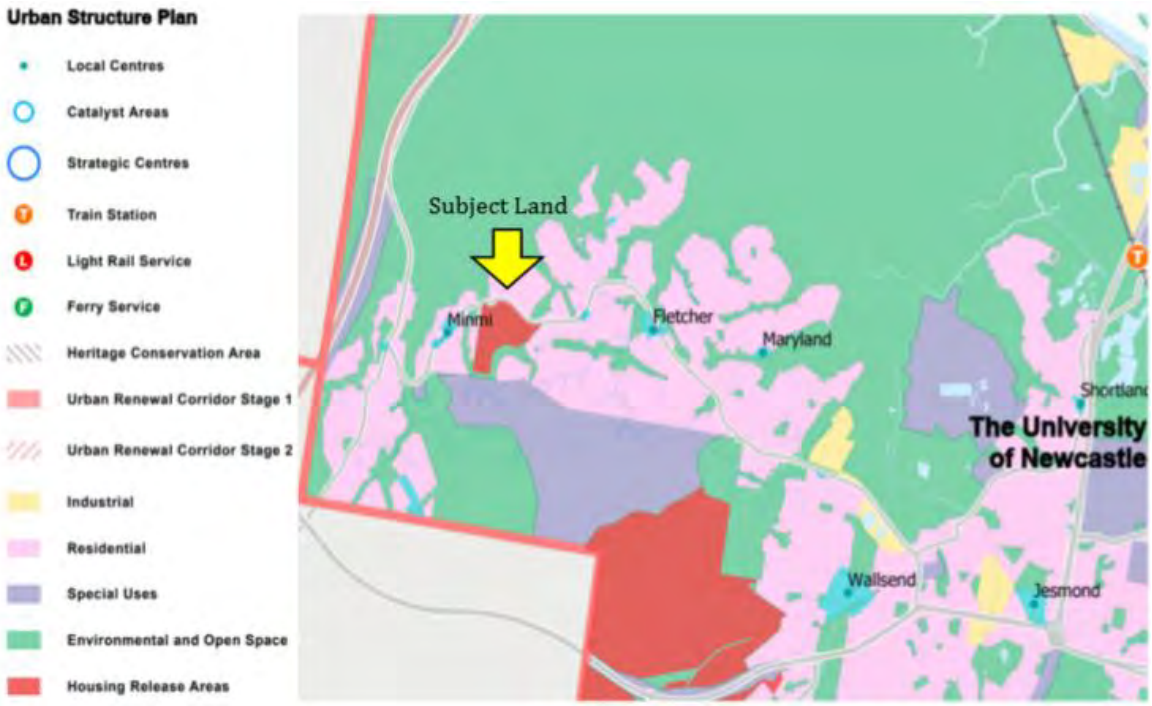

Figure 4-1 Excerpt from Newcastle LSPS Structure Plan (p17)

The following table lists this and other relevant Planning Priorities and related Principles within the LSPS. **Table 4-1** below also provides commentary on the proposal's consistency with each of the Planning Priorities, as provided by the proponent (Source: adapted from the proponent's report (p44-45). It is noted that Cardno planners concur with the applicant's comments as contained in Column 2 of the following table.

Table 4-1 Newcastle LSPS: Relevant Planning Priorities and Consistency with Planning Proposal	
Planning Priority/ Principle	**Consistency** adapted from the PP report (Barr, p44-45), with Cardno comment
2. Support emerging transport opportunities and public transport improvements with continued integration of land use and transport planning *Where intensification of land use is proposed comprehensive traffic and transport planning is undertaken to ensure the required infrastructure, initiatives and funding mechanisms are achievable.*	A Traffic Impact Assessment confirmed capacity exists within the local road network to cater to the proposal. Depending of the eventual subdivision design, the proposal may facilitate local bus routes through the site. Agreed
3. Green our neighbourhoods *Additional public green spaces and the provision of natural and built shade are included in planning for the mixed-use Catalyst Areas, Strategic Centres, Urban Renewal Corridors and Housing Release Areas*	The proposal will include the long-term conservation and management of at least 10.2 hectares of land that will read as public green space. Proposed residential land would, when subdivided, incorporate suitable street trees to provide shade. Agreed
5. Protect and enhance our bushland, waterways and wetlands *The blue and green grids are improved.*	The proposal will include the long-term conservation and management of at least 10.2 hectares of vegetated land, including the riparian zone of a first-order watercourse. Agreed
6. Reduce carbon emissions and resource consumption *Proposals in Housing Release Areas will incorporate mechanisms to achieve excellence in sustainable and urban building design.*	It is envisaged that the proposed residential areas will facilitate a range of lot sizes capable of accommodating sustainably-designed housing. Dwellings will be required to meet BASIX sustainability measures. Agreed
7. Plan for climate change and build resilience *Urban growth and change responds to environment and climate change risks and impacts. Infrastructure and asset planning incorporates emergency management principles and disaster risk reduction. Carbon emissions are minimised or offset*	The proposal will ensure compliance with Planning for Bushfire Protection 2019. New infrastructure and assets to support the proposed residential zoning can incorporate emergency management principles. Agreed
8. Plan for growth and change in Catalyst Areas, Strategic Centres, Urban Renewal Corridors and Housing Release Areas *Work with stakeholders to plan and prioritise infrastructure delivery with future development of …Housing Release Areas*	The proposal is within a nominated Housing Release Area and its progress is the way to facilitate the development of part of the land for new housing growth. Agreed
9. Sustainable, healthy and inclusive streets, neighbourhoods and local centres *Streets are the primary public spaces for access and exchange between people, and should be safe, friendly, healthy, attractive and efficient*	The proposal will facilitate new housing directly adjacent to existing established housing. The site is within walking distance to shops and capable of being serviced by public transport. Agreed
10. Development responds to the desired local character of our communities *Design contributes to achieving the envisaged character of neighbourhoods and local centres. The liveability of different neighbourhoods is enhanced through sustainable growth that reflects desired local character. Ensure known and potential*	The proposal will facilitate residential subdivision incorporating a range of lot sizes and will build on the local character of Fletcher as a greenfield estate. Agreed

Table 4-1 Newcastle LSPS: Relevant Planning Priorities and Consistency with Planning Proposal	
heritage places and values are conserved and contribute to local character and sense of place.	
11. Protect and celebrate our heritage *The City's identity is maintained by protecting and enhancing heritage buildings, streetscapes, views and key features.*	A comprehensive Aboriginal Cultural Heritage Assessment has been carried out for the site which includes recommendations for the recording and preservation of items of Aboriginal cultural heritage. Agreed
12. Sustainable, affordable and inclusive housing *At appropriate densities located for integrated public transport. Providing a greater diversity of quality housing. Enhancing the quality and liveability of housing. Proposals in Housing Release Areas will incorporate affordable housing, adaptable housing and mechanisms to achieve excellence in sustainable building design.*	The proposal will facilitate residential subdivision incorporating a range of lot sizes down to 300m^2 in order to provide housing diversity and affordability. Agreed

4.4 Draft Local Housing Strategy

CN is preparing a Local Housing Strategy 2020 (LHS), which sets a framework for the provision of housing across the City of Newcastle over the next 20 years. The LHS is accompanied by an Implementation Plan, which aims to translate the findings of the LHS into actions. The Draft LHS (dLHS) and Implementation Strategy was exhibited in August and September 2020. At the time of writing, the public submissions are being assessed, and it expected that the final LHS will be reported to Council in November 2020.

The dLHS is relevant to inform the current and future housing needs of CN. The subject site is specifically identified as a 'Housing Release Area' (p30), and the key issues for future development is accurately identified, stating:

"Two remaining greenfield sites located in the western part of the LGA are identified as Housing Release Areas. These areas are anticipated to undergo significant change in the future to accommodate housing and associated services. Land use and infrastructure planning is required for these areas to identify challenges and opportunities and to enable sustainable growth. Some of the key issues to be addressed in planning for these areas include:

- *conserving, protecting and managing significant habitats and areas of high biodiversity value (including riparian zones)*
- *traffic impacts on existing roads and intersections*
- *providing infrastructure and services including new road networks, public recreation, open space, and other community infrastructure*
- *remediating areas of contamination*
- *expanding and improving the Blue and Green Grids*
- *providing affordable rental housing."*

Consistent with the above, the dLHS identified that the conservation of environmental values and management of natural hazards (bushfire, flooding, mine subsidence etc) are important consideration for new housing release areas which "will be subject to comprehensive environmental assessment to ensure that existing biodiversity is protected appropriately in accordance with State legislation" (p34).

Table 4-2 below lists the dLHS's Housing Priorities that responds to the key findings and to guide the future of housing in Newcastle. The right-hand column provides the proponent's comments on how the PP addresses these Priorities.

Table 4-2 Draft LHS Housing Priorities and Consistency with PP	
Draft LHS Housing Priorities	**Proponent Response demonstrating consistency** (PP Report, Barr, p48)
1: Maintain and encourage housing supply in the right locations **##** refer 'Rationale' comments for this Priority from the dLHS at the end of this table which are highly relevant to the subject site	The land is identified as a Housing Release Area in the Newcastle LSPS, with which the LHS is intended to be consistent, hence the proposal is consistent with this priority.
2: Diversify housing type and tenure across the LGA to provide for a range of housing needs Housing Priority	The site has the potential to cater to the demand for both low and medium density housing forms within the popular growing suburb of Fletcher.
3: Increase the availability of accessible and adaptable housing	The proposal is expected to facilitate approximately 150 new dwellings. Vacant land provides the most economical opportunity to deliver accessible and adaptable housing.
4: Increase the supply of affordable rental housing	The supply of additional land for housing provides greater opportunity to increase the supply of affordable rental housing.
5: Ensure new housing and changes to exiting housing reflect the desired future local character	New detached housing on the subject land will be consistent with the character of Fletcher.
6: Homes are designed to be ecologically sustainable and to reduce resource requirements through the life cycle of the dwelling.	The supply of greenfield housing lots provides the opportunity to construct ecologically sustainable homes utilising modern building techniques and materials.
## *1: Maintain and encourage housing supply in the right locations: Rationale:* *The Catalyst Areas, Urban Renewal Corridors and Housing Release Areas included in the above strategic plans have been identified as the best areas to accommodate additional housing. As these areas grow and change, maintaining and improving their amenity, accessibility and liveability for both current and future residents will be particularly important.* *Understanding the vulnerability of these areas to natural hazards will also be a key factor in determining the location and density of future housing, especially with the anticipated increase in occurrence and severity of natural hazards as a result of climate change.* *Risk mapping will provide an evidence base for future land use planning decisions at the planning proposal and development application stage, helping improve our resilience and response to natural hazards.*	

With respect to Population and Housing Projections (p37-38) and Housing Supply, the dLHS indicates:

- *It is estimated that an additional 19,450 new dwellings will be required by 2041 to accommodate the 18,250 new households. To accommodate higher levels of population growth between 2016 and 2026, around 875 new dwellings will need to be provided on average each year, slowing to around 710 new dwellings each year between 2026 and 2041.*
- *In contrast, the Greater Newcastle Metropolitan Plan sets a projection for 16,800 dwellings to be delivered in the Newcastle LGA by 2036, from which 60% is to be in infill areas, and 40% in Greenfield areas.*
- *Based on the unconstructed pipeline supply (e.g. DA approved or under assessment), as of August 2019, CN is also on track to meet the underlying dwelling demand to 2026.*
- *The LHS seeks to meet the projected housing demand of 19,450 new dwellings by 2041 based on the DPIE (2017) Evidence Report as it is based on the latest available data (ie. over three times the required number).*
- *Of this theoretical capacity: 92% is in 'infill' areas, and 8% in 'greenfield' areas 44% is assumed to be dual occupancy housing in the R2 Low Density Residential zone*

- *While this exceeds the Greater Newcastle Metropolitan Plan projections of 16,800 dwellings by 2036, it takes into account the five additional years of housing provision beyond 2036.*
- *The actual capacity for housing supply is likely to be lower than the theoretical capacity, due to site-specific constraints, lack of development feasibility and some sites being withheld from development.*

In relation to other demographic outcomes of the study (2016 data), the dLHS identifies Minmi-Fletcher to be listed as one of the suburbs with the lowest percentage of very low to low income households (p18) and to have 1850 dwellings, 98% being detached dwellings.

In summary, while the dLHS clearly identifies the subject land as a future housing release area, there is enough land in the pipeline (already approved dwellings and zoned land) to deliver the housing needs in the near to medium term. The dLHS also clearly outlines the need for rigorous environmental studies to be undertaken for the release areas to ensure the inherent constraints and hazards are addressed.

4.5 Newcastle 2030 Community Strategic Plan 2018-2028

The Newcastle 2030 Community Strategic Plan (CSP, 2018-2028) is "based on the aspirations, knowledge and values of (the Newcastle) community. The CSP is a shared community vision to inform actions over the next 10 years" (p5), with four Guiding Principles underpinning the more focussed Strategic Directions and Community Objectives.

Extensive community consultation was undertaken in 2018 and the plan was adopted. A 'check in' review report was prepared in June 2020 and is due to be updated in 2020. The proponent's report addressed the CSP, however it appears that this was for a different (perhaps earlier) version. While some of the Plan's Strategic Directions/Community Objectives are the same (or similar), the following list of current are generally considered to be consistent with the Planning Proposal, and the proponent's responses, which are provided in column 2 of **Table 4-3,** are broadly concurred with.

Table 4-3 Newcastle 2030 Community Strategic Plan 2018-2028 and Consistency with PP

Relevant Strategic Direction/ Community Objectives	**Proponent's Commentary/ Justification of Consistency** (p46-48 Barr)
Integrated and Accessible Transport *1.1 Effective and integrated public transport* *1.2 Linked networks of cycle and pedestrian paths* *1.3 Safe, reliable and efficient road and parking networks* *Protected Environment* *2.1 Greater efficiency in the use of resources* *2.2 Our unique natural environment is maintained, enhanced and connected* *2.3 Environment and climate change risks and impacts are understood and managed* *Vibrant, Safe and Active Public Places* *3.1 Public places that provide for diverse activity and strengthen our social connections* *Inclusive Community* *4.1 A welcoming community that cares and looks after each other* *4.2 Active and healthy communities with physical, mental and spiritual wellbeing* *Liveable Built Environment* *5.1 A built environment that maintains and enhances our sense of identity* *5.2 Mixed-use urban villages supported by integrated transport networks* *5.3 Greater diversity of quality housing for current and future community needs* *5.4 Sustainable infrastructure to support a liveable environment* *Smart and Innovative* *Open and Collaborative Leadership*	This Planning Proposal seeks to: Provide an opportunity for future bus routes through the site with connectivity to adjacent developments and beyond. Maximise opportunities for walking and cycling within the site and provide a linkage to adjacent residential and natural areas by creating an east-west connection through the site, with potential for footpaths and on road cycle ways for wider community interaction. Retire biodiversity credits through one or a mix of the three alternatives provided in the Biodiversity Offset Scheme. Directly contribute to the creation of open space within the site that promotes active and passive recreation and community interaction. Require the payment of S94 (now 7.11) contributions for the provision of social and traffic/transport infrastructure to be provided in the western urban release area corridor for use of future residents of the site and for those in the wider Fletcher community. This Proposal seeks to provide new housing in an identified urban growth corridor, while conserving approximately 10.8ha or 41% of the site for conservation/ open space purposes which provides connectivity to adjoining conservation areas and linkages through the site for traffic, cyclists and pedestrian and the like.

5 Statutory Planning Framework

5.1 Consistency with State Environmental Policies

Table 5-1 below lists the State Environmental Planning Policies (SEPPs) relevant to the planning proposal and the relationship of the planning proposal with those SEPPs.

Table 5-1 Relevant State Environmental Planning Policies

Relevant SEPPs	Consistency and Implications
SEPP 55 (Remediation of Land)	Consistent. Refer to Section 6.6 of this report which details the outcome of a preliminary contamination report.
SEPP (Infrastructure) 2007	No applicable provisions. If the PP proceeds in a similar scale, it would not be 'traffic generating development'' as listed in Schedule 3 (200 lots).
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	Not applicable. Proponent's statement (p59) *The site has been mapped by the SEPP as a future residential growth area, pursuant to sheet RGA_034. This illustrates that the Government has recognised the site for an intended purpose for future residential development. Notwithstanding, the SEPP prohibits the carrying out of coal seam gas development within land within a residential zone and future residential growth area.*
SEPP (Vegetation in Non-Rural Areas) 2017	Applicable. Further study required. The accompanying 'Biodiversity Inventory Report' identified that the proposed clearing for the proposed R2 Residential zone exceeds the biodiversity offsets threshold and a biodiversity offset scheme will be required. Should the PP proceed to Gateway, it is intended that a Stage 2 detailed Biodiversity Assessment will be prepared, which will address the relevant criteria and consult with required Agencies.
SEPP (Koala Habitat Protection) 2019	Further study required. The accompanying 'Biodiversity Inventory Report' (in considering the previous SEPP 44 – Koala Habitat Protection) indicated that "the study area does not meet requirements for it to be considered as 'potential koala habitat'." Should the PP proceed to Gateway, it is intended that a Stage 2 detailed Biodiversity Assessment will be prepared, which will consider the recently updated SEPP Koala Habitat Protection (2019) and koala habitat potential in that context.

5.2 Consistency with Ministerial Directions

Section 9.1 of the Act enables the Minister to issue Local Planning Directions regarding the content of LEPs. **Table 5-2** below lists the Section 9.1 Directions relevant to the proposal, and whether the proposal is consistent with the direction.

Where the planning proposal is inconsistent with any of the relevant directions, those inconsistencies must be specifically explained and justified in the planning proposal. Additional information may be required after a Gateway determination has been issued, to demonstrate consistency with a direction or enable the Secretary to agree to an unresolved inconsistency. A PP will need to ensure that any unresolved inconsistency with a direction is addressed and agreed to by the Planning Secretary prior to the LEP being made.

Table 5-2 Relevant Ministerial Directions (Section 9.1 directions)	
Relevant Section 9.1 Directions	**Consistency and implications**
1. Employment and Resources	
1.3 Mining, Petroleum Production and Extractive Industries	Likely to be consistent as, pursuant to SEPP (Mining, Petroleum Production and Extractive Industries) 2007 a buffer of 2km applies to future residential growth area. To be confirmed in PP process via referral to Dept Primary Industries.
2. Environment and Heritage	
2.1 Environment Protection Zones A planning proposal that applies to land within an environment protection zone or land otherwise identified for environment protection purposes in a LEP must not reduce the environmental protection standards that apply to the land	Inconsistent. In accordance with (6), the PP seeks to satisfy the Director-General of the Department of Planning (or delegate) that the provisions of the Planning Proposal that are inconsistent are: justified by a strategy/ study; and is in accordance with the Regional Strategy. The LSPS identifies the land for a housing release area so has broad strategic consistency. Should the PP proceed to Gateway, further investigations and justification will be required to address this Direction.
2.3 Heritage Conservation	Consistent. The PP has considered Aboriginal artefacts and further investigation is to be undertaken. However, should the PP proceed to Gateway, further investigations and justification will be required to address this Direction.
2.6 Remediation of Contaminated Land	NB. Proponent's report does not address this Direction Consistent. Refer to Section 6.6 of this report which details the outcome of a preliminary contamination report.
3. Housing, Infrastructure and Urban Development	
3.1 Residential Zones	Consistent. The proposed development of the site is consistent with the relevant strategic planning documents, conforms with the objectives of the Direction and provisions and is able to be provided with all required infrastructure and services.
3.4 Integrating Land Use and Transport	Consistent. The proposed development of the site is consistent with the relevant strategic planning documents, conforms with the objectives of the Direction and will be accessible to existing transport routes and services.
4. Hazard and Risk	
4.1 Acid Sulfate Soils	Consistent. Can be appropriately addressed in standard development practices.
4.2 Mine Subsidence and Unstable Land	Consistent. Should the PP proceed to Gateway, further investigations and consultation will be required to address this Direction and is likely to be addressed via standard development processes.
4.4 Planning for Bushfire Protection	Consistent. A Strategic Bushfire Study accompanies the PP which addresses the PBP to inform the zone boundaries and indicative lot layout. Should the PP proceed to Gateway, further investigations and consultation with the RFS will be required to address this Direction
5. Regional Planning	
5.10 Implementation of Regional Plans	Consistent with HRP 2036, located within a Growth Area.

6 Site Planning Considerations

6.1 Rationale/Design of Indicative Subdivision Layout, Community Title and Site Specific DCP

An indicative subdivision layout has been prepared and is provided in the PP report (Barr, p82 and reproduced below at **Figure 6-1**). This layout is indicative only and is likely to be subject to change.

The proponent has listed the following factors that have been taken into account in determining the indicative subdivision design (adapted/summarised):

- *Residential zone: Land within the site of slope 15% and less (4% to 10%). Flatter areas have been identified and utilised for smaller lot sizes. Designed to provide adequate setbacks for potential building envelopes to provide for suitable APZs;*
- *Road access points: Peripheral roads utilised in determining the internal road network (extension of Kingfisher Drive on the site's eastern side and the preferred potential link with the proposed road system within the Winten Precinct 1A on the site's north western side).*
- *E2 Conservation zone: Centrally located 'pocket' of land which extends diagonally across the entire [site] from south to north. Aims to conserve environmentally sensitive land within the site including bushland, riparian and habitat corridors and provide physical connectivity to adjoining and adjacent, similarly zoned lands, in the north west corner of the site (p74). Contains 31 of the 45 identified hollow bearing trees.*
- *Conservation linkages: North western conservation corner coincides with the Winten Precinct 1A and Precinct 1 conservation corridors, which extend in a band around the south east, south and west of the site and then extends across Minmi Road, generally to the north in a short 100m long and 100m wide corridor to the main body of conservation land known as the Hexham Swamp. The relatively narrow and steep conservation corridor across Minmi Road, adjacent to the northeast corner of the site, which extends towards Hexham Swamp, has not been linked to the site due to the preference of the dominant conservation corridor linkage to the north west described above. No linkage should be required from the site to this conservation corridor on the northern-eastern side of the road, with the stronger conservation linkage favoured to the site's north west.*
- *Community Title Subdivision and Management of E2 Land: It is proposed that the site, once zoned, be developed using a staged community title scheme prepared in accordance with the Community Land Management Act 1989, associated Regulations and Registrar General's requirements. Lot 1 of the scheme will be Association Property and comprise the E2-zoned land and will be owned by an association comprising the registered owners of each of the other lots in the scheme. The land can provide for future maintenance and embellishment of this area of land which can also provide for recreation and associated purposes for the future residents of the site. Individual lots will be created for the future erection of dwelling houses. Roads created within the site will be dedicated as public roads.*

Should the PP proceed post-Gateway, further detailed studies will be required which will further alter the likely site outcomes, zone boundaries, and indicative subdivision layout and impact on ecological linkages. A key consideration will be the appropriate mechanism for the ongoing conservation of the proposed E2-zoned land (involving biodiversity offset measures). It has not yet been demonstrated that a community title model is the best option for this.

If the PP proceeds, a site-specific DCP will also be required to be prepared in accordance with Clause 8.3 of the NLEP 2012 and the recommendations of the updated supporting studies.

Figure 6-1 Indicative Subdivision Layout (Figure 21 Barr p 82)

6.2 Bushfire Risk

A Strategic Bushfire Study (MJD Environmental, Sept 2020) accompanies the updated PP and addresses the considerations of the Planning for Bushfire Protection Guidelines. This report has not been referred to Council's specialist environmental staff or the RFS. Part 5 of the Study 'Conclusion and Recommendations' provides the following (excerpts provided, p31).

In summary, this strategic assessment has determined that the proposed development is able to comply with PBP (2019) as;

- *the land is suitable for development in the context of bushfire risk*
- *new development on BFPL will comply with PBP 2019*
- *reliance on performance-based solutions is minimised*
- *infrastructure associated with emergency evacuation and firefighting operations is adequate.*
- *Ongoing land management practices are appropriate*

Furthermore, the development is not deemed inappropriate from a bushfire risk perspective due to the following factors;

- *The area is not exposed to a high bushfire risk*
- *The development is not likely to be difficult to evacuate during a bushfire due to its siting in the landscape, access limitations, fire history &/or size and scale.*
- *The development will not adversely affect other bushfire protection strategies or place existing development at increased risk.*
- *The development is not within an area of high bushfire risk where density of exiting development may cause evacuation issues for both existing and new occupants;*
- *The development does not have environmental constrains which cannot be overcome.*

In summary, the following key recommendations have been generated to enable the proposal to comply with PBP (2019).

- *Direct access will be provided to each lot in the proposed developments*
- *Services are to be provided and connected to the site in accordance with PBP (2019).*
- *Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.*
- *APZs will be required, additionally each future residential lot is to be managed as an IPA in perpetuity.* [NB: Specific distances to the east and west are provided, not reproduced here. It is noted that an APZ of 36m from the Forest hazard to the West (pending development) is required].

  Cardno note: If this development does not proceed, an easement within the site will be required (which will impact on the lot yield).
- *Assessment has demonstrated that a future residential dwelling on each lot within the proposed subdivision, can be established with a BAL exposure of no greater than BAL-29.*
- *Services are to be provided and connected to the site in accordance with PBP (2019) as summarised and assessed in Chapter 3, Section 3.4 of this report.*
- *Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.*

Council's letter of July 2020 requested specific matters to be addressed with respect to bushfire risk as follows:

"*h) Section 9.2 'Bushfire' (page 69) – The PP should, as a minimum, address the matters raised by the NSW RFS in their correspondence dated 13 June 2012, as they relate to the new proposal. The recommended way to address these matters is through the preparation of a Strategic Bushfire Study."* In summary, the RFS letter stated:

1. *Still has concerns with access between the two precincts of residential areas creating a pinch point that would be unsafe during a bush fire event.*

2. *The temporary APZ on the western boundary is not supported by any information to suggest it will be provided in perpetuity other than to propose the APZ will be provided by a concept plan for an adjoining subdivision. The RFS does not support subdivisions that cannot guarantee their own APZs within their property unless supported by an 88B easement being registered pursuant to s88B of the Conveyancing Act 1919.*

Proponent's response:

1. *The Strategic Bushfire Study has concluded that "The potential for the proposed development to be isolated in the event of a bushfire is low, as access to Minmi Road is provided by two separate routes; a direct access road in the North-Western corner of the Site, and indirectly via Kingfisher drive in the South /South-East of the Site, which connects to Minmi Road via Britannia Boulevard & Highland Way." The study also notes that all egress in the case of a bushfire will be away from the hazard. Consequently, we believe the proposal is capable of meeting with RFS approval.*
2. *We recognise that the RFS does not support subdivisions that cannot guarantee their own APZs within their property unless supported by an 88B easement being registered pursuant to s88B of the Conveyancing Act 1919. We note however that we are currently talking about a Planning Proposal seeking Gateway approval. Preparation of a subdivision application is unlikely to occur for some time yet, and it is an entirely reasonable assumption that development of the adjoining Winten land (which is already zoned and subject to a concept approval) will proceed in the meantime. If not, options exist to negotiate an easement or defer development of the western part of the subject land. In any event, we don't believe the timing of development of the adjoining land should prejudice decisions around the rezoning of our client's land. It is also important to stress that the indicative subdivision layout included with the proposal was intended only to demonstrate how the land may be developed in terms of road and lot layout/yield. The eventual subdivision design will almost certainly be different.*

In response to the previous sentence, the eventual subdivision layout will indeed need to be amended, noting the APZs mapped on the submitted indicative subdivision plan show that many of the proposed allotments are impacted by the recommended APZ, which would preclude creation of these allotments (refer to Figure 6-2 below which is the 'Preliminary Asset Protection Zone Assessment' Map extracted from the Strategic Bushfire Study, p15). The footprint of proposed R2-zoned land available for development is therefore reduced. Only a coordinated and comprehensive assessment of all required studies will resolve an eventual development area.

Hence, should the PP proceed post-Gateway, an updated Strategic Bush Fire Study is to be prepared by a suitably qualified and experienced consultant in accordance with 'Planning for Bush Fire Protection' (NSW RFS, 2019) that reflects any study outcomes and site planning.

Figure 6-2 Preliminary Asset Protection Zone Assessment Map (extracted from the Strategic Bushfire Study, MJD Environmental, p15)

6.3 Biodiversity and Conservation

Having regard to the extent of native vegetation removal to accommodate the R2 zone (14.7 hectares), the ecological aspects of the Planning Proposal are considered to be the most critical planning consideration, and the satisfactory resolution of the merit of this site-specific issue will determine whether the land should be rezoned (or not).

A Biodiversity Inventory Report (MJD Environmental, January 2020) was submitted with the Planning Proposal and was reviewed by Council staff. The following extracts of the Executive Summary of this report outline the approach to the assessment of the biodiversity issues associated with the proposal (pii-iii).

> *"In agreement with Council and DPIE, a current biodiversity report was to be developed to inform the planning proposal and a more extensive body of works was required given the site history. As such this BIR has been produced in a manner which is consistent with the Biodiversity Assessment Methodology (BAM) in order to satisfy later stages of the biodiversity planning process, post gateway. The BAM was*

used as the assessment method, to establish impacts on threatened species and threatened ecological communities in the locality under the Biodiversity Conservation Act 2016.

In addition, preliminary assessment was also undertaken having regard to those threatened entities listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The proposed subject site is zoned as E4 Environmental Living and is currently a vacant bush lot containing unsealed roads, fences, rubbish and native vegetation. The land has undergone historic clearing most likely for pit props and grazing evident by the young age cohorts of trees, fences, weed invasion and disturbed vegetation. The overall native woody vegetation is in moderate condition comprising good species composition and structure.

Field surveys carried out as part of the biodiversity assessment identified three Plant Community Types (PCT):

- *1589 – Spotted Gum – Broad-leaved Mahogany – Grey Gum grass – shrub open forest on Coastal Lowlands of the Central Coast*
- *1590 – Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest commensurate with the BC Act listed Endangered Ecological Community (EEC) Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions*
- *1619 – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands*

Impact Analysis: The proposal will result in the following impacts and required offsets as calculated using the BAM-C Calculator:

- *2.05 ha of PCT 1589 requiring 78 ecosystem credits; and*
- *11.77 ha of PCT 1590 requiring 406 ecosystem credits; and*
- *0.94 ha of PCT 1619 requiring 24 credits.*

The current method to retire credits for the proposal has not been determined and will be dependent on the availability of credits on the open market, viability of establishing a stewardship site in the locality or retirement of credits via payment into the Biodiversity Conservation Fund (BCF). It is likely that credit retirement will incorporate one or a combination of these options if the proposal was granted approval.

A preliminary assessment under the EPBC Act determined the proposed action is unlikely to have an impact to MNES based on the assessment criteria set out in relevant Commonwealth policies and advices as at the time of this assessment.

As part of the avoidance and minimisation strategy for the Planning Proposal, it is intended that the central area of the landholding will be rezoned as E2 – Environmental Conservation to conserve biodiversity in the locality and provide connectivity in a north-south direction via the Study Area. The connection to lands in the north is currently limited to highly mobile species that can navigate across the Minmi Road corridor and the fragmented nature of native vegetation to the north of the study area. The connection will facilitate movement to E2 lands in the south, which will require the crossing of the link road between both sides of the proposed lands to be rezoned to R2 lands."

The proponent's PP report (p71) confirms that the method of retiring biodiversity credits through the Biodiversity Offset Scheme has not yet been determined and is likely to be a combination of the options mentioned by MJD Environmental above.

Following review by Council's LEP Panel, Council's letter to the proponent dated 17 July 2020 recommended early consultation be undertaken with the *NSW Biodiversity Conservation Division to:*

i. *Confirm that the updated Biodiversity Inventory Report prepared by MJD Environmental dated January 2020, is consistent with relevant legislation and the 'Biodiversity Assessment Method Operational Manual – Stage 1' (NSW OEH, 2018).*

ii. *Commence discussions regarding the matters raised in correspondence received from NSW OEH dated 17 January 2019 in relation to the Biodiversity Offset Scheme, retiring credits from the previous off-site offset and options for a new Biodiversity Stewardship Agreement*

The proponent has advised that this has not occurred, "given the history of this project, (their) preference has been to await the outcome of both Council and DPIE's consideration of the Planning Proposal, noting that consultation and further investigation of various matters will need to occur post-Gateway."

Council also advised the proponent that, should the PP proceed post-Gateway that a Stage 2 Biodiversity Impact Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with the 'Biodiversity Assessment Method Operational Manual – Stage 2' (NSW DPIE, 2019). This is also to:

- Investigate opportunities to provide biodiversity offsets within the Newcastle LGA.
- Protect Threatened Ecological Communities identified on site by locating such communities within the proposed E2 Environmental Conservation zone, with appropriate buffers to development.
- Consider the implications of the Community Title scheme regarding the ongoing management, conservation and potential open space use of the proposed E2 Environmental Conservation land. It is unclear if or how the method of retiring biodiversity credits will be integrated with the proposed community title scheme for the ownership of the E2 zoned portion of the land, and whether this is an appropriate future management solution/mechanism for this land. Advice from the Biodiversity Conservation Trust in relation to this should be sought as part of these investigations.

6.4 Transport, Traffic and Access

A Traffic Impact Assessment Report prepared by Barker Ryan Stewart (December 2019) was submitted with the Planning Proposal and was reviewed by Council staff. The purpose of this report is to assess, and address traffic and access impacts generated by the proposed development. In summary, the report concludes that "the development of the subject site will have acceptable impacts on the operation of the Minmi Road / Britannia Boulevard intersection. Minmi Road will also operate well within its mid-block capacity with the additional traffic generated by the development. The surrounding road network will thus not require any upgrade works as a result of the proposed rezoning and development."

Following Council's assessment of this report, together with the indicative subdivision layout submitted, the following comments were provided to the proponent that need to be further addressed should the PP proceed post-Gateway:

- Integration with the neighbouring Winten development along the western edge intersection as it is a left-in left-out intersection only, and consulting with Winten regarding access between the sites.
- Extending Kingfisher Drive through to Minmi Road (opposite Brookfield Avenue East) which has a planned four-leg roundabout and will allow for an extension of the existing bus route.

6.5 Aboriginal Cultural Heritage and Archaeology

An Aboriginal Archaeological Assessment (ERM, in 2003) was submitted for a previous PP and was reviewed by the then Office of Environment and Heritage in 2015. This has been resubmitted for this PP currently before Council, and this matter is succinctly summarised as follows in the PP report (Barr, p66-69):

"(The 2003 ERM)… Archaeological Assessment noted that Aboriginal sites have been recorded on the site, but their significance is considered to be low. A grinding groove was located in the creek line to the west of the site and an isolated single artefact was recorded within the site. The following recommendations were included as part of the report prepared by ERM:

- *The three PAD areas of relatively undisturbed ground within the study area that have been identified (*refer to **Figure 6-3** below*) as having moderate potential to reveal Aboriginal cultural heritage, should undergo a subsurface testing program before ground disturbing elements of the proposed housing development proceeds. Most appropriately this would occur as part of documentation for a development application;*
- *During works, all known and recorded sites should be clearly marked and avoided;*
- *No archaeological constraints exist for sections within the study area identified as existing outside of the areas of archaeological significance, identified in Figure 15;*
- *Areas outside of the study area identified in the Archaeological Assessment as holding Aboriginal significance require protective measures to be undertaken before ground disturbing elements of the proposed residential development can proceed;*
- *It is recommended that regular meetings are established with the local Aboriginal community to discuss the progress of the proposed works;*
- *Where possible, and in consultation with Aboriginal stakeholders, conservation areas could be established where artefacts may be relocated, and interpretive strategies be established for the past use of the landscape by Aboriginal people; and*
- *A copy of the Archaeological report should be provided to each of the Aboriginal groups who expressed an interest in the original rezoning proposal.*

The Archaeological Assessment was supplied to the OEH, who subsequently reviewed the report and provided comment on 30 October 2015. In part this review by OEH stated:

"The Planning Proposal must include provisions to facilitate the conservation of Aboriginal cultural heritage values. Such provisions may include:

- *appropriate land use zoning (e.g. E2 conservation)*
- *redesign of future development to avoid harm*
- *incorporating areas into passive open space*
- *recommendations for a development control plan.*

OEH supports the recommendations made within the report (ERM) and takes this opportunity to remind Council that if any registered sites present within the property are to be impacted at the development stage an Aboriginal Heritage Impact Permit will be required".

The ERM report also stated in part "Aboriginal sites have been recorded within the region surrounding the site, although the overall site significance is considered to be low". Whilst the ERM report is dated the OEH comment is current. The recommendations in the ERM report will be implemented as supported by OEH and the single artefact and grinding grooves will be documented in preparing a development application for development of the site."

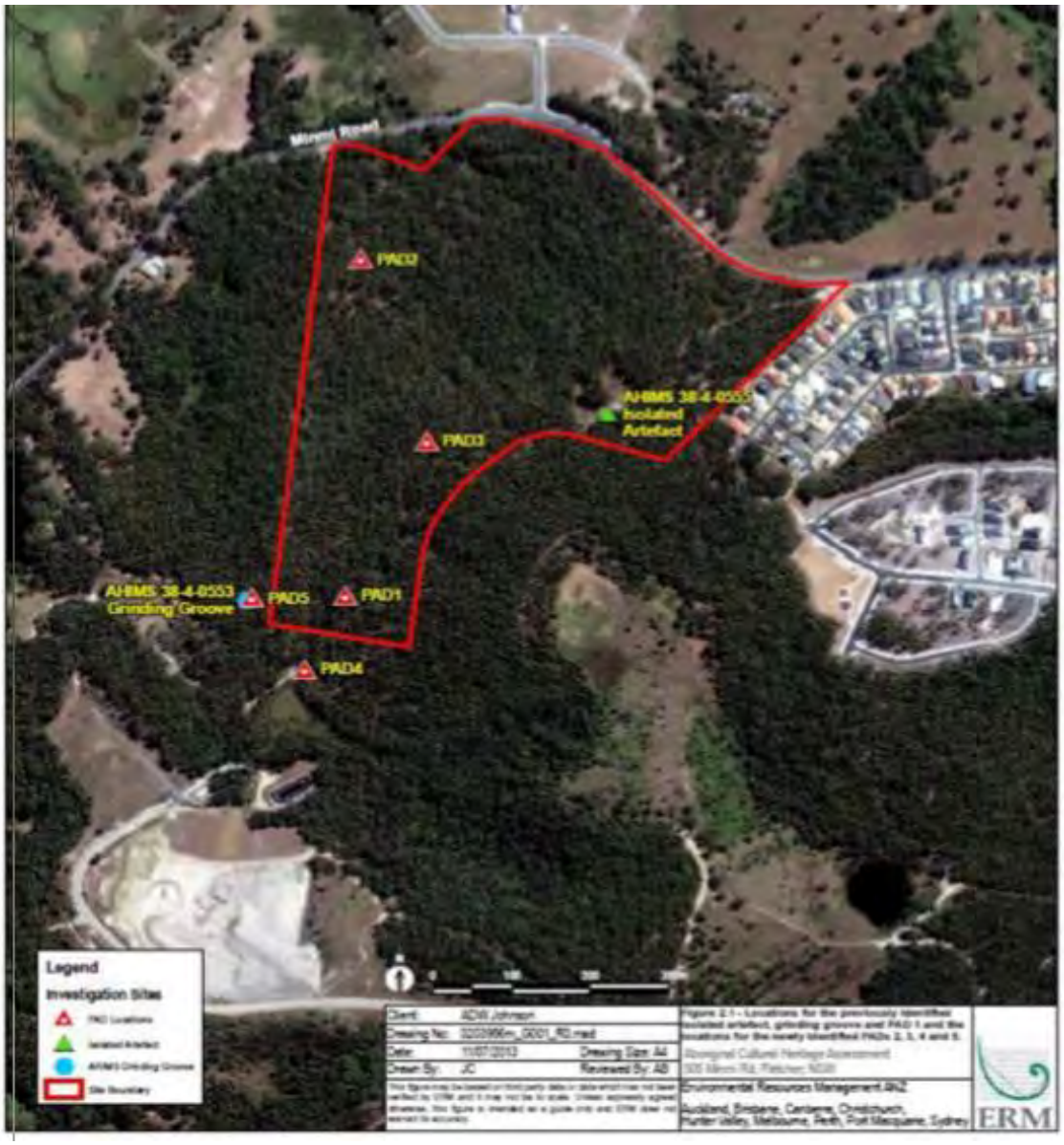

Figure 6-3 Location of Existing Artefacts and Discovered PADs (ERM 2003, p68)

While there is not anticipated to be any change to the previously reported situation, Council, in its letter dated 17 July 2020 requested that a new AHIMS search should be completed and also recommended early consultation be undertaken with the Local Aboriginal Land Council. The revised PP report (p66) states that a basic AHIMS Report was conducted in September 2020 which found no known Aboriginal places and one known Aboriginal site. The proponent has advised that the consultation has not occurred, "given the history of this project, our preference has been to await the outcome of both Council and DPIE's consideration of the Planning Proposal, noting that consultation and further investigation of various matters will need to occur post-Gateway."

Council has assessed this matter and previously advised the proponent (July 2020) that, should the PP proceed post-Gateway that an updated Aboriginal Cultural Assessment is to be prepared by a suitably qualified and experienced Aboriginal cultural heritage consultant in accordance with the 'Aboriginal cultural heritage consultation requirements for proponents 2010' (NSW OEH, 2010). The updated report is to include a new AHIMS search and additional consultation with the Awabakal Local Aboriginal Land Council.

6.6 Contamination

The PP is accompanied by a Report on Preliminary Contamination Assessment (Cardno Geotech Solutions, March 2014). The report also accompanied the two previous PP applications. This report concluded "the PCA was undertaken to determine the current site status in relation to potential contamination to support the proposed rezoning DA" and "it is considered that the site would be suitable for residential development from a contamination perspective, subject to further assessment, as summarised in Section 8.3 of the report being conducted".

In 2014 Council's Senior Environment Protection Officer reviewed the report and indicated in an internal referral that "…there is sufficient information available to satisfy the requirements of SEPP55 in relation to the proposed rezoning". The land remains vacant and no development has occurred since this assessment was undertaken. It is not anticipated that there is any change to the previous situation with respect to land contamination.

Council has assessed this matter and previously advised the proponent (July 2020) that, should the PP proceed post-Gateway that a supplementary letter providing updated details for the Preliminary Contamination Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with 'Managing Land Contamination Planning Guidelines, SEPP 55 – Remediation of Land' (NSW EPA, 1998).

6.7 Mine Subsidence

The site is located within the Newcastle Mine Subsidence District. A Preliminary Mine Subsidence Assessment prepared by Cardno Geotech Solutions dated 5 July 2013 (ref: 1706-001/0) was submitted for a previous Planning Proposal and correspondence was obtained from the Mine Subsidence Board which commented on that report (dated 12 June 2014). The MSB letter, which forms Appendix 1 of the current PP report concurs with the findings of the Cardno report and confirms that the site is partially undermined and will need to be remediated. A thorough investigation and report from a geotechnical engineer will therefore be required.

Council has assessed this matter and previously advised the proponent (July 2020) that, should the PP proceed post-Gateway that such a report will also need to confirm the nature and extent of the subsidence in the south eastern fringe of the site, and the scope for a detailed Geotechnical and Mine Subsidence Report is to be in accordance with Subsidence Advisory NSW requirements.

6.8 Flooding, Hydrology, and Water Management and Quality

The land is not affected by flooding. The existing central creek line (north west corner) will be retained/preserved within the proposed E2 Environmental Conservation zone. Council has reviewed this matter and previously advised the proponent (July 2020) that, should the PP proceed post-Gateway, (i) the indicative subdivision layout will be required to address 'Water Sensitive Urban Design Solutions for Catchments above Wetlands' (HCC REMS, 2007) and (ii) that an assessment of the water quality, groundwater and riparian corridors should be included as part of the Stage 2 Biodiversity Assessment.

Detailed stormwater management planning and design could occur at later stages of the development process, should the land be rezoned.

6.9 Servicing and Infrastructure

The proponent has advised that public utility services including telecommunications, gas, electricity, sewer and water will be available to service the development of the site, noting that the adjacent Winten development (within the same catchment) has received subdivision approval by Hunter Water. Further consultation with service providers will be conducted as the proposal moves forward in the planning process. It is noted that Hunter Water previously (2012) granted conditional approval to the Minmi Road Fletcher Sewer Servicing Strategy, subject to certain matters being addressed. The five-year approval period has since lapsed and the proponent will be required to reapply. Council has considered this matter and advised the proponent that, should the PP proceed post-Gateway that options for the proposed Sewer Servicing Strategy should be investigated and discussed with Hunter Water.

6.10 Noise, Odour, and Air Quality Impacts

The site is located within a newly developing residential area, and north of the Summerhill Waste Management Facility, a solid waste landfill. The PP report (Barr, p83) indicates that:

- *Given the distance of the site to the Summerhill Waste Management Centre and the high level environmental management of the facility, the potential impacts of the centre on the subject site by way of noise or odour are considered to be minimal. As such a specific assessment of noise and odour from the centre has not been carried out.*
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 identifies the site within a Future Residential Growth Area, around which, a buffer zone of 2km applies to any coal seam gas development. A specific assessment of the impact of odour and air quality from adjoining development including potential coal mining and coal-bed methane extraction on the subject land has not been carried out given the buffer in place.*

The report also notes that an odour and air quality assessment was not a specific consideration of the rezoning and subsequent development approval of the Winten Precinct 1 and 1A located to the south east and west of the site.

Council has assessed this matter and has advised that, should the PP proceed post-Gateway, the interface with the Summer Hill Waste Facility regarding noise and odour impacts on future residents should be factored into the proposed lot layout following the completion of updated studies.

6.11 Visual Impacts

A Visual Impact Assessment (VIA) has been prepared by BPP and accompanies the Proposal. The VIA was undertaken to ascertain the potential landscape and visual impacts of the proposed development of the site may have on surrounding areas and ascertain the significance of these impacts. While the removal of vegetation will alter the landscape significantly, this is consistent with that currently occurring and that will occur with the adjacent approved residential expansion areas to the west and south west (Winten development).

The following conclusion of the VIA (p29) is concurred with, which states: "*the combination of landscape and visual sensitivity impacts will be of minor significance. The direct significance of impacts for development is minimal, in comparison to the already cumulative impacts of existing and proposed development in the broader area. The visual impact of this development is mitigated by the fact that it is an isolated site amongst existing residential developments and has a significant amount of bushland being retained on the site*."

6.12 Economic Impact

The proponent's PP report (Barr, p89) outlines the anticipated economic impacts of the proposed rezoning of land, which are not disputed. In summary, this includes:

- Construction industry jobs (material and labour) associated with the subdivision and dwelling construction;
- Benefits of additional resident population (demand for local retail services and employment);
- Monetary contribution to Section 7.11 Western Corridor Local Infrastructure Contributions Plan 2013 funding additional infrastructure;
- Provision of infrastructure to the site (telecommunications, gas, water, sewer etc) will be costs borne by the developer;
- No negative economic impacts from: (i) road infrastructure as existing network has capacity; and (ii) compensation for vegetation clearing will be offset for on-site conservation.

6.13 Social Impact

The proponent's PP report (Barr, p91) outlines the anticipated social impacts of the proposed rezoning of land as follows:

- There will be no undue load on social infrastructure (shops, sports fields, pedestrian and cycle networks) as the development of the land is anticipated in strategic plans;
- The Section 7.11 Western Corridor Local Infrastructure Contributions Plan 2013 identifies the provision of social infrastructure in line with the proposed future residential development of the land;
- Passive recreational opportunities at the nearby Blue Gum Hills Regional Park;
- Increase in housing choice (range of lot sizes);
- Mitigation and harm prevention strategies will be adopted for three potential archaeological deposits within the sites;
- Open space and cycle network within the site;
- Impact on schools: the proponent states "*the proposed rezoning is expected to facilitate in the order of 150 dwellings. Based on an analysis of 2016 census data, the future development of the subject land could house in the order of 145 school-aged children, or roughly 75 primary students and 70 secondary students. Local primary schools include Minmi Public, Glendore Public and Maryland Public. These schools feed into Callaghan College Wallsend. Additionally, Bishop Tyrell Anglican College (an independent K-12 school) is located just 1.3km from the site in Fletcher. The NSW Department of Education is responsible for ensuring capacity is available within schools to cater for population growth.*"

In relation to the latter point, Council has assessed this matter and has advised that, should the PP proceed post-Gateway, the proponent is to consult with the NSW Department of Education to discuss the potential impact of the proposal on local schools and future State planning for additional school capacity.

7 Next Steps – Further Required Studies and Information

7.1 Recommended Additional Studies

Should the planning proposal be forwarded to the Department of Planning, Industry and Environment for a Gateway Determination (as recommended by this report), and the proposal proceed to a Gateway Determination, the following additional information/studies are recommended to be undertaken. All studies must be integrated/consistent in terms of recommendations. The following matters may be subject to change following detailed assessment of the PP and any requirements identified by State agencies.

Environmental

- A Stage 2 Biodiversity Impact Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with the 'Biodiversity Assessment Method Operational Manual – Stage 2' (NSW DPIE, 2019) and include all updated legislation, including SEPP (Koala Habitat Protection) 2019.
- Threatened Ecological Communities identified on site should be protected by locating them within the proposed E2 Environmental Conservation zone with appropriate buffers to development.
- Investigate opportunities to provide biodiversity offsets within the Newcastle LGA.
- Include an assessment of the water quality, groundwater, and riparian corridors as part of the Stage 2 Biodiversity Assessment.
- Consider the implications of the Community Title scheme regarding the ongoing management, conservation, and potential open space use of the proposed E2 Environmental Conservation land.

Contamination: A supplementary letter providing updated details for the Preliminary Contamination Assessment is to be prepared by a suitably qualified and experienced consultant in accordance with 'Managing Land Contamination Planning Guidelines, SEPP 55 – Remediation of Land' (NSW EPA, 1998).

Bushfire: A Strategic Bush Fire Study is to be prepared by a suitably qualified and experienced consultant in accordance with 'Planning for Bush Fire Protection' (NSW RFS, 2019) that reflect any updated indicative subdivision and consistent with other studies.

Heritage: An updated Aboriginal Cultural Assessment is to be prepared by a suitably qualified and experienced Aboriginal cultural heritage consultant in accordance with the 'Aboriginal cultural heritage consultation requirements for proponents 2010' (NSW OEH, 2010). The updated report is to include a new AHIMS search and additional consultation with the Awabakal Local Aboriginal Land Council.

Subdivision Layout: The indicative subdivision layout is to be amended in response to the recommendations of the updated supporting studies and the following:

- 'Water Sensitive Urban Design Solutions for Catchments above Wetlands' (HCC REMS, 2007).
- Integrating with the neighbouring Winten development along the western edge intersection as it is a left-in left-out intersection only. Consult with the owners of the neighbouring Winten development regarding access between the sites.
- Extending Kingfisher Drive through to Minmi Road (opposite Brookfield Avenue East) which has a planned four-leg roundabout, and which will allow for an extension of the existing bus route.

Site-specific Development Control Plan (DCP): A site-specific DCP is to be prepared in accordance with Clause 8.3 of the NLEP 2012 and the recommendations of the updated supporting studies.

Mine Subsidence: Confirm the nature and extent of the subsidence in the south eastern fringe of the site and scope for a detailed Geotechnical and Mine Subsidence Report in accordance with Subsidence Advisory NSW requirements.

Servicing: Options for the proposed Sewer Servicing Strategy should be investigated and discussed with Hunter Water.

Odour and Noise Impacts: The interface with the Summer Hill Waste Facility regarding noise and odour impacts on future residents should be factored into the proposed lot layout following the completion of updated studies.

Social Impact (Schools): Consult with the NSW Department of Education to discuss the potential impact of the proposal on local schools and future State planning for additional school capacity.

7.2 Consultation

Should the proposal proceed to a Gateway Determination, the public exhibition of the Planning Proposal and supporting information should be for a period of 28 days via the usual notification process (CN's webpage and by written notice to adjoining and nearly landowners, relevant stakeholders and community groups).

In addition, the following State agencies are likely to be further consulted during the Planning Proposal:

- Roads and Maritime Services (RMS);
- NSW Subsidence Advisory;
- Department of Family and Community Services;
- Department of Planning, Industry and Environment;
- Department of Minerals and Energy;
- Department of Primary Industries;
- Hunter Water Corporation; and
- Department of Education and Training.

8 Summary and Conclusion

This report considers the most recent iteration of the PP which includes updated reports, notably a Preliminary Biodiversity Inventory and Bushfire Study in line with the current legislation, and also addresses recent Local Strategies and studies, principally the LSPS and draft LHS.

The site (currently zoned E4 Environmental Living) is generally surrounded by R2 Low Density Residential-zoned land and is within a growth area. The site provides a 'gap' in this land use pattern, and the development of the suitable parts of the site for similar residential purposes is logical. The strategic studies clearly identify the subject land as a future housing release area, and hence the Planning Proposal has broad strategic merit. This report has also identified that the Planning Proposal is consistent with statutory planning provisions and relevant Ministerial Directions or is capable of justifying any inconsistency subject to the outcomes of further studies to be undertaken.

As recognised in previous studies and considerations, the site has significant environmental constraints and challenges. While the studies undertaken confirm the subject land has the potential for the intended residential and conservation outcome, the question of whether the PP has 'site specific merit' however still remains. Several further rigorous studies will be required to address the inherent constraints and hazards of the land and the interdependent analysis of these constraints. The extent of impacts, the resultant area for suitable residential development, offset requirements and the proposed management of the proposed E2-zoned land in particular require further refinement to ascertain this site-specific merit.

This process is time-consuming and costly, and it is understandable why the proponent seeks to defer this to a post-Gateway stage, which is typical timing for the preparation of detailed investigations.

These further studies may determine that the necessary offsets, asset protection zones and road network result in a potential reduction in terms of lot yield and overall feasibility of the proposal. In fact, this is a likely scenario, as the Bushfire Mapping has already revealed at this preliminary stage. There is no guarantee that the extensive investment in further studies and necessary offset arrangements will result in a positive outcome for the Planning Proposal, whether by way of refusal, or reduced development yield and profitability, if supported in a similar or revised format. The proponent should be aware of this risk.

Based on the need for this further work to occur to identify the site-specific merit, this report recommends that the PP be forwarded to the Department of Planning, Industry and Environment for a Gateway Determination.

While it is acknowledged that the proposal has broad strategic merit, the recently prepared draft Local Housing Strategy also indicates that there is enough land in the pipeline (already approved dwellings and zoned land) to deliver the housing needs in the near to medium term within the wider City of Newcastle. The further investigation and potential rezoning of land to accommodate residential expansion is not considered to be a pressing or urgent planning matter.

8.1 Recommendation

That Council:

1. Endorse a planning proposal for 505 Minmi Road, Fletcher, that seeks to amend the Newcastle Local Environmental Plan 2012 to:

- Rezone part of the site from E4 Environmental Living to part R2 Low Density Residential and part E2 Environmental Conservation
- Amend the Height of Building control for the site to 8.5m
- Amend the minimum lot size from 40 hectares to part 300m^2, and 1000m^2 (R2 portion) and retaining part 40ha (E2 portion);
- Identify the proposed R2 zoned portion of the site as an Urban Release Area.

2. Endorse that the Planning Proposal for 505 Minmi Road, Fletcher be forwarded to the Department of Planning, Industry and Environment for a Gateway Determination.

3. Should a Gateway Determination be received, that the additional studies and information listed in this report and also the Gateway Determination be prepared prior to public exhibition.

ATTACHMENTS DISTRIBUTED UNDER SEPARATE COVER

CCL 08/12/2020 - ENDORSEMENT OF PLANNING PROPOSAL TO AMEND NEWCASTLE LOCAL ENVIRONMENTAL PLAN 2012 - 505 MINMI ROAD FLETCHER

ITEM-105 **Attachment C:** Chronology for 505 Minmi Road, Fletcher

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ATTACHMENT C – CHRONOLOGY FOR 505 MINMI ROAD, FLETCHER

Source: ADW Johnson and Barr Property + Planning

Year	Description
1987- 2003	Under the Newcastle LEP 1987 large areas of land between Wallsend and Minmi were rezoned for residential purposes and the area was identified as a new land release area referred to as Blue Gum Hills. The whole of the nominated area was not zoned for residential purposes so that development and the provision of services could be undertaken in a planned manner. For this reason, land in the western part of the release area retained a rural zoning thereby preserving it for future development.
2003	Following a review of Council's 1987 LEP, significant areas of land within the western corridor study area were zoned 7(C) Environmental Investigation Zone, under the Newcastle LEP 2003.
2003	Council resolved not to consider requests to amend the Newcastle LEP 2003 to rezone land zoned 7(c) Environmental Investigation until such time that Sub-regional planning had been completed by then Department of Infrastructure and an urban development program was in place for the coordinated release of urban lands. Based on this decision a formal rezoning request had not been previously submitted for the subject land.
2004	Council considered a Notice of motion to proceed with rezoning of the 'Dan Land' (north of the subject land) and resolved to defer the matter until Council had been provided with a full briefing on the matter.
2005	Council received a report on 7(c) Environmental Investigation Zoned land, however, resolved to consider the funding of studies required for Western Blue Gum Hills as part of the 2006/2007 Management Plan process.
2005	Council resolved to await the draft on the Lower Hunter Regional Strategy before the determination is made on Blue Gum Hills. Blue Gum Hills West – Urban Development.
2005	Council resolved to prepare a draft LEP to commence the rezoning of the Dan Land. Council on 4 October 2005 resolved to rescind this resolution.
2006	The Minister of Planning determined that the Dan Land (north of the subject land) may be considered as a State Significant Site.
2007	The Coal and Allied land (west of the subject land) was deemed State Significant.
2009	The draft Newcastle – Lake Macquarie Western Corridor Planning Strategy was placed on public exhibition.
2009	Rezoning application (Planning Proposal) was lodged with Newcastle City Council for the subject land.
2012	Council resolved to forward the Planning Proposal to the then Minister for Planning and Infrastructure for 'Gateway Determination'.

Year	Description
2012	Newcastle Council was delegated the plan making powers in October 2012.
2012	The biodiversity offset package was accepted by then Office of Environment and Heritage as providing an acceptable environmental outcome for the loss of vegetation on the site.
2013	Department of Planning issued a Gateway determination on 22 February 2013.
2015	Council resolved to publicly exhibit the Planning Proposal, Draft Planning Agreement and Draft Conservation Agreement.
2015	The Planning Proposal, Draft Planning Agreement and Draft Conservation Agreement for the subject land were publicly exhibited for 28 days from 7 September 2015 to 6 October 2015.
2015	Report presented to CN at which time, Council resolved not to proceed with the Planning Proposal.
2016	Planning Proposal for the subject land was refused.
2017	New Planning Proposal request for subject land submitted to CN on 12 May 2017.
2017	Council advised new Planning Proposal for the subject land would not be supported as it was substantially the same as proposal discontinued in 2015.
2017	Council referred the Planning Proposal to the Hunter Region Joint Regional Planning Panel (JRPP) on 1 August 2017 for pre-Gateway Review.
2017	JRPP refused Pre-Gateway Review on 2 November 2017. With the reason that the proposal had demonstrated strategic merit but not site-specific merit.
2017	Amended Planning Proposal was prepared dated 24 November 2017 and amended 22 December 2017 and lodged with CN. The proposal was not formally progressed by CN but provided to TCG Planning for independent review.
2018	TCG Planning provided correspondence to CN on 25 May 2018 outlining the updated studies and amendments recommended to be made to the Planning Proposal for lodgement. The correspondence was provided to proponent on 5 June 2018.
2018-2019	Proponent commissioned updated studies and consulted with State agencies including OEH and DPIE, and with CN to review adequacy of Planning Proposal documentation.
2020	Updated Planning Proposal lodged on 7 May 2020 including updated Biodiversity Assessment Report, Traffic Impact Statement and Visual Impact Assessment.
2020	Newcastle Local Strategic Planning Statement adopted by Council on 26 May 2020, identifying the site as a Housing Release Area.

Year	Description
2020	LEP Panel Meeting held on 26 June 2020 to highlight key issues and additional information that would be required as the Planning Proposal progressed. A request for additional information letter was sent to the proponent on 17 July 2020.
2020	Draft Newcastle Local Housing Strategy publicly exhibited between 24 August and 21 September 2020, identifying the site as a Housing Release Area.
2020	Updated Planning Proposal was lodged on 23 September 2020 with a Strategic Bushfire Study and updates to the PP to reflect the feedback from the LEP Panel.
2020	TCG Planning re-commenced independent review of updated Planning Proposal and supporting studies on 2 October 2020 which included the preparation of an assessment report and recommendation as to whether the Planning Proposal should proceed.