Attachment 8

Statement of Environmental Effects

Multi Dwelling Housing

14 Cosgrove Avenue, Keiraville

Submitted to Wollongong City Council
On Behalf of Surewin Parkview Pty Ltd

JANUARY 2020

REPORT REVISION HISTORY

Revision	Date Issued	Revision Description	
01	17/12/19	Draft to Client	
		Prepared by	**Verified by**
		Ashleigh Coombes *Senior Project Planner*	Rebecca Gordon *Senior Associate*
02	06/01/20	Final revision	
		Prepared by	**Verified by**
		Rebecca Gordon *Senior Associate*	H. Deegan Helen Deegan *Director - Planning*

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

Appendix	Document	Prepared by
1	Planning Table of Compliance	City Plan
2	Architectural Plans	Edmiston Jones
3	Site Survey	LandTeam
4	Geotechnical Investigation	GHD
5	Arboricultural Impact Assessment	Moore Trees Arboricultural Services
6	Biodiversity Development Assessment Report and Credit Report	Biosis
7	Preliminary Site Investigation	GHD
8	Civil Plans, Statement and Water Study	LandTeam
9	Landscape Plans	Edmiston Jones
10	Vegetation Management Plan	Biosis
11	Traffic Impact Assessment	TRAFFIX

Appendix	Document	Prepared by
12	Plan of Management	City Plan
13	Endeavour Energy, Sydney Water and RFS Advice	Endeavour Energy, Sydney Water and RFS
14	QS Report	Mitchell Brandtam
15	Pre-Lodgement Meeting Advice	Wollongong City Council
16	Bushfire Hazard Assessment	Australian Bushfire Protection Planners Pty Ltd
17	Waste Management Plans (Construction and Operation)	Waste Audit
18	Clause 4.6 Variation Request	City Plan
19	Visual Impact Assessment	Urbaine Architecture
20	Statement of Heritage Impact	GBA Heritage
21	Aboriginal Cultural Heritage Assessment	Biosis
22	BASIX Certificate and NATHERs	Certified Energy
23	BCA Compliance Statement	Accredited Building Certifiers
24	Fire Engineering Statement	Fahrenheit Global
25	Access review	Morris Goding Access Consulting
26	Building Services Reports	EWFW Consulting Engineers
27	Crime Risk Assessment	City Plan

1. EXECUTIVE SUMMARY

This Statement of Environmental Effects (SEE) has been prepared for Surewin Parkview Pty Ltd by City Plan Strategy and Development Pty Ltd (City Plan) to accompany a Development Application (DA) for a proposed 'multi-dwelling housing' development to be submitted to Wollongong City Council (Council). The subject site is located at 14 Cosgrove Avenue, Keiraville (the site) and is legally described as Lot 90 in DP1086429.

This SEE has been prepared pursuant to Section 4.12 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and Clause 50 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Reg). The purpose of this SEE is to:

- describe the proposed development and its context;
- assess the proposal against the applicable planning controls and guidelines; and
- assess the potential environmental impacts and mitigation measures.

The proposed development comprises of:

- Site preparation works, including:
  - Tree removal; and
  - Bulk earthworks;
- Construction of five (5) individual buildings comprising a total of forty-seven (47) residential dwellings, including:
  - Thirty-six (36) x 3 bedroom dwellings; and
  - Eleven (11) x 4 bedroom dwellings;
- Vehicular and pedestrian access off Cosgrove Avenue and an internal loop driveway;
- Parking for one-hundred and nine (109) cars, including:
  - Ninety-four (94) residential car parking spaces with a double-garage provided for each dwelling;
  - Fifteen (15) visitor car parking spaces provided either at-grade or within the basement of proposed Building 2;
  - 4 motorcycle parking spaces; and
  - 4 visitor bicycle parking spaces;
- A waste recycling utility area and loading bay for large vehicles and one (1) contractor bay;
- Landscaping, communal open space, green roofs and vegetation management;
- Stormwater drainage works;
- One (1) emergency vehicle bay and a firefighting water tank at the rear of the site;
- New substation; and
- Strata subdivision of the proposed dwellings.

The proposed development is defined as 'multi dwelling housing' under the *Wollongong Local Environmental Plan 2009* (WLEP 2009) and is permissible with consent within the part of the site zoned R2 Low Density Residential (R2). The remaining portion of the site (south-west corner) is zoned Environmental Conservation. No part of the development is proposed within the E2 zone, with the only works proposed within this portion of the site being limited to vegetation management.

Under WLEP 2009, the height of any building in the R2 zone is not to exceed 9 metres when measured from the existing ground level and the floor space ratio (FSR) is not to exceed 0.5:1. The proposed development has a maximum overall height of 9 metres and a maximum FSR of 0.25:1 (when calculated as per the LEP). The proposal therefore complies with these development standards. A Clause 4.6 written

request, however, accompanies the DA for a minor variation (in part) to the minimum site width requirement of 18m. The large site well exceeds the minimum site width requirement, except at the entry to the site where no dwellings are proposed.

Overall, the proposed development complies with the key planning and development controls that are applicable to the proposal. An assessment of the proposed development against the statutory controls is included in Section 0, with a detailed assessment against the Wollongong Development Control Plan (DCP) included at **Appendix 1**.

The Architectural Plans for the proposed development have been prepared by Edmiston Jones and are at **Appendix 2**.

A Pre-Lodgement Meeting was held with Council on 1 April 2019 to discuss the proposed development. Issues raised at this meeting included bushfire, site topography, geotechnical, biodiversity/ flora and fauna, heritage, visual impacts and building design, site width, integrated development, drainage and traffic. Section 3.15.1 provides a detailed response to the issues raised by Council at this pre-lodgement meeting.

A significant focus of the proposal has been on identifying site characteristics and constraints to ensure a suitable developable footprint was identified. The integrated building design and landscaping approach, including the use of green roofs, is intended to create a proposal that sits into the site and existing environment with minimal impact on neighbours or views into the site. The built form has been recessed into the ridgeline and a deep landscaped buffer zone provided, which in correlation with the green roofs, selected materials and colours stepping down of the built form, result in a proposed development that is sympathetic to the surrounding Illawarra Escarpment and thereby retaining and enhancing the visual and scenic qualities pertaining to the escarpment.

The SEE concludes that the proposed development is a suitable use and is of an appropriate scale for the site. It is consistent with the desired future character of the area, is well designed and has no adverse amenity impacts. It is therefore recommended that development consent be granted by Council for the proposed development.

2. SITE ANALYSIS

2.1. Regional Context

The site is located within the suburb of Keiraville in the Wollongong local government area (LGA). Keiraville is an inner suburb of the city of Wollongong and is located within New South Wales' (NSW) Illawarra region. Wollongong is the third largest city in NSW and the tenth largest in Australia based on population[1]. The Illawarra region is a coastal region that is located immediately south of Sydney and north of Shoalhaven. The site is 84 kilometres south of Sydney's Central Business District (CBD) via the Princes Motorway.

A map showing the location of the site in the context of the Sydney and Wollongong CBDs is at Figure 1 below.

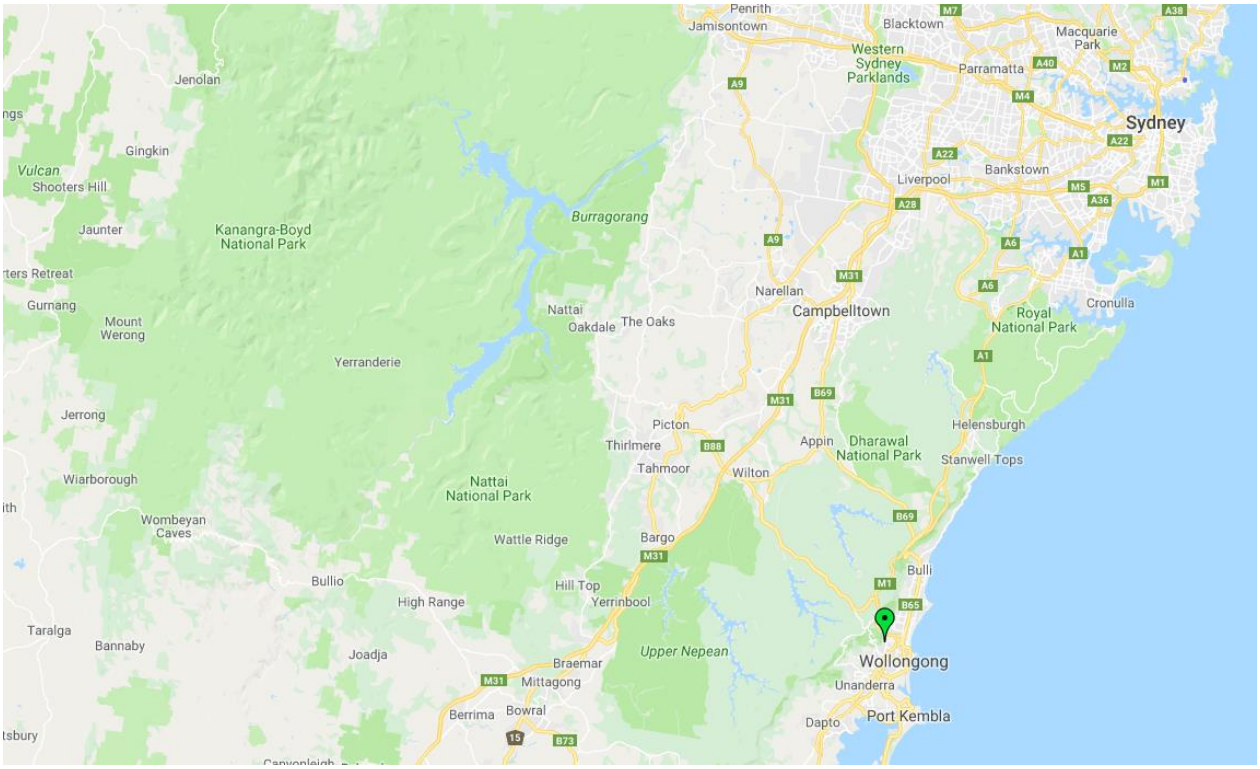

Figure 1: Regional context plan with site identified by green marker Source: Nearmap

2.2. Local Context

Keiraville is located at the base of Mount Keira and is approximately 4 kilometres north-west of Wollongong town centre. The suburb of Keiraville is largely a residential area with a small commercial area at Gipps Road and Grey Street. The University of Wollongong and Wollongong Botanic Garden are located within Keiraville.

1 Australian Bureau of Statistics 2019

Figure 2: Local context plan (Source: Edmiston Jones)

2.3. Site Address and Legal Description

The site has a street address of 14 Cosgrove Avenue, Keiraville and comprises a single allotment of land. The site is legally described as Lot 90 in DP1086429 as shown in Figure 3.

Figure 3: Cadastral relationship of the site with the site outlined in orange (Source: SIX Maps)

The site has a total area of approximately 41,934m^2 based on the boundary dimensions as identified in Table 1. The R2 zoned portion of the site (being the subject development area), has an area of approximately 36,753m^2.

Table 1: Site dimensions

Boundary	Frontage	Dimension (m)
North	University of Wollongong (Lot 1 in DP1188267)	122.07
North-East	2 Cosgrove Avenue	319.15
East	Cosgrove Avenue	18.62
South	2-28 Cedar Grove; and 2-6 Andrew Avenue	354.53
West	Unformed road	176.52

2.4. Site Description

2.4.1. Existing Improvements

The site comprises a vacant lot of land that is partially cleared and is the only lot within the locality that has not yet been built upon. The large parcel of R2 Low Density Residential zoned land, immediately adjoining the north-east boundary of the site, currently contains a single dwelling at the street frontage with the remaining portion of the site being significantly vegetated. The other surrounding sites contain a mix of single and two-storey detached dwellings.

A temporary metal fence is located along the site's frontage to Cosgrove Avenue to restrict access. There are tracks evident within the existing landscape that demonstrate common paths of travel on-site. There are no existing buildings or other structures of any form that are located within the site's boundaries. The site comprises a large number of trees and a substantial grassed area as shown in the aerial view at Figure 4.

Figure 4: Aerial view of the site with the site outlined in orange (Source: Nearmap)

2.4.2. Topography

The existing site topography is evident in the survey prepared by LandTeam which is included at **Appendix 3**. For reference, an extract of the survey plan is provided at Figure 5.

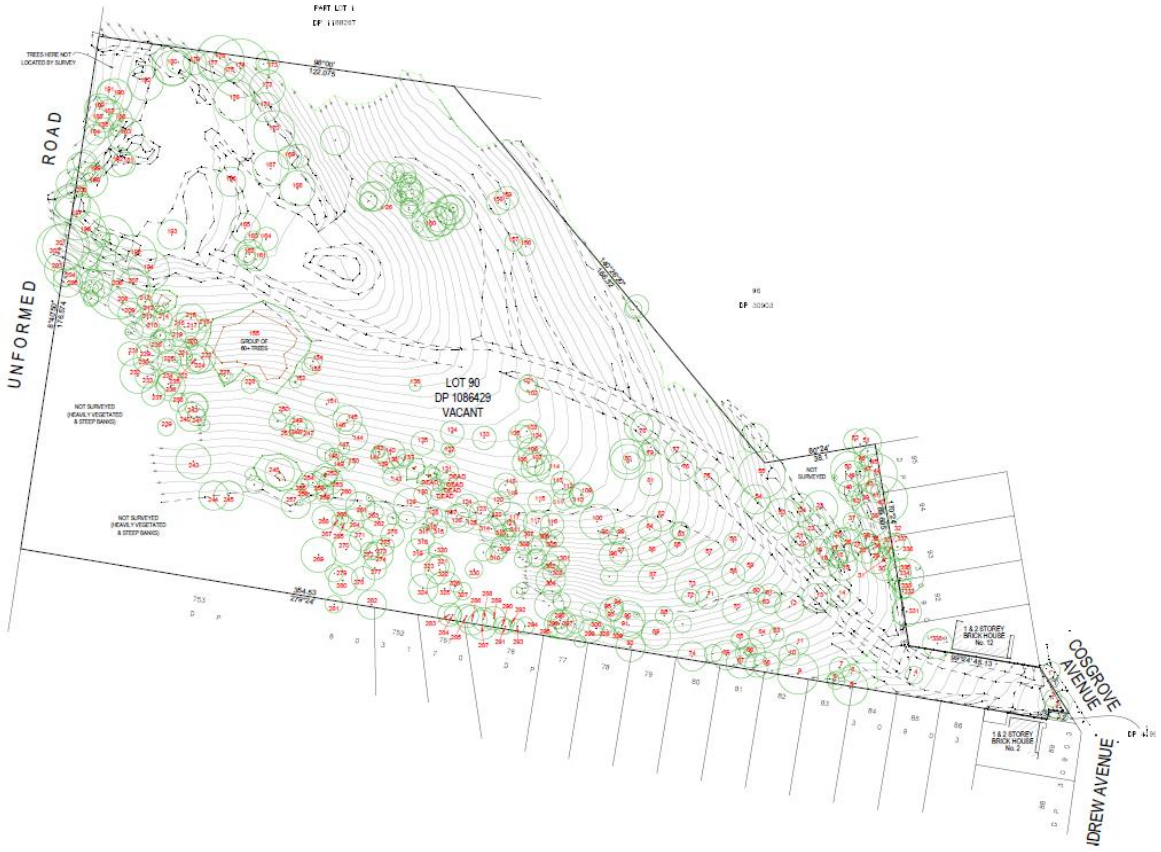

Figure 5: Extract of site survey (Source: LandTeam)

As shown in the survey plan, the site is located on a moderate to steep sided ridge which extends down from Mount Keira on the Illawarra Escarpment in an approximate west to east direction towards Cosgrove Avenue. From the top of the ridge (western boundary) to Cosgrove Avenue there is a difference in height of approximately 76 metres.

The surface of the site is discussed in more detail in the Geotechnical Investigation prepared by GHD (**Appendix 4**). GHD observed during their on-site geotechnical investigations, that the ground surface over the spine of the ridge varies from approximately 5 to 12 degrees. The existence of locally steeper and flatter areas is mainly associated with the man-made terrace, which is located in the upper part of the site towards the north-western corner and has been formed by cut and fill. The ridge's side-slopes range between 10 and 30 degrees and vary between the upper and lower slopes. The upper slopes are generally moderately steep, whereas the lower slopes range from steep to very steep. The slopes to the north of the man-made terrace have been modified by fill with batter slopes up to 45 degrees.

2.4.3. Trees

An Arboricultural Development Assessment Report has been prepared by Moore Trees (**Appendix 5**). An assessment of the development site found that there were three-hundred and forty-four (344) existing trees on the R2 and E2 zoned land, noting that this only includes trees that come under the tree management permit policy in the Wollongong DCP. The location of the existing trees that have been identified on the site are shown on the site survey. The Arboricultural Development Assessment Report includes details of

the identified trees, including species, height, spread, diameter, live canopy, defects, safe useful life expectancy (SULE), condition etc.

The majority of the E2 Environmental Conservation zoned portion of the site (being the south-west corner of the site) was not included as part of the survey, as this area is heavily vegetated, has a steep terrain and does not form part of the development site.

2.4.4. Ecology

A Biodiversity Development Assessment Report (BDAR) prepared by Biosis Pty Ltd (Biosis) is included at **Appendix 6**. Within the BDAR the following vegetation communities are noted to have been recorded on the R2 and E2 zoned land during field surveys:

- Lowland Dry-Subtropical Rainforest;
- Illawarra Escarpment Blue Gum Wet Forest (previously identified as Escarpment Blackbutt Forest);
- Acacia Scrub (derived community);
- Native grassland (derived community);
- Planted trees; and
- Weeds and exotics.

The various vegetation communities are shown in Figure 6.

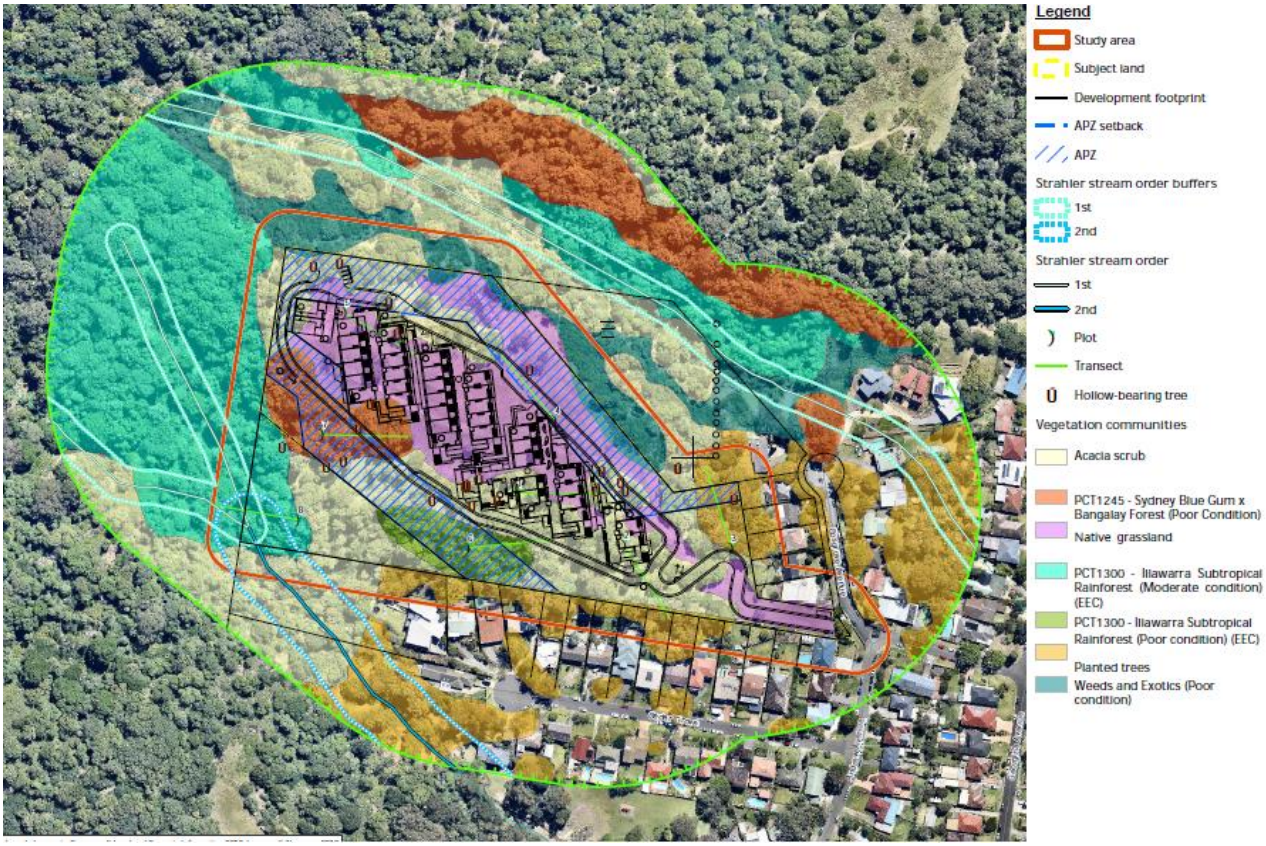

Figure 6: Vegetation of the site with overlay of the proposed development (Source: Biosis)

The recorded Lowland Dry-Subtropical Rainforest is a listed endangered ecological community (EEC). Approximately 0.6 hectares of this EEC is in moderate condition and 0.2 hectares is in poor condition.

No threatened flora species were recorded on the site during the field surveys as confirmed by the BDAR. The only threatened fauna species recorded on the site was the Greater Broad-nosed Bat. However, based on the disturbed nature of the habitats on site it was concluded that it was unlikely that this species was roosting on site or reliant on the resources that are provided by the subject site.

Twenty (20) hollow-bearing trees were recorded on the R2 and E2 zoned land that provide potential habitat for small mammals and microbats. Other habitats present within the subject site for fauna species included open areas and native trees.

2.4.5. Watercourses

Watercourses and their riparian corridors transverse the south-west and north-east corners of the site (Figure 7Figure 6). These identified waterways are non-perennial water systems and only flow when rainfall allows.

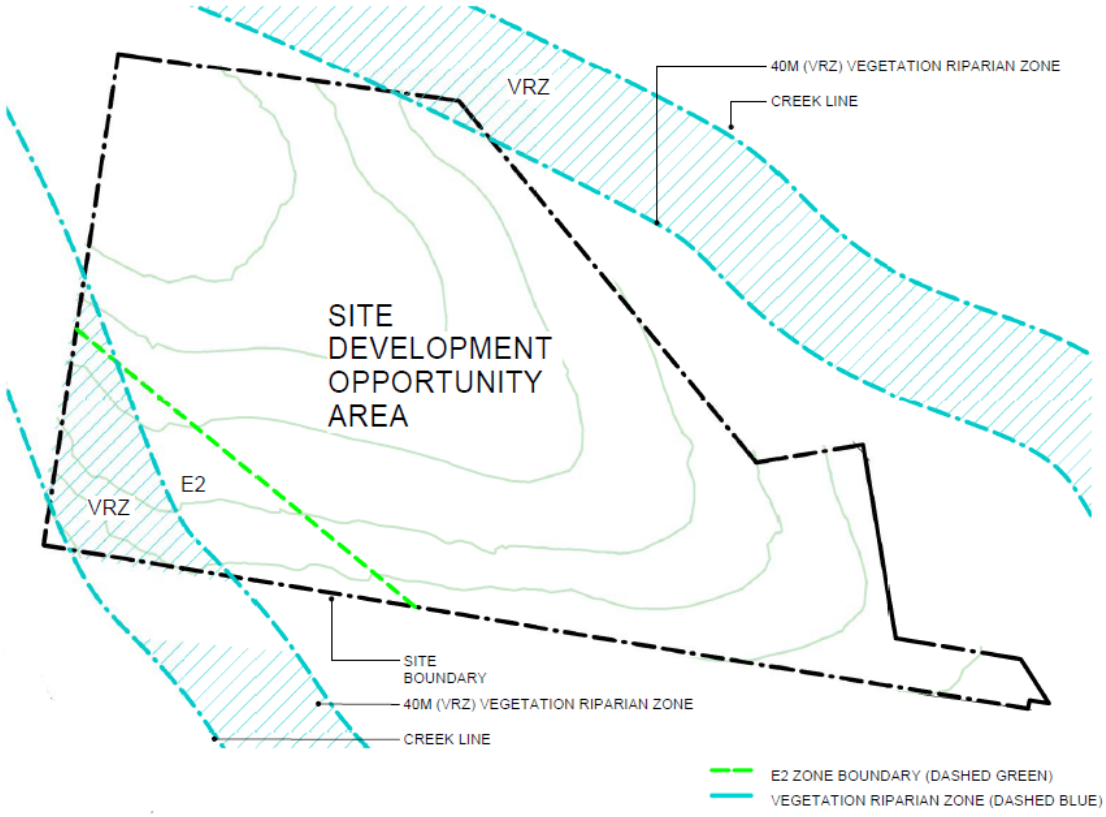

Figure 7: Approximate locations of the natural watercourses (Source: Edmiston Jones Architects)

2.4.6. Geotechnical Hazards

A Geotechnical Investigation has been prepared by GHD and is included at **Appendix 4**. Based on the findings of this and previous geotechnical reports prepared by Coffey Geotechnics, portions of the site are subject to potential landslide hazards such as localised slumping of the soil cover, soil creep movements and larger deep seated failure of the soil and weak rock over steep side slopes and fill areas. The geotechnical constrained portions of the site are identified in Figure 8.

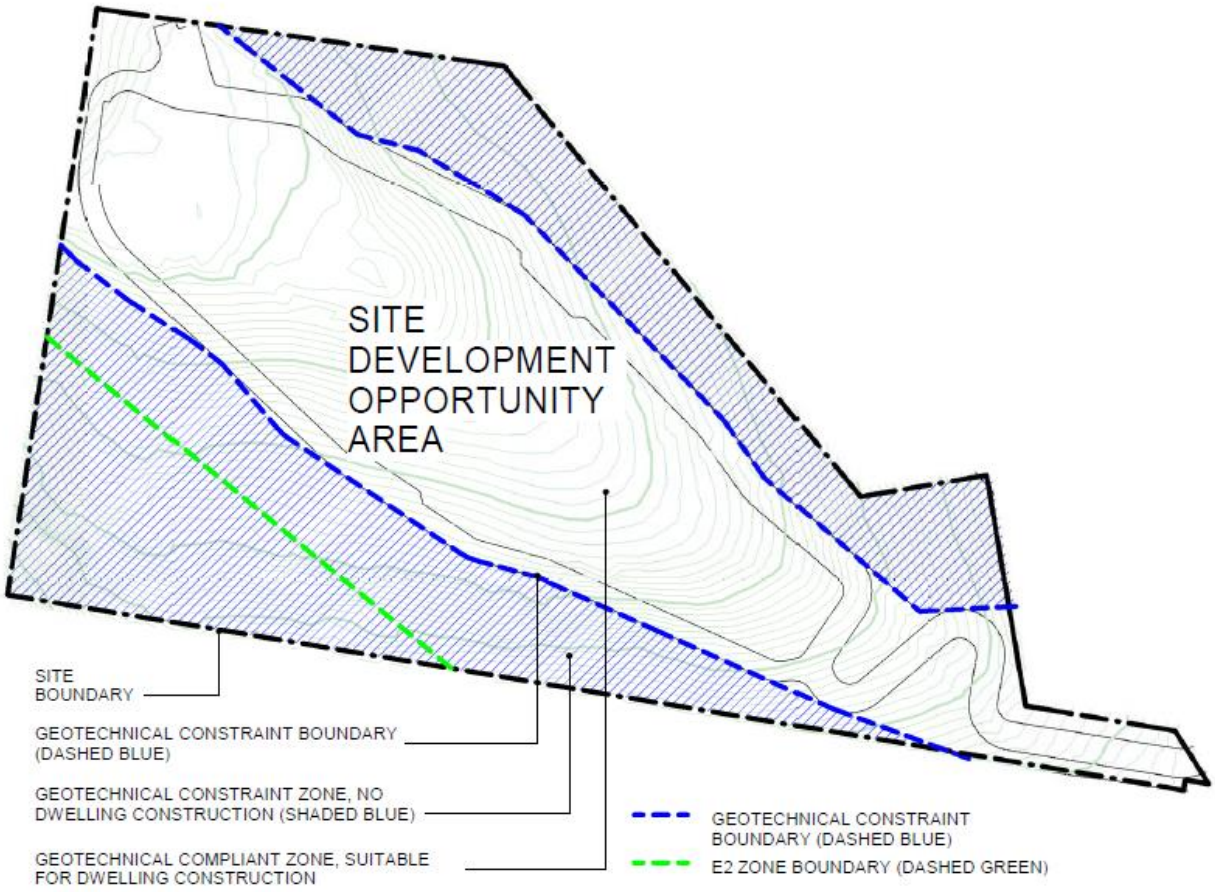

Figure 8: Geotechnical constrained portion of the site shown blue (Source: Edmiston Jones Architects)

2.4.7. Bushfire Hazards

The site is identified on Wollongong's Bushfire Prone Land Map as being bush fire prone land (Figure 9). Most of the site has a Category 1 Bushfire Prone Land Vegetation affection, with some small Bushfire Buffer affection at the entry to the site.

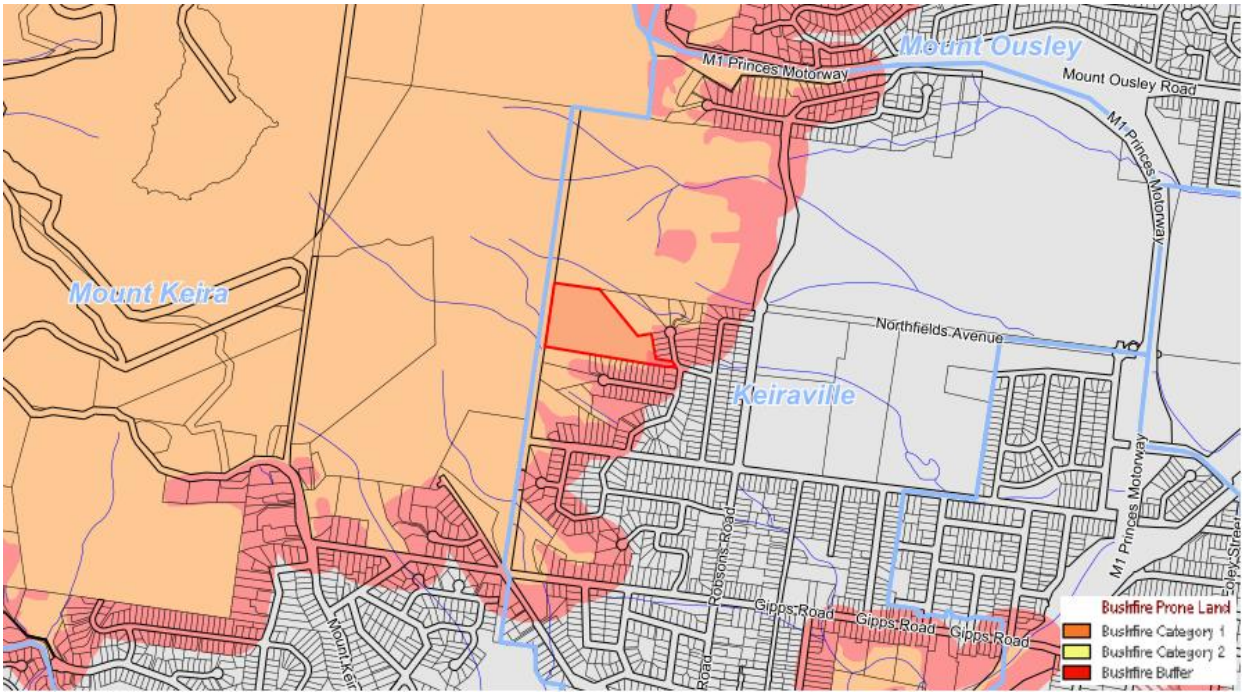

Figure 9: Wollongong bushfire prone land map extract (Source: Wollongong City Council)

2.4.8. Heritage

Based on a desktop study the site has not been found to contain any State or local heritage items. However, the part of site zoned E2 Environmental Conservation is located within the Illawarra Escarpment Landscape Area. The Illawarra Escarpment Landscape Area is an identified heritage conservation area of local significance. There are also heritage items (built and landscape) and archaeological sites located within the site's vicinity.

A desktop study and subsequent field investigation did not identify any Aboriginal sites or objects on the site.

Figure 10: E2 zoned portion of the site is located in the Local Heritage Conservation Area (Source: Edmiston Jones Architects)

2.4.9. Soils and Geotechnical Conditions

A Preliminary Site Investigation for Contamination has been prepared by GHD and is included at **Appendix 7**. Based on the observations of a site walk-through and the results of site history investigations, the potential for contamination to be present was assessed as being low.

With reference to the NSW Government Sharing and Enabling Environmental Data (SEED) website, the Preliminary Site Investigation for Contamination notes that there is no known acid sulfate soils at or near the site.

The subsurface investigations undertaken as part of the Geotechnical Investigation (**Appendix 4**) generally indicated both topsoil overlying colluvium (e.g. gravel) and residual soil overlying weathered rock. The general subsurface conditions encountered are summarised in Table 1 to Table 4 of the Geotechnical Investigation.

No groundwater was encountered in any of the test pits or boreholes excavated or drilled during these investigations.

2.4.10. Stormwater

Due to the undeveloped state and topography of the site it has three identified sub-catchments, including:

- Sub-catchment falling to the existing road drainage in Andrew Avenue;
- Sub-catchment falling towards an unnamed watercourse to the north-east of the site; and

- Sub-catchment falling towards an unnamed watercourse to the south-west of the site.

All three sub-catchments ultimately drain to Fairy Creek and into the ocean off the east coast of North Wollongong.

Based on a desktop study the site is not identified as being affected by flooding.

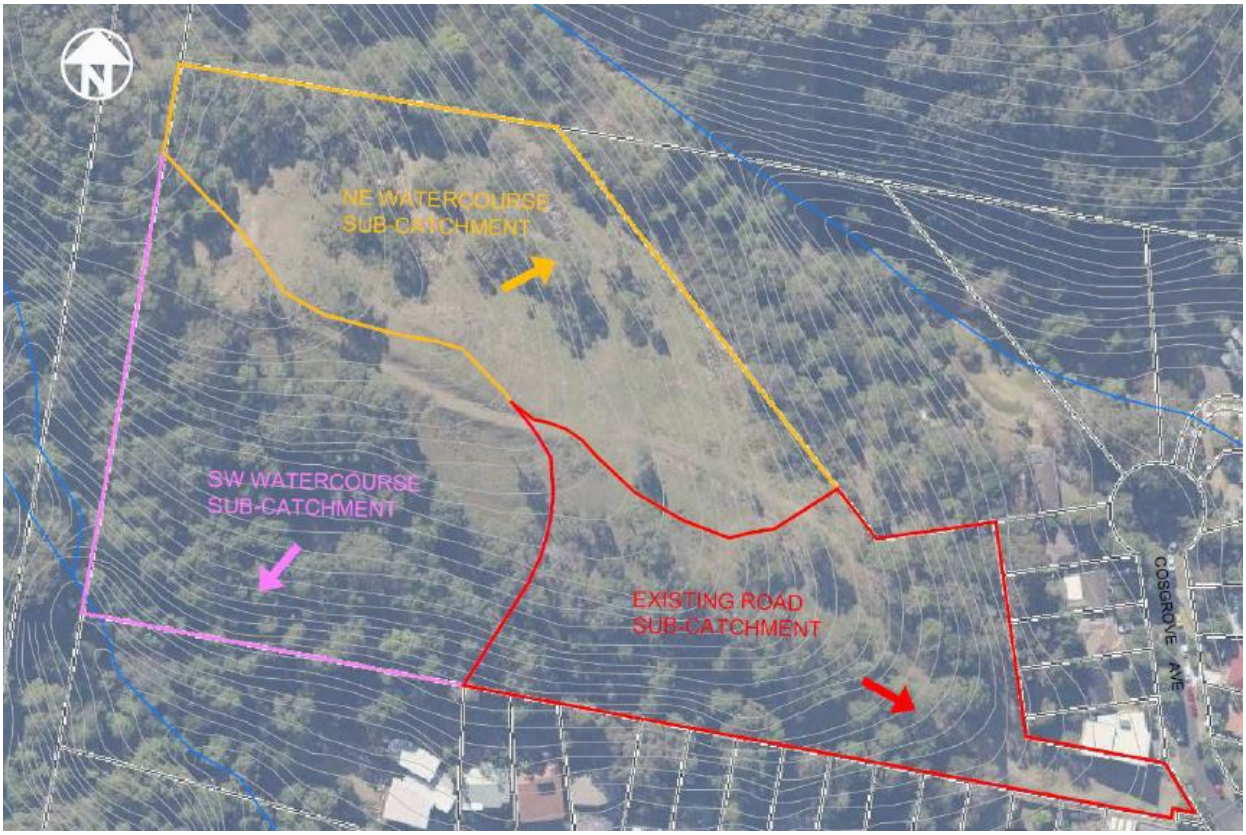

Figure 11: Existing sub-catchment areas (Source: LandTeam)

2.4.11. Parking, Access and Transport

Vehicular access to site is provided via a single paved driveway between Cosgrove Avenue and the site's boundary. The site is undeveloped and as such there are no formal car parking spaces currently on the site. The site and suburb of Keiraville is supported by public transport in the form of bus services. The nearest bus stops to the site are approximately 450 metres north-east on Northfields Avenue and Robsons Road. Bus routes 10, 41 and 53 service these stops and provide connections to Wollongong, Dapto and Shellharbour. North Wollongong Railway Station is located to the east of the site and is an approximate 6 minute drive from the site. North Wollongong Railway Station is located on the South Coast line and provides services to Sydney and Kiama.

Street parking is available on Cosgrove Avenue and surrounding streets, noting Georgina Avenue has 'No Parking' restrictions between 6:00am and 6:00pm along the eastern side of the road. Time restricted kerbside parking is permitted along the western side of Georgina Avenue.

2.4.12. Site photos

Figure 12: View of the site from the man-made terrace, looking east across the site and North Wollongong (Source: City Plan)

Figure 13: View of the site from the man-made terrace, looking south-east across the site and Wollongong (Source: City Plan)

Figure 14: View of the site from the man-made terrace, looking west towards Mount Keira and the escarpment (Source: City Plan)

Figure 15: View of the site's Cosgrove Avenue frontage and access, looking west from Cosgrove Avenue (Source: Urbaine Architecture)

Figure 16: View of the site from Robsons Road, Keiraville, looking north-west towards the escarpment (Source: City Plan)

Figure 17: View of the site from Wollongong Botanic Garden, looking north-west towards the escarpment (Source: City Plan)

2.4.13. Summary

Following careful review of all the site's characteristics and constraints, the suitable buildable footprint for the site, known as the developable area, was established. The building footprint is surrounded by a perimeter loop road and allows for APZ areas and is contained wholly within the land zoned for residential purposes.

2.5. Surrounding Development

2.5.1. Overview

Immediately to the north of the site is vegetated land that is owned by the University of Wollongong. This land forms part of the Illawarra Escarpment. To the south and east of the site is low density residential development comprising one and two-storey dwelling houses. Immediately west of the site is vegetated land comprising the Illawarra Escarpment and Mount Kiera.

2.5.2. Photos of Surrounding Uses

Figure 18: View of the existing residential dwelling at No. 12 Cosgrove Avenue looking east (Source: Google Streetview, 2013)

Figure 19: View of the existing kiosk substation on Lot 1 in DP 419934 and residential dwelling house a No. 2 Andrew Street immediately west of the site (Source: Google Streetview, 2013)

Figure 20: View of the existing residential dwellings located on the northern side of Cedar Grove (Source: Google Streetview, 2013)

Figure 21: View of the existing residential dwellings at the end western end of Cedar Grove looking up towards the Illawarra Escarpment and Mount Kiera (Source: Google Streetview, 2013)

2.6. Relevant Planning History

2.6.1. DA-2012/545

Development consent (DA-2012/545) was granted by Council on 29 November 2012 for the Torrens title subdivision of the site into three (3) residential lots, including construction of a new access driveway and tree removal.

An associated Construction Certificate was issued on 23 October 2017 and minor stormwater works were subsequently undertaken. Although the consent has been acted upon, formal registration of the three lots has not occurred. The subject site therefore remains as one single allotment.

2.6.2. Other

A pre-lodgement meeting was held on 12 July 2017 to discuss a development proposal to subdivide the site into twenty-four (24) residential lots. A DA for the proposed subdivision, however, was never lodged with Council for assessment and determination.

3. DESCRIPTION OF DEVELOPMENT

3.1. Overview

The proposed DA seeks approval for the construction of a 'multi-dwelling housing' development which comprises of the following:

- Site preparation works, including:
  - Tree removal; and
  - Bulk earthworks;
- Construction of five (5) individual buildings comprising a total of forty-seven (47) residential dwellings, including:
  - Thirty-six (36) x 3 bedroom dwellings; and
  - Eleven (11) x 4 bedroom dwellings;
- Vehicular and pedestrian access off Cosgrove Avenue and an internal loop driveway;
- Parking for one-hundred and nine (109) cars, including:
  - Ninety-four (94) residential car parking spaces with a double-garage provided for each dwelling;
  - Fifteen (15) visitor car parking spaces provided either at-grade or within the basement of proposed Building 2;
  - 4 motorcycle parking spaces; and
  - 4 visitor bicycle parking spaces;
- A waste recycling utility area and loading bay for large vehicles and one (1) contractor bay;
- Landscaping, communal open space, green roofs and vegetation management;
- Stormwater drainage works;
- One (1) emergency vehicle bay and a firefighting water tank at the rear of the site;
- New substation; and
- Strata subdivision of the proposed dwellings.

The following table provides a summary of the proposed multi-dwelling housing development per building:

Table 2: Summary of Proposed Development, Building by Building

Building/ Level	Dwelling Nos.	Details
Building 1 (Lyrebird Building)	1-3	3 x 3 bedroom dwellings 3 garages (6 car parking spaces) Communal waste storage area 2 at grade visitor car parking spaces
TOTAL NUMBER OF DWELLINGS		3

Building/ Level	Dwelling Nos.	Details
Building 2 (Bowerbird Building)	4-18	10 x 3 bedroom dwellings 5 x 4 bedroom dwellings 15 garages (30 car parking spaces) 6 visitor car parking spaces 1 motorcycle parking space 4 visitor bicycle parking spaces Communal waste storage area
TOTAL NUMBER OF DWELLINGS		15
Building 3 (Rosella Building)	19-32	12 x 3 bedroom dwellings 2 x 4 bedroom dwellings 14 garages (28 car parking spaces) 3 visitor car parking spaces 1 motorcycle parking space Communal waste storage area
TOTAL NUMBER OF DWELLINGS		14
Building 4 (Kestrel Building)	33-45	10 x 3 bedroom dwellings 3 x 4 bedroom dwellings 13 garages (26 car parking spaces) Communal waste storage area 2 visitor car parking spaces
TOTAL NUMBER OF DWELLINGS		13
Building 5 (Sea Eagle Building)	46-47	2 x 4 bedroom dwellings 2 garages (4 car parking spaces) 2 visitor car parking spaces 2 motorcycle parking spaces Communal waste storage area
TOTAL NUMBER OF DWELLINGS		2
Total		47 dwellings (inc. 5 adaptable) ▪ 36 x 3 bedroom dwellings ▪ 11 x 4 bedroom dwellings 109 car parking spaces ▪ 94 residential car parking spaces ▪ 15 visitor car parking spaces 4 motorcycle parking spaces 4 visitor bicycle parking spaces

Building/ Level	Dwelling Nos.	Details
		5 communal waste storage areas

Source: Edmiston Jones

Refer to the Architectural Plans prepared by Edmiston Jones included at **Appendix 2** for further details.

Signage has been identified in the accompanying Crime Risk Report that will be the subject of a separate application.

3.2. Proposed Site Plan

An extract of the site plan, prepared by Edmiston Jones Architects, is included at Figure 22.

Figure 22: Site plan extract (Source: Edmiston Jones)

3.3. Tree Removal

All existing trees within the developable area are to be removed as part of the proposed development. A further 85% of trees within the identified Asset Protection Zone (APZ) are to be removed as part of the development.

Refer to the tree protection plan included at Appendix 1 of the Aboricultural Development Assessment Report (**Appendix 5**) for further details regarding the trees proposed to be retained or removed from the site.

3.4. Excavation and Filling

Bulk earthworks in the form of both cut and fill are proposed as part of the DA. The maximum depth of cut is estimated at 10 metres and is proposed between Buildings 1 and 2. The maximum height of fill is estimated at 5-6 metres and is proposed to occur at the southern end of Building 4.

A Bulk Earthworks Plan has been prepared by LandTeam and forms part of the Civil Drawings (**Appendix 8**). This plan shows the location and estimated depths of cut and fill proposed as part of the application. An extract of the Bulk Earthworks Plan for the proposed development can be viewed at Figure 23.

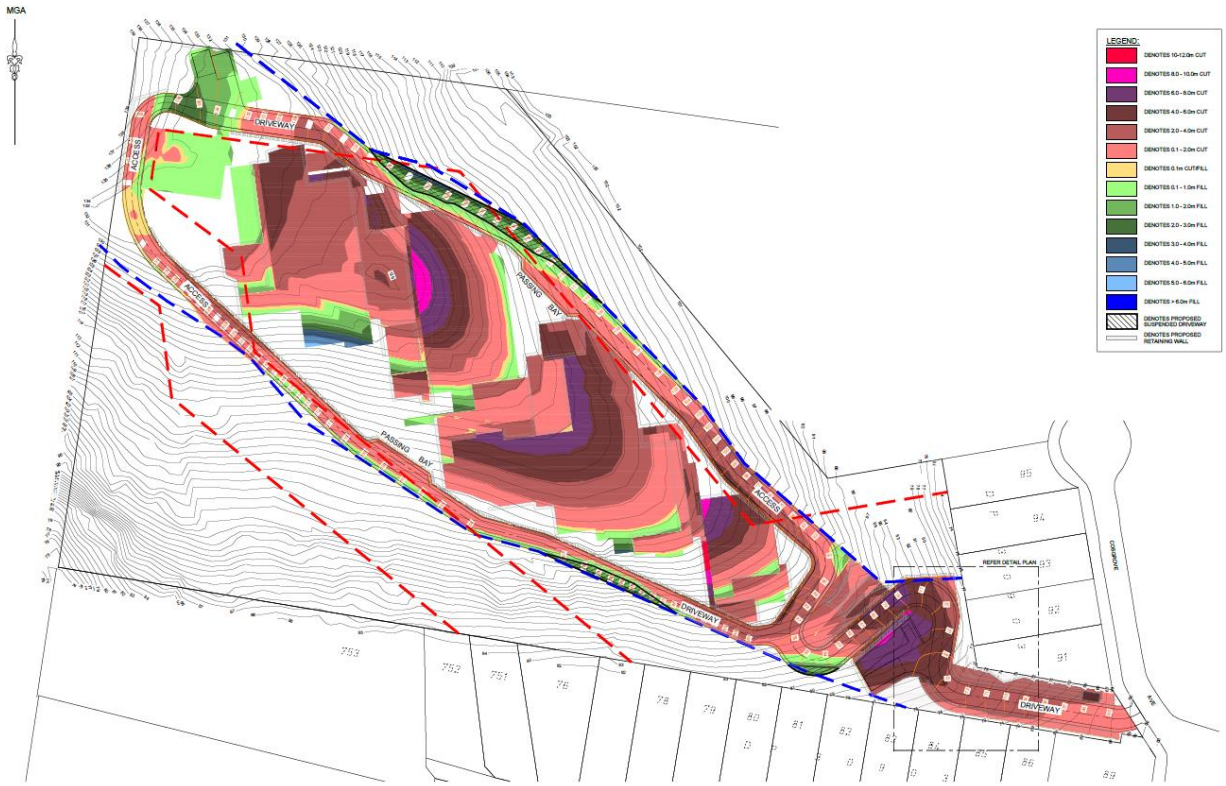

Figure 23: Bulk Earthworks Plan extract (Source: LandTeam)

3.5. Development Statistics

The key statistics and elements of the project are shown in the table below:

Table 3: Development Statistics.

Element	Proposal
Site Area	36,753m^2 Note: As per the LEP, site area means the area of any land on which development is or is to be carried out. The land may include the whole or part of one lot, or more than one lot if they are contiguous to each other, but does not include the area of any land on which development is not permitted to be carried out under this Plan. In this regard, the E2 zoned portion of the site must be excluded from the site area.
Gross Floor Area	9,322m^2 Note: Calculated as per the LEP definition. However, when calculated as per the DCP (i.e. including the podiums) the GFA increases to 11,887m^2.
Floor Space Ratio	0.25:1 Note: Calculated based the above figures.
Maximum Height	9 metres
Total Dwellings	Forty-seven (47)
Total Adaptable Dwellings	Five (5)
Total Parking	One-hundred and nine (109), including 94 resident and 15 visitor spaces
Landscaped Area	21,209m^2
Deep Soil Zone	15,370m^2

3.6. Architectural Intent

Edmiston Jones as the architects of the proposed development have designed the layout of the development to carefully consider a detailed analysis of the site and local context. Refer to the site analysis drawings within the Architectural Plans (**Appendix 2**) for further details. The following objectives have been adopted by Edmiston Jones to guide the design of the proposed development:

- The protection of local ecosystems by consolidating the built form footprint within the centre of the site, which has previously been disturbed due to the fill activities used to create the man-made terrace.
- Creation of an integrated built form and landscape solution that both reinstates the original surrounding landscaped habitat and provides opportunity for new habitat within the proposed development.
- Consideration of how the site is viewed from key external vantage points within the Keiraville locality.
- Consideration of how the development sits within the existing topography and landscape of Illawarra Escarpment.
- The protection of the quality of amenity (i.e. overshadowing and privacy etc) to the residential properties adjacent to the site through a combination of building and landscape design considerations.

The buildings have been designed to be sympathetic to the Illawarra Escarpment. Specifically, inspiration for the building language has been drawn from the stepped sandstone cliff faces, deep shadows, interlinked forest canopies and muted colours of the site's surrounding natural environment.

The provision of communal open space areas and pedestrian connections throughout the site is intended to provide various opportunities for social interaction between residents and create a strong sense of community.

In relation to the design principles that have guided the dwelling design and housing mix for the proposed development, a combination of 3 and 4 bedroom dwellings with different plan layouts, design character and site outlook have been provided. This is to take advantage of the site's unique characteristics and allow for flexible living arrangements that cater for a wide range of occupant demographics and lifestyle requirements.

3.7. Ecological Sustainable Development

The State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 mandates provisions relating to reduced consumption of mains-supplied potable water, reduction of greenhouse gas emissions and improved thermal comfort for all residential development. A BASIX Certificate which satisfies all relevant requirements accompanies the DA.

Council encourages, however, that applicants go beyond the minimum BASIX requirements for their development. Passive solar design involves designing a development for the local climate, orientating the buildings to achieve good passive solar heating in winter and cooling in summer, insulating, glazing and considering the thermal mass of construction materials. The use of the most efficient water and energy appliances and systems, natural ventilation, efficient heating and cooling systems and renewable energy should be considered in any proposal. Developments should also aim to maintain, conserve and enhance indigenous species, populations and ecological communities prior to, during and post construction.

The following ESD principles have been used in the design and siting of the proposed development:

Building design

- Consolidation of the built form to maximise site landscape opportunities and decrease hard surfaces
- Orientation of dwellings to obtain winter solar access into dwellings
- Orientation of dwellings to obtain access to cooling summer breezes
- Energy efficient glazing systems
- Sun shading to glazing
- Natural cross flow ventilation through dwellings
- High levels of building insulation
- Selection of low maintenance robust building materials to minimise future requirements for maintenance works
- Specification of low volatile organic compounds (VOC) materials within dwellings
- Rainwater storage tanks for reuse on site
- Residential garages sizes to accommodate bicycle storage
- Waste management systems incorporating facilities for recycling and onsite composting
- Energy efficient electrical fittings and appliances
- Water efficient hydraulic fixtures and fittings

Landscape design

- Use of predominantly native endemic species
- Use of predominantly low water use species
- Use of primarily natural materials as hard landscape elements

- Green roof planting solution to insulate buildings, exclude roof glare, improve air quality and reduce stormwater runoff
- Provision of on-site detention to reduce stormwater runoff
- Trellised climbing plants to keep buildings cool and reduce visual impact when viewed from outside of site
- Enhance vegetative site coverage to reduce soil moisture loss and to minimise erosion
- Planting zones heavily mulched to reduce irrigation requirements
- Removal of weed species and install feral deer exclusion fencing to maximise native regeneration and reduce erosion
- Enhance and build on biodiversity through revegetation including rehabilitation of the PCT 1300: Illawarra Subtropical Rainforest by a qualified bush regeneration specialist
- Enhance habitat connectivity across the site from existing natural bushland to the North, South and West
- Rainwater re-use within landscape irrigation systems and water quality bio-retention pond system

3.8. Materiality and Façade Treatment

The materials incorporated into the design of the development include a combination of lineal cladding, expressed concrete and sandstone in an earthy colour palette that is inspired by the Illawarra Escarpment.

Figure 24 includes an extract of the schedule of materials and colour palette for the proposed development. The application of the selected materials and colour palette within the façade design is shown in Figure 25.

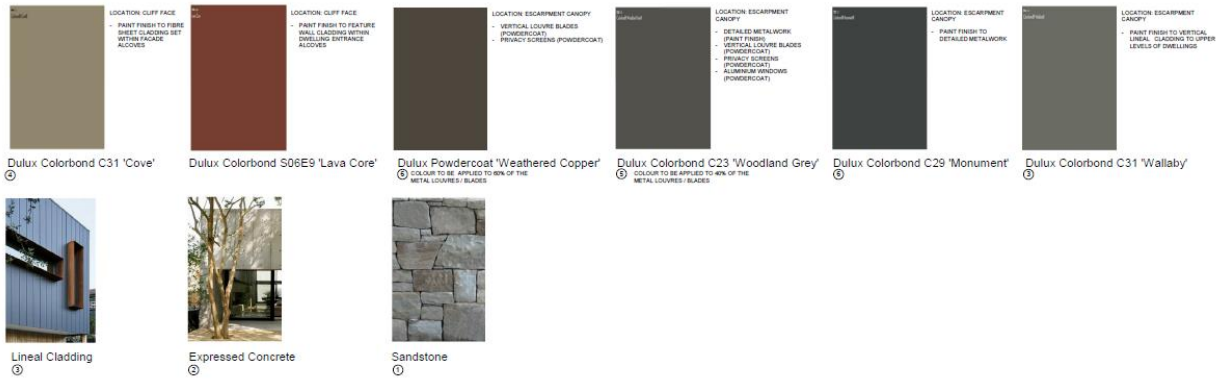

Figure 24: External materials and colour palette extract (Source: Edmiston Jones)

Figure 25: Building 4 - East (Typical Elevation) extract (Source: Edmiston Jones)

3.9. Landscaping and Communal Open Space

The following six (6) key principles were identified by Edmiston Jones to guide the landscape design for the proposed development:

- To enhance and building on the architectural character of the development;
- To enhance and build on the biodiversity of the immediate area;
- To enhance and build on habitat connectivity to adjacent natural bushland;
- To provide a sustainable and attractive external environment for residents to enjoy and recreate in;
- To increase bushfire safety for the development; and
- To enhance and build on the visual impact of architectural elements when viewed from the coastal plain.

A Landscape Masterplan prepared by Edmiston Jones is included at **Appendix 9,** with an extract at Figure 26.

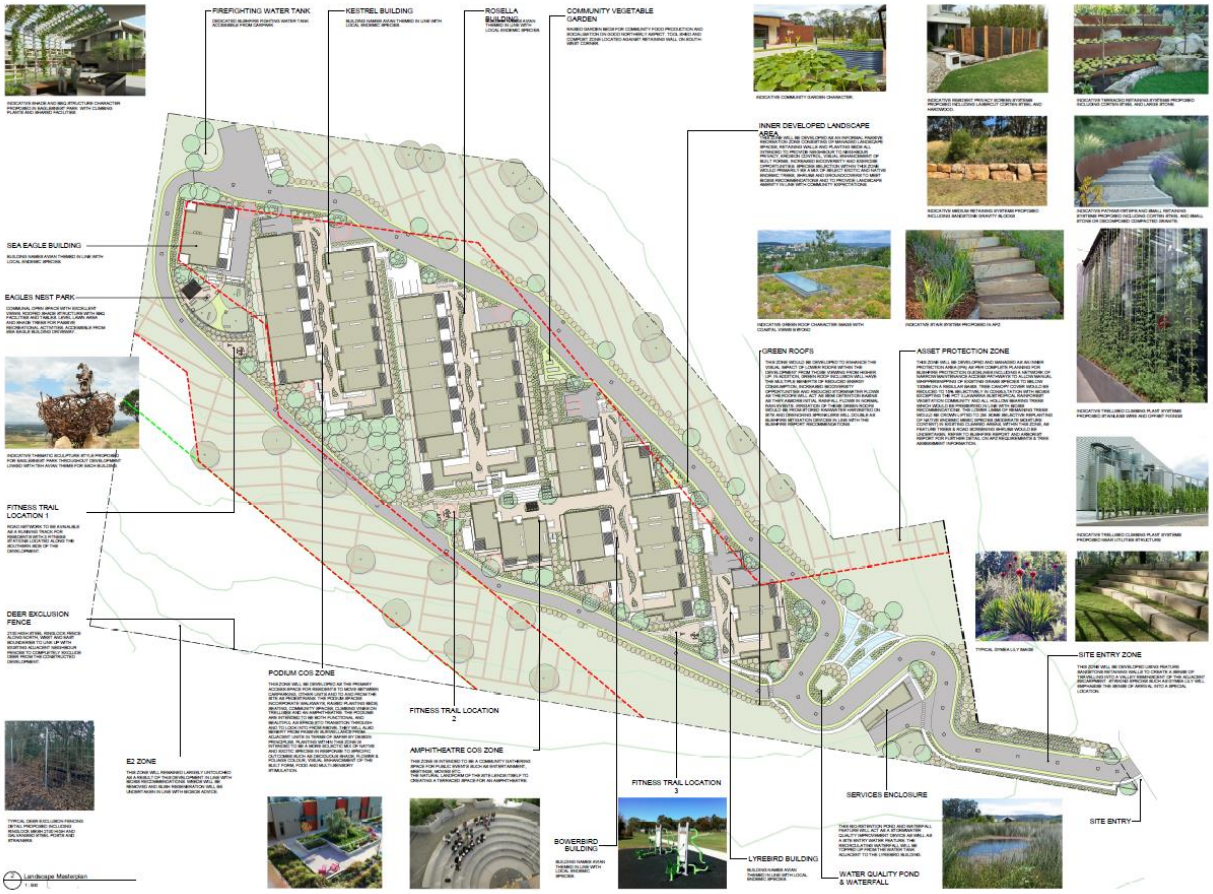

Figure 26: Landscape Plan extract (Source: Edmiston Jones)

The proposed development includes a total of 21,209m^2 of landscaped area across the site. Of this area, 15,370m^2 comprises deep soil zones and 2,893m^2 of communal open space for residents. The communal open space provision includes different areas to meet the various needs of residents and their visitors, such as:

- Eagles Nest Park comprising a roof shade structure with barbeque facilities, tables and lawn area;
- Fitness trail with three (3) separate exercise locations;
- Central communal zone with tiered informal seating and pergola within the podium area of Building 2; and
- Communal vegetable garden.

Communal open space is also proposed on the podium levels of proposed buildings 1 to 4. These zones will also act as the primary walkway for residents to move between car parking, other dwellings and to and from the site and will incorporate raised planting, seating, pergolas and other landscape features.

Green roofs are proposed on the roofs of each building to enhance the appearance of the buildings when viewed from higher ground and from outside of the site. The green roofs also reduce heat loads and reflectivity.

A bio-retention pond and waterfall have been incorporated into the landscape design. These will act as a stormwater quality improvement device and as a site entry water feature.

An asset protection zone (APZ) forms part of the proposed development as a result of the site's bushfire risk. This zone will be developed and managed as an inner protection area (IPA) and will include a network of 0.6 metre wide maintenance footpaths and stairs that run parallel and perpendicular to the site, respectively.

Refer to the Landscape Plans prepared by Edmiston Jones included at **Appendix 9** for further landscape details.

3.10. Vegetation Management Plan

As part of the DA, approval is sought for the Vegetation Management Plan (VMP) included at **Appendix 10**. The VMP has been prepared for the portion of the site that is zoned E2 Environmental Conservation. This portion of the site is being conserved under the proposal, is heavily vegetated and does not form part of the development site.

The VMP provides controls and actions specifically for the management of the vegetation to be retained within the E2 zone. It outlines the ongoing management actions required for the successful establishment of native plants within the VMP area and actions to protect the surrounding vegetation from future impact.

The VMP includes recommendations for the bushfire Asset Protection Zone (APZ) that will be provided entirely within the R2 Low Density Residential zoned portion of the site. Ongoing management of weeds across the entire site (i.e. both the R2 and E2 zones) is also addressed by the VMP.

Two native vegetation communities and one derived vegetation community occur within the VMP area. This includes the Illawarra Subtropical Rainforest, the Illawarra Escarpment Blue Gum Wet Forest and Acacia Scrub (derived community). A range of fauna habitat features, including tall open forest, a watercourse, leaf litter and two hollow-bearing trees, are also present within the VMP area.

The specific management actions that are included in the VMP include:

- Slow and strategic removal of all exotic species/weeds, with scope to maintain the integrity of the slope and promote natural regeneration.
- Removal of all rubbish from the VMP area.
- Installation of a deer exclusion fence (to encompass the entire VMP area).
- Installation of a silt fence (attached to exclusion fence) to prevent water and gravity fed weed seed from entering the VMP area.
- Installation of coir logs in areas with high erosion potential.
- Management of retained vegetation, including installation of tree and vegetation protection measures.
- Bush regeneration and revegetation (infill planting) to assist in the rehabilitation of the residing vegetation communities. All installed plants are to be propagated from locally sourced seed stock collected within a 5 kilometre radius of the study area and selected from the list contained in the VMP.
- Planting and bush regeneration maintenance, including weed management and control.
- Ongoing monitoring and maintenance.

3.11. Access and Parking

3.11.1. Parking

Each dwelling has been provided with a double garage that can accommodate two (2) car parking spaces. Therefore, a total of ninety-four (94) resident car parking spaces have been provided as part of the development. Fifteen (15) visitor car parking spaces have also been provided throughout the development to ensure that car parking for visitors is available in proximity to each of the five (5) proposed buildings. Four (4) motorcycle parking spaces and four (4) visitor bicycle spaces are also provided throughout the development. It is proposed that resident bicycle parking will be accommodated within the enclosed garages for each dwelling.

A service bay is provided towards the entry to the site next to the proposed waste recycling utility area and loading bay. Separate parking for NSW Rural Fire Service (RFS) vehicles has been provided north of proposed Building 5.

3.11.2. Vehicular Access

Vehicular access to the proposed development is via a 6.5 metre two-way driveway accessed via Cosgrove Avenue. The driveway loops around the waste recycle utility area and loading bay and bio-retention pond and entry water feature, before heading west up along the northern side of the site and to the residential dwellings. A secondary one-way fire service access (with overtaking bay) is provided from the terminus of the two-way access driveway along the southern side of the proposed development to provide loop emergency service access to Cosgrove Avenue. The nominated emergency services such as Fire Rescue NSW and RFS will be given a key to the removable chain barrier that restricts access to this one-way driveway. Passing and turning bays have been provided along the driveways to ensure safe traffic movement.

A plan showing the site vehicular circulation is included in the Architectural Drawings found at **Appendix 2**.

3.11.3. Pedestrian Access

Pedestrian access is primarily provided from Cosgrove Avenue to Buildings 1 to 5 via a 1 metre wide pathway, which incorporates stairs. A plan showing the main pedestrian path of travel is included in the Architectural Drawing (**Appendix 2**). Pedestrian access is also available within the internal loop road proposed as part of the development.

3.11.4. Service Access

Access to the service bay by the nominated waste vehicle is via a reverse manoeuvre from the access driveway. In addition to garbage vehicles, removalist vehicles will also be required to utilise this service bay near the entry to set down goods. Any bulky goods will then be required to be transported up the access driveway by light vehicles or vans. For further details regarding the use of the loading/unloading bay, refer to the separate Plan of Management for the site.

3.11.5. Construction Access

During the construction stage all vehicles will access the site via the site's Cosgrove Avenue frontage. Refer to the Preliminary Construction Traffic Plan included as part of the Traffic Impact Assessment (**Appendix 11**).

3.12. Operational Management

The Plan of Management (PoM) at **Appendix 12** identifies the everyday operation of the proposed development and establishes the logistical measures to ensure the development is functional in relation to:

- Building maintenance;
- Shared facilities,
- Waste management;
- Loading area;
- Delivery of bulky goods;
- Security;
- Access;
- Fire Safety and Prevention;
- Letterboxes;
- Signage;
- Use of balconies and terraces; and
- Fencing.

3.13. Infrastructure and Utility Works

3.13.1. Civil Engineering

In addition to the bulk earthworks/ cut and fill described in detail above in Section 3.4 of this SEE, the proposed development includes the construction of basement walls and retaining walls throughout the site. The basement of each building is to be cut into the hillside by up to 10 metres on the uphill side of the building and at close to or above the existing ground level on the downhill side of the building. The basement retaining walls will be reinforced blockwork or anchor type walls depending on the height of the walls.

Various other retaining wall types are proposed throughout the site dependent on location, visual requirements and wall height and include reinforced anchored concrete pile walls, post and wale walls, self-weight (gravity) walls and concrete blockwork walls as illustrated in the Civil Drawings at **Appendix 8**.

Figure 27 identifies which of the proposed retaining walls will be visible and not visible post construction.

Figure 27: Retaining Wall Layout Plan extract

Green roofs are proposed for all of the dwellings that will drain to various underground rainwater tanks. Each rainwater tank is to be used for on-site detention (OSD) and for re-use in the landscape maintenance. The piped and overland flow path from each rainwater tank will be directed to the the loop driveway, which will capture overland flows via a centrally graded pavement and convey through the site via a pit and pipe network. This network is divereted to lower portions of the site where it is treated in the bio-retention pond. Once the piped and overland flows have been treated it is then discharged to a lintel pit in Andrew Avenue.

Refer to the Civil Drawings and General Design Statements prepared by LandTeam (**Appendix 8**) for details.

3.13.2. Electrical

A new padmount electrical substation is to be installed in the south-eastern corner of the site. Specifically, this substation is to be installed close to the site's Cosgrove Avenue frontage and north of the entry driveway. The new substation is proposed to replace the existing kiosk substation to the south of the site and will supply electricity to both the proposed development and the existing street supply.

Initial consultation has been undertaken with Endeavour Energy who has provided the applicant with a 'Design Brief' for the proposed electrical works (**Appendix 13**).

3.14. Capital Investment Value

The estimated capital investment value (CIV) of the project is estimated at $30,394,293 (excluding GST). Refer to the QS Budget Report prepared by Mitchell Brandtman provided at **Appendix 14**.

Given the development has a CIV that exceeds $30 million, the DA will be assessed by Council but determined by the Southern Regional Planning Panel (SRPP) in accordance with Clause 20 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) and Section 2.15 of the EP&A Act.

3.15. Pre-Lodgement Consultation

3.15.1. Council

A Pre-Lodgement Meeting to discuss the proposed development was held with Council on Monday 1 April 2019. The issues raised by Council and the Applicant's response to these issues are detailed in Table 4. A copy of the pre-lodgement meeting notes as provided by Council is included at **Appendix 15**.

Table 4: Pre-Lodgement issues raised by Council.

Item	Comment
Planning	
Relevant Environmental Planning Instruments	
The provisions of all relevant Environmental Planning Instruments and Development Control Plan(s) must be addressed within the Statement of Environmental Effects (SEE). *The relevant Environmental Planning Instruments and Development Control Plans are:* *State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)* *State Environmental Planning Policy (State and Regional Development) 2011* *State Environmental Planning Policy (Building and Sustainability Index: BASIX) 2004* *Wollongong Local Environmental Plan 2009 (WLEP 2009)* *Wollongong Development Control Plan 2009 (WDCP 2009)* *Wollongong City Wide Development Contributions Plan 2018*	Refer to Section 4 of this SEE for an assessment of the proposed development against the relevant environmental planning instruments (EPIs). Section 5.2 and the accompanying Table of Planning Compliance (**Appendix 1**) provides an assessment of the proposed development against the relevant provisions within the Wollongong DCP.
Integrated Development	
Rural Fires Act 1997 (NSW Rural Fire Service) *Development with any proposed form of subdivision on bushfire prone land, a Bush Fire Safety Authority is required under the Rural Fires Act 1997.* *The proposal would be considered "Integrated Development" – Special Fire Protection Purpose under section 4.46 of the Environmental Planning and Assessment Act 1979 and section 100B of the Rural Fires Act 1997.* *Accordingly, the development application must be accompanied by a Bushfire Hazard Assessment demonstrating compliance with the aim and objectives of Planning for Bushfire Protection 2006 and the specific*	Refer to Section 4.2.3 of this SEE for further details. The proposed development is integrated development under the Rural Fires Act 1997 (NSW RFS). A Bushfire Protection Assessment has been prepared by Australian Bushfire Protection Planners Pty Ltd to accompany this application to Council and is included at **Appendix 16** of this SEE.

Item	Comment
objectives and performance criteria for the land use proposed. In particular, the following matters must be addressed: *a) a statement that the site is bush fire prone land, where applicable;* *b) the location, extent and vegetation formation of any bushland on or within 100 metres of the site;* *c) the slope and aspect of the site and of any bush fire prone land within 100 metres of the site, which may determine the likely path of any bush fires;* *d) any features on or adjoining the site that may mitigate the impact of a high intensity bush fire on the proposed development, and* *e) a statement assessing the likely environmental impact of any proposed bush fire protection measures.* *f) whether any building is capable of complying with AS 3959-2009 in relation to the construction level for bush fire protection.* *It is noted that changes are envisaged to occur mid-2019 to the Environmental Planning and Assessment Act 1979 relating to the bushfire requirements whereby Planning for Bushfire Protection 2018 will be applicable rather than 2006 document. Prior to the lodging the development application a review of the relevant legislation is to occur to ensure the relevant PFBP document is addressed.* *You are required to submit one (1) copy of the site plan and all information submitted, for referral to the NSW Rural Fire Service.* *You are also required to submit a cheque for $320.00 made payable to the NSW Rural Fire Service and a separate fee of $140.00 made payable to Wollongong City Council for administration costs.* *If the proposal does not involve subdivision, the application will still be referred to the NSW RFS for comment under section 4.14 of the Environmental Planning and Assessment Act 1979 due to the nature of the development that involves the intensification of the site and situated on bushfire prone land with a proposal that may seek alternative solution to Planning for Bushfire Protection.* *It is strongly recommended consultation with the NSW RFS prior to the determining the design of the proposal, in particular due to the upcoming changes to bushfire requirements that is to occur under the Act.*	
Natural Resource Access Regulator *If the proposal seeks works within 40 metres of the top of the bank of a watercourse the development*	Refer to Section 4.2.3 of this SEE for further details. The proposed development is integrated development under the Water Management Act 2000.

Item	Comment
will be Integrated Development and concurrence is required from the NSW Natural Resources Access Regulator. *Discussion at the meeting was had regarding whether asset protection works was the only element of development to be located within 40m of the top of the bank of a watercourse, if the proposal would be considered Integrated Development. Council is unclear on this matter however, it suggested that this is discussed with NRAR and if the authority considers it does not to trigger Integrated Development written confirmation from NRAR is to be provided with the development application.* *Based on the information presented at the pre-lodgement meeting and the comments provided by Environment (further below), it appears likely that vegetation management works may be required within the 40m from top of bank of watercourse, in addition with potential for civil works to occur. If this is the case it is considered the proposal will be Integrated Development.* *Integrated Development Assessment – Information required for the NSW Natural Resources Access Regulator. If development is proposed within 40 metres of the top of the bank of a watercourse a controlled activity approval in accordance with Section 4.46 of the Environmental Planning and Assessment Act 1979 and the Water Management Act 2000 is required. The NSW Natural Resources Access Regulator must give concurrence to the proposal. You are required to submit one (1) copy of the site plan showing:* *The location and name of creek/watercourse; and* *The distance from the proposed development to the top of the bank.* *You are also required to submit a cheque for $320.00 made payable to the NSW Natural Resources Access Regulator and a separate fee of $140.00 made payable to Wollongong City Council for administration costs.*	A plan indicating the location of the nearby watercourses is included at **Appendix 2** of this SEE.
State Environmental Planning Policy No. 55 - Remediation of Land (SEPP 55)	
A separate submission is to be included within the Statement of Environmental Effects addressing the requirements of State Environmental Planning Policy No. 55 – Remediation of Land. SEPP55 applies to the State and Clause 7 is relevant to all development applications.	SEPP 55 is addressed in Section 4.5.2 of this SEE.
State Environmental Planning Policy (Building and Sustainability Index: BASIX) 2004	
BASIX Certification must be provided in support of the proposal outlining the commitments to be included so that the development meets the minimum targets attributed to Water Efficiency, Energy Efficiency and Thermal Mass.	The BASIX SEPP is addressed in Section 4.5.3. A BASIX Certificate has been provided at **Appendix 22**.
Wollongong Local Environmental Plan 2009 (WLEP 2009)	

Item	Comment
A comprehensive Statement of Environmental Effects (SEE) addressing all relevant clauses of WLEP 2009 is to be submitted.	Section 4.6 of this SEE includes an assessment of the proposed development against the WLEP 2009.
Wollongong Development Control Plan 2009 WDCP 2009)	
A comprehensive Statement of Environmental Effects (SEE) including all relevant site constraint reports is to be submitted. The SEE must address all relevant chapters as relates to the development proposal and provide full justification for any variation requests in accordance with Cl. 8 of Chapter A1.	Section 5.2 and the accompanying Table of Planning Compliance (**Appendix 1**) provides an assessment of the proposed development against the relevant provisions within the Wollongong DCP.
Wollongong City Wide Development Contributions Plan 2018	
A development contributions levy will apply to the proposed development if approved. A detailed cost estimate report is required to be provided in conjunction with the Development Application. (Please note: Council uses the Cordell's Ecosting Guide to confirm the accuracy of construction cost estimates).	A detailed cost report has been prepared by Mitchell Brandtman and is provided at **Appendix 14**.
Regional Planning Panel/ State Environmental Planning Policy (State and Regional Development) 2011	
Under Part 4 clause 20(1) of the SEPP (State and Regional Development) 2011 development specified in Schedule 7 is regionally significant development. The information provided indicates the proposal could have a capital investment value of more than $30 million and if so the application will be required to be referred to the Regional Planning Panel (RPP). *The development application is to be accompanied by a detailed cost summary (with GST) to calculate the relevant development application fees but in addition, clearly provide the CIV of the development.* *If the application does not trigger the requirement to be referred to Regional Planning Panel, it could be referred to LPP for determination.*	Refer to Section 3.14 of the SEE for further details. Based on the detailed cost report at **Appendix 14** the proposed development will have a CIV over $30 million and therefore is to be determined by the SRPP.
Local Planning Panel	
On 1 March 2018 Mandatory Local Planning Panels (commonly known as IHAPs) for all councils in Sydney and for Wollongong City Council (WCC) came into effect. *WCC has an existing IHAP Charter and IHAP however from 1 March 2018 based on directions from the Minister, the referral criteria to a Local Planning Panel (LPP, formerly known as IHAP in WCC) has changed.* *The referral criteria applicable to WCC are contained at Schedule 2 available in the link below:*	Based on the CIV the proposed development will be determined by the SRPP and therefore the application will not go to the Local Planning Panel.

Item	Comment
http://www.planning.nsw.gov.au/Assess-and-Regulate/Development-Assessment/Independent-Hearing-and-Assessment-Panels/Statutory-rules *LPP is a determining authority. If the application receives more than 10 submissions or seeks a departure to the development standard greater than 10% the application will be required to be determined by LPP.*	
Design Review Panel (DRP)	
Given the scale and nature of the proposed development it is considered that there would be merit in seeking an independent review of the proposals via a DRP process and in particular if the application requires to be determined by LPP. *Council requires via WLEP 2009 in other identified areas of the City, that certain developments be independently design reviewed before a final determination to ensure satisfactory design outcomes.* *This is also available for other developments and the applicant is encouraged to engage in this process prior to lodgement if desired.* *Whilst there is no mandatory requirement as relates to the development for Council's Design Review Process to be undertaken for the subject site, it should be appreciated that this information is provided in good faith with the understanding of the importance of the project and the expectation that this may expedite the assessment period following lodgement.* *There is a charge associated with this facility in accordance with Council's fees and charges policy (this should be confirmed with Council's Customer Service Section prior to lodgement). Please refer to the relevant application from for Design Review Panel that has been already forwarded under a separate cover.*	The proposed development has not been referred to the DRP prior to the lodgement of the application. The design intent of the proposed development is described in detail in Section 3.6 of this SEE, with the plans having been prepared by a registered architect.
General Planning Issues	
Site information/constraints: *A Section 149 Certificate should be obtained to clarify details on any constraints affecting the proposed development site. All relevant site constraint reports should be included within the Statement of Environmental Effects.* *149 (2) Certificate - Provides information about the zoning of the property, the relevant state, regional and local planning controls and other planning affectations such as heritage, land contamination and road widening; and* *149 (2) and (5) Certificate - Provides additional advice regarding demolition, foreshore building lines, other heritage considerations and general advice.*	A Section 149 Certificate was obtained to confirm the constraints affecting the proposed development. Identified constraints have been addressed by the relevant consultants in the accompanying documentation and are discussed throughout the SEE. A detailed description of the existing site and its constraints is provided within Section 2.4 of this SEE.

Item	Comment
A comprehensive Site and Context Analysis Plan prepared in accordance with the minimum standards outlined within Chapter A1, Section 9 of Wollongong Development Control Plan 2009 is to be submitted with the development application. *A detailed survey plan is to be provided prepared by a registered surveyor of the site as current.* *Existing and proposed finished floor levels are to be shown on the elevation plans to Australian Height Datum (AHD).* *A schedule of external finishes is to be provided and should include samples of proposed colours and materials.* *A Site Waste Minimisation and Management Plan are to be submitted. Refer to Chapter E7 – Waste Management of WDCP 2009.* *A Soil and Water Management Plan is to be submitted. Refer to Chapter E22 – Soil Erosion and Sediment Control of WDCP 2009.* *A Site Waste Minimisation and Management Plan are to be submitted. Refer to Chapter E7 – Waste Management of WDCP 2009.* *The proposal involves cut and fill works within the site. A bulk earthworks plan is to be submitted with the application and clearly identify the proposed cut and fill proposed.* *The proposal when lodged will be required to be notified in accordance with Wollongong Development Control Plan 2009 – Appendix 1: Notification and Advertising Procedures.* *Any phasing of the development proposed will required to be detailed and provided within the SEE, this is to include phasing plans.* *A search of the development history reveals that consent was granted for a three (3) lots Torrens title subdivision in DA-2012/545 on 29 November 2012. Council records show that it appears a Construction Certificate has been issued for the driveway works associated with this subdivision consent. Clarification is sought if works have occurred on site and if so details and certification of the works.* *Council records also show that a dwelling house was approved for the site in RD-2009/838/A on 9 March 2011 however, it appears this consent may have lapsed.* *Any development application lodged is to detail the works that have been carried out on site, shown and accounted for with the submitted plans and accompanying documents.* *Consultation with the community was discussed and Council has Neighbourhood Forums, within our local government areas that are community groups independent form Council who meet to discuss local issues. Keiraville would be located*	Refer to drawing no. DA/03 of the Architectural Plans (**Appendix 2**) for detailed site analysis plans. A survey of the existing site, elevation plans showing heights to the AHD and a schedule of materials and finishes is also included in the Architectural Plans that accompany this application. Waste Management Plans for both the construction and operational phases of the proposed development are included at **Appendix 17**. A soil and water management plan and bulk earthworks plan are both included at **Appendix 8**. Development consent (DA-2012/545) was granted by Council on 29 November 2012 for the Torrens title subdivision of the subject site into three (3) residential lots, including construction of a new access driveway and tree removal. An associated Construction Certificate was issued on 23 October 2017 and minor stormwater works were subsequently undertaken. Although the consent has been acted upon, formal registration of the three lots has not occurred. The subject site therefore remains as one single allotment. There are no other active consents relating to the site. No public consultation has been undertaken in the preparation of this application to Council, except for some consultation with Aboriginal community groups. Public consultation will occur post-lodgement, with the Applicant to respond to any issues raised in the assessment and exhibition process as is necessary.

Item	Comment
in the Neighbourhood Forum 5 – Wollongong Area. Contact details can be found on Council's website.	
Specific planning issues	
Wollongong Local Environmental Plan (WLEP) 2009	
Clause 5.10 Heritage conservation/ Clause 7.8 Illawarra Escarpment area conservation – The site contains a heritage item being the E2 zoned portion of the land as Escarpment Conservation, also being located within the Illawarra Escarpment. Therefore Clause 5.10 is applicable to the proposal and requires to be addressed.	Clauses 5.10 and 7.8 of the WLEP 2009 are addressed in Sections 4.6.6 and 4.6.10 of this SEE respectively.
Clause 7.1 Public utility infrastructure - The application is required to demonstrate there is sufficient infrastructure available to service the development. You may wish to consult with Sydney Water is recommended in regards to the provision of waste water and potable water requirements.	Clause 7.1 of the WLEP 2009 is addressed in Section 4.6.7.
Clause 7.14 Minimum site width – The minimum site width required for a multi dwelling housing is to have a dimension of at least 18 metres. It appears that the site width across the site does not maintain a minimum of 18m as measured perpendicular to the side boundaries and an exception to this development standard will be sought; reference is made to judgement in Blasi v Wollongong City Council [2018] NSWLEC 1074.	Clause 7.14 of the WLEP 2009 is addressed in Section 4.6.11. The proposed development in part does not comply with the minimum site width requirement. A Clause 4.6 Variation Request to justify the proposed contravention is included at **Appendix 18**.
Clause 4.6 Exceptions to development standard *An exception to development standard can be sought under clause 4.6 of WLEP 2009. The variation statement in addition to addressing the requirement within Clause 4.6, it is also to provide narrative around the Land and Environment Court matter Four2Five Pty Ltd v Ashfield Council [2015]. Information is needed to demonstrate why compliance is unreasonable or unnecessary, addressing at least one of the points that resulted from Wehbe v Pittwater Council [2007].*	The relevant matters in relation to Clause 4.6 have been addressed in the Clause 4.6 Variation Request.
Wollongong Development Control Plan (WDCP) 2009	
Chapter D1 Character Statements for Keriaville requires to be addressed in the SEE.	Refer to the Planning Table Compliance at **Appendix 1**.
Illawarra Escarpment/Visual Impact Assessment	
The site is located in a prominent location, visible from public places at a significant distance and comprises of Illawarra Escarpment land.	A Visual Impact Assessment accompanies the DA.
The site is identified as being within the Illawarra Escarpment lands, corresponding to the E2 zoned land. In addition, WDCP 2009 Chapter B6 Illawarra Escarpment appears to identify the site to be located within the Mount Keira Precinct.	The E2 zoned portion of the site falls within Precinct 5 of Council's DCP – Mount Keira. The R2 residential zoned portion of the site (i.e. the subject of this

Item	Comment
	DA), however, sits outside the precinct boundaries. Pursuant to Council's DCP, an appropriate visual impact statement must be undertaken for any development located in any Escarpment Precinct. Since no development is proposed within the E2 zoned portion of the site (Precinct 5), a visual impact assessment from the nominated viewpoint locations, as identified in Appendix 1 of Chapter B6 of Council's DCP, is not required. However, for the purposes of completeness, a Visual Impact Assessment had been undertaken that has considered these viewpoints as well as others and is included at **Appendix 19**.
Chapter B6 of WDCP 2009 is applicable to the site/development and must be addressed in the SEE.	Refer to the Planning Table Compliance at **Appendix 1**.
A visual impact assessment should be provided in accordance with the requirements contained in Chapter B6 Section 5 (refer to view locations in Appendix 1).	A Visual Impact Assessment has been prepared by Urbaine Architecture in accordance with the requirements contained within the Wollongong DCP, with a copy included at **Appendix 19** of this SEE.
Stormwater/Flooding	
The development is subject to the controls in Chapters E13 (Floodplain Management) and E14 (Stormwater Management) of the Wollongong Development Control Plan (WDCP) 2009.	Noted.
A stormwater concept plan including on-site stormwater detention (OSD) will need to be prepared by a suitably qualified civil engineer in accordance with Chapter E14 of the Wollongong DCP2009 and submitted with the development application.	A Stormwater Catchment Plan has been prepared by LandTeam and is included in the Civil Plans at **Appendix 8**. The proposed development seeks a minor variation to Clause 12.2.2 of Chapter 14 of the Wollongong DCP. This variation is addressed in the General Design Statement included at **Appendix 8**.
Stormwater disposal from the development will need to be in accordance with Section 11.3 of Chapter E14 of the Wollongong DCP2009.	Refer to the Planning Table Compliance at **Appendix 1**.
Natural catchment boundaries are to remain unaltered. In situations where proposed impervious areas straddle natural	Natural catchment boundaries and the proposed stormwater drainage design

Item	Comment
catchment boundaries, multiple separate OSD systems shall be provided.	are discussed in detail in the suite of civil documents included at **Appendix 8**.
The stormwater management system will need to ensure no transfer of stormwater between catchments and no increase in stormwater flow rates discharging to each proposed disposal point.	The Water Cycle Management Study at **Appendix 8** confirms that the post-development stormwater flows are no greater than the pre-development flows.
The above requirements will need to be demonstrated with detailed plans showing the pre and post development catchment boundaries, areas, and minor/major system discharge rates draining to each proposed stormwater disposal point.	Refer to the Water Cycle Management Study for details.
In order to maintain the existing distribution of runoff from the site to a suitable disposal point, it appears that easement(s) to drain water will be required in accordance with Section 11.3.6 of Chapter E14.	No stormwater drainage easements are required as all stormwater run-off generated by the proposed development are to be collected and drained to Council's existing stormwater drainage network.
Documentary evidence will be required to be submitted with the development application confirming the downstream property owner(s) agrees to the provision of an easement to drain water through their property.	Not applicable given the comment to the item above.
Where connection to an existing Council stormwater system is proposed, an analysis of the receiving stormwater system will need to be undertaken to demonstrate there is sufficient capacity in accordance with Sections 11.3.2 and 9(b)(v) of Chapter E14.	Refer to the Water Cycle Management Study for details.
The design of the development will need to ensure that stormwater discharges and overflows from the proposed development will not be diverted and/or concentrated onto any adjoining property or public road, when compared with existing surface flow conditions.	Refer to the Water Cycle Management Study for details.
The proposed stormwater design will need to be endorsed by a suitably qualified geotechnical engineer.	The stormwater drainage design has been prepared in accordance with the Geotechnical Investigation.
The proposed stormwater and landscape plans will need to be compatible.	Refer to the Stormwater Catchment Plan and Landscape Plan included at **Appendix 8** and **9** respectively.
Traffic	
General	
The applicant should refer to Chapter E3 – Car Parking, Access, Servicing/ Loading Facilities and Traffic Management of the Wollongong Development Control Plan 2009.	Noted.

Item	Comment
The applicant must provide all internal access dimensions on the site plan, including grades, access widths, parking aisle widths which comply with AS2890.1.	The driveway access and car park have been designed in accordance with the relevant Australian Standards as detailed in the Traffic Impact Assessment that is included at **Appendix 11**.
A Traffic Impact Assessment will need to be prepared by a suitably qualified consultant and be prepared in accordance with Table 2.1 of the RTA Guide to Traffic Generating Development. The assessment must clarify the trip generation and distribution of the development and carry out a SIDRA analysis of all relevant intersections.	A Traffic Impact Assessment has been prepared by Traffix and is included at **Appendix 11** of this SEE.
Access and Manoeuvring	
The applicant needs to assess the capacity of the existing local road network based on the carriageway width and the design threshold of the existing cross sections to demonstrate that the network can accommodate the existing and proposed traffic generation. The applicant should refer to Table 2 of Chapter B2 of the DCP.	Section 6 of the Traffic Impact Assessment assesses the traffic impacts of the proposed development on the local road network.
The proposed access design should ensure that adequate pedestrian and vehicle sight distance is provided as per AS2890.1.	The site vehicular access complies with the relevant Australian Standards as discussed in Section 7.1 of the Traffic Impact Assessment (**Appendix 11**).
The gradient of the first 6 metres of the access driveway must comply with Clause 3.3 of AS2890.1.	See comment above in relation to site vehicular access.
The civil design, width and gradient etc, of the proposed internal road must comply with AS2890.1.	See comment above in relation to site vehicular access.
The applicant must provide a long section for the entire road network which also shows access to visitor and residential garage parking spaces, which must be prepared by a suitably qualified civil engineer.	Driveway long sections have been prepared by LandTeam and are included at **Appendix 8** of this SEE.
Barriers shall be constructed to prevent vehicles from running over the edge of an elevated driveway or parking area. They are required wherever the drop from the edge of the platform exceeds 600mm. Barriers are to comply with Clause 2.4.5.3 of AS2890.1 and designed structurally for the loading requirements of AS1170.1.	Parking areas are to be provided in accordance with the relevant Australian Standards, with wheel stops to be provided where required.
The intersection of the proposed one-way section of road must be clearly defined by signage and line marking to ensure that users do not drive in the wrong direction.	As shown on the Landscape Masterplan, a removable chain barrier is to be located at either end of the one-way section of the accessway to ensure that no users of the site drive in the wrong direction.

Item	Comment
Traffic calming is required on long straight sections of road every 100-150 metres to maintain safe traffic speeds.	The gradient of the accessway is such that it acts as a traffic calming mechanism for users of the site.
Pedestrian paths need to be provided within the development to encourage sustainable travel. A 1.5 metre wide footpath needs to be provided on at least one side of the internal road network.	Pedestrians pathways have been provided throughout the proposed development in accordance with the relevant BCA/ access provisions.
The applicant must provide swept paths which show a B99 vehicle passing a B85 vehicle on all car parking aisles and critical corners.	A Swept Path Analysis is included at Appendix D of the Traffic Impact Assessment provided at **Appendix 11**.
Clause 2.5.2 (c) of AS2890.1 provides the minimum requirements for safe and convenient movement of vehicles on circulation roadways and ramps within car parking areas. In particular it requires swept paths to be provided. Areas which it is necessary for two vehicles to pass one another shall be designed for a B85 vehicle to pass a B99 vehicle. In both cases areas shall be checked using single turn swept path templates for the B99 vehicle and the B85 vehicles which include the swept path clearances specified in Paragraph B3.1 and the swept path clearances specified in Paragraph B3.2. The swept path clearances shall clear any kerbs at the boundary of the intersection area.	Refer to the Swept Path Analysis included at Appendix D of the Traffic Impact Assessment (**Appendix 11**).
Swept paths also need to be provided for larger vehicles as detailed in the Traffic Impact Assessment. RFS vehicles, waste collection vehicles (12.5 metre Large Rigid Vehicle) and removalist vehicles.	The Swept Paths Analysis provides swept paths for heavy rigid vehicles up to 12.5 metres in length.
The applicant will need to provide information on how removalist vehicles will access the site, load and unload. It should be noted that the maximum grade for these vehicles, and all other waste and service vehicles is 15.4%. All vehicles must be able to turn (no more than 3 turning movements) and exit in a forward direction.	Refer to Section 5.5 of the Traffic Impact Assessment for details of how removalist vehicles will be required to access the site, load and unload. Further details can also be found in the PoM (**Appendix 12**).
Car Parking	
1 car space per dwellings (<70m2) or 1.5 car spaces per dwelling (70-110m2) or 2 car spaces per dwelling (>110m2), plus 0.2 car parking spaces per dwelling for visitors.	Section 5.1 of the Traffic Impact Assessment (**Appendix 11**) demonstrates the proposed development's compliance with Council's parking requirements.
1 bicycle space per 3 dwellings (residents) and 1 bicycle space per 12 dwellings (visitors).	Section 5.3 of the Traffic Impact Assessment demonstrates the proposed development's compliance with the DCP's bicycle parking requirements.
1 motorcycle space per 15 dwellings.	Section 5.4 of the Traffic Impact Assessment demonstrates the proposed

Item	Comment
	development's compliance with the DCP's motorcycle parking requirements.
Adaptable dwellings	
Within a multi dwelling development incorporating more than 6 dwellings, 10% of all dwellings should be adaptable units. Parking space sizes for adaptable units should comply with AS2890.6 (2009).	Five (5) adaptable dwellings have been included within the proposed development in accordance with the requirements of the Wollongong DCP. The garages of each of these adaptable dwellings is capable of accommodating an accessible parking space.
The applicant should identify which units are to be adaptable on the DA plans.	The location of these dwellings is depicted in the Architectural Plans included at **Appendix 2** of this SEE.
1 car parking space which complies with AS2890.6 (2009) is considered acceptable for an adaptable dwelling.	Section 5.2 of the Traffic Impact Assessment (**Appendix 11**) confirms compliance with the Australian Standards.
Residential Bicycle Security	
The applicant should show the location of residential bicycle parking which provides the appropriate level of security (User Class B) as required by AS2890.3. This should be provided in a secure communal compound.	Each dwelling has been provided with a double garage that is capable of accommodating bicycle parking.
Visitor Bicycle Security	
The applicant should provide any required visitor bicycle spaces in an accessible area within the site. These spaces have lower security requirements and can be rails which, if outside, are protected from the weather.	Four (4) visitor bicycle parking spaces are required. These spaces have been provided within the basement/ ground floor of proposed Building 2. Additional bicycle parking can be provided if required.
Waste Servicing and Deliveries	
Waste collection details are to be provided, such as the location of the bins for storage and collection, method of collection, and size of collection vehicle.	The Operational Waste Management Plan prepared by Waste Audit and included at **Appendix 17** provides details of how waste will be managed.
The applicant should consider providing access for Council's waste collection vehicle (10.52 metres long) as under Council's current waste policy residents, will be required to pay the waste collection charge regardless of whether private waste collection takes place. Council's waste vehicles can be indemnified of any damage in order to enter private developments. Generally if the applicant tests the loading bay with a 12.5 metre swept path, it should allow sufficient access.	The service bay for waste collection has been designed to accommodate a 12.5m long vehicle. This is detailed in Section 5.5 of the Traffic Impact Assessment that is at **Appendix 11** of this SEE. It is intended for a normal Council service to be provided.

Item	Comment
A development with more than 6 dwellings proposed requires a communal waste facility (or facilities) to be provided within the site. The facility needs to be accessible by all, well-lit and with adequate manoeuvrability of bins within. More information on the bin requirements and controls relating to communal waste facilities can be found in Chapter E7 of the DCP.	A waste recycling utility area and loading bay is located towards the site entry as shown on the Architectural Plans (**Appendix 2**). This facility has been designed to accommodate the waste generated by the development, with the service bay located and designed to allow access for a heavy rigid vehicle. Separate communal waste areas have also been provided within each of the buildings.
The applicant will need to provide details of how waste bins are transported to the collection point, taking into consideration any steep grades etc.	Refer to the Operation Waste Management Plan included at **Appendix 17** and the PoM included at **Appendix 12** for waste management details.
Turning for waste collection vehicles (no more than 3 turning movements) should be demonstrated using swept paths. Overhead clearances must also be observed. The operating clearances for garbage trucks can be found within Chapter E7 of the DCP.	Refer to the Swept Path Analysis appended to the Traffic Impact Assessment for demonstrated compliance. The communal waste facility is external and therefore clearance heights are irrelevant.
A maximum grade of 15.4% should also be taken into consideration.	Refer the driveway long sections at **Appendix 8**. The proposed development in terms of gradient has been designed to comply with the Australian Standards.
Subdivision	
It is considered if future subdivision will be sought for the development that it forms part of the development application for the multi dwelling housing as this will enable an understanding of the management of the site and development.	Strata subdivision is proposed as part of the application.
Only two types of subdivision will be acceptable: Community title subdivision Strata subdivision Combination of Community title and Strata subdivision	See comment above in relation to the subdivision proposed.
All proposed lots must comply with minimum lot size required by Wollongong LEP 2009.	The minimum lot size does not apply to strata subdivision.
Applicant is required to submit subdivision plan indicating lot layout, lot areas, existing and proposed easements.	Refer to drawing no. DA/05 of the Architectural Plans, which includes a draft plan of strata subdivision.
Applicant is required to submit a subdivision staging plan (if applicable).	N/A

Item	Comment
The design must comply with requirements outlined in Chapter B2 of Wollongong Development Control Plan (WDCP) 2009.	Refer to the Planning Table Compliance at **Appendix 1**.
Geotechnical	
A Geotechnical report prepared by and/or technically verified by a geotechnical engineer or engineering geologist as defined by Wollongong Development Control Plan 2009, Chapter E12 – Geotechnical Assessment is to be submitted. The geotechnical report must be accompanied by form M11 or M13 (for subdivisions only) bearing the original signature of the engineering geologist or geotechnical engineer, who has either prepared or technically verified the geotechnical report certifying that it has been prepared in accordance with the above Plan and AGS (2000) guidelines as amended. A geotechnical report is required to demonstrate the proposed civil works and nominated building envelopes for the proposed lots are suitable for the constraints.	A Geotechnical Investigation has been prepared by GHD and is included at **Appendix 4** of this SEE.
Supplementary geotechnical advice will be required specific to the engineering design for the development.	The proposed development has been designed with consideration of the recommendations contained with the Geotechnical Investigation at **Appendix 4**.
Landscape	
The current design will require substantial tree removal for the development, as well as regrading of the site which will impact the existing site trees.	Noted.
The developer is required to submit a Landscape Concept Plan (scale 1:100 or 1:200) as part of the Development Application in accordance with the requirement of Chapter E6 – Landscape of Wollongong Development Control Plan 2009.	Refer to the Landscape Plan prepared by Edmiston Jones included at **Appendix 9** of this SEE.
The Landscape Plan is to be prepared be a registered Landscape Architect or person eligible for registration with the Australian Institute of Landscape Architects in accordance with the requirement of Chapter E6 – Landscape of WDCP 2009.	The Landscape Plans have been prepared by a qualified landscape architect (i.e. Edmiston Jones).
The landscape concept plan must show all existing trees on site accurately plotted, species identified and numbered to correspond with the arborist report. Clearly show which trees are to be retained or removed.	The Landscape Plan has been designed to correspond with the existing trees identified on the site by the accompanying arboricultural impact assessment.
An Arborist's Report is to be submitted with the application. Visual Tree Assessment (VTA) Level 2 is to include but not limited to the following: *The accurate location, genus and species of each tree;*	An Arboricultural Development Assessment Report has been prepared by Moore Trees Aboricultural Services (**Appendix 5**).

Item	Comment
Health, amenity value and ULE (Useful Life Expectancy) rating of each tree; *Any pests or diseases that may be present on each tree;* *Any site changes and surrounding structures which may affect the health or vitality of the tree* *The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) required for each tree proposed to be retained;* *Where appropriate, recommend a VTA Level 3 assessment.*	
The proposed landscaping for the development must provide a number of trees to be proposed which will provide a canopy height equal or above the proposed height of the roofs due to the space available upon the land to be shown on the landscape plan.	Refer to the Landscape Plan included at **Appendix 9** for details of new trees to be planted on the site.
Site landscaping must be integrated with the stormwater management (drainage) controls. In particular, the location and nature of on-site stormwater detention should not conflict with landscaping areas and objectives.	Landscaping and stormwater drainage have been integrated as evident in the Landscape Plan (**Appendix 9**) and the Stormwater Catchment Plan (**Appendix 8**).
Environment	
The proposed development shall be sited and designed to firstly avoid adverse environmental impacts, secondly to minimise any adverse environmental impacts that cannot be avoided, thirdly to compensate/offset any adverse environmental impacts that cannot be minimised and to ensure positive environmental outcomes are maximised. Offsets should only be used to compensate for impacts when all feasible measures have first been taken to avoid and minimise those impacts. *Using this approach is expected to result in the development footprint including asset protection zones located within the already existing mainly cleared areas and a reduced development footprint compared with the concept plans presented at the pre-lodgement meeting.*	The environmental impacts associated with the proposed development are detailed in Section 6. Where impacts have been identified, appropriate mitigation and management measures are proposed. Due to the site characteristics and constraints affecting the site, the developable area has been restricted mainly to the crest of the terrace comprising a grass and few trees. Opportunities and constraints mapping to identify a suitable developable area has been undertaken. Refer to the Architectural Plans at **Appendix 2**. Integrated and co-ordinated development allows impacts to be managed.
Council's mapping identifies much of the lot as being of Natural Resource Sensitivity–Biodiversity, ie containing important native vegetation and native fauna habitat. The areas mapped as Natural Resource Sensitivity–Biodiversity and containing native vegetation should be considered as a	Clause 7.2 of the WLEP 2009 is addressed in Section 4.6.8. A BDAR has also been prepared by Biosis and is included at **Appendix 6** of this SEE.

Item	Comment
constraint when determining the development footprint. A statement addressing clause 7.2 of WLEP 2009 shall be included within the SEE and a Flora and Fauna Impact Assessment Report shall be prepared and submitted for any impacts the proposed development may have on the areas mapped as Natural Resource Sensitivity–Biodiversity.	
If the proposed clearing and other impacts exceeds the NSW Biodiversity Conservation Regulation 2017 threshold levels, then the Biodiversity Offset Scheme applies to the proposed development and a Biodiversity Development Assessment Report is required. If not, then the test of significance detailed in section 7.3 of the NSW Biodiversity Conservation Act 2016 must be used to determine whether the proposed development is likely to significantly affect threatened species. If threatened species are likely to be significantly affected, then a Biodiversity Development Assessment Report is required.	The proposed development involves the clearing of native vegetation that exceeds the threshold levels and therefore requires the preparation of a BDAR. This report is included at **Appendix 6** of this SEE.
If the area of proposed asset protection occurs within native vegetation, this is considered clearing. In this case, the area of asset protection for the proposed development as presented at the pre-lodgement meeting is likely to trigger entry into the Biodiversity Offsets Scheme and a Biodiversity Development Assessment Report instead of a Flora and Fauna Impact Assessment Report will be required. *The Flora and Fauna Impact Assessment Report or Biodiversity Development Assessment Report (if required instead) submitted with the development application shall meet the requirements of the NSW Biodiversity Conservation Act 2016 and the Commonwealth* *Environment Protection and Biodiversity Conservation Act 1999 and shall be prepared by a suitably qualified and experienced ecologist (and accredited assessor in the case of the Biodiversity Development Assessment Report) and is to include the assessment of all potential direct and indirect on-site and off-site impacts for all phases of the proposed development, including consideration of the impacts of buildings, access, services and the creation and maintenance of asset protection zones.* *The full extent of the area of potential direct and indirect impacts on the endangered ecological community Illawarra Subtropical Rainforest from the proposed development is to be assessed. Recommended measures to avoid, minimise and offset potential impacts on the Illawarra Subtropical Rainforest for all phases of the development are to be provided.*	A BDAR has been prepared and is included at **Appendix 6**. The issues raised by council have been included in this document.
The proposed development is to be sited and designed so that objective 1(a) of clause 7.6 Earthworks of WLEP 2009 and the objectives and development standards of Chapter	Clause 7.6 of the WLEP 2009 is addressed in Section 4.6.9.

Item	Comment
E19 – Earthworks (Land Reshaping Works) of WDCP 2009 can be met.	
A Bulk Earthworks Plan is to be submitted.	A Bulk Earthworks Plan has been prepared by LandTeam and is included at **Appendix 8** of this SEE.
A Vegetation Management Plan (VMP) for the areas of native vegetation to be retained (including asset protection zones) shall be submitted with the development application. *The VMP is to incorporate applicable recommendations from the Arborist Report, Bush Fire Risk Assessment Report and Flora and Fauna Impact Assessment Report/Biodiversity Development Assessment Report and shall be prepared by a person with:* *TAFE Diploma qualifications in Conservation and Land Management (Natural Area Restoration), and/or* *a minimum of five (5) years' demonstrated experience in bush regeneration, or* *degree qualifications in environmental management or ecological sciences with demonstrated experience in bush regeneration.* *The VMP shall include, but not be limited to:* *aims and objectives;* *a detailed site assessment;* *site plan and map detailing work zones;* *existing species inventory;* *photographs;* *photographic monitoring points identified on a site plan;* *a management strategy including priorities, timetable of activities (with dates or numbers of weeks), preferably in table form;* *responsibilities;* *weed control methods, and timing and frequency of weed control;* *herbicides to be used;* *planting lists;* *the use of local provenance indigenous plants and seed sources;* *proposed planting densities;* *methods to minimise and replace plant losses;* *methods intended to be used to protect new plantings from herbivory (eg deer);* *details of materials to be used in site works (eg fencing, tree guards, mulch etc);*	Refer to the VMP included at **Appendix 10** of this SEE. The VMP has been prepared to generally address Council's requirements.

Item	Comment
clear and measurable performance criteria for completion of the primary work stage; *clear and measurable performance criteria for completion of the maintenance period;* *method of performance evaluation;* *regular monitoring;* *a follow up maintenance program for a minimum of three years and until the performance criteria have been met;* *opinion of probable cost (to include labour, plants, materials, monitoring and reporting);* *weed control and planting works by suitably qualified and experienced bush regenerators;* *provision of annual reports to Council; and* *details of a permanent, legally binding mechanism to enable the management of the VMP area in perpetuity.*	
The Landscape Concept Plan is to show the VMP areas and note these areas will be managed in accordance with the VMP document.	The Landscape Masterplan identifies the E2 zoned land that is to be the subject of the VMP (**Appendix 9**).
A Water Sensitive Urban Design Strategy Report is to be submitted with the development application. Refer to Chapter E15 – Water Sensitive Urban Design of WDCP 2009 and the attachment. Council encourages considerations for water quality modelling (MUSIC) with secondary treatment such as porous paving, grass swales, irrigation to open spaces with limiting the number of gross pollution traps and dry basins/bio retention basins.	A Water Cycle Management Study has been prepared by LandTeam and is included at **Appendix 8**.
Council's mapping identifies category 1 watercourses beyond the subject lot. According to Chapter E23 – Riparian Land Management of WDCP 2009, the minimum riparian corridor width for each side of a category 1 watercourse shall be 50 metres from the top of bank (consisting of a 40 metre wide core riparian zone and 10 metre wide vegetated buffer). Chapter E23 of WLEP 2009 does not permit asset protection zones in the riparian corridor of Category 1 watercourses. The proposed development shall establish riparian corridors in accordance with Chapter E23 of WDCP 2009. *Any proposed variation will require negotiation with the local Natural Resources Access Regulator (NRAR) Licensing and Approval Officer, Jeremy Morice (phone 02 4224 9736 or email jeremy.morice@nrar.nsw.gov.au) and the outcomes of any discussions/agreement obtained in writing and included within the SEE.*	The proposed development may be considered integrated development as detailed in Section 4.2.3 of this SEE. It requires the removal of two (2) trees within the APZ which overlaps with the riparian corridor of the watercourse traversing the site's south-west corner.
A Preliminary Site Contamination Investigation Report prepared in accordance with Chapter E20 – Contaminated Land Management of WDCP 2009 is required.	A Preliminary Site Investigation for Contamination has been prepared by GHD and is included at **Appendix 7**.

Item	Comment
A Soil and Water Management Plan prepared in accordance with Chapter E22 – Soil Erosion and Sediment Control of WDCP 2009 is required.	A soil and water management plan prepared by LandTeam is included in the Civil Plans at **Appendix 8**.
If there is the potential for adverse noise impacts on adjacent residents from the use and servicing of the bin storage and collection area, then an acoustic report prepared by a consultant who is a member of the Australian Acoustical Society or the Association of Australasian Acoustical Consultants with recommended acoustic mitigation measures is required.	Noise and vibration associated with the proposed development is addressed in Section 6.4.8 of this SEE.
If there is the potential for adverse construction noise impacts on nearby residents, then an acoustic report prepared by a consultant who is a member of the Australian Acoustical Society or the Association of Australasian Acoustical Consultants with recommended acoustic mitigation measures is required.	Noise and vibration associated with the proposed development is addressed in Section 6.4.8 of this SEE.
The Arborist Report, Flora and Fauna Impact Assessment Report/Biodiversity Development Assessment Report, Bushfire Risk Assessment Report, Landscape Concept Plan, Vegetation Management Plan and Engineering Design Plans (including Bulk Earthworks and Drainage) are to be coordinated with each other.	The plans and reports have all been coordinated with each other to ensure that there is consistency across the suite of documents that is submitted to Council.
Heritage	
The proposed development will be considered with regard to Clause 5.10 of the Wollongong LEP 2009 and Chapters B6: Development in the Illawarra Escarpment, E10: Aboriginal Heritage and E11: Heritage Conservation of the Wollongong DCP 2009.	Clause 5.10 of the WLEP 2009 is addressed in Section 4.6.6, with an assessment of the proposed development against the provisions of the Wollongong DCP included in the Planning Table of Compliance that is included at **Appendix 1** of this SEE.
The proposed development site includes part of the Illawarra Escarpment Conservation Area. The site is located on a prominent ridgeline that is highly visible from a broad area. The development is also located within the visual setting of the State Heritage item Gleniffer Brae and the Botanic Gardens.	This has been considered in the assessment of the proposed development.
A Visual Impact Assessment should be prepared to assess impacts on key viewing points from the Wollongong CBD, North Wollongong, Gleniffer Brae and the Botanic Gardens and the University of Wollongong.	A Visual Impact Assessment has been prepared by Urbaine Architecture and is included at **Appendix 19**.
A Heritage Impact Statement that addresses the Visual Impact Assessment, the relevant DCP Chapters as well as the potential impacts on the key heritage values identified in the Illawarra Escarpment Heritage Study 2007 should be prepared.	A SoHI has been prepared by GBA Heritage and is included at **Appendix 20** of this SEE, which concludes the proposal will have an acceptable impact.

Item	Comment
Mt Keira is recognised as a highly significant Aboriginal cultural landscape and there are known Aboriginal sites in the vicinity. Views to and from the prominent ridgeline are also highly significant. The proposal will likely have significant impacts on vegetation, the natural landform and significant views to Mt Keira.	The SoHI recommends that the proposed development is worthy of approval from a heritage perspective.
Therefore an Aboriginal Cultural Heritage Assessment Report (ACHAR) that considers the cultural significance of the site as well as the archaeological potential should be prepared to inform any future application.	An ACHAR has been prepared and is included at **Appendix 21**.
Materials and colours need to be carefully considered, natural and muted bushland tones should that integrate with the surrounding landscape should be used. Bright or white finishes including for surfaces such as driveways and internal roads will not be supported.	Section 6.3.9 of this SEE details how the materials and colours have been chosen to reflect the materials and colours of the surrounding environment.
The impacts of the APZ on the vegetation and landscape will need to be carefully considered and explored.	This has been taken into account in design development and assessment.
The proposal will be notified to the local Aboriginal Community in accordance with Clause 5.10(8) of the Wollongong LEP 2009.	Noted.
Council notes that as previously indicated a pre lodgement for a 23 lot subdivision on the site was unlikely to be supported. The current proposal is likely to have similar or greater impacts.	The SoHI confirms that the proposed development will have an acceptable impact in terms of heritage.

4. STATUTORY PLANNING CONSIDERATIONS

4.1. Overview

The relevant statutory framework considered in the preparation of this report comprises:

- Environmental Planning and Assessment Act 1979;
- Environmental Planning and Assessment Regulation 2000;
- State Environmental Planning Policy No. 44 - Koala Habitat Protection;
- State Environmental Planning Policy No. 55 - Remediation of Land;
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004;
- State Environmental Planning Policy (Infrastructure) 2007;
- Sydney Regional Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017; and
- Wollongong Local Environmental Plan 2009.

Where relevant, these controls are addressed below.

4.2. Environmental Planning and Assessment Act 1979

4.2.1. Section 1.3 – Objects

The EP&A Act is the principle planning and development legislation in New South Wales (NSW). In accordance with Section 1.3 of the EP&A Act there are ten objects of the Act as listed in the extract below.

> *1.3 Objects of Act*
>
> *The objects of this Act are as follows:*
>
> *(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
>
> *(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
>
> *(c) to promote the orderly and economic use and development of land,*
>
> *(d) to promote the delivery and maintenance of affordable housing,*
>
> *(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
>
> *(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
>
> *(g) to promote good design and amenity of the built environment,*
>
> *(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*
>
> *(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
>
> *(j) to provide increased opportunity for community participation in environmental planning and assessment.*

For the reasons set out below the proposed development is considered to satisfy the objects of the EP&A Act:

- A VMP and bushfire property management are proposed to ensure there are no adverse impacts on the State's resources.
- The proposed development has been assessed as having an acceptable environmental, economic and social impacts as detailed within Section 79 and the accompanying consultant reports and plans. Environmental, economic and social considerations have formed the basis of the design as a means of facilitating ecologically sustainable development that can be enjoyed by future residents for generations.
- The orderly and economic development of land is promoted in that the site is of a size that can accommodate the proposed development without any significant adverse impacts on the locality or major non-compliances with the relevant statutory and non-statutory planning controls. The proposed development does not preclude the redevelopment of any other property surrounding the site.
- The site currently comprises vacant land and therefore does not contain an existing affordable housing. However, the delivery of housing options is promoted through a mix of 3 and 4-bedroom dwellings in the form of multi-dwelling housing that will contribute to increased housing supply in the locality, while also providing increased housing choice to meet the needs and budgets of different households.
- The proposed development is of a residential nature and will not produce any harmful emissions. Any potential impacts on stormwater or air quality (e.g. dust) can be appropriately managed and mitigated. A BDAR has been prepared by Biosis and is included at **Appendix 6** of this SEE. It confirms that avoidance of impacts to native vegetation, threatened ecological communities and fauna habitat have been achieved through the offsetting of impacts associated with the loss of vegetation.
- The portion of the site zoned E2 Environmental Conservation forms part of the Illawarra Escarpment, with the Illawarra Escarpment Landscape Area a heritage conservation area under the WLEP 2009. The proposed development does not adversely impact on the heritage significance of the Illawarra Escarpment or any other heritage items or conservation areas in the vicinity of the site as detailed in Section 4.6.6 of this SEE and the accompanying heritage assessment prepared by GBA Heritage (**Appendix 20**).
- Good design and amenity for future residents of the proposed development has been achieved by providing different dwelling types that provide a variety of designs to cater for a range of household types, which are recessed into the ridgeline and surrounded by landscaping and communal open space. Good design and amenity of the built environment is further promoted through the use of high-quality materials and colours and horizontal and vertical elements sympathetic to the Illawarra Escarpment. The proposed development has been designed to step down with the topography of the site to maximise views towards the Wollongong coast and the acoustic and visual privacy of the residents. The Visual Impact Assessment (**Appendix 19**) also demonstrates that the proposed integrated development and comprehensive landscaping has a reasonable impact on context.
- The proposed development will be constructed in accordance with the relevant building code and standards. It will also be appropriately maintained during its ongoing operation to promote occupant safety.
- Objects (i) and (j) are the responsibility of the government.

4.2.2. Section 4.15 of EP&A Act 1979

Section 4.15(1) of the EP&A Act specifies the matters a consent authority must consider when determining a DA. The relevant matters for consideration under Section 4.15 of the EP&A Act are addressed in Table 5.

Table 5: Section 4.15 of EP&A Act 1979.

Section	Comment
Section 4.15(1)(a)(i) Any environmental planning instrument	Consideration of relevant EPIs is discussed in Section 0.
Section 4.15(1)(a)(ii) Any draft EPI	The draft State Environmental Planning Policy (SEPP) - Remediation of Land was publicly exhibited from 31 January 2018 to 13 April 2018. The intention of this draft SEPP is to repeal and replace the current SEPP 55 - Remediation of Land. The provisions contained within the exhibited draft SEPP are generally the same as those contained within the existing SEPP 55. The proposed development complies with the provisions of SEPP 55 as discussed in Section 5.2. Therefore, it is considered to comply with the provisions of the draft SEPP - Remediation of Land.
Section 4.15(1)(a)(iii) Any development control plan	An assessment of the proposed development against the relevant provisions of the Wollongong DCP is included at **Appendix 1** of this SEE. A summary of and justification for any minor variations is included in Section 5.2 of this SEE.
Section 4.15(1)(a)(iiia) Any planning agreement	Not relevant to this proposal.
Section 4.15(1)(a)(iv) Matters prescribed by the regulations	Consideration of the various matters prescribed by the regulations is included at Section 4.3 of this SEE.
Section 4.15(1)(b) - (e) Likely impacts Suitability of the site Any submissions made Public Interest	Refer to Section 6 of this SEE for consideration of the matters for consideration under (b), (c) and (e). Matter (d) relates to submissions made to a DA in accordance with the EP&A Act or regulations and is a matter for consideration by the consent authority.

4.2.3. Section 4.46 – Integrated Development

Clause (1) of this section of the EP&A Act defines development that is integrated development. Integrated development is development that requires development consent and one or more of other approvals from another authority. In these circumstances each relevant approval body is required to provide their General

Terms of Approval (GTA) in relation to the development prior to the consent authority granting development consent to the application.

The proposed development is integrated development in accordance with Section 4.4.6 of the EP&A Act. The site is defined as 'waterfront land' under the Water Management Act 2000 (WM Act) as it is located within 40 metres of a waterway and therefore requires approval under Section 91 of the WM Act. The proposed development is also integrated development under Section 100B of the Rural Fires Act 1997 (RF Act) as it involves the strata subdivision of bushfire prone land that could be lawfully used for residential purposes.

4.3. Environmental Planning and Assessment Regulation 2000

4.3.1. Clause 92 – Additional matters that consent authority must consider

Clause 92(1) of the EP&A Reg prescribes certain matters that are to be taken into account by a consent authority in assessing and determining a DA for the purposes of Section 4.15(1)(a)(iv) of the EP&A Act. None of the matters prescribed under Clause 92(1) of the EP&A Reg relate to the proposed development.

4.3.2. Clause 98 – Compliance with the Building Code of Australia

Any building work must be carried out in accordance with the requirements of the Building Code of Australia (BCA), pursuant to Clause 98 of the EP&A Reg and to be conditioned as part any development consent. A BCA Compliance Statement has been prepared by Accredited Building Surveyors and included at **Appendix 23**. This report concludes the proposed development can achieve compliance with the BCA and that these matters can be adequately addressed in the preparation of the Construction Certificate documentation.

4.4. Biodiversity Conservation Act 2016

The Biodiversity Conservation Act 2016 (BC Act) commenced on 25 August 2017 and applies to all NSW. The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and in the future, consistent with the principles of ecologically sustainable development. In doing so it lists and protects threatened species, populations and ecological communities. Impacts to any threatened species and endangered ecological communities listed under the BC Act are required to be taken in account when determining a DA in accordance with section 7.3 of the BC Act.

Applicants must consider if their development will exceed any of the following biodiversity offset scheme thresholds:

1. Exceeding the clearing threshold of an area of native vegetation;
2. Carrying out development on land included in the Biodiversity Values Land Map; or
3. Having a 'significant effect' on threatened species or ecological communities.

The proposed development exceeds the native vegetation clearing thresholds and therefore a BDAR has been prepared.

A BDAR has been prepared to accompany this application and is included at **Appendix 6**. The site is not identified on land that is included on the Biodiversity Values Land Map (**Figure** 28). However, in accordance with the BDAR a total of 3.65 hectares of vegetation is to be cleared, including 1.93 hectares of native vegetation. The minimum lot size for the subject site is 449m^2 and therefore the clearing threshold is 0.25 hectares or more.

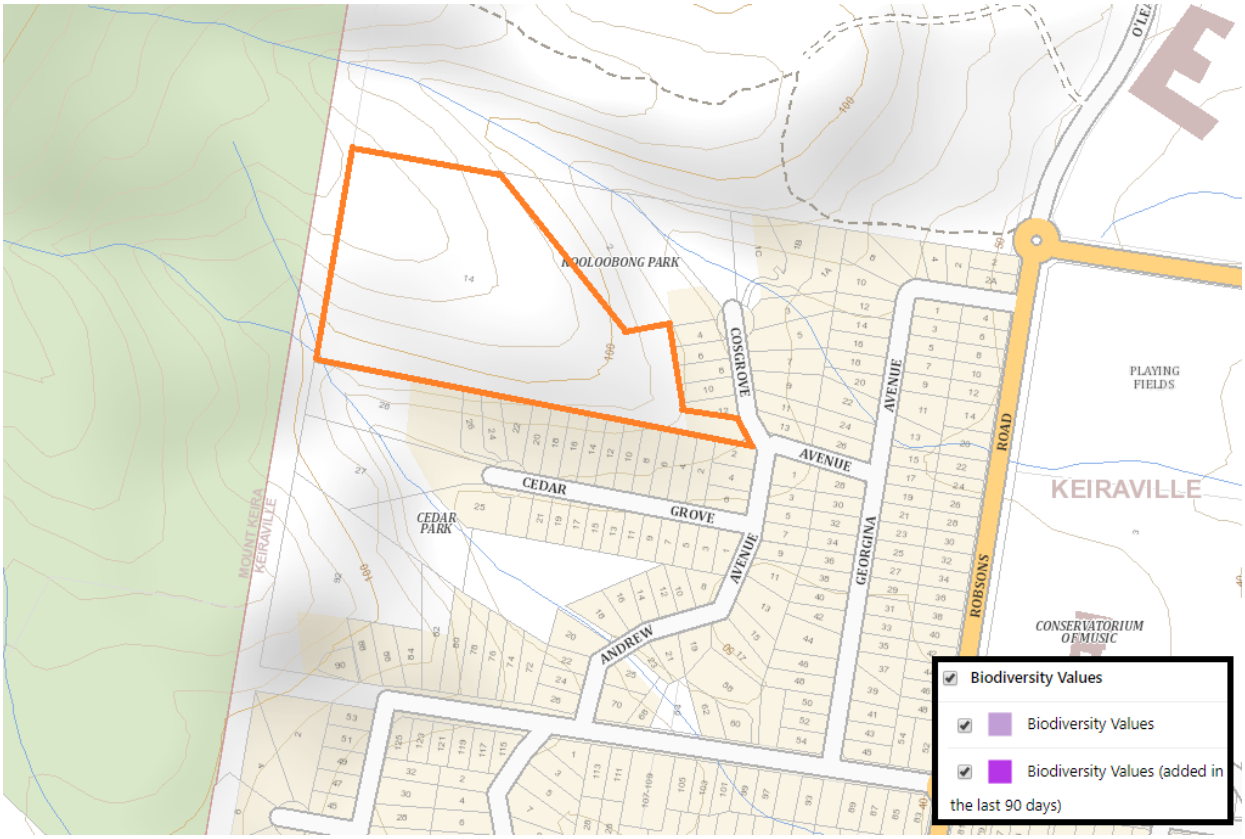

Figure 28: Biodiversity Values Land Map extract with site outlined in orange (Source: NSW Office of Environment and Heritage)

Subsequently, the proposed development triggers the threshold for the biodiversity offset scheme to apply. The BDAR identifies the credits that are required to offset the proposed development's biodiversity impacts, in accordance with the Biodiversity Assessment Method (BAM) as triggered by the proposed vegetation clearing. The proposed development generates eight (8) credits and therefore requires the payment of $172,428.76.

The BDAR further identifies measures to minimise and avoid the impacts of clearing native vegetation from the site and confirms that there are unlikely to be serious and irreversible impacts resulting from the proposal.

The BDAR has been prepared in accordance with the BAM and therefore satisfies the provisions of the BC Act.

4.5. State Environmental Planning Policies

4.5.1. State Environmental Planning Policy No. 44 - Koala Habitat Protection

State Environmental Planning Policy No. 44 - Koala Habitat Protection (SEPP 44) aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reserve the current population decline. The site is located within the Wollongong LGA and therefore is land to which SEPP 44 is applicable.

No koalas have been identified on the site and the potential for the species to occur on the site is low because of a very limited number of feed trees and the habitat not supporting breeding. Therefore, the site is not considered potential or core koala habitat and the SEPP 44 provisions are satisfied.

4.5.2. State Environmental Planning Policy No 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Lands (SEPP 55) establishes State-wide provisions to promote the remediation of contaminated land in reducing the risk to human health or the environment.

SEPP 55 states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable then remediation must take place before the land is developed. The policy makes remediation permissible across the State with or without consent based on the category of works, defines when consent is required and requires that all remediation comply with standards. Further, it ensures land is investigated if contamination is suspected and requires councils to be notified of all remediation. The Managing Land Contamination: Planning Guidelines were prepared to establish 'best practice' for managing contamination and assist councils and developers to determine when land is at risk.

Clause 7 of the SEPP 55 requires that a consent authority must not grant consent to any development on land unless it has considered whether a site is contaminated land or potentially contamination land, and if it is, that it is satisfied that the land is suitable (or will be after undergoing remediation) for the proposed use.

A Preliminary Site Investigation for Contamination has been prepared and included at **Appendix 7**. This report presents the findings of a review of the site's history and a site walkover to visual assess potential contamination. Site history information indicates that the site has been largely undeveloped except for vegetation clearing, regrading activities, fencing and localised fill placement in the eastern portion of the site. GHD have formed the opinion that prior to 1960 the site was likely used as grazing land for livestock (cattle).

Potential sources of contamination were identified on the site based on the site history and observation results. However, based on these same findings the report concludes the potential for contamination to be low. As there is low potential for contamination on the site no further contamination investigations are required and the site is considered suitable in its current form for residential development as proposed by this application, subject to the ongoing removal of domestic waste and its disposal offsite to a licenced waste facility and the preparation of an unexpected finds protocol to manage any contamination uncovered during construction.

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

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (BASIX SEPP) establishes a scheme under which certain types of residential DAs must be accompanied by a BASIX certificate that indicates compliance with mandatory targets and contains a list of commitments about sustainability. The online assessment tool calculates a dwelling's energy and water scores based on design data.

The BASIX SEPP requires the submission of a BASIX certificate to accompany an application for a development consent for any “BASIX affected building” being a building that contains one or more dwellings. A BASIX certificate for proposed development has been prepared by Certified Energy (**Appendix 22**). A Nationwide House Energy Rating Scheme (NaTHERs) Certificate is also included in this appendix.

4.5.4. State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) was introduced to facilitate the easy and fast delivery and maintenance of essential infrastructure and services such as hospitals, schools, railways, roads, power and water supplies and other necessary services across NSW by improving regulatory certainty and efficiency to provide a simplified process for providing the necessary infrastructure.

Clause 45 Development likely to affect an electricity transmission or distribution network

Clause 45 of the Infrastructure SEPP ensures that the electricity supply authority for the area in which the development is to be carried out is giving the opportunity comment on development to which this clause applies. This clause applies to the proposed development as the site is located immediately adjacent a substation. Therefore, the application will need to be referred to the electricity supply authority for comment. This has been done and it has been confirmed by Endeavour Energy that a new substation is required.

Clause 104 Traffic-generating Development

Clause 104 of the Infrastructure SEPP ensures the Roads and Maritime Services (RMS) is given the opportunity to comment on development that is 'traffic generating development' in Schedule 3 of the SEPP. The site does not have access to a classified road and is not within 90 metres of a road that connects to a classified road. The proposed development also only provides for forty-seven (47) dwellings (i.e. less than the 300 dwelling threshold) and therefore does not trigger Clause 104.

4.5.5. State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (Vegetation SEPP) forms part of a suite of land management and biodiversity conservation reforms that work together with the BC Act to create a state framework for regulating the clearing of natural vegetation on land within NSW. The Vegetation SEPP ensures that the biodiversity offset scheme will apply to all clearing of native vegetation that exceeds the offset thresholds in urban areas and environmental conservation zones that do not require consent.

Approval is sought as part of this DA for the removal of trees in accordance with the Arboricultural Impact Assessment. The removal of native vegetation has been identified as exceeding the biodiversity offset scheme. Subsequently, a BDAR has been prepared in accordance with the BAM and is discussed in detail in Section 4.4. This report concludes that the proposed development will not have any adverse biodiversity impacts. Therefore, the proposed development is considered to be consistent with the Vegetation SEPP provisions.

4.6. Wollongong Local Environmental Plan 2009

4.6.1. Zoning

The site is zoned part R2 Low Density Residential and part E2 Environmental Conservation as shown in Figure 29. The built form component of the proposed development is entirely located in the R2 zoned portion of the site.

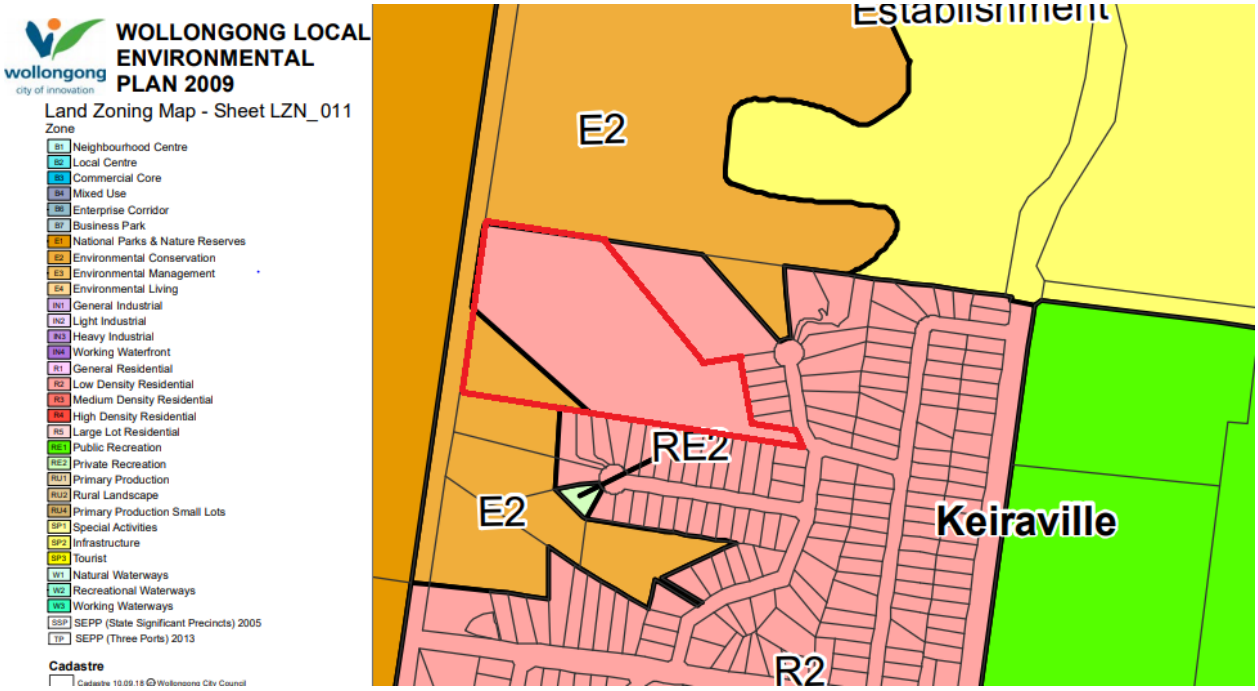

Figure 29: WLEP 2009 Land Zoning Map extract (Source: NSW Legislation)

4.6.2. Permissibility

The proposed development is wholly located on the part of the site that is zoned R2 Low Density Residential. An extract from the WLEP 2009 Land Use Table in relation to the R2 zone is provided below.

> *"Zone R2 Low Density Residential*
>
> *1 Objectives of 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.*
>
> *2 Permitted without consent*
>
> *Home occupations*
>
> *3 Permitted with consent*
>
> *Attached dwellings; Bed and breakfast accommodation; Boarding houses; Boat launching ramps; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Environmental facilities; Exhibition homes; Exhibition villages; Group homes; Health consulting rooms; Home-based child care; Hospitals; Hostels; Information and education facilities; Jetties;* ***Multi dwelling housing;*** *Neighbourhood shops; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Residential flat buildings; Respite day care centres; Roads; Semi-detached dwellings; Seniors housing; Shop top housing; Signage; Tank-based aquaculture; Veterinary hospitals*
>
> *4 Prohibited*

Any development not specified in item 2 or 3"

The proposed development is consistent with the WLEP 2009's definition of 'multi dwelling housing', which means *"…3 or more dwellings (whether attached or detached) on one lot of land, each with access at ground level".* Multi dwelling housing is permitted with consent in the R2 zone under item 3 of the Land Use Table.

4.6.3. Objectives

The objectives of the R2 Low Density Residential zone are included in the Land Use Table extract above. The proposed development is consistent with the objectives of the R2 Low Density Residential zone as follows:

- It provides for forty-seven (47) new dwellings on the last cleared and zoned undeveloped property within the locality. A mix of 3 and 4 bedrooms dwellings is proposed to provide for increased housing choice and contribute to the mix of low density development; and
- It does not preclude the development of surrounding R2 zoned properties for non-residential land uses that provide facilities or services that can assist with meeting the day to day needs of residents.

The objectives of the E2 Environmental Conservation zone as outlined in the WLEP 2009 Land Use Table are:

Zone E2 Environmental Conservation

1 Objectives of 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 retain and enhance the visual and scenic qualities of the Illawarra Escarpment.*
- *To maintain the quality of the water supply for Sydney and the Illawarra by protecting land forming part of the Sydney drinking water catchment (within the meaning of State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011) to enable the management and appropriate use of the land by Water NSW.*

The proposed development is consistent with the objectives of the E2 Environmental Conservation zone as:

- A vegetation management plan is to be implemented for the portion of the site that is zoned E2, which will assist in protecting, managing and restoring this land that is identified as being of high value.
- The developable area is entirely located within the R2 Low Density Residential zoned portion of the site and therefore has been designed to prevent destruction or damage to the qualities of the E2 zone.
- The built form has been recessed into the ridgeline and a deep landscaped buffer zone provided, which in correlation with the green roofs, selected materials and colours stepping down of the built form, result in a proposed development that is sympathetic to the surrounding Illawarra Escarpment and thereby retaining and enhancing the visual and scenic qualities pertaining to the Illawarra Escarpment.
- The site of the proposed development is not located within the Sydney drinking water catchment within the meaning of State Environmental Planning Policy (Sydney drinking Water Catchment) 2011. Therefore, the proposed development will not affect the quality of the water supply; however,

measures have been incorporated in the proposed stormwater drainage design to meet water quality targets.

4.6.4. Height of Buildings

Pursuant to Clause 4.3(2) of the WLEP 2009 the height of a building on any land is not to exceed the maximum height shown for the land on the Height of Buildings Map, which is 9 metres as shown in Figure 30.

Figure 30: WLEP 2009 Height of Buildings Map extract with site outlined in red (Source: NSW Legislation)

The proposed development has a maximum building height of 9 metres from the existing ground level. Therefore, the proposed development complies with the applicable height of buildings development standard.

Refer to the site sections and height envelope review within the Architectural Plans (**Appendix 2**) for more details.

4.6.5. Floor Space Ratio

Pursuant to Clause 4.4(2) of the WLEP 2009 the maximum FSR is not to exceed the FSR shown for the land on Floor Space Ratio Map, which is 0.5:1 as shown in the map extract at Figure 31.

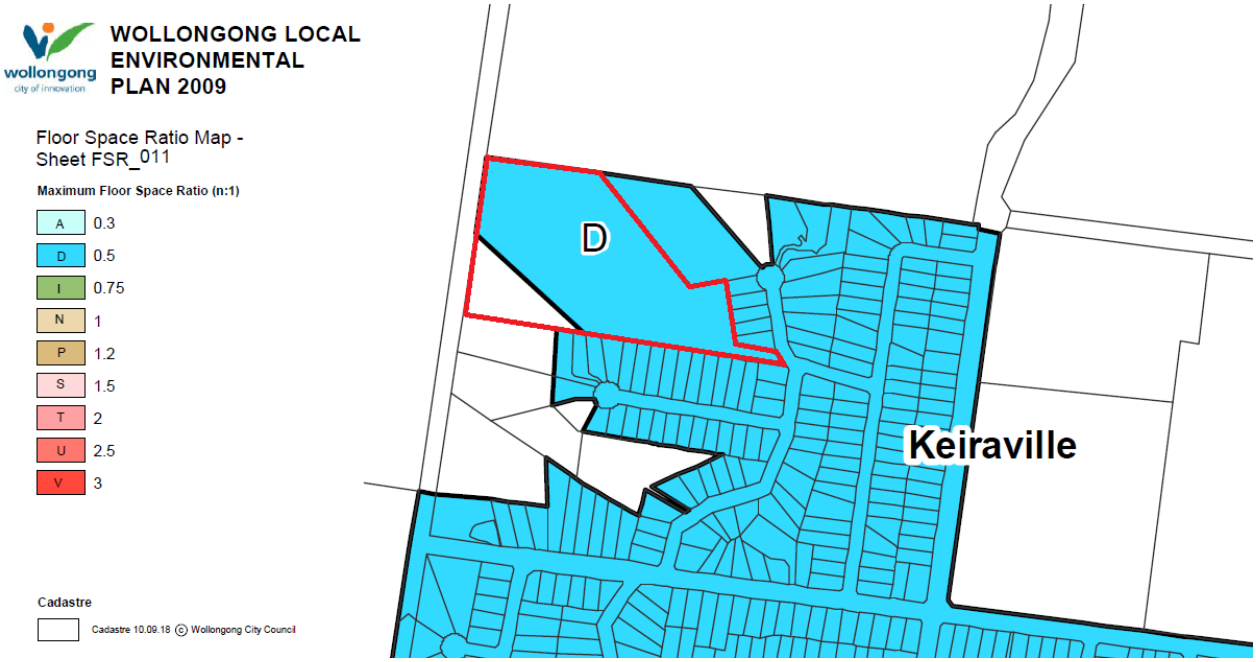

Figure 31: WLEP 2009 Floor Space Ratio Map extract with site outlined in red (Source: NSW Legislation)

The proposed development has a maximum FSR of 0.25:1 as described in Section 3.5. This is based on a site area of 36,753m2 and a GFA of 9,322m2. As per the LEP, the site area cannot include the E2 zoned portion of the site. The proposed development complies with the maximum FSR.

For completeness, the GFA has also been calculated to include the podium areas as required by the DCP. With the podiums, the GFA increases to 11,887sq.m which results in an FSR of 0.32:1. While the LEP prevails, it is noted that the FSR is still less than the maximum FSR of 0.5:1 for the site.

4.6.6. Heritage Conservation

The part of site zoned E2 Environmental Conservation is within the Illawarra Escarpment Landscape Area. The Illawarra Escarpment Area is identified as item no. 6480 on the Heritage Map extract provided at Figure 32.

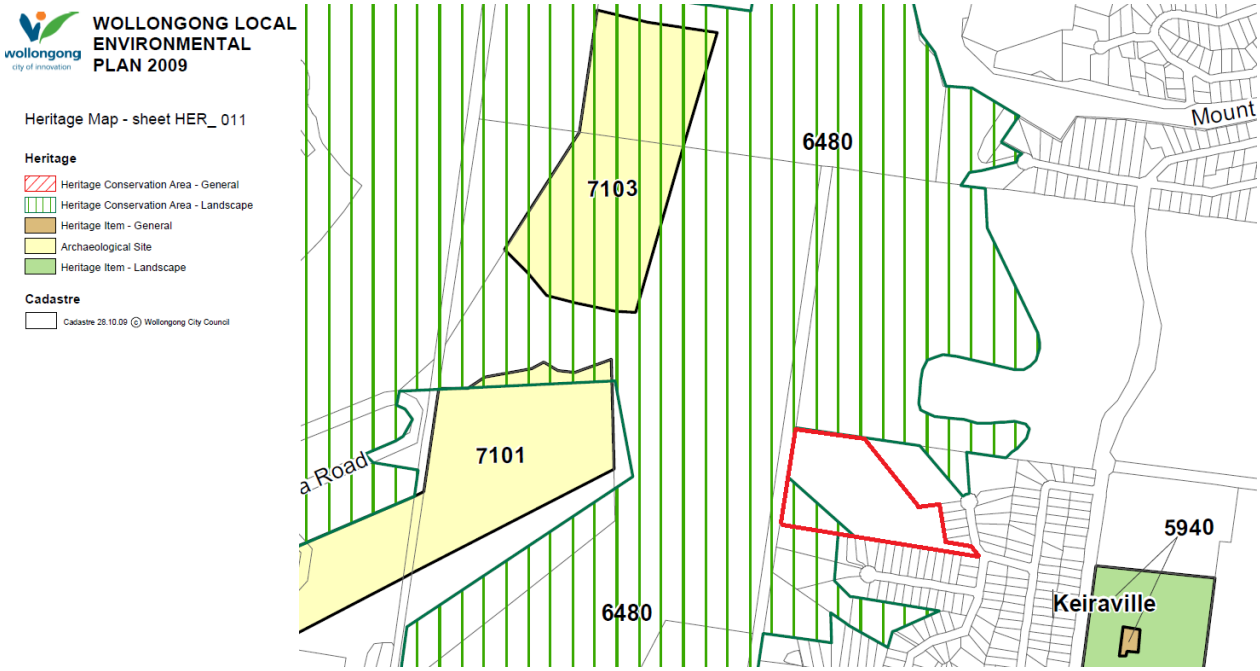

Figure 32: WLEP 2009 Heritage Map extract with site outlined in red (Source: NSW Legislation)

There are also heritage items (built and landscape) and archaeological sites located within the site's vicinity. Identified heritage items under the WLEP 2009 located in the vicinity of the site are detailed in Table 6.

Table 6: Heritage items and archaeological sites in the vicinity of the site

Suburb	Item Name	Address	Property Description	Significance	Item No
Heritage Item - General					
Keiraville	"Gleniffer Brae" and surrounding garden	Wollongong Botanic Garden, off Murphys Avenue	Lot 3, DP 252694	State	5904
Heritage Item - Landscape					
Keiraville	"Gleniffer Brae" and surrounding garden	Wollongong Botanic Garden, off Murphys Avenue	Lot 3, DP 252694	State	5904
Archaeological Site					
Mt Keira	Kemira Colliery*	Mt Keira Road	Part Lot 31 and Part Lot 32, DP	Local	7101

Suburb	Item Name	Address	Property Description	Significance	Item No
			751299 and Lot 1, DP 852788		
Mt Pleasant	Mt Pleasant Colliery*	Parrish Avenue	Lot 2, DP 852788 and Lot 2, DP 870325	Local	7103

*Indicates an archaeological site or a heritage site with an archaeological component.

Where development is proposed on land identified within Schedule 5 of the WLEP 2009 or in the vicinity of such, subclause 5.10(5) of the WLEP 2009 stipulates the consent authority may require the preparation of a heritage management document that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item(s) or heritage conservation area(s) concerned.

A Statement of Heritage Impact (SoHI) has been prepared by GBA Heritage and included at **Appendix 20**. The conclusions made by GBA Heritage in relation to the proposed development can be summarised as follows:

- The site is not listed as an item of heritage significance under any statutory instrument; however, part of the site is within the Illawarra Escarpment Landscape Conservation Area under the WLEP 2009.
- The site is considered to be within the locality of State listed heritage item 'Gleniffer Brae'; however, it is not in the immediate vicinity and is separated by the intervening residential development and topography. Other heritage items in the wider locality are also separated from the subject site by intervening development, distance and local topography and have no direct visual connection to the site.
- The proposed development is limited to the area outside the Illawarra Escarpment Landscape Area and is consistent with the existing residential development in Cosgrove Avenue and the surrounding area.
- The proposed development will not adversely impact on the heritage significance of 'Glennifer Brae'. No adverse impacts are envisaged for the Illawarra Escarpment Landscape Area or other heritage items as the existing views and setting of the heritage conservation area and heritage items will be retained.
- The proposed development has been thoughtfully designed to reduce its visual dominance, while also being in keeping with the residential scale and character of the streetscape on Cosgrove Avenue.
- The proposed development is consistent with the heritage provisions in the WLEP 2009 and WDCP 2009.

Based on these conclusions the HIS recommends that Council should have no hesitation approving the application.

4.6.7. Public Utility Infrastructure

The objective of Clause 7.1 of the WLEP 2009 is to ensure sufficient infrastructure is available to service development. Pursuant to this clause development consent must not be granted for development on land unless the consent authority 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 the infrastructure available. For the purpose of this clause public utility infrastructure relates to water, electricity and sewerage.

Advice has been received from Sydney Water (**Appendix 13**) that confirms that existing water infrastructure within Cosgrove Road can accommodate the proposed development within the need for any amplification. This advice also confirmed the availability of a sewer main connection located in Cosgrove Avenue; however, a minor extension of the sewer is required to provide a point of connection within the development boundary.

Endeavour Energy have also provided a Design Brief (**Appendix 13**) that confirms the requirement for a new padmount substation on the site to supply adequate electricity to accommodate the proposed development.

4.6.8. Natural Resource Sensitivity - Biodiversity

The objective of Clause 7.2 of the WLEP 2009 as it relates to natural resource sensitivity - biodiversity is to:

> *"…protect, maintain or improve the diversity and condition of the native vegetation and habitat, including:*
>
> *(a) protecting biological diversity of native flora and fauna, and*
>
> *(b) protecting the ecological processes necessary for their continued existence, and*
>
> *(c) encouraging the recovery of threatened species, communities, populations and their habitats."*

This clause applies to the site as land identified as 'Natural resources sensitivity - biodiversity' as shown in Figure 33.

Figure 33: Natural Resources Sensitivity - Biodiversity Map extract with site outlined in red (Source: NSW Legislation)

Pursuant to Clause 7.2(3) development consent must not be granted for development on land to which this clause applies unless the consent authority has considered the impact of the development on the following:

a) native terrestrial flora and fauna and its habitat;

b) native aquatic flora and fauna and its habitat;
c) the ecological role of the land, waterways, riparian land or wetland; and
d) threatened species, communities, populations and their habitats.

Pursuant to Clause 7.2(4) development consent must also not be granted on land to which this clause applies unless the consent authority is satisfied that the development is consistent with the objectives and:

a) the development is designed, sited and managed to avoid potential adverse environmental impact;
b) if a potential adverse environmental impact cannot be avoided, the development:
   i) is designed and sited so as to have minimum adverse environmental impact;
   ii) incorporates effective measures so as to have minimal adverse environmental impact; and
   iii) mitigates any residual adverse environmental impact through the restoration of any disturbed areas.

A Biodiversity Development Assessment Report (BDAR) is included at **Appendix 6** to assess the potential biodiversity impacts of the proposed development. The removal of vegetation from the subject land triggers the Biodiversity Offsets Scheme (BOS) threshold. The required assessment has therefore been undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) and the Biodiversity Conservation Act 2016 (BC Act).

Field investigations, undertaken in accordance with the BAM, recorded 3.65 hectares of vegetation within the subject land, including 1.4 hectares of PCT 1245 Acacia Scrub, 1.51 hectares of PCT 1245 grassland, 0.33 hectares of PCT 1245 Sydney Blue Gum x Bangalay Forest, 0.208 hectares of PCT 1300 Illawarra Subtropical Rainforest (TEC) and 0.205 hectares of exotic vegetation. There were no threatened flora species recorded within the subject land.

Lowland Dry-Subtropical Rainforest was identified along the western edge and within the southern boundary of the subject land, extending to the west through the study area and onto the escarpment. Lowland Dry-Subtropical Rainforest in the Illawarra is listed as Illawarra subtropical Rainforest in the Sydney Basin Bioregion under the BC Act, and Illawarra Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion under the EPBC Act. As the Illawarra-Shoalhaven Subtropical Rainforest community is listed under the BC Act and EPBC Act, a Test of Significance (ToS) and an assessment against Significant Impact Criteria (SIC Assessment) was required to determine if the project would pose a significant impact to this community under the BC Act and EPBC Act. The assessment concluded that matters of NES are not likely to be significantly impacted by the proposed development and as such, a referral of the project to the Commonwealth is not required.

Other potential impacts arising from the development have been assessed in detail in the BDAR. While avoidance of impacts to native vegetation, threatened ecological communities and fauna habitat have been achieved, the direct impacts of the development include:

- removal of 3.65 hectares of vegetation (made up of 1.93 hectares of native vegetation and 1.72 hectares of cleared/exotic vegetation)
- removal of 10 hollow-bearing Acacia trees
- removal of 3.65 hectares of potential native fauna species habitat.

These impacts will be permanent and will occur from the outset of the development. In accordance with the BAM, offsets are therefore required to be secured for the proposed development. In summary, offsetting through the transfer and retirement of biodiversity credits are required for impacts to two separate Vegetation Zones at the subject land. A biodiversity credit report and credit payment report are provided within the BDAR.

One threatened fauna species, Greater Broad-nosed Bat, was also recorded at the subject land. Given the disturbed nature of habitats on site, it is unlikely that this species is roosting on site or reliant on the resources provided by the subject land. This species is also an ecosystem species, and as such no additional offsets are required for impacts to the habitat of this species.

Mitigation measures, however, will help to avoid and minimise the potential impacts to biodiversity values that remain present within the study area and include:

- Implement a Vegetation Management Plan.
- Install appropriate exclusion fencing around trees and vegetation to be retained in the subject land.
- Install signage on the boundary of the conservation zone stating 'No Go Zone' or 'Environmental Protection Area' to ensure no personnel or vehicles impact the area.
- Locate all material stockpiles, vehicle parking and machinery storage within cleared areas proposed
- Where appropriate, native vegetation cleared from the study area should be mulched for re-use on the site, to stabilise bare ground.
- Wet down work areas to reduce dust generation during construction and cover any stockpiles when not being used.
- Implement temporary stormwater controls during construction to ensure no impacts to the watercourse located to the west of the study area.
- Implement sediment and erosion control measures prior to construction works commencing (e.g. silt fences, sediment traps).
- Undertake vegetation preclearance surveys at least three days before clearance begins, to detect any nesting birds or other species residing in the area. A fauna relocation strategy should be in place prior to vegetation clearance being undertaken and should be included in the CEMP for the proposed development.
- Undertake vegetation clearance supervision by a qualified ecologist/fauna spotter/catcher when removal of hollow-bearing Acacias occurs. A fauna relocation strategy should be in place prior to vegetation clearance being undertaken.
- If bush rock or boulders are encountered during site preparation, these should be moved into adjacent habitats such as the APZ or study area, and should not be removed from the site.
- Prescriptions for mitigation of potential impacts of construction activities on retained native vegetation and habitat should be addressed in a site-specific CEMP.
- Install appropriate fencing to ensure no access to areas of vegetation outside of the subject land.
- Lighting should point towards the development and not into surrounding vegetated areas.
- Native trees and shrubs should be incorporated into the landscape design, to minimise the potential for exotic species spreading to bushland areas.
- Implement the Vegetation Management Plan.
- Stormwater controls should direct all water flowing from the subject land away from surrounding vegetation.
- Ensure bin areas are enclosed and located close to roadways and at the entrance to the development, to reduce potential for increase in rats and other pests into native vegetation in surrounding areas.

Provided the above measures and those recommended within the BDAR are undertaken it is considered that the impacts on biodiversity within and surrounding the subject land and study area will be avoided or minimised.

4.6.9. Earthworks

The objective of clause 7.6 of the WLEP 2009 is to ensure that earthworks, for which development consent is required, will not have a detrimental impact on environmental functions and processes, neighbouring land uses, cultural or heritage items or conservation areas or unique features of the surrounding land. Development consent must not be granted for earthworks unless the following matters have been considered:

> *"(3) Before granting development consent for earthworks, the consent authority must consider the following matters:*
>
> *(a) the likely disruption of, or any detrimental effect on, existing drainage patterns and soil stability in the locality,*
>
> *(b) the effect of the proposed development on the likely future use or redevelopment of the land,*
>
> *(c) the quality of the fill or of the soil to be excavated, or both,*
>
> *(d) the effect of the proposed development on the existing and likely amenity of adjoining properties,*
>
> *(e) the source of any fill material or the destination of any excavated material,*
>
> *(f) the likelihood of disturbing Aboriginal objects or other relics,*
>
> *(g) proximity to and potential for adverse impacts on any watercourse, drinking water catchment or environmentally sensitive area."*

Approval for bulk earthworks in association with the proposed development is sought as part of this application.

The site has three existing stormwater sub-catchments as discussed in detail in Section 2.4.10 of this SEE. Adjoining residential properties within the sub-catchment that falls towards Andrew Avenue are currently subject to uncontrolled and steep upstream catchment due to the site's undeveloped nature and topography. This exposes these adjoining residential properties to the risk of stormwater inundation and erosion.

As detailed in the General Design Statement for engineering matters included at **Appendix 8**, it was determined to not be practicable to drain to the north-eastern and south-western sub-catchments. Therefore, the stormwater drainage system has been designed to divert these flows to the south-eastern drainage. This will minimise flows to the adjoining residential development and is considered an improvement. Subsequently, the earthworks proposed will not result in any adverse impacts on stormwater.

Retaining walls are proposed to ensure earthworks do not adversely impact on the stability of soils, noting the proposed development is located over the ridge crest and upper sideslopes of the ridge such that the built form and accessways are wholly located on the parts of the site with a low to medium risk of slope instability. The Geotechnical Investigation (**Appendix 4**) makes further recommendations regarding construction techniques that will be implemented in the construction stage to manage any potential soil instability, including the provision of both temporary and permanent excavation support within building areas.

Potential site contamination issues are addressed in Section 4.5.2 and contamination assessment at **Appendix 7**. This assessment concluded that the likelihood for contamination on the site was low. Subsequently, no contaminated excavation material is expected be found during the earthworks, however, GHD have recommended the preparation of an unexpected finds protocol should contamination be

encountered. Excavated material will be collected and used as clean fill or disposed of at a land fill facility. The destination of material excavated from the site will be confirmed once a contractor has been appointed. Excavated material from the site will be re-used as fill on the site and therefore the fill will not be contaminated.

No Aboriginal objects or sites have been identified on the site as identified in the Aboriginal assessment at **Appendix 21**.

A Soil and Water Management Plan has been prepared by LandTeam and is included at **Appendix 8**. Measures are to be implemented in accordance with this plan to minimise any dust and/ or stormwater run-off generated from the site during construction and ensure the amenity of adjoining properties is maintained.

4.6.10. Illawarra Escarpment Area Conservation

The overall objective of Clause 7.8 of the WLEP 2009, as it relates to the Illawarra Escarpment area conservation, is to provide specific controls to protect, conserve and enhance the Illawarra Escarpment area. This clause applies to part of the site as land shown as being within the Illawarra Escarpment area Figure 34.

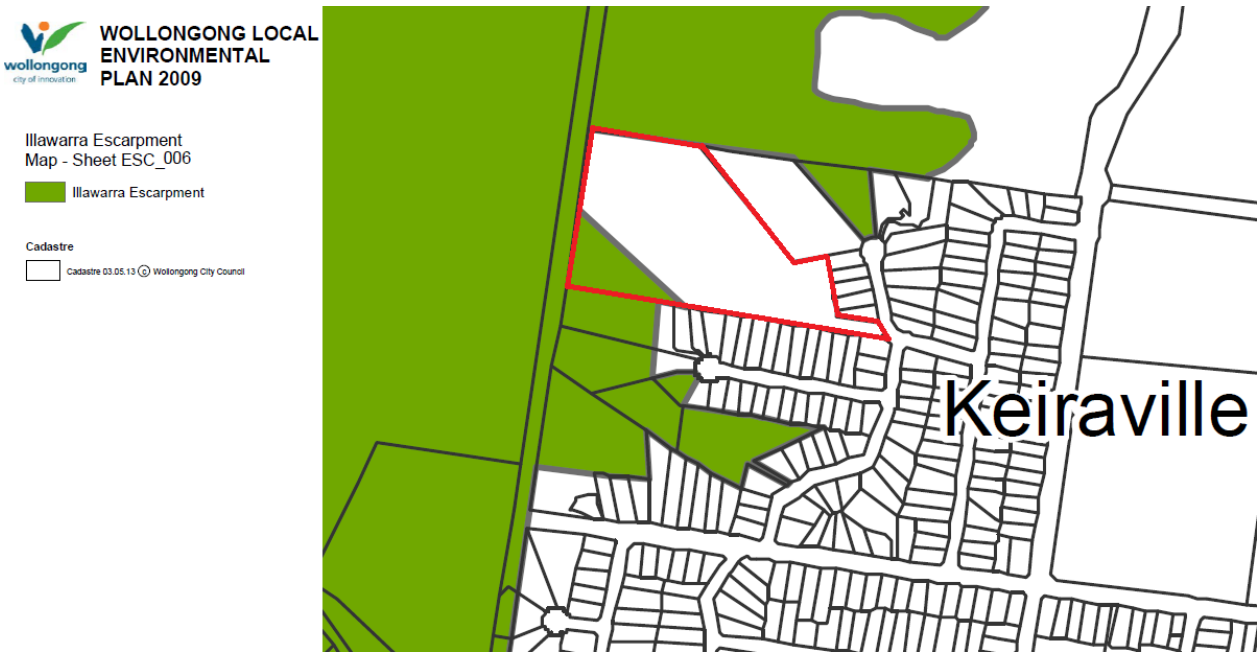

Figure 34: WLEP 2009 Illawarra Escarpment Map extract with site outlined in red (Source: NSW Legislation)

Under this clause of the WLEP 2009 development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development will do the following:

a) be located so as to minimise any adverse impact on natural features and environment; and
b) incorporate on the land, conservation and rehabilitation measures to enhance the escarpment.

The part of the site identified within the 'Illawarra Escarpment' is consistent with the part of the site zoned E2. Consequently, the proposed development is not located on any part of the site within the Illawarra Escarpment.

A VMP (**Appendix 10**) has been prepared by Biosis for the part of the site identified as Illawarra Escarpment. Vegetation management works proposed within this part of the site include rehabilitation works such as seed collection, weed management, natural regeneration, infill planting and revegetation, nominated plant numbers and densities, fertilising, watering, pest control and deer exclusion fencing. These proposed vegetation management works are intended to reinstate the site's important ecological values.

4.6.11. Minimum Site Width

Pursuant to Clause 7.14(1) of the WLEP 2009 development consent must not be granted for development for the purpose of multi dwelling housing unless the development site has a dimension of at least 18 metres.

For a small portion of the site (i.e. the access handle), the minimum width of the site when measured perpendicular to the boundary is 16.88 metres as shown on the Architectural Plans at **Appendix 2.** Therefore, the proposed development in part does not strictly comply with the LEP minimum site width requirement. A Clause 4.6 Variation Request prepared by City Plan is included at **Appendix 18** of this SEE, which addresses the requirements of Clause 4.6 of the WLEP 2009 and provides justification for the minor contravention.

5. OTHER PLANNING CONSIDERATIONS

The relevant planning framework considered in the preparation of this report comprises:

- Illawarra-Shoalhaven Regional Plan; and
- Wollongong Development Control Plan.

5.1. Illawarra-Shoalhaven Regional Plan

The Illawarra-Shoalhaven Regional Plan applies to the LGAs of Kiama, Shellharbour, Shoalhaven and Wollongong. This Regional Plan for the Illawarra-Shoalhaven seeks to provide the strategic policy, planning and decision-making framework to guide the region to sustainable growth over the next 20 years. The vision for the region is a sustainable future and resilient community that is capable of adapting to changing, economic, social and environmental circumstances and is to be achieved through the following goals:

- a prosperous Illawarra-Shoalhaven;
- a region with a variety of housing choices, with homes that meet needs and lifestyles;
- a region with communities that are strong, healthy and well-connected;
- a region that makes appropriate use of agricultural and resource lands; and
- a region that protects and enhances the natural environment.

The projected housing needs for the Wollongong LGA between 2016 and 2036 is 14,600 new dwellings. In providing sufficient housing supply to suit the changing needs of the Illawarra-Shoalhaven region, the Regional Plan notes within the Wollongong LGA there is enough potential in existing areas to meet this target. The site is an undeveloped parcel of land zoned for low density residential in an existing urban area and therefore provides an opportunity to facilitate development that contributes to Wollongong's housing targets. It will protect, and in fact enhance a portion of E2 zoned land, and the minor increase in population will support the local Keiraville economy.

5.2. Wollongong Development Control Plan

Consideration of compliance and/or consistency with the relevant provisions within the Wollongong DCP is provided in the Planning Compliance Table prepared by City Plan and provided at **Appendix 1** of this SEE.

The following parts of the Wollongong DCP are relevant to this proposed development for multi dwelling housing:

- Part A - Introduction
- Part B - Land Use Based Planning Controls:
  - Chapter B1 - Residential Development; and
  - Chapter B6 - Development in the Illawarra Escarpment;
- Part D - Locality Based DCPs/Precinct Plans:
  - Chapter D1 - Suburb Character Statements (section 3.28: Keiraville); and
- Part E - General (City Wide) Controls.

The Table of Compliance demonstrates the proposed development generally complies with the DCP's controls. Any minor variations with the relevant controls within the WDCP 2009 where alternative approaches consistent with the objectives have been proposed are discussed below.

5.2.1. DCP Variations

Retaining wall heights

In cases where the subject site is steeply sloping and the proposed retaining wall is setback more than 1 metre from any side or rear property boundary, the DCP states that Council may consider a variation to the 1m maximum retaining wall height. A variation is proposed in this instance and is supported by a separate statement prepared by LandTeam dated 12/12/19 (**Appendix 8**).

Preliminary retaining wall details have been designed by a qualified Chartered Structural Engineer and accompany the DA. The walls have also been designed in accordance with site specific Geotechnical advice.

In relation to the visual impact of the walls, it should be noted that the majority of the retaining walls will be cut into the existing landform and be contained within new proposed buildings and therefore will not be visible. The most significant retaining walls will primarily be hidden by the proposed buildings themselves (e.g. the proposed basement parking walls), while the visible walls will be provided with appropriate terracing and/or landscape screen planting. All visible walls are also proposed to be constructed of sandstone materials in colours that are sympathetic and complement the surrounding natural environment. A plan showing the 'concealed' and 'visible' retaining walls has been prepared by LandTeam and is included with the Civil plans.

Natural drainage catchment boundaries

The Concept Stormwater Plan has been designed so that all stormwater is piped in 5 year storms and includes five (5) tiered underground on-site detention (OSD) tanks under the driveway. In combination with overland flow paths, the stormwater concept can cater for the 100 year storm event to the OSD System and subsequent discharge point.

The site has been modelled in DRAINS modelling software to ensure that the post-development flows do not exceed pre-development flows in accordance with Council's requirements. The results demonstrate that stormwater can be adequately managed within the site boundaries.

The proposed development, however, does not strictly comply with Clause 12.2.2 of the DCP. This non-compliance is addressed in the General Design Statement prepared by LandTeam dated 12/12/19 (**Appendix 8**). This solution proposed achieves the control's objectives and is a better outcome for residents to the south of the site.

Minimum site width

The area on which the multi-dwelling housing will be constructed has a site width much greater than the 18 metre minimum requirement. That is, a small portion of the site, however, measures 16.88 metres when measured perpendicular to the side boundaries as required by the DCP. This portion of the site is proposed to act as an access handle accommodating a generous 2-way vehicular and pedestrian entry framed by formal landscaped features. This portion of the site does not propose any multi-dwelling housing or habitable floor area.

A Clause 4.6 Variation Request prepared by City Plan is included at **Appendix 18**, which addresses the requirements of Clause 4.6 of the WLEP 2009 and provides justification for the minor contravention.

6. ENVIRONMENTAL IMPACT ASSESSMENT

6.1. Overview

This section of the SEE identifies and assesses the potential impacts resulting from the proposed development with specific reference to the matters for consideration under Section 4.15 of the EP&A Act.

6.2. Context and Setting

Opportunities and constraints mapping to identify a suitable developable area within the R2 zoned land has been undertaken. Refer to the Architectural Plans at **Appendix 2**.

The context and setting of the proposed development is described within Section 2 of this SEE.

The proposed development is compatible with the existing and desired future character of the Keiraville locality, which is generally characterised by a mix of one, two and three-storey dwelling houses, interspersed with multi dwelling housing, residential fat buildings, commercial uses, educational establishments (e.g. University of Wollongong and Keiraville Public School) and recreation areas (e.g. Wollongong Botanic Garden). The subject site is situated at the foothills of the Illawarra Escarpment and Mount Keira as the suburb's namesake. Many of the dwellings located within the foothills have been designed to reflect the locality's topography.

The proposed development includes two-storey multi-dwelling housing with basement garaging (buildings 1 to 4) and 'traditional' 2 storey multi dwelling housing (building 5). Buildings 1 to 4 have been recessed into the ridgeline with deep landscaped buffer zones and green roofs to integrate the buildings into the surrounding environment.

Further consideration of the compatibility of the proposed development and its surroundings can be undertaken with regard to the LEC Planning Principle on “compatibility with context” as established in the Project Venture Developments v Pittwater Council (now Northern Beaches Council) [2005] NSWLEC 191 case. To ascertain whether a proposal is compatible with its context the following two questions can be asked:

- **Are the proposal’s physical impacts on surrounding development acceptable?**

  The physical impacts include constraints on the development potential of surrounding sites.

  The proposed development has been designed with due consideration of the adjoining properties. Setbacks to neighbouring residential properties and the Illawarra Escarpment exceed Council's requirements due to the topography of the site and the requirement for an APZ for bushfire management. The landscape setting provided by these setbacks creates a suitable interface between the Illawarra Escarpment and the existing low-density residential development at its foothills.

  The proposed development does change the existing drainage patterns to adjoining properties. The stormwater management solution proposed is an improvement on the current situation, with stormwater running uncontrolled into adjoining residential properties due to the site's topography.

  Changes to the site's topography through cut and fill will not create increased soil instability in the locality, with retaining walls to be utilised throughout the proposed development to manage level changes.

  The proposed development does not impact on the development potential of any adjoining properties.

- **Is the proposal's appearance in harmony with the buildings around it and the street character?**

  The proposed development will have a positive impact on the Cosgrove Avenue streetscape in that it proposes a multi-dwelling housing development on the last undeveloped property in the street. The choice of materials and colour palette, landscaping (including vegetation regeneration) and the recessing of the building into the ridgeline assist in minimising the visual impact of the proposed development, with the materials and colour palette in particular taking their inspiration from the escarpment. Whilst not visible to the street, the development will be viewed from further afield and an analysis of this impact demonstrates the proposal is appropriate in this context.

6.3. Built Environment

6.3.1. Height, Bulk and Scale

The maximum building height permitted on the site under the WLEP 2009 is 9 metres from ground level (existing). The proposed development is located entirely within the 9 metre height limit as shown in Figure 35 and has been designed such that the façades of the buildings are viewed as two-storeys from ground level.

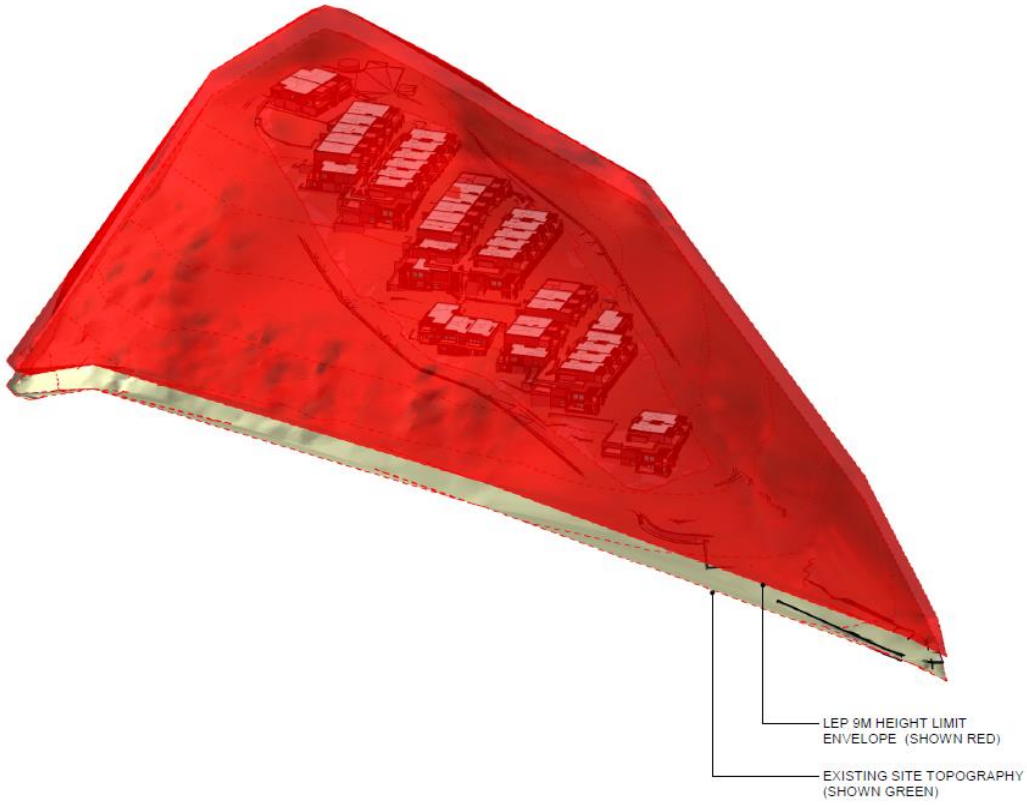

Figure 35: 9m height envelope isometric (Source: Edmiston Jones)

The WLEP 2009 further prescribes a maximum FSR of 0.5:1 for any development proposed on the site. The proposed floor space has been thoughtfully distributed between five (5) separate buildings, with the project occupying only 50 percent of the permitted FSR for the site (0.25:1).

One of the main design objectives was for the development to sit comfortably on the site when viewed both from within and when looking back to the site. The design approach therefore facilitates an integrated and well considered development rather than a series of individual lots with detached dwellings and potential secondary dwellings scattered across the site.

Five (5) individual architecturally-designed buildings have been provided to minimise the appearance of building bulk. Buildings 1 to 4 include two-storey multi-dwelling housing with basement garaging and building 5 includes 'traditional' 2 storey multi dwelling housing with ground level garaging. The buildings have been carefully designed by a local architect and have been designed to integrate with the adjoining escarpment.

In response to the topography of the land, the buildings have been stepped down and recessed into the site. Extensive landscaping initiatives further ensure that the built form integrates with the surrounding environment and connects the site to the escarpment. Landscape elements that have been incorporated into the overall design of the building include green rooftops, plant climbers on the retaining walls, vertical gardens and planter boxes on the podiums.

The provision of significant boundary setbacks and extensive landscaping surrounding the buildings, including a pond, communal park and vegetable gardens further minimise the overall building bulk/mass. The green roofs also assist in minimising the visual impact of the lower buildings when viewed from above, and also add visual relief when viewed from external viewpoints within the surrounding locality.

The selected materials and finishes are sympathetic and blend with the surrounding natural environment, with all materials and finishes being of the highest standard. The contrast in materials and colours between the upper and lower floors reflects those of the escarpment.

The architecture, landscaping and materials/finishes have been carefully integrated to ensure that the bulk and scale of the development has no negative impacts and that the development blends with its surroundings.

6.3.2. Setbacks

Significant boundary setbacks have been provided with all 5 buildings being located in the centre of the site well away from neighbouring properties. The northern setbacks vary from 23.15m to 46.32m. The eastern setback to the dwellings fronting Cosgrove Avenue is 58.41m. The southern setbacks vary from 22.91m to well over 100m, and the western boundary setback is 10.43m. The building setbacks well exceed Council's minimum requirements and assist in eliminating any potential overlooking or privacy impacts to neighbouring properties. Both sides of the entry driveway are provided with a terraced landscaped setback to provide visual relief and privacy to neighbours.

The waste collection area is setback 8.22m from the southern common boundary, with the adjoining loading/unloading bay being 1.72m from the boundary. The loading bay, however, is 2.7m lower than the adjacent ground level and therefore will not be visible from the neighbouring sites. The retaining walls, which enclose the loading bay, also act as an acoustic barrier and will ensure that there are no unreasonable noise impacts during waste collection and delivery operations.

6.3.3. Design and Aesthetics

The proposed development provides a high quality and sensitive approach to the surrounding environment.

The built form has been separated into five (5) separate buildings and recessed into the ridgeline to retain a low profile that follows the existing contours of the site and integrates the development into the landscape. The architectural language of the building has been developed with a unified palette of materials, colours and forms to create a development that is harmonious in its presentation and creates a sense of

community. Refer to Section 6.3.9 of this SEE for a detailed discussion on the selected materials and colours.

Edmiston Jones have drawn inspiration for the building language from the stepped sandstone cliff faces, deep shadows, interlinked forest canopies and muted colours that are characteristic of the Illawarra Escarpment. In a similar language to the sandstone cliff faces, the buildings have been articulated by stepped cross-sectional massing, façade indentations, projected shadowing devices, deep terraces with covered canopies and cantilevered building based to form shadow lines as evident in the Architectural Plans. The green roofs and integrated landscape between buildings reflect the interlinked forest canopies and have been designed to breakdown the horizontal and vertical lines of the built form and help link the proposed development with the adjacent landscape of the Illawarra Escarpment to the west.

The stepping of the built form ensures that views from each of the dwellings towards the coastline are maximised. The footprint of the proposed development has also been consolidated centrally within the site where the land has already been disturbed in order to minimise its environmental impacts, whilst also respecting the bushfire, geotechnical and other such constraints that affect the subject site.

6.3.4. Solar Access

WDCP 2009 requires that at least 50% of the required communal open space area receives at least 3 hours of direct sunlight between 9:00am and 3:00pm on 21 June. With a total of 47 dwellings, the proposed development requires 235sq.m of communal open space. This means that only 117.5sq.m of common open space is required to receive unrestricted solar access during the specified timeframes.

The proposed development provides 2,893sq.m of formal communal open space (i.e. Eagles Nest Park adjacent to Building 5 and the communal podiums within buildings 1-4). These spaces will be available for use by all residents within the development. In addition to these formal areas, the development also includes a communal vegetable garden, a fitness trail with 3 ‘stations’ and informal ‘meeting spaces’ within the APZs. The communal spaces are appropriately landscaped, with Eagles Nest Park being embellished with seating and BBQ facilities. The communal spaces receive high levels of solar access and excellent amenity for residents and their visitors. The proposed development well exceeds the minimum solar access requirements to communal open spaces.

The DCP further requires that windows to north facing living rooms receive a minimum of 3 hours of direct sunlight between 9:00am and 3:00pm in mid-winter. At least 70% of the dwellings must also receive 3 hours of direct sunlight to at least half (50%) of the private open space area during the specified timeframe.

Solar access diagrams are included in the Architectural Plans at **Appendix 2**. Based on these diagrams, 22 of the dwellings receive direct sunlight to the internal living areas for a minimum of 3 hours between 9:00am and 3:00pm in mid-winter. In accordance with the DCP, all north facing living rooms receive the required 3 hours of direct solar access. Additionally, thirty-five (35) of the main terrace areas (i.e. 74%) receive the required amount of solar access. The proposed development therefore fully complies with the solar access requirements of Council's DCP.

6.3.5. Overshadowing

Shadow diagrams have been prepared as part of the Architectural Plans included at **Appendix 2**. These diagrams compare the shadows cast by the existing site topography and the proposed development, noting these do not take into account existing tree coverage and fencing that most likely already have shadow impacts.

At 9:00am on 21 June the existing shadows and those resulting from the proposed development are generally consistent, except for a minor increase in overshadowing on the rear of Lot 11 in DP 867659 (No. 27 Cedar Grove), the front of Lot 10 in DP 867659 (No. 25 Cedar Grove) and the cul-de-sac at the

end of Cedar Grove. By 11:00am there is no shadow being cast by the proposed development on these adjoining properties.

At 12:00pm on 21 June most of the shadows cast by the proposed development are on the site itself, except for some overshadowing to the rear of some adjoining properties on the northern side of Cedar Grove.

By 3pm most of the shadows cast by the proposed development are still on the subject site itself with the overshadowing of the adjoining properties to the south moving further east along Cedar Grove.

The shadow diagrams demonstrate the proposed development will not preclude existing development on adjoining properties, including internal living areas and 50% of private open space areas, from receiving three hours of direct sunlight between 9:00am and 3:00pm on 21 June.

6.3.6. Privacy

The generous side and rear building setbacks ensure that there will be no negative impacts to neighbouring properties in terms of privacy or overlooking. Both sides of the entry driveway are also provided with a terraced landscaped setback to provide visual relief and privacy to neighbours.

The proposed dwellings have also been designed to eliminate potential privacy impacts between each dwelling. Where required, the following measures have been provided to provide a high level of amenity and ensure privacy is maintained between neighbours:

- 1.8m courtyard fencing at the podium levels;
- Landscaping/screens between ground level open spaces;
- Substantial landscape buffers between building block to obscure any potential line of sight;
- Privacy screens/planter boxes in front of all window opening facing onto a communal podium area;
- Box frames around windows that may have a direct line of sight from a neighbouring balcony; and
- Fixed screens to balconies.

The typical relationship between each building block is further shown in Figure 36. This plan extract demonstrates that the sloping terrain further assists in maintaining high levels of privacy between dwellings. This plan shows that the main living areas typically overlook the green rooftop of the adjacent building and therefore will not impact on neighbouring properties.

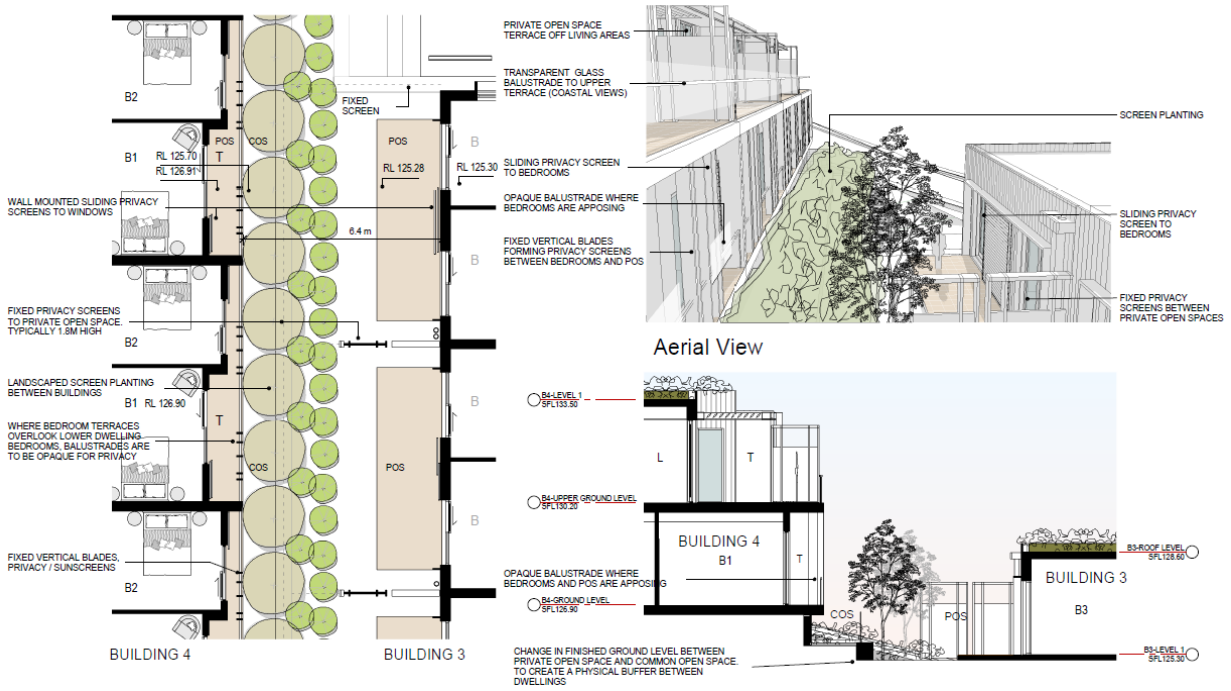

Figure 36: Typical relationship between buildings (Source: Edminston Jones Architects)

6.3.7. Views and Visual Impact

To assist with better understanding view and visual impacts, a Visual Impact Assessment has been prepared by Urbaine Architecture Pty Ltd and is included at **Appendix 19**.

Mount Keira Precinct Viewpoints

The Illawarra Escarpment is divided into ten (10) precincts in accordance with Chapter B6 of the WDCP 2009. The part of the site zoned E2 Environmental Conservation forms part of the Mount Keira Precinct. The WDCP 2009 requires that a visual impact assessment be prepared for development in any precinct, with Appendix 1 of Chapter B6 nominating viewpoints for each precinct on which this assessment is to be based. A total of six (6) viewpoints are nominated within the WDCP 2009 for the Mount Keira Precinct. As no development is proposed on the E2 zoned portion an assessment from these viewpoints is not required. For completeness, however, Urbaine Architecture have undertaken a visual impact assessment from these viewpoints.

Based on the visual impact assessment undertaken from the nominated viewpoints for the Mount Keira Precinct, Urbaine Architecture have concluded that there is *"very little"* visual impact observed from the development because of the site's distance from these viewpoints and the large trees surrounding the site. When assessed with the proposed green roofs and the extensive new landscaping within the developable area, Urbaine Architecture note that the proposed development will be *"almost imperceptible"* from the distance of these viewpoints and therefore will have almost no visual impact on the Illawarra Escarpment itself.

Local Viewpoints

The Visual Impact Assessment notes that there is potential for the development to be seen from key local viewpoints. Twenty (20) key local viewpoints were nominated from which to undertake a visual impact

assessment, which includes viewpoints from the State heritage listed 'Gleniffer Brae' within the Botanic Gardens. Based on this assessment it has been concluded that in most cases the visual impact is *"minimal"*. Where the visual impact is greater, the proposed development has been designed to be integrated into the landscape through the incorporation of extensive soft landscaping on roofs and rock retaining walls. The selected colours are natural and muted to reflect the colours of the surrounding landscape and rock forms.

Overall the views from the local area are mixed – some limited to the immediate area adjacent roads and streetscapes and others with middle and far distant views to the east, and to Mount Keira to the east, beyond the subject site. The assessment indicates that there is limited connectivity within the local area in terms of views available. From the roads and streetscapes it is clear that the proposed development, because of its lower elevation and proposed landscaping, will not have impact on significant views from within the local area.

The Visual Impact Report concludes that:

"Mitigation of the visual and physical impact has been achieved through the use of appropriate materials, being of natural hues and non-reflective. Also, through the use of native vegetation and landscaped retaining walls where the natural landform drops away. As the landscape, within and around the new development, matures, so the building will blend increasingly into the natural surroundings.

The introduction of landscaped stone retaining walls, together with green, landscaped roof forms, help to break up the massing of the built forms, ensuring that the design is not seen as one single element. The retaining walls and roads are further integrated into the natural landscape with low shrubs and creepers which, over time, will soften the overall development, allowing it to blend well into the natural context.

The visual impacts of the proposed development are considered to be compatible with the existing visual context and satisfy the intents and objectives of the Wollongong Local Environmental Plan".

6.3.8. Heritage

The E2 zoned portion of the site forms part of the heritage listed Illawarra Escarpment Landscape Area. The developable part of the site (zoned R2), however, is not a heritage item or part of a heritage conservation area. State and locally listed heritage items and areas in proximity to the site are listed in Table 6 of this SEE.

A Statement of Heritage Impact (SoHI) has been prepared by GBA Heritage to assess the proposed development from a heritage perspective. The conclusions of the SoHI included at **Appendix 20** are summarised in Section 4.6.6 of this SEE. Based on these conclusions the SoHI concludes that the application has an acceptable impact from a heritage perspective and can be approved.

6.3.9. Materials and Colour

Refer to Figure 24 and Figure 25 for an extract of the schedule of materials and finishes and associated elevation.

The existing colour palette of the Illawarra Escarpment, in which the site is located, comprises dark muted greys, deep greens, robust weathered sandstone faces and detailed highlights from the canopy tree trunks. The materials and colours have been selected to reflect the colour palette of the existing Illawarra Escarpment, which will create a subdued harmonious development with unified forms, organic colours, dark shadowed recesses and subtle highlights from feature screening similar to the escarpment beyond. The selected materials and colours have been layered in a similar manner to the Illawarra Escarpment as follows:

- The ground level walls and landscape retaining walls are finished in sandstone with landscape trellises.

- The lower building levels comprise of a mix of stone, concrete and painted fibre cement clad walls. The stone and concrete walls form a robust base to the five (5) proposed buildings whilst the infill cement fibre panels are setback into recesses and coloured with warm sandstone and light ochre colours.
- The upper levels of the buildings are clad in vertical lineal fibre cement panels with highlight blades/ sunscreens. The upper levels colours are darker in keeping with the colours of the surrounding tree canopies.

The colour finish of the private access road will be of muted bushland colours. Light grey and white coloured finish surfaces that are potentially visible from a public road or place will not be provided.

6.3.10. Building and Construction

Compliance with the BCA will be demonstrated as part of the future Construction Certificate (CC) documentation. The BCA Compliance Statement at **Appendix 23** confirms that the proposed development can readily achieve compliance with the BCA provisions by addressing the measures identified in the statement.

Advice from Fahrenheit Global (**Appendix 24**) notes some minor non-compliances with the BCA for fire safety. However, as per the advice these identified non-compliances and any other non-compliances that may be identified by Council or the private certifier can be resolved at the CC stage by way of performance solutions, deemed-to-satisfy solutions or a combination of both. Any performance based solution will require a full fire engineering assessment prior to the issuing a CC. In complying with the BCA, the proposed development will include a Fire Hydrant System that shall extend from the Authority water main located on Cosgrove Avenue as detailed in the Building Services Statement (**Appendix 26**).

Whilst a final builder has not yet been appointed, Hutchinson Builders have provided input into the building and construction approach to assist with the preparation of the DA and SEE documentation

A detailed Construction Management Plan (CMP) will be prepared by the appointed contractor. It is anticipated that Council will include appropriate conditions within any development consent requiring the preparation and approval of the CMP prior to construction works commencing on site.

Initial advice from Hutchinson Builders indicates, however, that the main construction process will be as follows:

- Site establishment including site amenities, concrete pumping zone (within the site boundary) and construction driveway.
- Commence excavation works from the bottom of the site to the top, and construct retaining walls as works progress.
- Excavate and compact building platforms at each tier ready for construction activities.
- Construct ring road around the development area to enable construction vehicle access to each tier.
- Construct dwellings commencing at Building 1 and work up hill to Building 5.
- Install landscaping.
- Install final wearing layer of private access driveway.

All construction works and hours will be in accordance with relevant DA conditions and authority requirements. Appropriate safety measures will be installed and the site will be secured to prevent unauthorised access during construction activities. Dust and noise control measures will also be appropriately implemented.

Hutchinson Builders have advised that a detailed Environmental Management Plan (EMP) will also be prepared prior to the commencement of works. The purpose of this EMP is to:

- Identify the environmental issues (aspects and impacts) for this project;
- Establish, communicate and implement environmental operational controls to reduce any adverse impacts on the environment from the building activities.
- Ensure compliance with all relevant environmental legislation, any applicable license, approvals and permits, and other regulatory requirements;
- Ensure that works are managed to reduce adverse impacts on the environment, including waste management, sediment and erosion control, noise and vibration, dust and the like; and
- Action any outcomes from incidents or accidents, project audits or other identified non-conformances and to continually improve the Environmental Management System.

The Geotechnical Investigation at **Appendix 4** also makes recommendations in relation to building design and construction, including building footings, excavation support, unsupported cuts, earthworks, drainage and private accessway. These recommendations will be implemented in the design and construction of the proposed development, with all details to be submitted as part of the CC documentation.

6.4. Natural Environment

6.4.1. Flora and Fauna

A BDAR has been prepared to accompany this application and is included at **Appendix 6** of this SEE. Field investigations undertaken in accordance with the BAM recorded 3.65 hectares of vegetation, including:

- 1.4 hectares of Acacia Scrub;
- 1.51 hectares of grassland;
- 0.33 hectares of Sydney Blue Gum x Bangalay Forest;
- 0.208 hectares of Illawarra Subtropical Rainforest; and
- 0.205 hectares of exotic vegetation.

The existing Lowland Dry-Subtropical Rainforest plant type community is an identified EEC under the BC Act.

The BDAR identifies the following direct and unavoidable impacts from the proposed development:

- Removal of 3.65 hectares of native vegetation;
- Removal of ten (1) hollow-bearing Acacia trees; and
- Removal of 3.65 hectares of potential native fauna species habitat.

Whilst the above figures indicate that all native vegetation on the site is to be removed as part of the proposal, 15% of vegetation within the APZ is to be retained in accordance with the Aboricultural Impact Assessment, including the Illawarra Subtropical Rainforest that has been identified as being in moderate condition.

Sections 5.2.2 and 5.2.3 of the BDAR identify additional potential indirect impacts and prescribed impacts.

Mitigation measures are identified in Section 5.1 of the BDAR to minimise the potential impacts to biodiversity, including the implementation of a vegetation management plan during construction and operation. Additionally, credits are required to offset some of the identified impacts on the native vegetation.

Provided the mitigations measures recommended within the BDAR are adopted it is considered that the impacts on biodiversity within and surrounding the subject land and study area will be avoided or minimised. Further details are also provided in Section 4.6.8 of the SEE.

6.4.2. Vegetation Management

A VMP (**Appendix 10**) has been prepared by Biosis in accordance with the recommendations of the BDAR. The VMP area comprises the portion of the site zoned E2 Environmental Conservation in the south-west corner. This area contains Illawarra Subtropical Rainforest, Illawarra Escarpment Blue Gum Wet Forest and Acacia Scrub. The specific management zones and actions to be implemented are detailed in Section 3.10 of this SEE.

The BDAR notes that through the implementation of the VMP the proposed development will mitigate any adverse environmental impacts through the restoration of the E2 Environmental Conservation zoned land, which contains EEC Illawarra Subtropical Rainforest to be restored and maintained to improve ecological values.

6.4.3. Tree Removal

Trees to be removed are identified on the tree protection plan at Appendix 1 of the Tree Impact Assessment (**Appendix 5**). The trees to be removed within the main bulk earthworks are numbered as 1-8, 10-16, 18, 20, 29-31, 54, 56-65, 68, 70-73, 75-88, 96-155, 160-171, 176, 177-200, 207, 215-218 and 228 on this plan. To comply with bushfire recommendations, 85% of trees within the Asset Protection Zone (APZ) are required to be removed. The arborist has recommended that trees 222-235, 232, 238, 240, 242, 252, 283, 285, 287 and 342 within the APZ area be retained as they are of the highest quality based on species, size and condition. This includes the Illawarra Subtropical Rainforest that has been identified by Biosis as being in moderate condition. Hollow bearing trees 235, 238, 240, 242 and 342 within the APZ are also proposed to be retained.

The number of trees to be removed as part of the proposed development has been minimised by consolidating the developable area in the centre of the site where the site has been cleared and trees are scattered.

The trees proposed to be retained will require tree protection measures to be install prior to clearing works occurring. This fencing will be located at the Tree Protection Zones (TPZs) for the trees to be retained and will ensure that these trees are to be protected during the construction of the proposed development. Tree protection is required to be carried out in accordance with the recommendations of Section 5 of the report.

A Project Arborist will be appointed to oversee the Aboricultural related works as per the Tree Impact Assessment.

With the recommendations of the Tree Impact Assessment implemented during the construction phase, there is nothing in the report to suggest that the application cannot be supported by Council based on trees.

6.4.4. Landscape

A Landscape Plan has been prepared for the proposed development and is included at **Appendix 9**. The principles that have guided the landscape design for the proposed development are discussed in Section 3.9.

As advised by Edmiston Jones the design intent of the guiding principles will be achieved through the use of predominantly native endemic species, natural contextual materials (e.g. sandstone and green roof), a sympathetic colour palette and efficient use of the existing cleared grassland for the majority of the development.

Additionally, mulch will be generated from on-site clearing and re-used on site, topsoil will be stockpiled and re-used and natural rock and logs within the proposed excavation zone will be relocated to the APZ for habitat creation.

The landscape setting of this development is to be the filter through which the community will view the site, and therefore plays a significant role as a visually sympathetic development. Edmiston Jones have advised that the Illawarra Escarpment Landscape Area will be honoured in the landscape design through the selection of strong character species and the stratified nature of the site terracing, which will reflect the horizontal sandstone cliff character of the escarpment above the coastal plan.

Overall, Edmiston Jones are of the opinion that the design principles collectively achieve a sustainable and beautiful landscape solution for the proposed development that sensitively sits within its escarpment backdrop.

6.4.5. Water Management

The existing drainage conditions for the site are discussed in detail in Section 2.4.10 of this SEE and the Stormwater Catchment Plan (**Appendix 8**) demonstrates the stormwater drainage design for the proposed development. The stormwater design for the proposed development is discussed in detail in Section 3.10.1.

The proposed stormwater drainage design includes five (5) tiered underground OSD tanks under the driveways.

The site was modelled in DRAINS modelling software to ensure that the proposed development does not exceed pre-development flows in accordance with Council's requirements. The results of the DRAINS modelling undertaken by LandTeam are summarised in Table 7.

Table 7: DRAINS modelling results

Storm Event	Pre-Development Discharge	Post-Development Discharge
5 Year ARI	0.266m^3/s	0.226m^3/s
10 Year ARI	0.333m^3/s	0.244m^3/s
20 Year ARI	0.422m^3/s	0.323m^3/s
50 Year ARI	0.487m^3/s	0.471m^3/s
100 Year ARI	0.553m^3/s	0.546m^3/s

The results in the above table demonstrate that stormwater can be adequately managed within the site boundaries.

Treatment measures for the proposed stormwater run-off generated from the proposed development include:

- Gross pollutant traps;
- Bio-retention basin;
- Green roofs; and
- Rainwater tanks.

The WDCP 2009 specifies the minimum stormwater quality performance targets for development. Stormwater quality modelling using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) was undertaken to ensure that the proposed development meets these stormwater targets. Results of the MUSIC modelling undertaken for the proposed development are summarised in Table 8.

Table 8: MUSIC modelling results

Pollutant Type	Pollution Reduction Target	Actual Pollution Reduction
Total Suspended Solids	80%	87.8%
Total Phosphorus	55%	66.8%
Total Nitrogen	40%	42.4%
Gross Pollutants	90%	99.6%

(Source: LandTeam)

The results in the above table demonstrate that the proposed development meets minimum targets for water quality.

6.4.6. Soil Management

Refer to Section 4.5.2 of this SEE for the SEPP 55 assessment with regard to potential soil contamination. A Preliminary Site Investigation for Contamination report for the site has been prepared by GHD (**Appendix 7**) and concludes that the site is suitable for the proposed residential development.

Also refer to the ESCP prepared by LandTeam and included in the Civil Plans at **Appendix 8** of this SEE, which indicates that suitable soil management and sediment control measures will be adopted. This matter can also be addressed as a condition of consent.

6.4.7. Air and Microclimate

It is envisaged that some dust may be generated during the construction phase of the proposed development. An ESCP has been prepared by LandTeam and included at **Appendix 8** of this SEE. Hutchinson Builders have further identified the following measures that could be used to control dust during construction:

- All machinery and tools that generate dust are to be fitted with water attachments or dust removal devices.
- Exhaust systems, extraction fans and the like can be provided where necessary.
- All trucks carting material to and from the site are to have their loads appropriately covered.
- Any works involving production of silica dusts is not to be undertaken without formal controls being determined.

A detailed CMP will be provided by the contractor once appointed and prior to the issue of the Construction Certificate. This matter can be addressed as a condition of consent.

The proposal is otherwise not expected to give rise to any long term or adverse impacts on air quality or microclimate.

6.4.8. Noise and Vibration

Construction noise and vibration

It is envisaged that some noise may be generated during the construction phase of the development. Potential noise sources include vehicle movements, loading and unloading and methods of excavation for high strength rock such as the use of rock saws or large excavators with hydraulic rock hammers. This noise can be managed through the imposition of appropriate conditions that restrict the construction hours.

Operational noise

Noise may be generated during the operation of the proposed development as a result of waste collection. The waste/ recycling utility area and serving bay has been stepped down from the site boundary by approximately 2.7 metres. The retaining wall required as a result of the level change acts as an acoustic barrier/enclosure and will assist in minimising any noise that may be generated during waste collection activities.

In accordance with the PoM, signage will also be provided throughout the proposed development, reminding residents to be respectful of other residents and neighbours in relation to noise generation within communal areas. Use of the outdoor common areas (except for access) will be restricted to no later than 9.00pm Friday and Saturday, and 8.00pm on all other nights. The playing of amplified and/or canned music will also be prohibited within all outdoor communal areas.

6.5. Movement and Access

6.5.1. Transport

Public transport in proximity to the site is discussed in Section 2.4.11 and the Traffic Impact Assessment **(Appendix 11**). Bus routes in the area generally operate in a loop and provide connections between key destinations within Wollongong such as the University of Wollongong, Wollongong Railway Station and Wollongong Hospital. Further, North Wollongong Railway Station provides connections to Sydney in the north and Kiama in the south.

6.5.2. Parking

A Traffic Impact Assessment has been prepared to accompany this application and is included at **Appendix 11**, which includes an assessment of the proposed development against the relevant parking requirements.

Car Parking

The proposed development will adequately accommodate resident and visitor parking fully on site and not contribute to any on-street parking issues.

The total number of car parking spaces required for the proposed development by the WDCP 2009 is one-hundred and four (104) based on the provision of thirty-six (36) x 3 bedroom and eleven (11) x 4 bedroom dwellings, including ninety-four (94) residential car parking spaces and ten (10) visitor car parking spaces.

The proposed development provides a total of one-hundred and nine (109) car parking spaces across the site, including ninety-four (94) residential car parking spaces and fifteen (15) visitor car parking spaces. Therefore, the proposed development satisfies the car parking requirements set out within the WDCP 2009.

Accessible Parking

Neither the WDCP 2009 or BCA specify a rate for accessible car parking for visitors or residents within multi-dwelling housing developments and therefore reference has been made to the Australian Standards. In accordance with the Australian Standards five (5) of the proposed dwellings have been designed to be adaptable (i.e. minimum of 10%). Subsequently, an adaptable car parking spaces is required for each of the adaptable dwellings. These adaptable car parking spaces can be accommodated within each adaptable dwellings' double garage. This provision satisfies the requirements of the Australian Standards and is therefore acceptable.

Motorcycle Parking

The WDCP 2009 requires the provision one (1) motorcycle parking space for every fifteen (15) dwellings. Forty-seven (47) dwellings are proposed and therefore four (4) motorcycle parking spaces are required. The proposed development provides four (4) motorcycle parking spaces and therefore complies with the DCP.

Bicycle Parking

The WDCP 2009 requires the provision of bicycle parking spaces for the proposed development at a rate of one (1) space per three (3) dwellings for residents and one (1) space per twelve (12) dwellings for visitors. Based on the proposed development's provision of forty-seven (47) dwellings, sixteen (16) residential bicycle parking spaces and four (4) visitor parking spaces are required to be provided. The double garages proposed for each dwelling are of a size to be able to accommodate residential bicycle parking. Furthermore, there is sufficient space within common basement areas for the provision of visitor bicycle parking. The provision and design of visitor bicycle parking spaces can be addressed as a condition of consent. Therefore, the proposed development is capable of complying with the WDCP 2009 for bicycle parking.

6.5.3. Traffic

The site in its current form is undeveloped and therefore there is no existing traffic generation from the site. Based on the relevant requirements within the RMS Guideline to Traffic Generating Development, a weekday peak hour vehicle trip rate of 0.5-0.65 per dwelling has been applied to the proposed development. Based on the provision of forty-seven (47) dwellings and the adoption of a 80:20 split, the predicted trip generation volumes for the proposed development are thirty-one (31) vehicles per hour (6 in, 25 out) during the morning peak and thirty-one (31) vehicles per hour (25 in, 6 out) during the evening peak.

These trips will be distributed across the road network via Northfields and Murphys Avenues and Robsons Road. Traffic surveys confirmed that the intersections of Northfields Avenue, O'Leary Road and Robsons Road and Murphys Avenue and Robsons Road will continue to operate at a Level of Service A with the proposed development. Therefore, it has been concluded that there will be minimal impact on the locality's road network.

Refer to the Traffic Impact Assessment included at **Appendix 11** for further details regarding traffic impacts.

6.5.4. Servicing / Waste

Demolition and Construction Waste

A Construction Waste Management Plan has been prepared by Waste Audit and is included at **Appendix 17**. The appointed contractor(s) will dispose of the construction waste based on the type of material. Where possible, construction waste will be reused or recycled on-site or sorted for disposal off-site at a nominated facility.

Hutchinson Builders have advised that waste generated during the construction phase of the proposed development can be transported in skip bins and accessed via the proposed truck routes outlined in Figure 37. Truck movements would be restricted to left-in/left-out to Georgina Avenue based on the proposed routes.

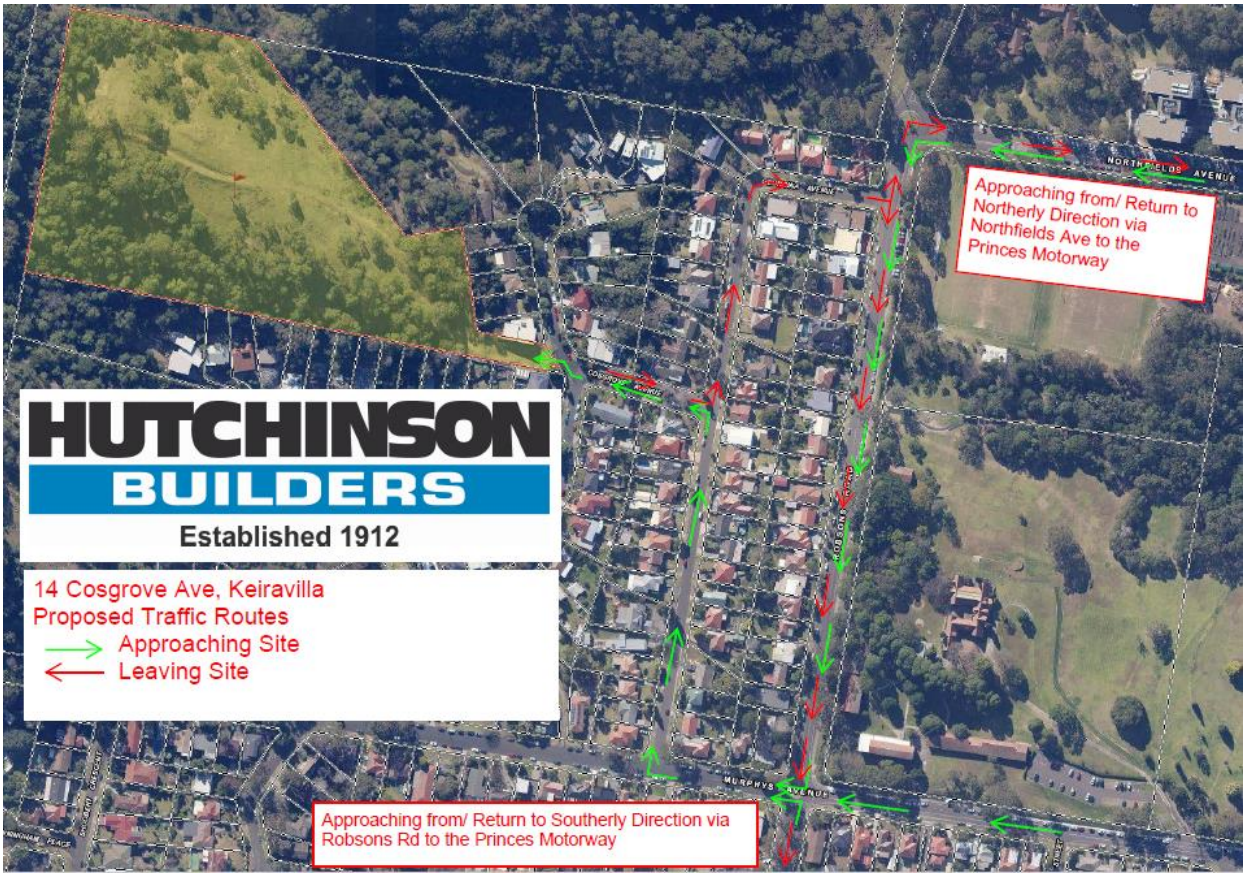

Figure 37: Proposed truck routes for construction (Source: Hutchinson Builders)

Operational Waste

Waste and recyclables generated during the ongoing occupation of the dwellings will be collected on-site by Council. A service bay for large rigid vehicles has been provided adjacent to the waste/ recycling utility area near the entry to the site. Access to the service bay will be undertaken via a reverse manoeuvre from the access driveway. Removalist vehicles will also be required to utilise this service bay near the entry to set down goods. Any bulky goods will then be required to be transported up the access driveway by light vehicles or vans. For one-off deliveries residents will be required to make suitable arrangements directly with the relevant retail company. The service bay has been designed and located to allow for entry and exit to the site in a forward direction.

A nominated contractor will be responsible for moving waste and recycling bins to and from the communal bin storage areas within the basement areas of Buildings 1 to 4 and the utility area for Building 5 to the waste/ recycling storage area near the entry of the site prior to and after Council's waste collection. The mechanism for transferring bins across the site will be at the discretion of the nominated person or company, and will be undertaken in accordance with the Plan of Management prepared for the site (**Appendix 12)**.

The Traffic Impact Assessment (**Appendix 11**) confirms this arrangement is acceptable due to the site's constraints.

6.5.5. Accessibility

An Access Review has been prepared by Morris Goding Access Consulting (MGAC) and is included at **Appendix 25**. The proposed development has been assessed under relevant provisions of the Disability Discrimination Act, BCA, Australian Standards and Disability (Access to Premises-Building) Standards 2010. Consideration has also been given to the relevant accessibility provisions contained in the WDCP 2009. Based on this review of the proposed development it has been concluded accessibility requirements pertaining to external site linkages, building access, common area access and parking can be readily achieved, except for the steep site gradient that will be addressed via a proposed BCA Performance Solution. Ingress and egress, paths of travel, circulation and common areas will also comply with the relevant statutory requirements for accessibility with the support of further BCA Performance Solutions. MGAC will work with the project design team at the Construction Certificate stage to ensure compliance is achieved. Compliance with the BCA and Access to Premises Standards can be conditioned as part of any consent.

6.6. Site Suitability

6.6.1. Geotechnical

A Geotechnical Investigation has been prepared by GHD for the site and is included at **Appendix 4** of this SEE.

No groundwater inflow was encountered within boreholes or test pits that were drilled as part of the investigation.

The site surface conditions/ topography observed on-site is detailed in Section 2.4.2 of this SEE. The moderately steep to very steep nature of the ridge's slopes has been considered in the design, with the developable area consolidated in the centre of the site where the slope of the land is not as steep, noting that the centre of the ridge contains some flatter areas associated with an existing man-made terrace. Figure 38 demonstrates how the proposed development has been designed to be geotechnically compliant.

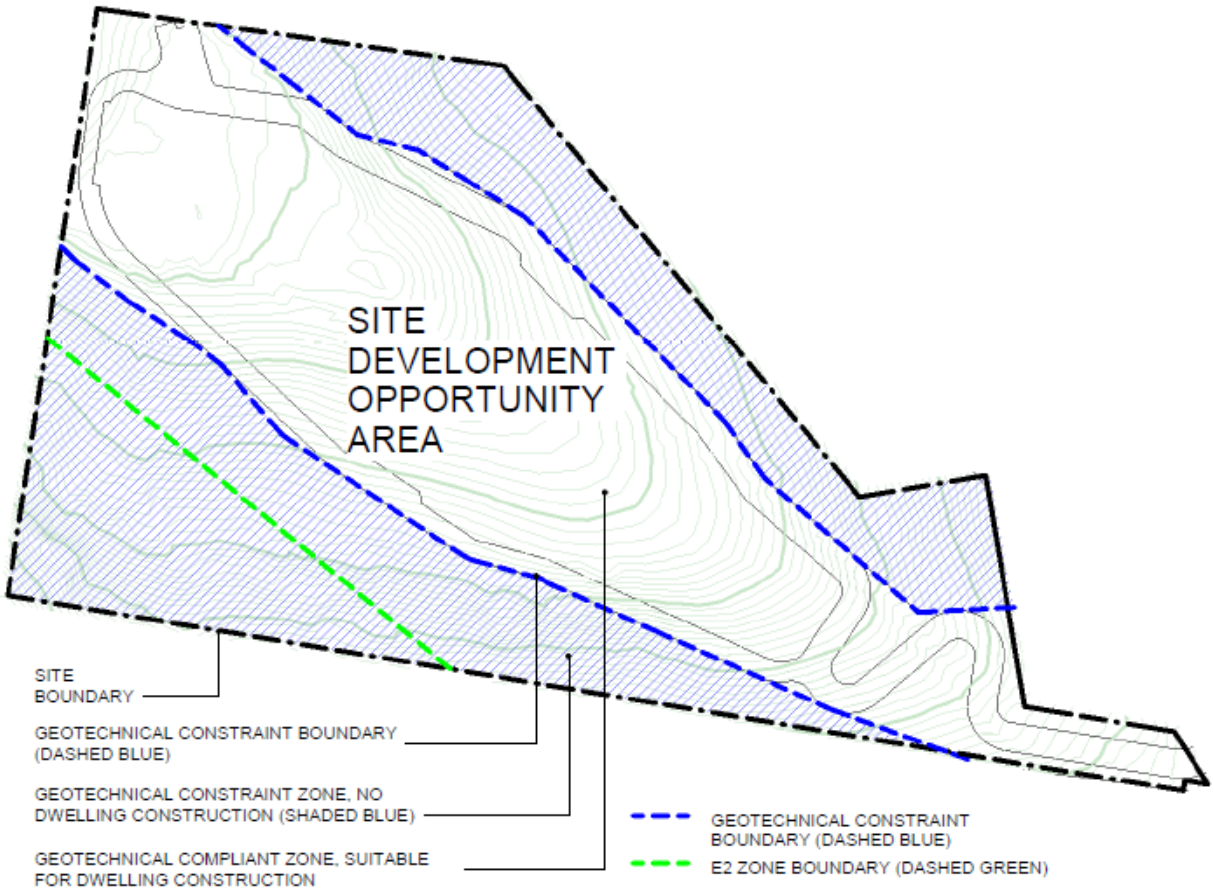

Figure 38: Geotechnical constraints plan (Source: Edmiston Jones)

Based on the risk of landslide due to the site's topography and the subsurface conditions that were encountered, the Geotechnical Investigation makes the following recommendations:

- The type of footings that are to be adopted for the five (5) proposed buildings are to be determined based on the proposed depth of the of each of the building basements and the ultimate design loads. Building footings are to be designed in accordance with the parameters identified in the Geotechnical Investigation.
- Excavation in building areas will require suitable retention systems for temporary and permanent support. Ground support will be required prior to excavation commencing given the excavation proposed.
- Unsupported temporary and/or permanent cuts should be battered or structurally retained based on the type of sub-surface conditions that are encountered, the depth of cut and the degree of steepness.
- Material excavated from the site is to be re-used on the site for fill where possible or disposed off-site.
- Allowance is to be made for the placement of working platform over identified clays if required, to minimise the disturbance of the surface materials from heavy vehicles accessing the site during construction.

- Surface water is to be managed during construction to avoid concentrated flows discharging to the sleep slopes and all exposed soils in excavation batters should be protected from erosion. LandTeam have prepared a Soil and Water Management Plan in accordance with this recommendation.
- Consideration is to be given to the construction of some sections of elevated pier supported concrete accessways, particularly where the accessways cross the steep to very steep sections of the sideslopes.

These matters could be addressed as conditions of consent.

6.6.2. Contamination

Refer to the Preliminary Site Investigation (PSI) for Contamination (**Appendix 7**) and Section 4.5.2 for the SEPP 55 assessment. The PSI concludes that the site is suitable for the proposed residential use.

6.6.3. Bushfire

The site is bushfire prone land as identified on Wollongong's Bushfire Prone Land Map included at Figure 9. A Bushfire Protection Assessment has been prepared by Australian Bushfire Protection Planners (**Appendix 16**). The assessment was prepared in accordance with the advice from the RFS included at **Appendix 13**.

The Bushfire Protection Assessment makes the following recommendations that have been adopted in the design:

- **Provision of APZ and Landscape Management**

Based on the location of existing and proposed vegetation within 140 of the proposed development, an APZ is required of 10 to 25 metres wide depending on the type of vegetation and the slope of the land. The proposed development has been designed to comply with the required APZs as shown in Figure 39, with an APZ of varying widths of 11 to 29 provided to the development to ensure protection from bushfires. Due to the steep slopes within the recommended APZ, a series of maintenance paths and stairs have been provided. A positive covenant is to be applied to this common area of the site to ensure that the APZ is maintained in perpetuity.

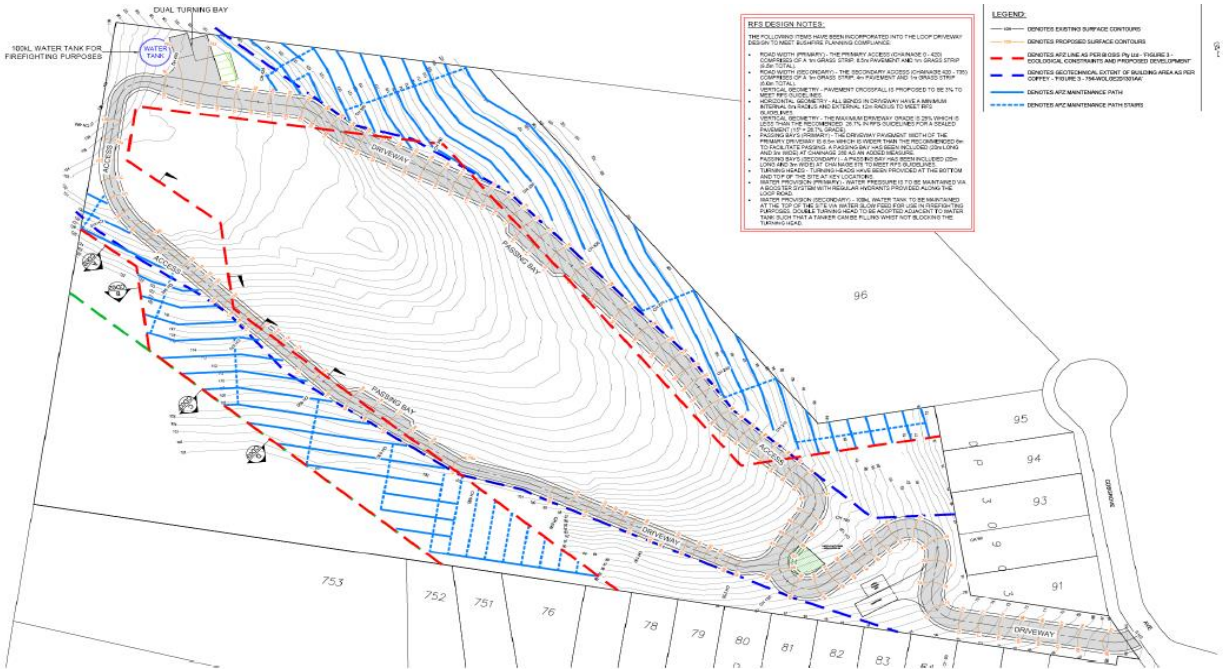

Figure 39: Plan of Asset Protect Management Paths extract (Source: Australian Bushfire Protection Planners Pty Ltd)

- **Access for Firefighting Operations**

A loop road from Cosgrove Avenue and around the proposed built form provides access on all sides of the development.

- **Water Supplies for Firefighting Operations**

A dedicated bushfire fighting water tank and parking bay are located in the north-west corner of the site. These have been provided to assist with firefighting operations given the steepness of the site. The dedicated tank will be recessed into the topography and will be screened by planting to minimise any visual impacts.

- **Building Construction**

The buildings are to be built to Bushfire Attack Level (BAL) 19 and 29 in accordance with the Australian Standards.

- **Roof Top Sprinklers**

The green roofs are to be irrigated to provide a wet-down to prevent ember ignition of the landscaped areas.

- **Emergency Management**

An Emergency Management and Evacuation Plan is to be prepared and implemented by the Strata Body.

The Bushfire Protection Assessment concludes that the proposed development satisfies the aims and objectives of *Planning for Bushfire Protection 2006* and therefore complies with Section 100B of the RF Act.

6.6.4. Services and Utilities

The site is an existing and well-established urban area with access to a range of services and utilities infrastructure.

Electrical

An existing kiosk substation is located on Lot 1 in DP 419934 adjacent to the site and fronting Cosgrove Avenue. This existing substation is to be decommissioned and removed as part of the proposed development and replaced with a new padmount substation in the north-east corner of the site adjacent to Cosgrove Avenue. The requirement for the new substation is confirmed by the Design Brief provided by Endeavour Energy (**Appendix 13**). Compliance with the specifications in the Design Brief can be conditioned as part of a development consent.

Water and Sewer

Sydney Water has provided a feasibility letter for the proposed development that is included at **Appendix 13**. This letter confirms that the existing 100 millimetre cast iron cement lined (CICL) water main in Cosgrove Avenue can accommodate the proposed development without the need for any amplification of water mains. In terms of sewer there is an available 150 millimetre vitrified clay (VC) sewer main in Cosgrove Avenue. A minor extension of the sewer will be required to provide the point of connection to this sewer main.

Gas

EWFM have prepared a Building Services Statement for the proposed development and is included at **Appendix 26**. In accordance with this statement a natural gas system is to be implemented within the development and will extend from the 32 millimetre nylon Authority Gas main located in Cosgrove Avenue to the gas boundary regulator at the property boundary with a gas pressure of 5kPa to be confirmed by the operator. The gas reticulation shall extend from the boundary regulator assembly to all five (5) proposed buildings.

6.6.5. Aboriginal Archaeology

An Aboriginal Cultural Heritage Assessment has been prepared by Biosis is included at **Appendix 21**. Consultation with the local Aboriginal community revealed Keiraville to have high cultural significance due to its proximity to Mount Kiera as an area that contains a known dreaming story and was used for ceremonial purposes. A field investigation identified one (1) area of potential archaeological deposit (PAD). This PAD was located on a flat section of the ridgeline as shown in Figure 40 and had remained relatively undisturbed.

Figure 40:Test excavation results (Source: Biosis)

Test excavations undertaken within the PAD did not identify any Aboriginal archaeological deposits. Furthermore, the results of the test excavations confirmed the presence of colluvial soils of the Illawarra Escarpment, which are identified as having undergone significant disturbances from mass movement and erosion. Subsequently, the ACHAR confirms that there is low archaeological potential for Aboriginal sites or objects to be present on the site and no harm to Aboriginal sites is likely to occur as a result of the proposed development.

Biosis have suggested a number of management recommendations based on the results of the ACHA assessment, including stop work provisions for any potential heritage sites or human remains identified during construction.

The recommendation to implement an interpretation strategy is at the developer's discretion, noting that the ACHA assessment has confirmed harm to Aboriginal sites by the proposed development is unlikely.

6.7. Social and Economic Effects

6.7.1. Crime and Safety

Crime Prevention through Environmental Design (CPTED) is a recognised model that provides that if development is appropriately designed it can reduce the likelihood of crimes being committed. By introducing CPTED measures within the design of the development, it is anticipated that these will assist in minimising the incidence of crime and contribute to perceptions of increased public safety in the locality. The principles of CPTED include surveillance, access control, territorial reinforcement and space management.

The planning, layout and materials of the proposed development have been designed and selected in consideration of the principles of CPTED as assessed in the Crime Risk Report included at **Appendix 27**.

The Crime Risk Report concludes based on the analysis undertaken in relation to the principles of CPTED that there does not appear to be any likelihood that the proposed development will adversely affect crime levels in the area, with the incorporation of design features that address potential crime risks, including:

- Appropriate lighting, CCTV, landscaping and sightlines to increase surveillance and promote feelings of safety.
- A clear transition from communal to private areas, with private and servicing areas having suitable access control.
- Extensive communal open space and shared facilities throughout the proposed development will encourage positive social relationships amongst neighbours and a sense of ownership and care over the space.
- Appropriate space management strategies which include ongoing landscaping, site maintenance and graffiti removal.

Overall, the proposed development has been found to offer a high level of amenity, casual surveillance, and ultimately resident and visitor safety throughout both communal and private areas of the site.

6.7.2. Social, Economic and Employment

The proposed development will provide additional housing close to existing services, facilities and transport. The site is within walking distance or a short drive to public transport such as buses and trains, educational establishments (e.g. University of Wollongong), Wollongong Hospital and Wollongong Central shopping centre. The site is also ideally located to enjoy the beaches along the Illawarra coastline and the nature of the escarpment.

The proposed development will provide additional housing choice in the form of multi-dwelling housing in an area that generally comprises low density residential development of one and two-storey dwelling houses. Multi-dwelling housing developments already exist between Murphys Avenue, Robsons Road and Princes Motorway, however, the majority of these developments appear to be quite old and are not as generously sized as the dwellings that will be provided by the proposed development (i.e. minimum 3 and 4 bedrooms). The proposed development also offers views over Wollongong and to the coast unlike other similar developments and provides high-quality communal open space areas that can provide for the various needs of residents.

The Architectural Plans that accompany this application and included at **Appendix 2**, demonstrate the high standard of built form that will be achieved on the currently undeveloped site. High quality materials and finishes have been incorporated into the design of the proposed development to create a modern and visually aesthetic development that is sympathetic to and reflective of its natural environment. The incorporation of significant landscaping at the ground level and between and on top of buildings, further seeks to provide improved visual amenity from the public and private domains and for residents.

The proposed development will also have a positive economic and employment impact through the generations of jobs in the Wollongong LGA during the construction and operation phases of the development. These jobs will be generated both directly on the site and indirectly through the supply chain.

6.7.3. Public interest

Pursuant to existing case law of Ex Gratia P/L v Dungog Council ([2005] NSWLEC 148), the question that needs to be answered to establish if a development is in the public interest is "Whether the public advantages of the proposed development outweigh the public disadvantages of the proposed development?"

There are no unreasonable impacts that will result from the proposed multi-dwelling development on land zoned R2 and currently cleared and vacant, therefore, the benefits of providing high-quality additional housing supply that can accommodate different households outweigh any disadvantage and as such the proposed development will have an overall public benefit.

7. CONCLUSION

This DA seeks approval for a multi-dwelling housing development at 14 Cosgrove Avenue, Keiraville.

This SEE has undertaken an environmental assessment of the proposal and has concluded that the proposal provides a built form that is consistent and compatible with the desired future character of the site and the surrounding locality, to provide low-density residential development that is sympathetic to the Illawarra Escarpment.

In summary, the proposal is considered to:

- be an appropriate response to the context, setting, planning instruments and development guidelines and other considerations outlined in Section 4.15(1) of the EP&A Act;
- provide a built form consistent with and appropriate to the desired future character of the site. The proposed development complies with the maximum building height and FSR prescribed by the LEP. The proposed development also generally complies within the provisions of the Wollongong DCP.
- will not detract from the high level of amenity that is currently enjoys by residents living in adjoining properties.
- provide employment opportunities during construction and again during its operation for private contractors.
- have no adverse impacts on the environment, traffic, parking, drainage, flora, fauna, bushfire or other external features or services. Where impacts have been identified mitigation and management measures have been recommended.

The proposal will deliver a suitable and appropriate development and is worthy of approval. After a careful and thorough review of all the site's opportunities and constraints, the identified developable area can be reasonably built upon for the proposed multi dwelling purpose. All concerns in relation to flora, fauna, bushfire, heritage, geotech, stormwater, visual impact, traffic and parking etc can be satisfactorily managed.

APPENDIX 1

Planning Table of Compliance

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 2

Architectural Plans

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 3

Site Survey

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 4

Geotechnical Investigation

APPENDIX 5

Aboricultural Impact Assessment

APPENDIX 6

Biodiversity Development Assessment Report

APPENDIX 7

Preliminary Site Investigation

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 8

Civil Plans, Statement and Water Study

APPENDIX 9

Landscape Plans

APPENDIX 10

Vegetation Management Plan

APPENDIX 11

Traffic Impact Assessment

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 12

Plan of Management

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 13

Advice from Endeavour Energy, Sydney Water and RFS

APPENDIX 14

QS Report

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 15

Pre-Lodgement Meeting Advice

APPENDIX 16

Bushfire Hazard Assessment

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 17

Waste Management Plans

APPENDIX 18

Clause 4.6 Variation Request

APPENDIX 19

Visual Impact Assessment

APPENDIX 20

Statement of Heritage Impact

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 21

Aboriginal Cultural Heritage Assessment

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 22

BASIX and NaTHERs Certificates

APPENDIX 23

BCA Compliance Statement

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 24

Fire Engineering Statement

APPENDIX 25

Access Review

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 26

Building Services Report

City Plan Strategy & Development P/L
Suite 6.02, 120 Sussex St, Sydney NSW 2000
P +61 2 8270 3500
CITYPLAN.COM.AU

APPENDIX 27

Crime Risk Assessment