



**Link Road Structure Plan
Design Report**



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A handwritten signature in blue ink, appearing to read "GE".

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If this document is not signed it is a draft.

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OVERVIEW

INTRODUCTION

Eden Estates' landholding is in the western area within the City of Newcastle and the northern area of Lake Macquarie. The site was formerly a coal mine and is now being investigated to deliver a new urban development with a range of living, shopping, entertainment, recreation, education, and environmental facilities.

A Structure Plan has been prepared for the site following site investigations on biodiversity, geotechnical stability, bushfire, infrastructure, and services.

This design report explains the analysis of the site, how the vision has evolved and how it is captured in the Structure Plan.

Despite its history as a coal mine, the site contains native vegetation and fauna. The site has been subject to extensive ecological assessment to understand and confirm the environmental values and how these values can be embodied in a structure plan to create a community in a setting of native bushland and natural creeks.

The key preliminary site assessments that have informed the evolution of the design include:

- Aboriginal Cultural Heritage
- Biodiversity
- Geotechnical Stability

Preliminary assessment of bushfire, contamination and non-Aboriginal heritage have also been completed. The Structure Plan has considered *Planning for Bushfire Protection 2019* policy requirements including enabling perimeter roads around the interface with bushland areas and providing multiple egress routes for evacuation. Whilst the site has no non-Aboriginal heritage items that shape the design, the former stream tram line is already interpreted with the existing regional share path and the site has an interesting history that can be interpreted throughout the development.

The Structure Plan and design report will inform and guide more detailed investigations and analysis of the site to support future development. These assessments will include analysis on demands for social infrastructure, education, and recreation facilities. There will also be assessments on demands for retail and commercial activities, impacts on transport and traffic, and requirements for stormwater management facilities.

The Structure Plan is a robust design that has considered numerous physical attributes of the site and a range of aspirational objectives to ensure the delivery of an outstanding development. This design report details what these considerations are and how they have shaped the Structure Plan design.

PURPOSE OF THIS REPORT

A Structure Plan has been prepared for the site to inform a Planning Proposal to rezone land within the site. The purpose of this design report is to present the Structure Plan for the Eden Estates landholding and explain the site considerations and development objectives that have influenced the design for the site.



LAND & SITE DETAILS

LAND DETAILS

The Eden Estates landholding includes 11 existing lots with a total area of approximately 570 hectares.

Lot 2 DP800035	Lot 350 DP1167367
Lot A DP36897	Lot 3051 DP1202601
Lot B DP36897	Lot 3052 DP1202601
Lot 1 DP192650	Lot 3053 DP1202601
Lot 1 822151	Lot 31 DP35580
Lot 3057 DP1208470	

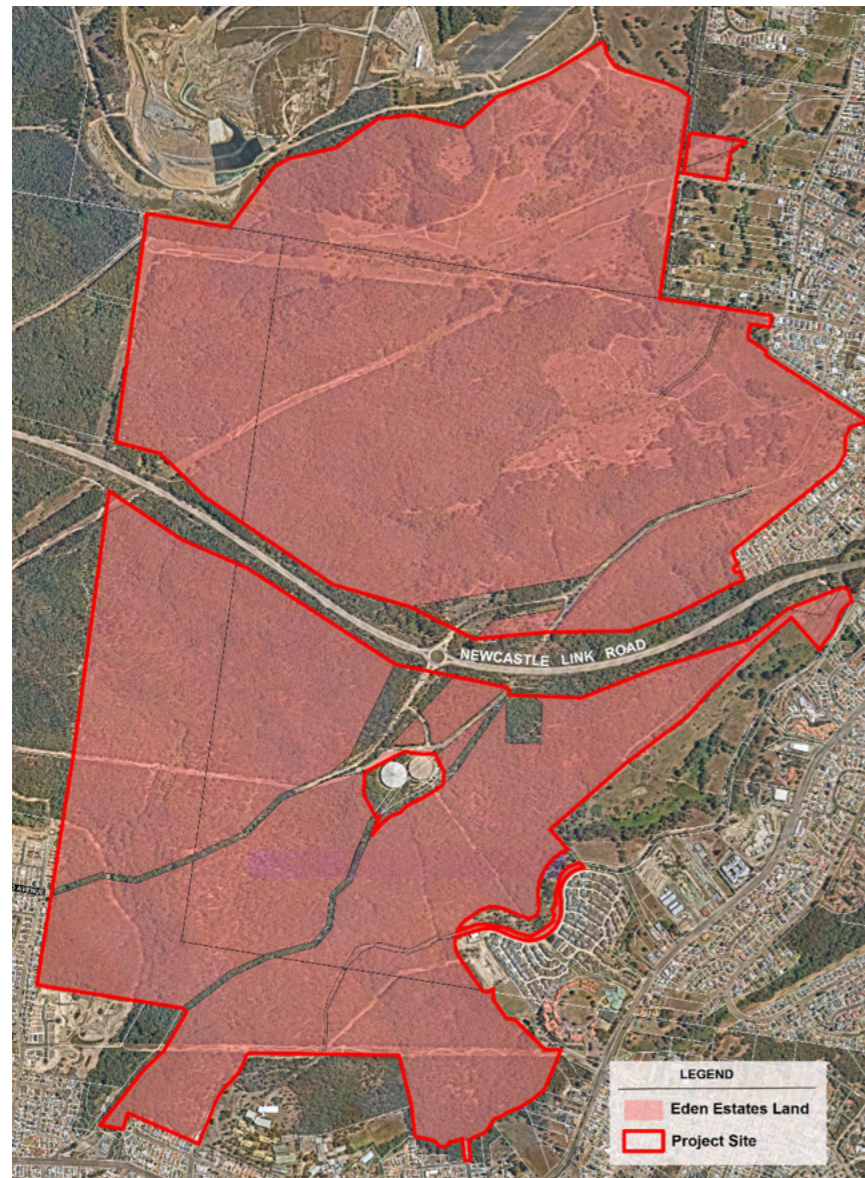


Figure 1 – Eden Estates Landholdings

SITE DESCRIPTION

The Eden Estates landholding forms most of the land within the Project Site (the 'site').

The site is a former colliery and has been subject to extensive underground mining and surface activity, particularly in the north.

Land within the site has variable topography with elevations extending from 4m AHD to almost 100m AHD. The landform varies from flatter grades to steep slopes throughout the site.

The land is extensively covered in vegetation with some cleared areas in the north which have been subject to the surface mining activity.

The site spans the boundary of two Local Government Areas of the Newcastle City and Lake Macquarie City Councils, and straddles five suburbs:

- Wallsend
- Cameron Park
- Edgeworth
- Elmore Vale
- Glendale

Newcastle Link Road bisects the site into two, with areas to the north and south of the major road. The north and south legs of a large roundabout on Link Road provide the main access points to the site. Other site access points are generally from local roads in the surrounding residential areas.

There are numerous 'paper' road reserves within the site, however these road reserves do not contain constructed public roads or provide public access for vehicles. The land within the road reserves is included in the site as it is integral to the proper design and development for the project area. The area of the site including Eden Estates land and road reserves is approximately 592 hectares.

The site contains overhead high voltage electricity transmission infrastructure including 330kV and 132kV lines. There are also water reservoirs within the southern portion of the Eden Estates landholding and mains infrastructure supply urban land to the south.

LOCATION

The site is located approximately 12km west of the Newcastle CBD and approximately 4km east of the M1 Pacific Motorway / Hunter Expressway / Newcastle Link Road interchange. Speers Point is approximately 4.5km to the south.



Figure 2 – Location

REGIONAL CONTEXT

The site is located within an urban area in the west of Greater Newcastle on the edge of the metro core.

The Newcastle CBD and Newcastle Port to the east (within 12km) are major economic activity and employment areas in the region. The Newcastle Airport and RAAF Base Williamtown are 22km to the northeast and the wine country of the Hunter Valley is approximately 30 km to the west.

There are numerous key regional facilities located between the site and the Newcastle CBD. The University of Newcastle is ranked within the world's top 200 universities and is located 5.2km to the northeast.

The John Hunter Hospital provides a full range of medical services and is the centre for the John Hunter Health and Innovation Precinct, which will incorporate state of the art research and education facilities. It is located 4.6km to the east and is the most important medical facility in the region.

A sports precinct is located 7.8km to the east, comprising a sports stadium and harness racing track in Broadmeadow. There are early discussions to revitalise the precinct to include additional sporting fields, a sports centre, hotel, and improved tennis, hockey and football facilities and parks.

The North West Lake Macquarie Catalyst Area is located immediately to the south, comprising seven precincts to guide new urban development, urban renewal, economic activity and employment generation. The Catalyst Area is a focus for urban development in the northwest of Lake Macquarie and promotes expanding urban development towards the Newcastle Link Road north of Glendale.

Newcastle Link Road is the main transport route between the Newcastle CBD and the M1 Motorway and Hunter Expressway interchange, and it bisects the site. It provides easy access to the both the north and south portions of the site and will form primary access to future development.

The Link Road provides direct connections to all major activity nodes including the Newcastle CBD, Newcastle Port, John Hunter Hospital, University of Newcastle and sports precinct.

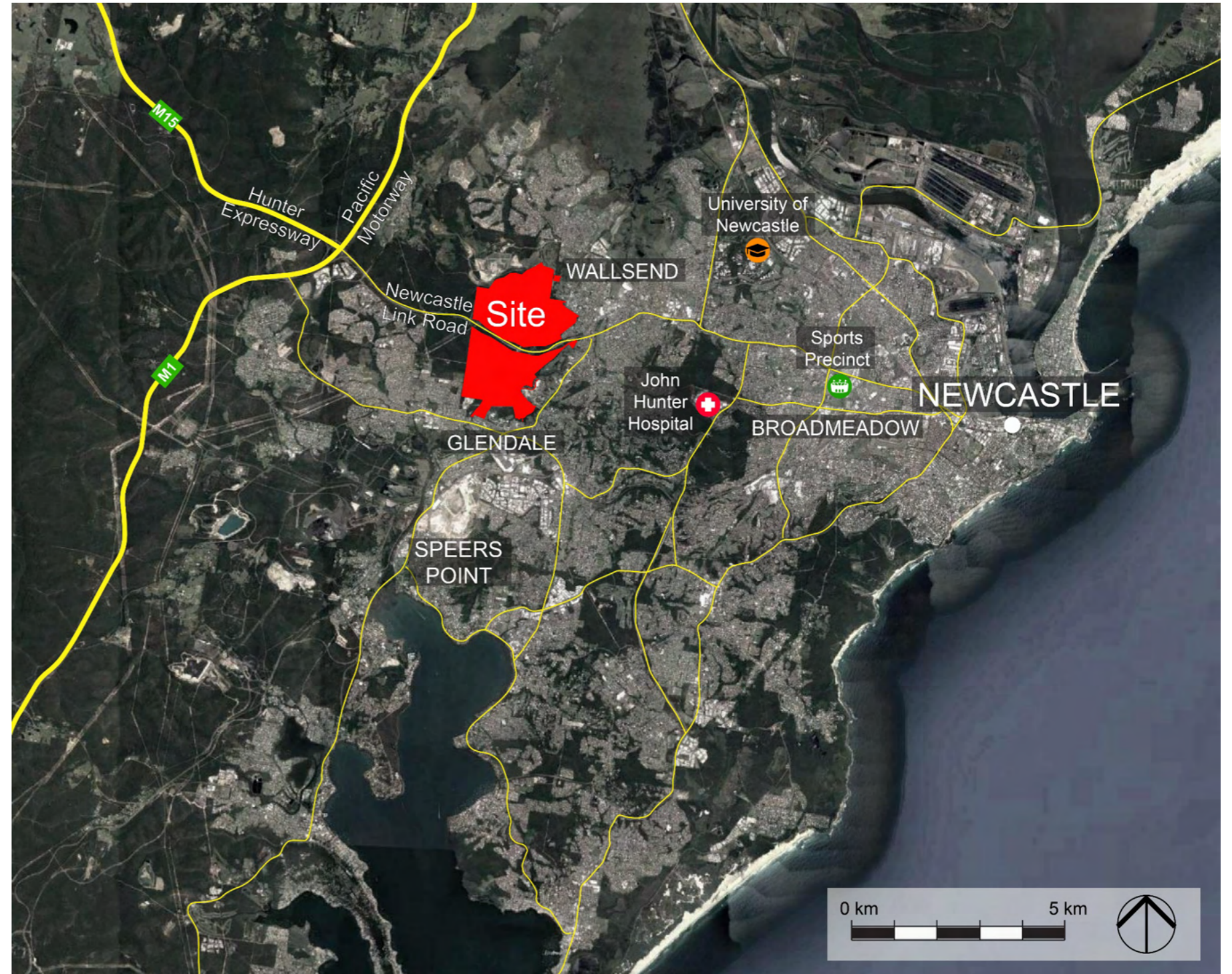


Figure 3 – Regional Context

LOCAL CONTEXT

The Newcastle Link Road connects with other major arterial roads around the site. Lake Road is to the east of the site and extends to the south to connect with Lake Macquarie. Main Road is an east-west arterial road to the south of the site and a section of Minmi Road is to the west. A separate section of Minmi Road is to the north east extending from the Link Road to the northern areas of Fletcher.

Land surrounding the eastern, southern and southwestern boundaries is predominately established residential and suburban in character. The land to the west, which was also subject to historic coal mining, has been planned and zoned for future residential development and there are large rural lifestyle lots to the northeast.

A sub-regional shopping centre is located approximately 1.2 kilometres south in Glendale with a large employment lands area further south of the sub-regional centre. There is also a rail line that provides local and intercity services between Newcastle and Sydney.

There are numerous district and local centres in the existing urban areas, with a district centre at Wallsend, which is less than one kilometre from the site boundary in the north.

The Glendale TAFE college is adjacent to the south site boundary. There are also numerous public and private primary and secondary schools to the east and south.

A regional sports centre is located next to the Glendale shopping centre which includes indoor and outdoor sporting facilities. There are numerous playing fields to the east and south that support a range of different sports. The Blue Gum Hills Regional Park is to the northwest.

The Summerhill Waste Management Centre is located north of the site within a large landholding owned by Newcastle City Council. The waste facility is active, and the Council landholding also contains a solar farm and cleared land immediately north of the site boundary.

The well-established residential areas in the locality contain a range of retail, recreational and educational facilities.

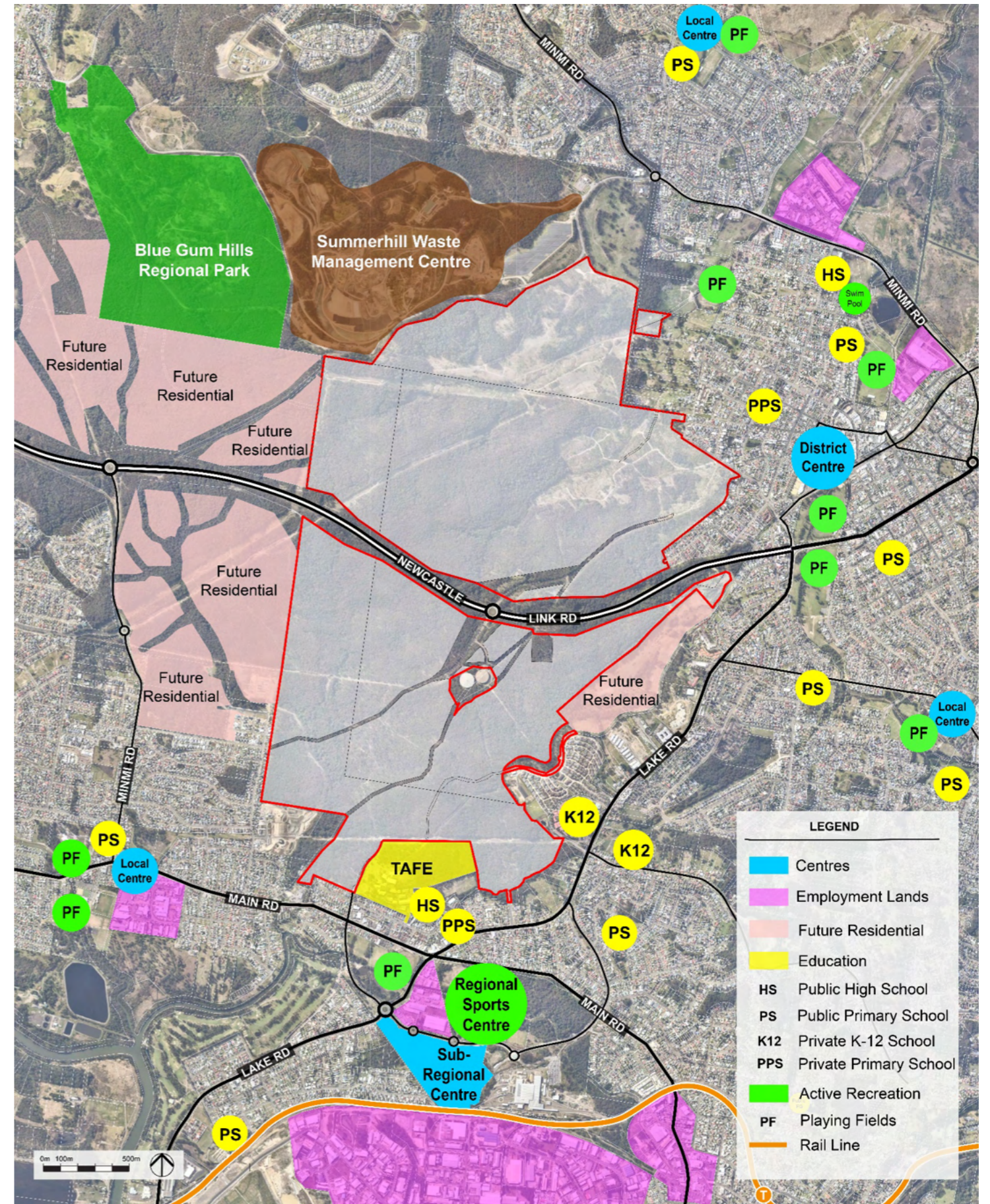


Figure 4 – Local Context

SITE ANALYSIS

SITE APPRECIATION

The site is mostly covered with vegetation and has a wide-ranging landform that is delineated into elevated and lower lying areas that typically transition with steep slopes.

The site has many areas with natural attraction. With its ever-changing landform and creeks, extended views are offered from the elevated areas. There are areas of high aesthetic quality within the creeks, including waterbodies, rocky gullies and exposed sandstone.

The site analysis in this report describes the key site attributes that have defined the Structure Plan.



Figure 5 – Site Photo Locations



SITE ANALYSIS

TOPOGRAPHY & SLOPE

The site has ranging topography with elevations extending from 4m AHD in Brush Creek (see Figure 7) to the south of Link Road to almost 100m AHD in the most elevated areas north of Link Road.

With a change in elevation of over 90m, the site has varying landforms with distinctive elevated and lower lying areas. The transition between these areas are typically steep slopes, but these areas can be incorporated into the overall development.

The portion of the site north of Link Road is 10m AHD at its lowest point to the northeast and 98m AHD at the highest point to the west. The elevated land within the northern portion of the site is in the west and adjacent to the boundary with Link Road.

The portion of the site south of Link Road is 4m AHD at its lowest point within Brush Creek to the south and 94m AHD at the highest point where the Hunter Water tank site is located. The elevated land within the southern portion of the site is along the boundary with Link Road, with land in the southern portion of site predominantly lower in elevation.

The contrasting elevations results in steep slopes along the changes in topography, with changes in grades that are unsuitable for urban development and limit access between the transition in levels. However, the sloping areas do provide visual interest and attraction in the natural features of the site and can be included in the bushland areas and accommodate paths and trails.

The sloping areas with grades 20 percent or greater are generally considered a threshold for urban development. This is because development on land 20 percent or higher requires extensive changes in landforms and it is difficult to satisfy road design standards. The sloping areas can be incorporated within the overall development

Key design response principles:

- **Locate development on flatter landforms**
- **Generally avoid areas with grades greater than 20 percent for urban development (i.e. housing, roads)**
- **Include sloping land in bushland areas of site**

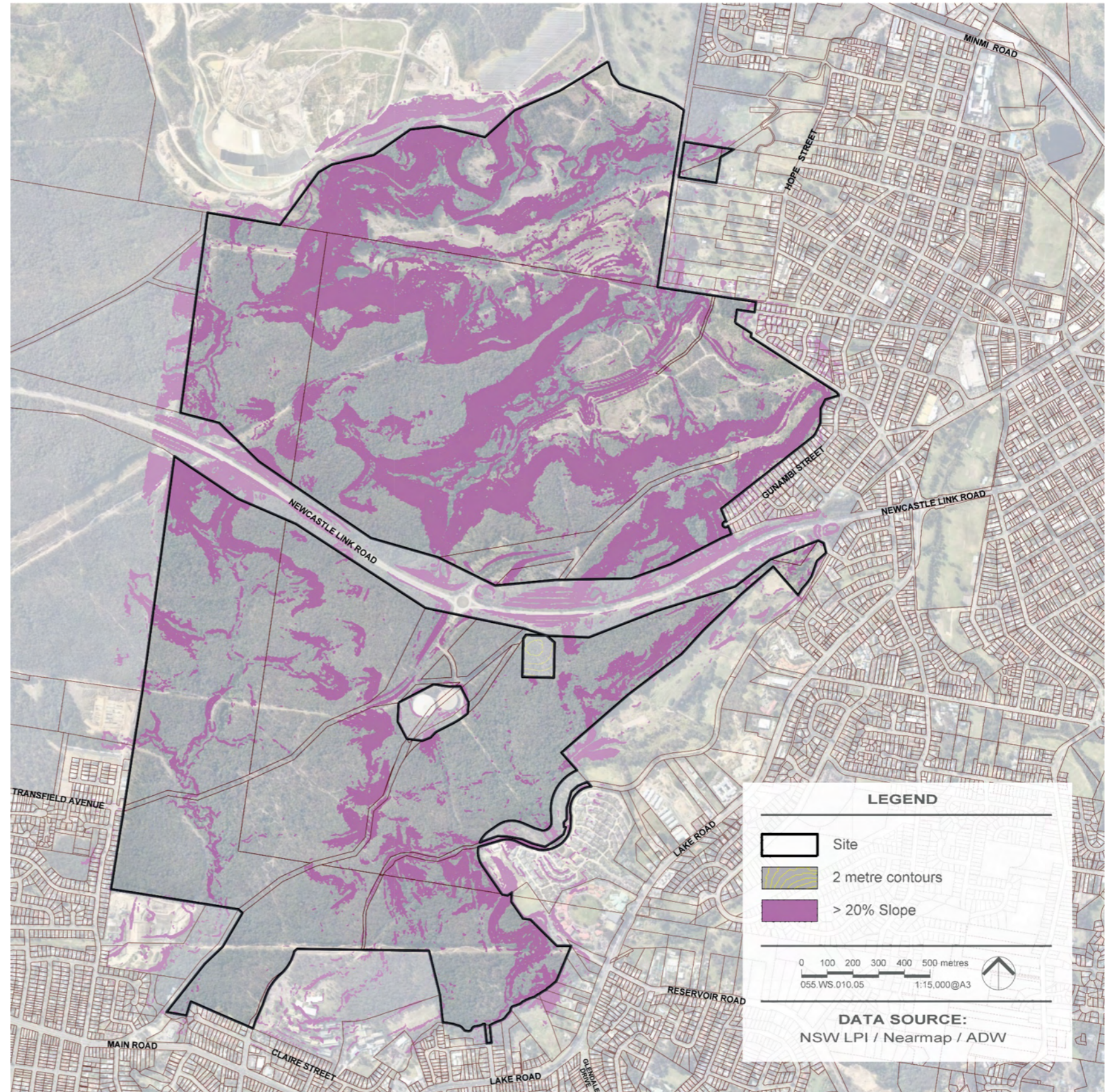


Figure 6 – Contours & Slope >20 Percent

SITE ANALYSIS

CREEKS & RIPARIAN CORRIDORS

The lower lying areas are defined by the creeks and streams that traverse the site. There are five riparian systems that extend into the site from various directions and typically the start of all riparian areas are within the site.

The riparian systems are mostly Category 1 or 2 streams under the NRAR 'Guidelines for riparian corridors on waterfront land' with one Category 3 stream in the south of the site. The adopted widths of the vegetated riparian zone areas adjoining the channel of the stream are detailed below.:

Stream Type	Vegetated Riparian Zone Width
Category 1	10 metres
Category 2	20 metres
Category 3	30 metres

There are two distinct riparian systems in the north that flow and discharge to the northeast towards the Hunter River, with one named Maryland Creek. Both Maryland Creek and the second creek have been subject to physical change as part of the historical surface mining within this northern part of the site.

The largest riparian system is Brush Creek within the southern portion of the site, which extends beyond the site boundary to the west. This riparian system flows southwards to Lake Macquarie.

There are a small number of riparian areas that require further detailed site investigation to determine whether they provide natural drainage and riparian function. Notably a drainage line is identified in the NSW Land & Property Information topographic mapping on the eastern side of Brush Creek in the southwest of the site. It is shown without a riparian corridor and will be subject to future assessment.

There are two other smaller creeks in the southeast of the site. One flows to the south towards Lake Macquarie and the other flows to the northeast to the Hunter River.

The riparian areas are important assets to form the green and blue grid networks within the site and grid connections to the other areas in the locality. The riparian areas are to be confirmed and preserved and will form an important environmental asset and feature for development within the site.

Key design response principles:

- Assess and preserve creeks and riparian areas
- Integrate riparian protection areas with larger tracts of bushland
- Retain and protect online waterbodies
- Establish a green and blue network with creeks and riparian corridors
- Minimise road crossings of riparian areas

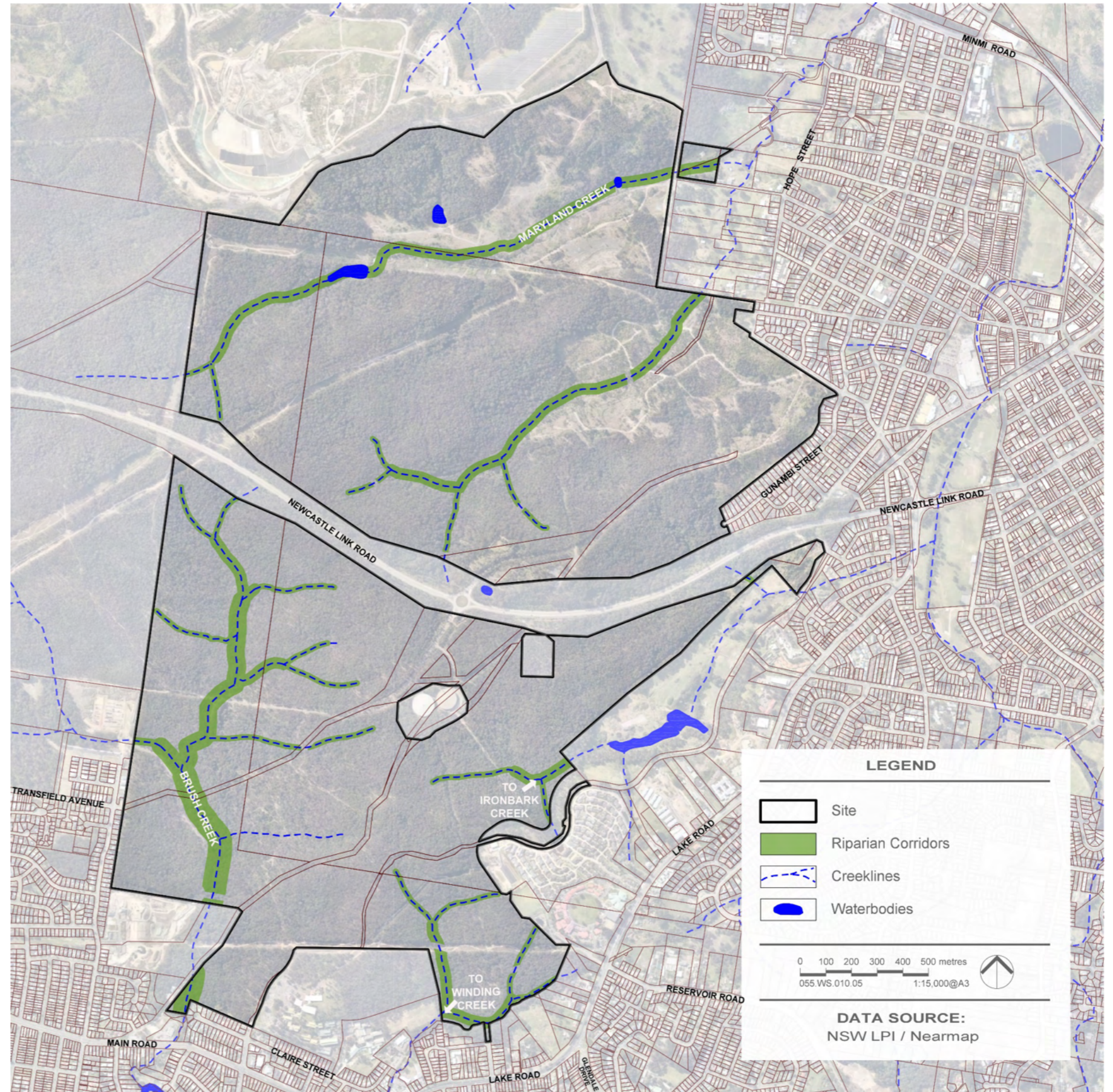


Figure 7 – Riparian Areas

SITE ANALYSIS

HIGH POINTS & RIDGELINES

In contrast to the riparian areas, the highpoints and ridgelines define the most elevated areas and the catchment boundaries within the site.

The northern portion of the site has three ridgelines and numerous high points that distinguish two main catchments. These ridgelines typically extend from the southwest to align to the northeast where they terminate. The ridgeline along the northern boundary with the Summerhill Waste Management Centre forms a convenient physical and visual barrier to the waste facility.

The southern portion of the site has a central dominant ridgeline south of the Hunter Water tank site orientated north-south. There is a large catchment to the west of the central ridgeline and two smaller catchments to the east.

The high points and more prominent ridgelines delineate areas within the site that have individual character in aspect, natural features and environmental assets. Areas within the site defined by more prominent ridgelines provide opportunities to capture identity and aesthetic value in the new urban areas.

Key design response principles:

- **Maintain dominant, elevated protruding ridgelines**
- **Preserve the ridgeline between the site and Summerhill Waste Management Centre**
- **Integrate ridgelines with paths, trails and lookouts**
- **Incorporate narrow ridgelines into green grid network**

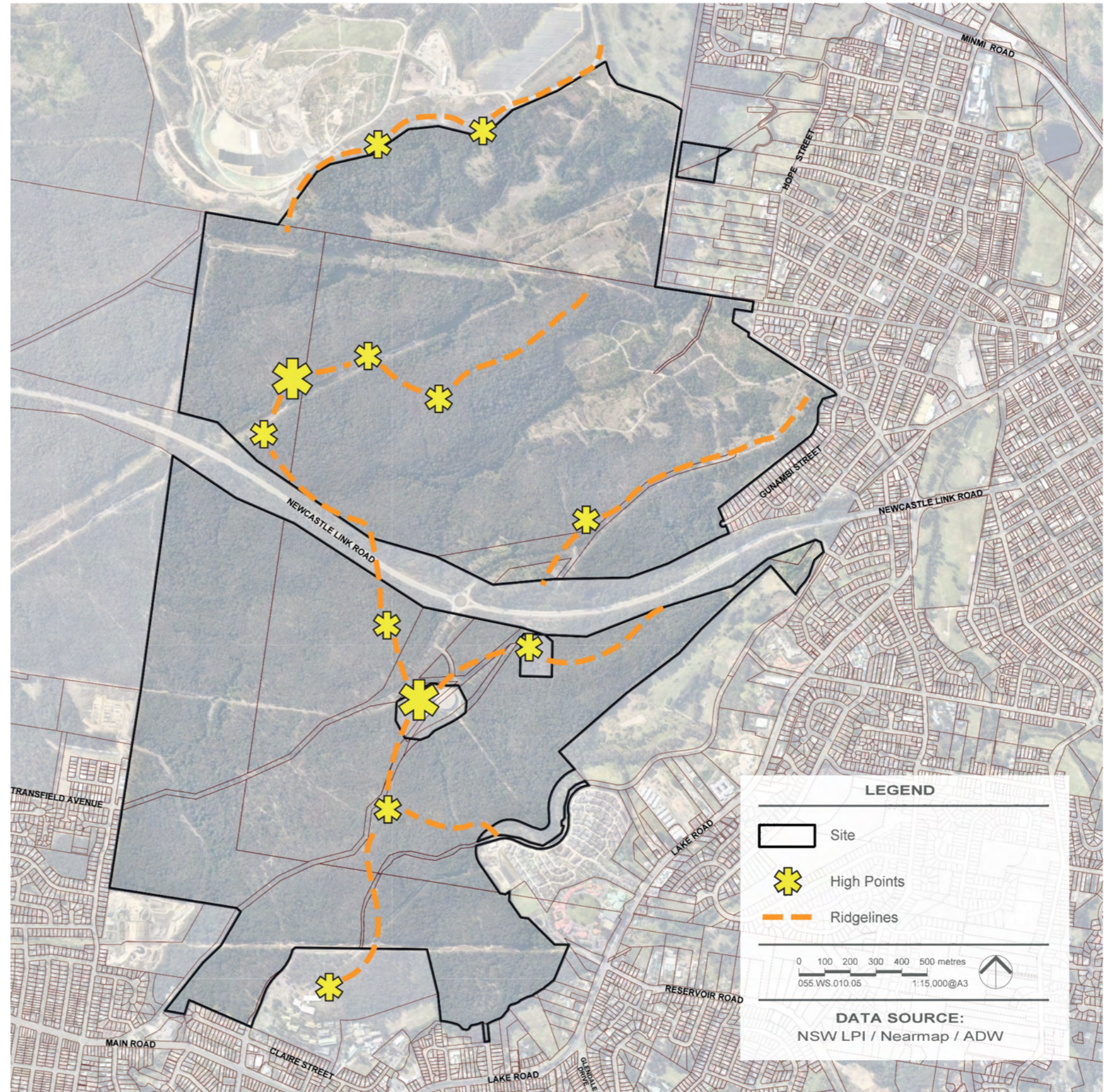


Figure 8 – High Points & Ridgelines

SITE ANALYSIS

BIODIVERSITY & HABITAT

The site has subject to comprehensive ecological surveys by AEP and other select experts throughout 2020 to ensure that significant biodiversity values are identified and duly considered in the design and delivery of the new community. This has included numerous site surveys for ecological communities, flora and fauna species throughout 2020 in accordance with the NSW Biodiversity Assessment Methodology (BAM).

Whilst some biodiversity investigations are still to be completed to meet all seasonal assessment requirements, there is a comprehensive understanding of the environmental and biodiversity values within the site. Importantly, the significant biodiversity values need to be respected and it is essential that a balance in the land to be developed and the land to be retained and conserved for biodiversity and habitat is achieved.

The site is predominantly covered with native vegetation with cleared areas in the north, where there has been historical surface mining activity.

The results of the extensive surveys of the various ecological communities, threatened fauna and flora species, hollow-bearing trees and other notable habitat features have been digitised and collated into a detailed GIS database. This database of biodiversity information is a key input into the urban design process.

Two species of highest individual biodiversity significance within the site are predominately located in the area north of Link Road, which are the Scrub Turpentine (*Rhodamnia rubescens*) and Powerful Owl (*Ninox strenua*).

Scrub Turpentine is a critically endangered species in NSW and there are numerous areas within the site where specimens of Scrub Turpentine are in high concentrations, which are more common in and around the riparian areas. High concentrations of the Scrub Turpentine need to be preserved to avoid any serious and irreversible impacts.

There are two Powerful Owl nests located within the site and a 100m buffer has been demarcated around the nest sites in accordance with the BAM to provide protection for this key habitat. Land within this 100m offset is not suitable for development.

There are also numerous water bodies and associated surrounding buffers (200m) that offer important habitat for the Southern Myotis (*Myotis macropus*).

Glossy Black-Cockatoo (*Calyptorhynchus lathamii*) were identified on the site, which coincided with a large coastal push of this species following the 2019 / 2020 bushfires. Most activity and potential breeding habitat was identified in the southwest of the site, but no evidence of breeding was observed during targeted surveys. This area of potentially important habitat is also demarcated.

Other threatened flora species have also been recorded and mapped within the site, including:

- Black-eyed Susan (*Tetratheca juncea*)
- Nettle Bottle Brush (*Callistemon linearifolius*)
- Small-flower Grevillea (*Grevillea parviflora subsp. parviflora*)

It is intended to obtain biodiversity certification for development areas within the site, with retained areas being utilised for conservation purposes as a Biodiversity Stewardship Site. Consultation with relevant government agencies has occurred, and all agree this is the preferred assessment vehicle and outcome approach for the site.

Key design response principles:

- **Avoid development within Powerful Owl habitat areas (100m buffer)**
- **Avoid and distance development from concentrations of Scrub Turpentine**
- **Minimise development within Southern Myotis habitat**
- **Minimise impacts on threatened flora species**

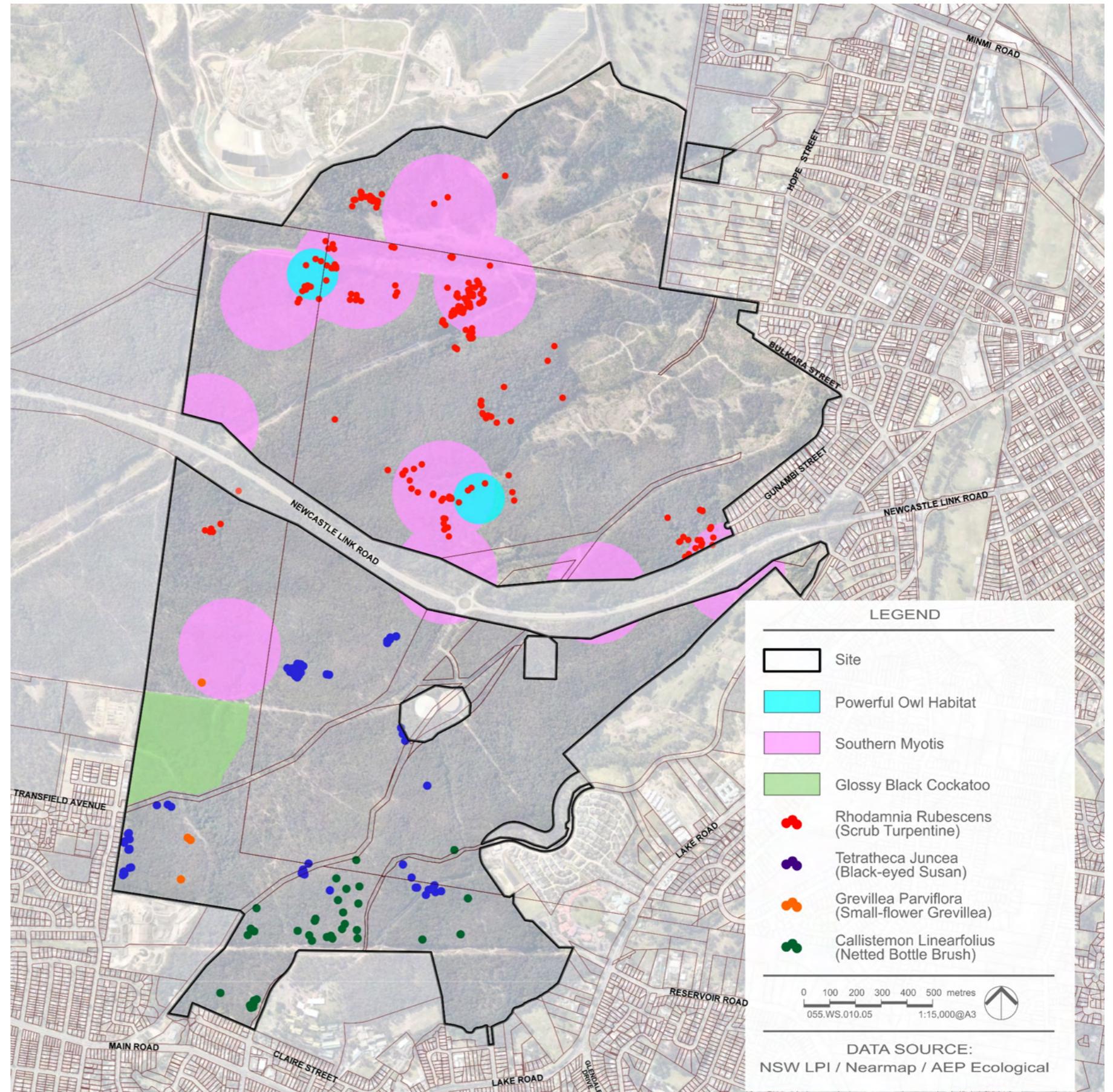


Figure 9 – Biodiversity & Habitat

SITE ANALYSIS

ABORIGINAL CULTURAL HERITAGE

Some areas that have not be subject to surface mining activity have been found to contain or potentially contain items of Aboriginal Cultural Heritage.

A targeted investigation of the site by Kelleher Nightingale Consulting uncovered archaeological sites and archaeological areas with known items of Aboriginal Cultural Heritage. Areas with potential for Aboriginal Cultural Heritage were found as part of the investigation.

The Aboriginal Heritage Information Management System registered sites are mostly within the creeks and riparian areas of the site. The targeted investigation focused on areas with potential for development and typically did not investigate bushland and riparian areas intended to be preserved.

The elevated land in the portion of the site north of Link Road is identified as having potential for archaeological deposits and an archaeological site is located either side of a creek adjacent to the western boundary.

In the area south of Link Road the main area of archaeological significance is either side of Brush Creek.

The mapped archaeological sites and areas, and areas with potential for archaeological deposits, are not a constraint on the design for the structure plan. However, these areas will require more detailed archaeological investigations prior to development and disturbance.

There are two modified trees within the site which are of significance. One of the modified trees is immediately south of Link Road boundary and adjacent to the western boundary of the site. The other is in the northernmost archaeology site near the western boundary. Both modified trees are to be preserved and protected from development.

Key design response principles:

- **Avoid impacts on modified trees**
- **Reduce disturbance of archaeological sites and potential archaeological sites**

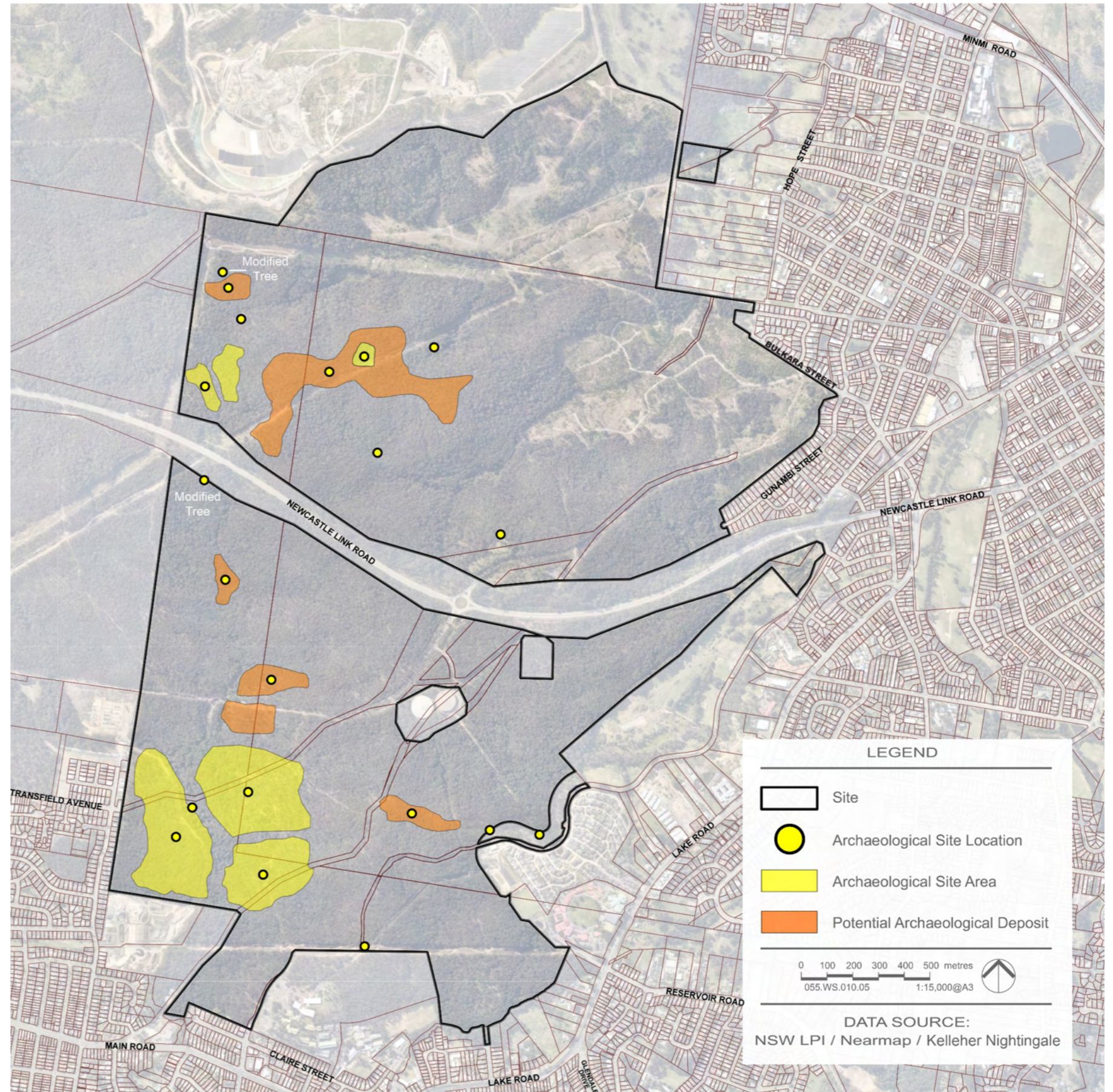


Figure 10 – Aboriginal Cultural Heritage

SITE ANALYSIS

ACCESS

Newcastle Link Road bisects the site and provides extensive frontages to the northern and southern areas of the site. There is also an existing roundabout on Link Road that shows future intent for a major four-way intersection. The general location of the existing roundabout provides a practical entry point as the grades between the site and Link Road are even. There are some areas along Link Road where the carriageway is in a deep cut or elevated in relation to the natural landform which prevents access to the site on both sides of the road.

The northern area has frontage to Bulkara Street to the east which provides a secondary lower-order street connection into the existing urban areas of Wallsend, where former access to the colliery was provided.

The southern area has access to Frederick Street in the south and Frederick Street (west) along the western boundary. There is an aim to facilitate a connection between the two existing Frederick Street roads.

There is also a potential connection to Lake Road in the east at the intersection with Reservoir Road. This intersection also provides entry to Macquarie College and is a potential entry point to the site.

Whilst there is no road frontage to the north, there is potential for a connection to Minmi Road through land owned by Newcastle City Council. This needs to be considered with the future planning of Council's land immediately to the north of the site. However, this connection requires coordination and agreement with others, and therefore, cannot be assured.

There are numerous internal access constraints due to the landform and steep slopes. In the north there are limited opportunities to traverse the steep slopes which creates limited opportunities for aligning roads within the site. There is also limited opportunity to extend the main entry road from Link Road to the south. The general location of the existing internal road provides the most practical alignment to traverse the ridgeline north of the Hunter Water reservoir site.

There is an existing regional pedestrian and cycle path along the eastern boundary, which also traverses the southern portion of the site. This path aligns with a section of a nineteenth century steam tramway linking Wallsend to West Wallsend. The tramway was extended Speers Point in 1911 and the steam tram operated until 1932, where the tramway was subsequently removed. There are numerous locations to connect to the existing regional pathway network and interpret the historic tramway system.

Key design response principles:

- Provide a major four-way entry within Link Road that provides access to north and south
- Provide multiple connections into the surrounding existing road network
- Provide multiple connections to regional pedestrian and cycle paths
- Facilitate a connection between Frederick Street south and Frederick Street to the west
- Align higher order internal roads in the steeper areas with the least sloping areas, addressing changes in elevation

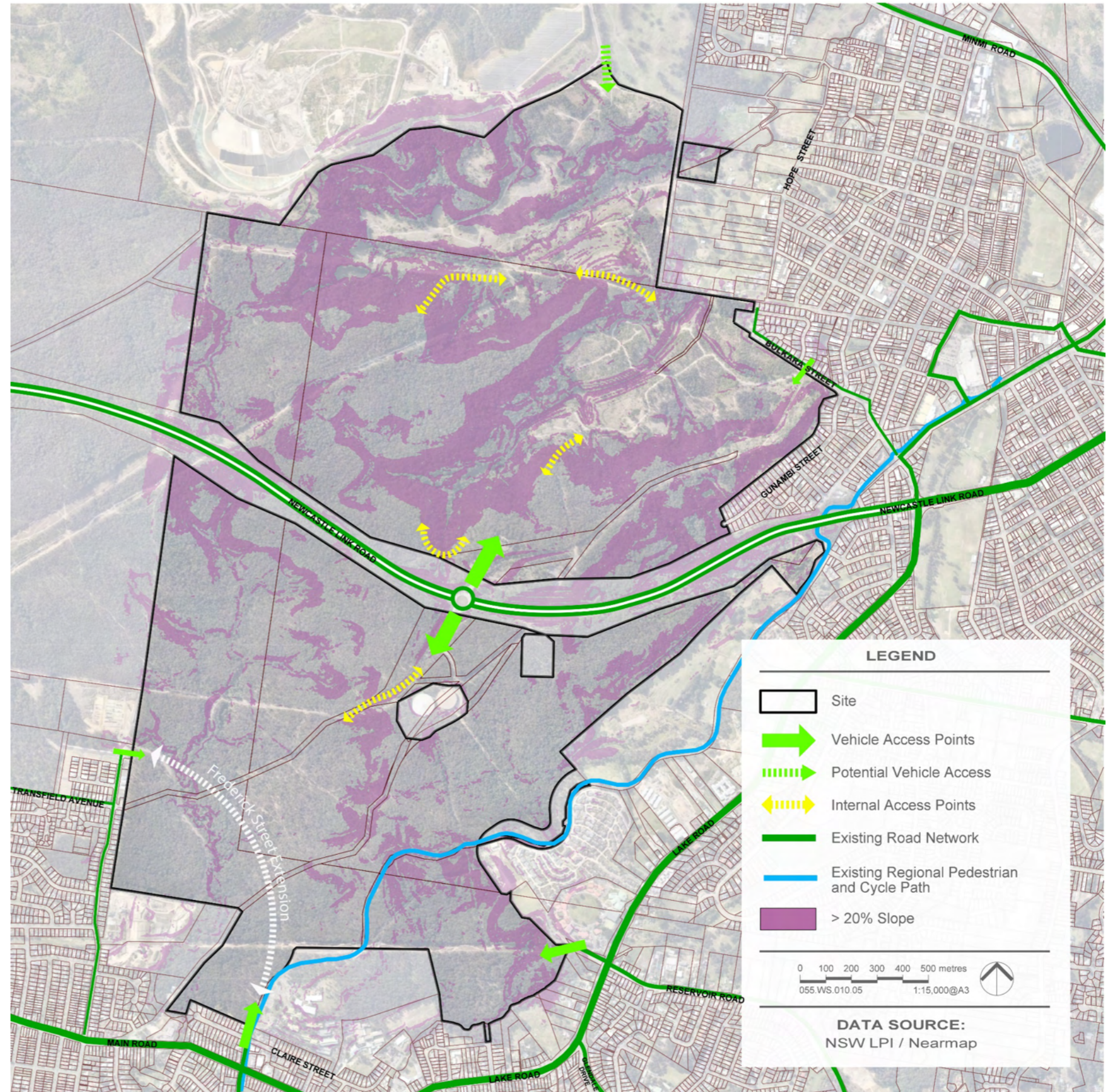


Figure 11 – External & Internal Access

SITE ANALYSIS

GEOTECHNICAL STABILITY

The northeast portion of the site has been subject to extensive surface disturbance as part of the historical mining activity. The boundary of surface disturbance and filled areas typically aligns with the cleared areas within the site.

Two 'deep fill' zones have been identified as a constraint for some types of development, which are identified as Areas 4 and 5. These areas are believed to have filling depths 15m or greater at their respective deepest areas.

Whilst these areas will require more detailed investigation to map the depths and geotechnical stability, it is deemed that housing and roads are not suited to Areas 4 and 5.

Other areas within the surface filling boundary have shallow depths of fill and will also require more detailed investigations.

Whilst not shown in **Figure 8**, there has also been extensive underground mining activity in the sub-surface areas in both the north and south of the site. These areas have not been shown in the site analysis as there are investigations and construction techniques that can be implemented at sub-surface and surface levels to manage subsidence risks associated with developing the land.

Key design response principles:

- Allocate suitable land uses to deep fill areas

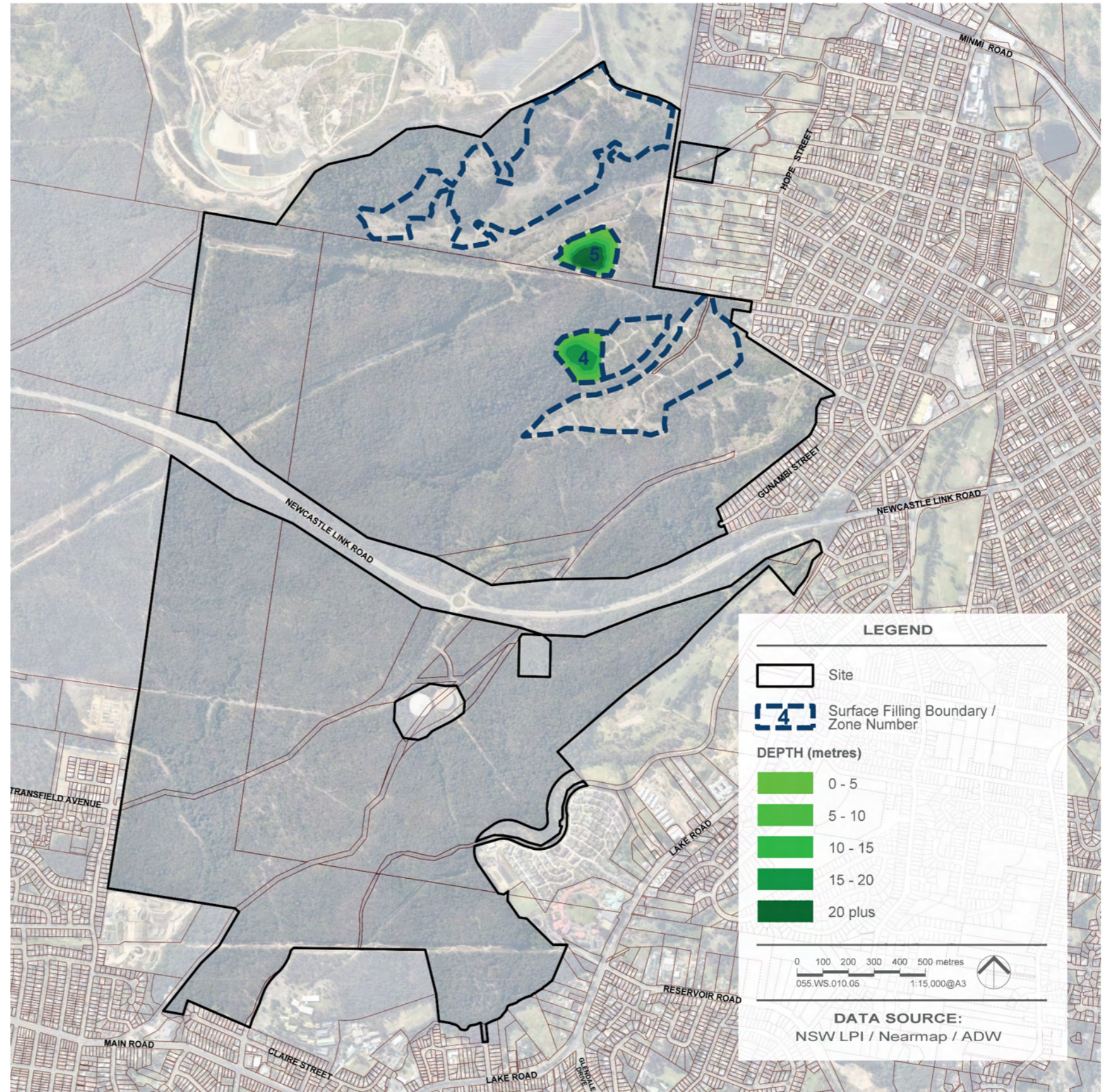


Figure 12 – Geotechnical Stability

SITE ANALYSIS

INFRASTRUCTURE & EASEMENTS

The site contains various services and infrastructure to supply the broader locality.

There are numerous high voltage transmission lines traversing the site in the north and south. There is a 300kV transmission line in the north of the site and two 132kV transmission lines, one in the north and one in the south. There are also some smaller voltage lines within the site that provide local electricity supply to facilities such as the Hunter Water reservoirs.

All the transmission lines have easements which are 60m wide for the 330kV line and 45m wide for the 132kV lines. The smaller lines (33kV and 66kV) have narrower easements and there are numerous additional registered easements that do not contain any electrical infrastructure.

The 330kV line is a significant infrastructure item and cannot be relocated. Conversely, the 132kV lines and small voltage lines are relocatable and are not considered a constraint. The easements that do not contain transmission infrastructure are considered to be surplus to infrastructure needs and are also not a constraint.

There is a large rectangular easement in the northeast of the site. This easement relates to the former mining operations and was intended to prevent intrusive works without a site-specific management plan and a health and safety plan. This easement is not a constraint for developing the site.

The Hunter Water reservoirs are located on a high point on Hunter Water land within the site south of Link Road. There are two existing large reservoir tanks and a water main that extends to the southeast to supply water to the broader area. There is also a release valve and scour to the east of the reservoirs. It is understood Hunter Water may require a third tank site and there is a rectangular parcel of land to the northeast of the reservoir site owned by Hunter Water for another tank that could be used for this purpose.

There is a sewer pump station on the north-eastern boundary with the urban areas of Wallsend and a sewer main on the southern boundary with Edgeworth. There is also numerous communications infrastructure (i.e. optic fibre cables) throughout the site.

The key infrastructure items that influence future development are the 330kV transmission line and the water infrastructure.

Key design response principles:

- Avoid urban development in 330kV transmission line and easement except roads
- Underground 132kV and lower voltage transmission lines in road reserves and other non-residential land uses
- Allow for a third water reservoir tank site
- Align existing trunk water infrastructure with public roads and lands

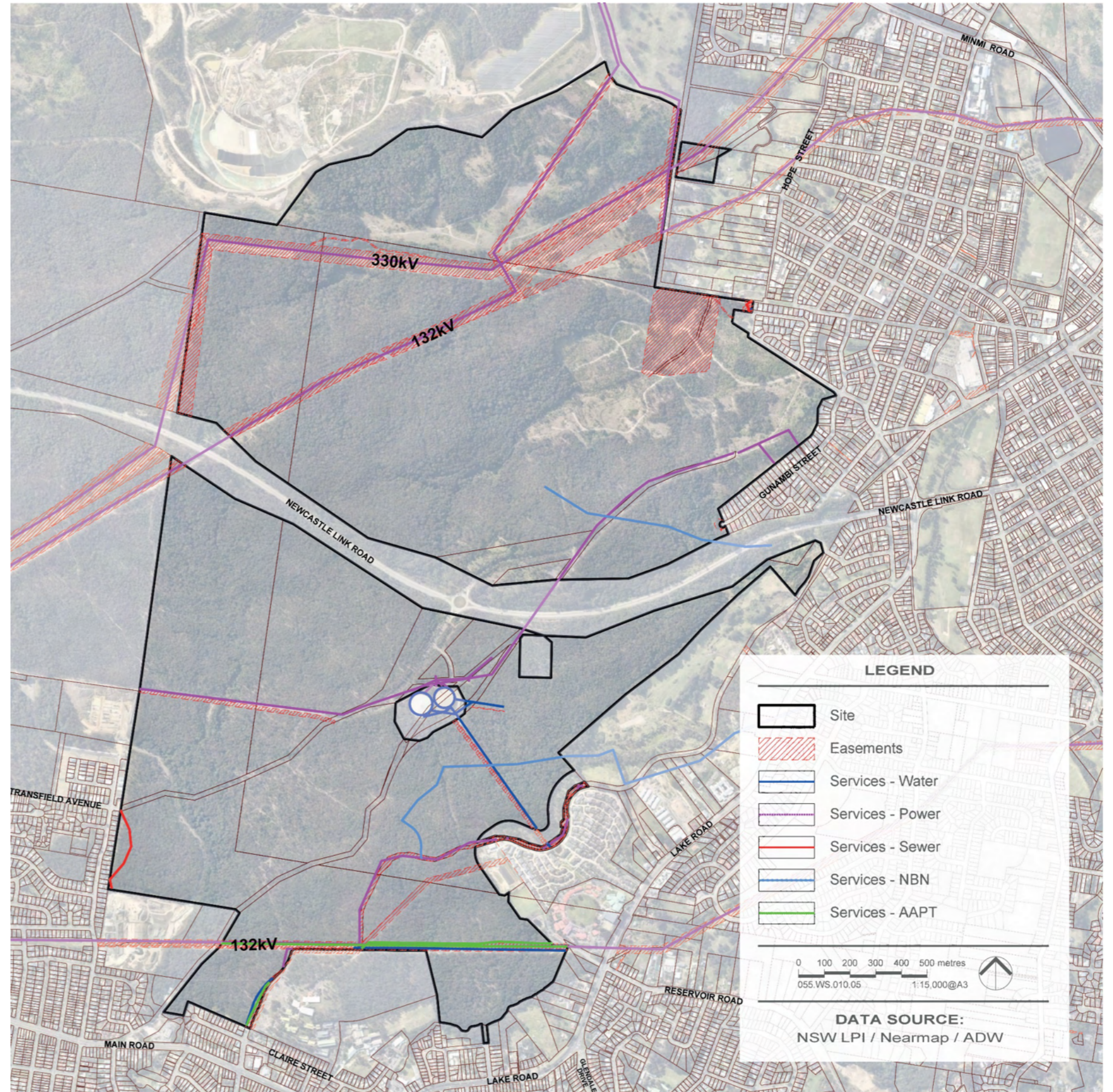


Figure 13 – Infrastructure & Easements

SITE ANALYSIS

COMBINED SITE & CONSTRAINTS ANALYSIS

Overlaying all the key influencing factors and attributes assembled as part of the site analysis creates a clear understanding of the areas that are more suited for development and areas that are less suitable.

The combined site analysis is essential to understanding the site and sets a clear framework to evolve the design of the Structure Plan.

LEVELS OF CONSTRAINT

The various constraints are grouped into a hierarchy of significance with the highest level of constraint having the most effect on the design and the lowest level having the least amount of influence.

High Level Design Constraints

- *Slope >20 percent*
- *Creeks and riparian areas*
- *Powerful Owl nest sites within a 100m buffer*
- *Concentrations of Scrub Turpentine*
- *Aboriginal Cultural Heritage modified tree sites*
- *Access points to external road network*
- *Alignment of internal road access across sloping land*
- *330kV transmission line and easement*

Moderate Level Design Constraints

- *Deep fill areas (Areas 4 and 5)*
- *Southern Myotis habitat and waterbodies*
- *Threatened native flora species*
- *Ridgelines and high points*
- *Transition with Summerhill Waste Management Facility*
- *Archaeological sites and potential archaeological deposit areas*
- *Trunk water infrastructure*

Low Level Design Constraints

- *Slope <20 percent*
- *132kV and lower voltage transmission lines and easements*
- *Shallow surface fill areas*

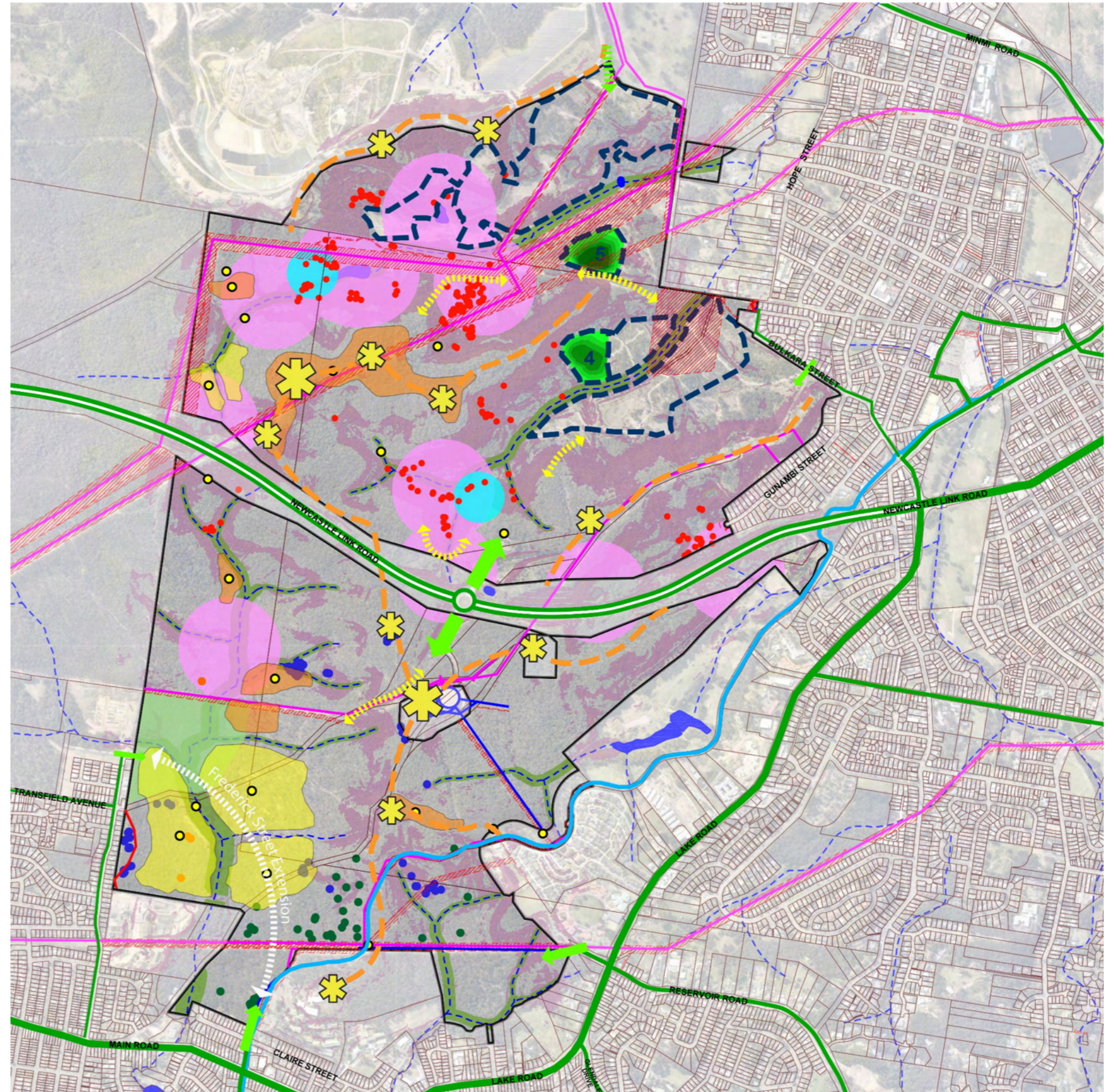


Figure 14 – Combined Site Analysis

DESIGN PRINCIPLES

There are numerous elements in delivering an outstanding new community. Planning a new community for people with a strong sense of social and environmental awareness and high expectation for amenity requires a great design. To meet the aspirations and expectations of the future residents, employees and visitors, design principles are established to set a clear understanding of how to facilitate a quality and site responsive urban design.



DESIGN OBJECTIVES

The design objectives provide direction to deliver on the design principles. The design objectives shape the urban layout, land uses and ingredients to create a new community and achieve a meaningful environmental response to the biodiversity values of the site.

Design objectives:

- Create a new estate that fosters community building and relationships and high liveability standards
- Design a desirable place where people will want to live, learn, work and play
- Encourage people to participate by providing spaces and places for a range of facilities for all ages
- Provide for local shopping, dining and entertainment facilities
- Encourage active, healthy lifestyles and walkable neighbourhoods
- Facilitate public transport services and connections
- Respond to the natural attributes of the site
- Create destinations linked by a network of interesting pathways and trails for cyclists and pedestrians
- Protect areas of significant biodiversity value
- Preserve and enhance creeks and riparian areas
- Evolve a design that embodies the development vision

ENABLING AN EXEMPLARY COMMUNITY

CREATE AN IDENTITY & BUILD A GREAT COMMUNITY

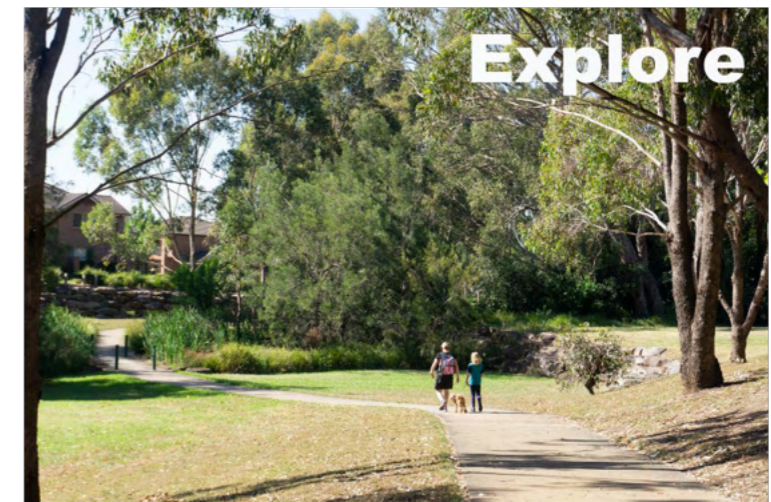
The Eden Estates' vision is to create an exemplary community that is underpinned by design excellence with a strong identity and community focus.

Creating a strong identity and a welcoming, cohesive community requires the implementation of well-considered and balanced design objectives. The Structure Plan embodies the design principles and delivers these carefully and purposely prepared design objectives, providing the high-level planning for a new community.

The design needs to facilitate a mix of places and spaces that encourage people to connect with each other frequently to grow relationships and feelings of belonging to where they live.

An identity and sense of place is essential to fostering the delivery of an exemplary community with all the material elements (urban layout, public spaces, landscaping) and immaterial elements (friendships, participation, acceptance).

To create a complete community, there needs to be a diverse range of facilities to support it. These include local shops, sporting fields, walking and cycle paths and trails, local parks and schools that combine to provide for the needs of daily living, within a short distance of where people live. These facilities create amenity, and all homes should be a short walk from a local park or recreation space.



“Walkability is an essential feature of any healthy, liveable built environment. The creation of walkable neighbourhoods is arguably the simplest and most effective way to improve health and wellbeing and create liveable, sustainable cities and towns.”

Creating Walkable Neighbourhoods (Dec 2018)
NSW Government, Active Living NSW & Heart Foundation

STRUCTURE PLAN

CREATING A VIBRANT NEW COMMUNITY

The scale and capacity of the site provides an opportunity to create a vibrant new community on the outer metropolitan core of Greater Newcastle. The size of the site and scale of development also offers a great opportunity to create a new suburb and create an identity for the new urban area.

The Structure Plan design identifies numerous focal points to grow the new community and balances the social and housing needs with the environmental values of the site.

Community activity nodes are created throughout the north and south portions of the site. The north has an active open space area which could contain playing fields, community facilities, playgrounds, childcare and a cafe. The southern active open space area could also contain these types of facilities and is located next to a school site. Co-location of the school with the active recreational area allows co-use of the open space facility.

There are numerous parcels of residential land of varying sizes and character around the community activity nodes. Typically, the residential areas are located on the flatter land and are nestled within the riparian areas and areas of steep sloping land. Given the varied landforms and aspects, each of the residential sub-neighbourhoods will experience different characteristics that will contribute to the identity of living within the site.

Every residential area will have access to local parks and a network of pedestrian and cycling pathways and trails within the bushland areas. Provision of paths and trails for recreation and commuting within the site and the broader locality is a key principle in the design of the Structure Plan.

Large tracts of native vegetation and riparian areas are connected with ribbons of green to form an extensive green and blue grid within the site. There are two main biodiversity links within the south that connect with a wide biodiversity corridor to the north. There are also large tracts of bushland in the north east linked with continuous green links to form the green grid.

The commercial centre will host a variety of shopping, dining, entertainment, co-working and recreation facilities, all to be supported with end of trip facilities. The community heart will form the main business activity centre and meeting place for the future community within the site. The commercial centre is ideally positioned to take advantage of its exposure to Link Road to capture the 'movement economy' travelling east towards Newcastle and west towards the M1 Motorway and Hunter Expressway. A left-in/left-out intersection is proposed approximately 500m west of the main entry from Link Road which will provide easy access for passing traffic to access highway services (i.e. service stations, restaurants, etc.), shopping and services. The left-in/left-out intersection is critical to activate the commercial centre and the provision of job generating activities.

A clear road hierarchy and structure facilitates easy circulation within the site and connections into the existing road networks around the site. Principal entry is at the general location of the existing roundabout on the Link Road, which provides access to the north and south. The main entry to the north is dual carriageway with a median to present an impressive entrance that arrives at a roundabout. This main road extends north down the section of steep slope that has the most suitable grades to the lower lying areas and active open space area. There is also a collector road that extends west from the first arrival roundabout to access the elevated land to the west. This loops around to the northeast and down another slope to re-join the main north-south entry road. This creates a robust structure for lower-order residential streets to distribute traffic within and around the site and facilitate bus routes to ensure accessible public transport services for the community.

The southern entry road also has a dual carriageway entry and extends to the south to connect with Frederick Street and Lake Road to the east. The extension of Frederick Street is also enabled with main road connections to the west. All roads and streets are to be primarily of residential character with local residential streets being low-speed and designed for people as well as vehicles.

The existing 'paper' road reserves within the site have been planned with the Eden Estates landholding to ensure the best possible design. It is recommended that two small parcels of land outside the site on the eastern boundary should be included in the broader planning and design of site as they form logical extensions to the development and are physically separated from the urban areas to the east by creeks and riparian protection areas.

An employment lands area is located adjacent to the Summerhill Waste Management Centre and a third reservoir site is located next to the existing reservoirs.

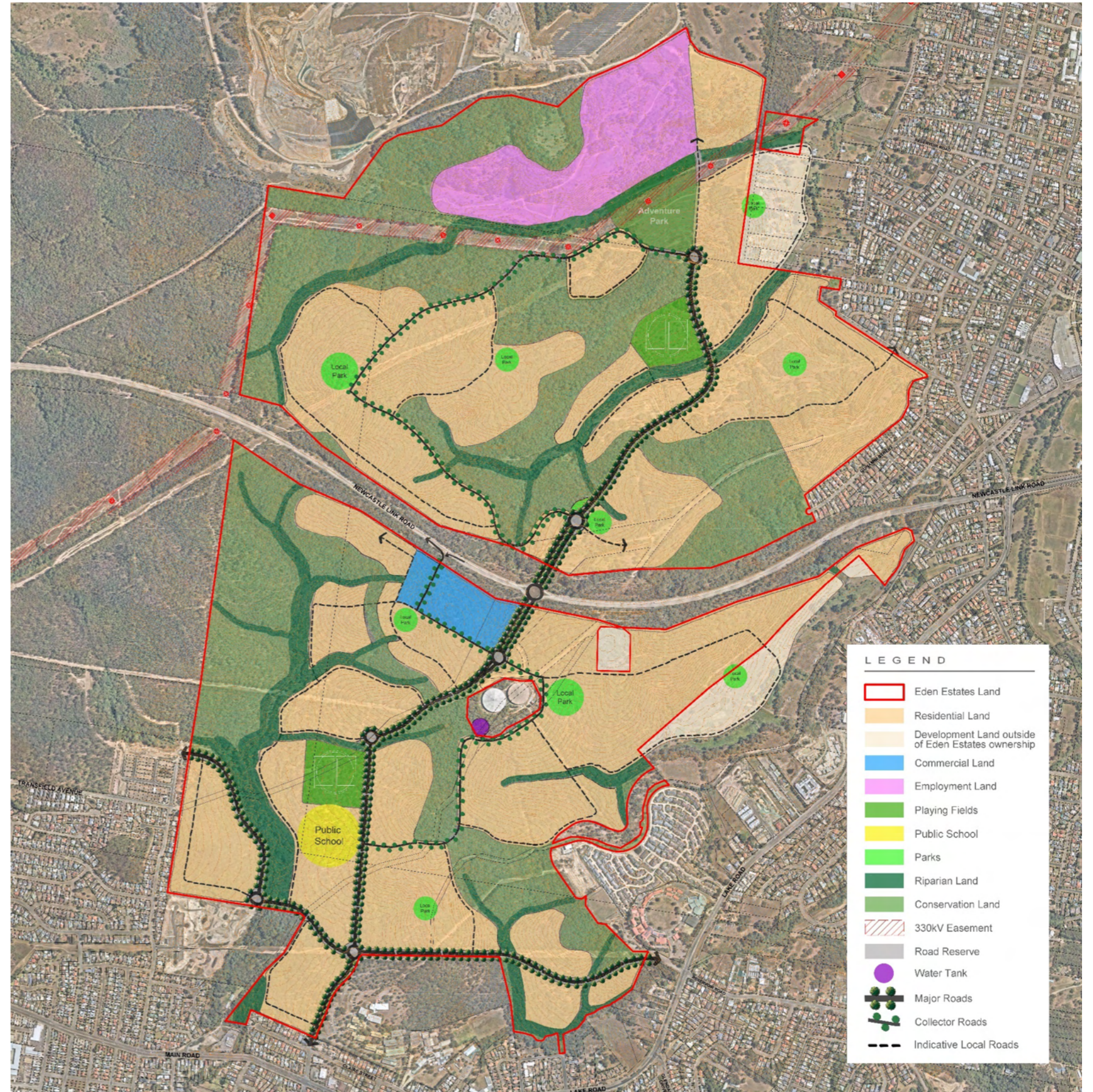


Figure 15 – Structure Plan

STRUCTURE PLAN



Quality local parks & open space surrounded by housing



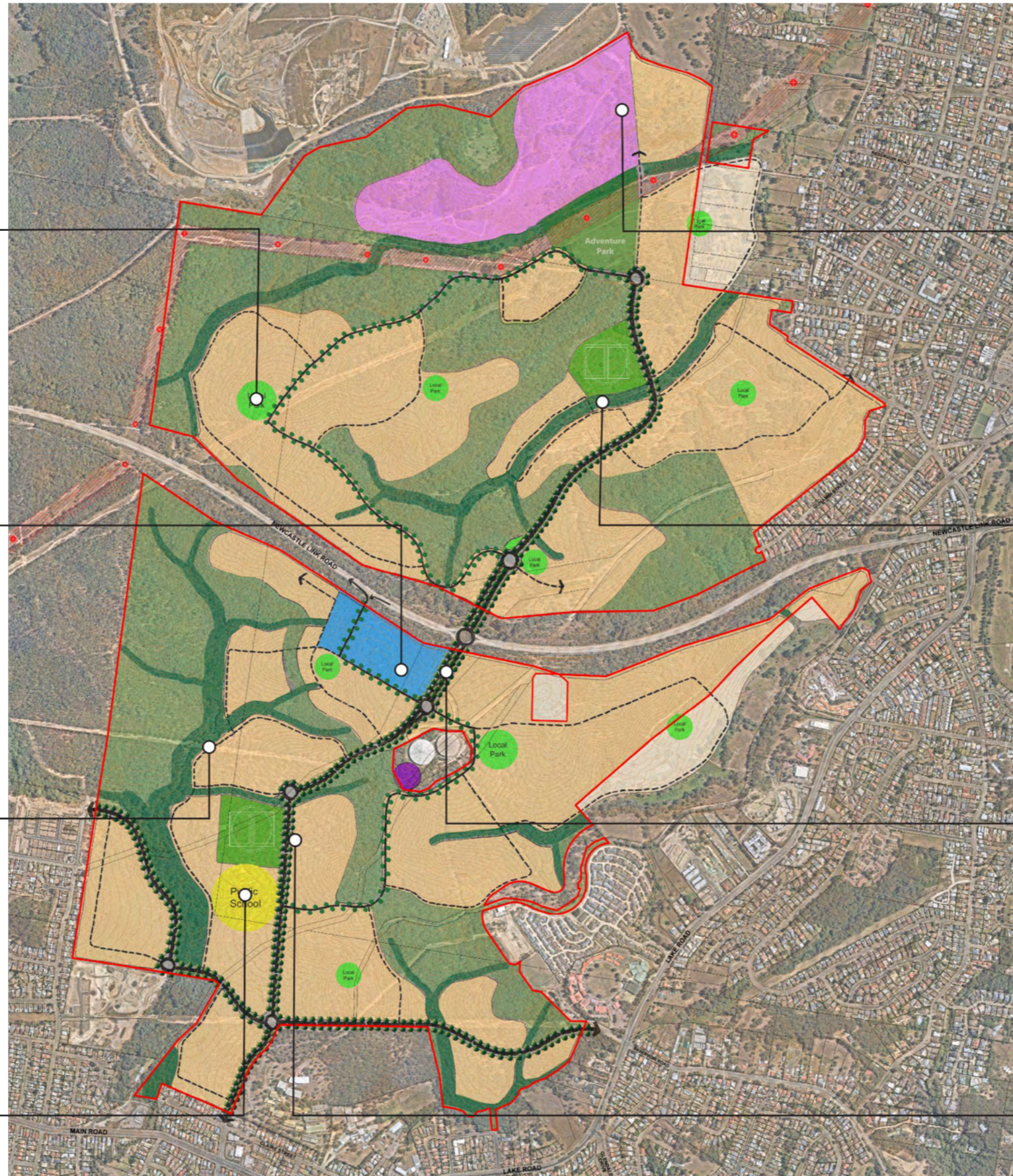
Shopping, dining & entertainment activities for day and night



Urban areas that are surrounded with a curtain of bushland



Schools co-located with sports fields



Suitable uses within the transition area to the Summerhill waste facility



Restore natural waterways & riparian areas



Create attractive entrances that instill a sense of arrival & identity



Locate quality medium density housing to orientate high amenity areas

STRUCTURE PLAN

SITE RESPONSIVE DESIGN

An overlay of the site analysis containing the key influencing attributes of the site shows how the Structure Plan has responded to the physical characteristics and preliminary site investigations.

Physical Landform

The Structure Plan responds to the landform by placing development on the flatter areas. Prominent ridgelines are retained as visual assets, and sloping areas are avoided.

There are minimal areas of steep sloping land within the land identified for residential and commercial uses. The land identified with a slope over 20 percent within the development areas is typical and just exceeds the 20 percent gradient threshold. These steeper areas can be earthworked with the surrounding flatter land to create areas suitable for urban development.

Major and collector roads align with the most practical transition points between the elevated and lower lying areas and utilise existing road alignments where possible. This will ensure that roads can integrate with the slope to achieve suitable vertical road design standards that support private vehicles and public transport.

Formal and informal recreational uses are located over the deep fill areas and the disturbed areas subject to shallow fill areas identified for development.

Environmental

Riparian areas are preserved throughout the development and provide important linkages between tracts of bushland. The riparian areas are important environmental assets as they provide habitat for many fauna and flora species and are also areas with higher potential for items of Aboriginal cultural significance. The riparian areas also have valuable aesthetic qualities and provide higher levels of amenity at the interface with residential development.

The design respects the biodiversity values of the site by having no impact on the Powerful Owl habitat areas and minimal impacts on the Scrub Turpentine. The concentrated areas of Scrub Turpentine are unaffected and buffered from the edges of the development areas.

The Southern Myotis habitat is largely unaffected and the threatened native flora species is predominantly conserved within the bushland areas.

The majority of Aboriginal archaeological sites are preserved in non-development areas and the modified trees are buffered from the development areas.

Access & Infrastructure

Access to the surrounding road network is achieved from multiple points around the site which offer a practical connection. Road connections align with existing roads around the site and the internal alignment of high-order roads align with the most practical locations to travel across the sloping areas of the site.

The regional pedestrian and cycle paths have numerous connection points to link a network of paths and trails within the site, which will enable people to safely travel long distances to the northeast and south by non-vehicular modes of transport.

The 330kV transmission line and easement is clear of residential and commercial activities and only contains recreation and roads. Other lower voltage transmission liens are incorporated into the design within road reserves.

Trunk water infrastructure is also protected within road reserves.

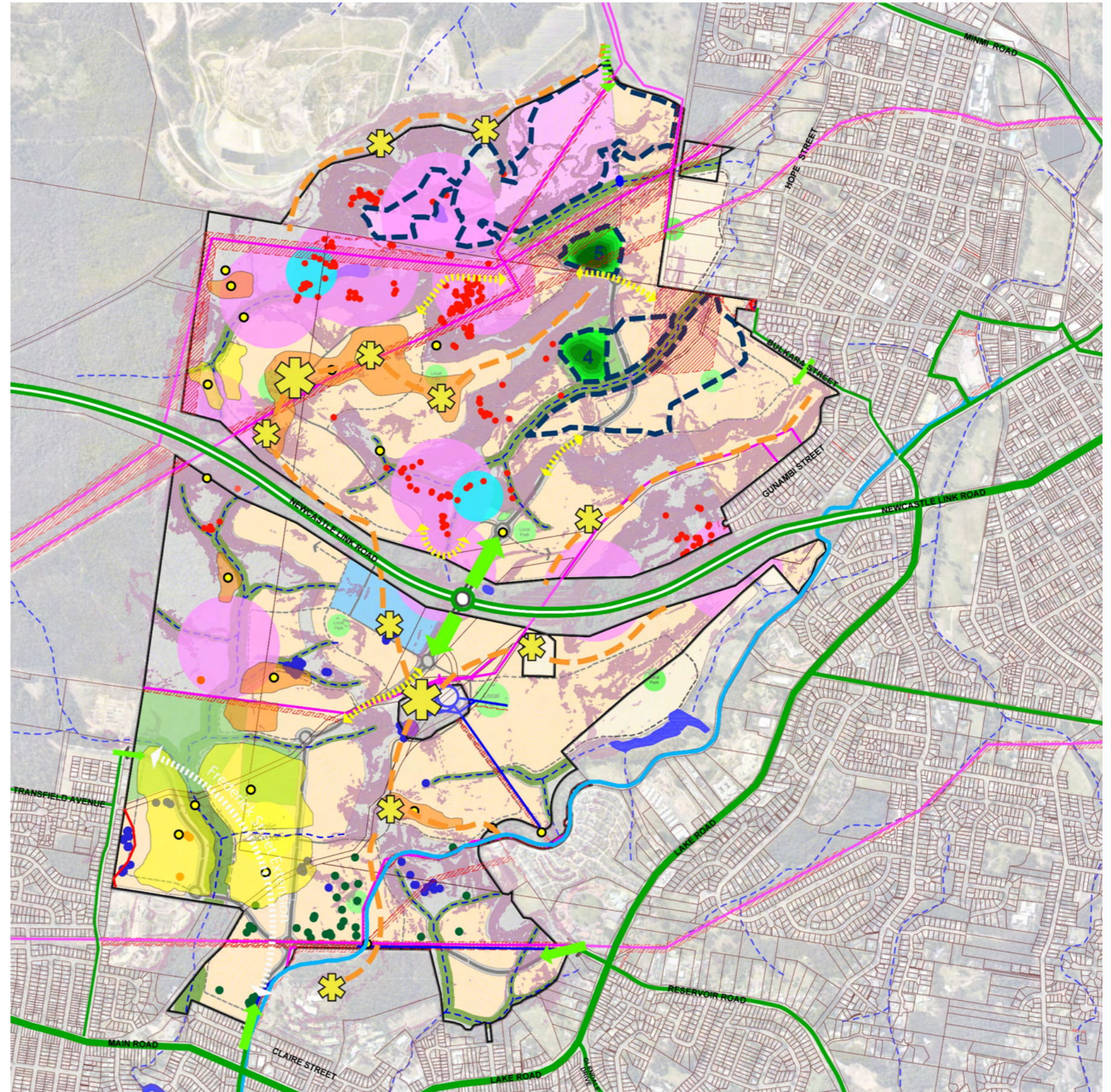


Figure 16 – Structure Plan & Site Analysis Overlay

STRUCTURE PLAN

PEDESTRIAN & CYCLING MOVEMENT

Providing an extensive pathway network is a key outcome for the site. Pathways will facilitate various modes of use including walking, cycling and hiking for recreation, traveling within site and connecting to the surrounding pathway network.

The regional pedestrian and cycle path that extends along the eastern boundary and through the southern portion of the site provides numerous opportunities to connect to the regional network. An activity node with trip facilities (for example a hydration station and bicycle type pump) and fitness station at the main connection to the regional path will enhance amenity for users and encourage a healthier community. With possible future road connections to the north, there may be an opportunity to connect to other regional pathway infrastructure, such as the Richmond Vale Rail Trail.

Connections to the activity centres (commercial centre, active open space areas and schools) within the site are essential to encourage healthy, walkable communities. The site also has many natural features to integrate with paths and trails and extensive bushland within and along the edges of the development.



Paths along the edge of riparian and bushland areas create a quality interface with residential areas and it is convenient for local residents to access the pathway network.

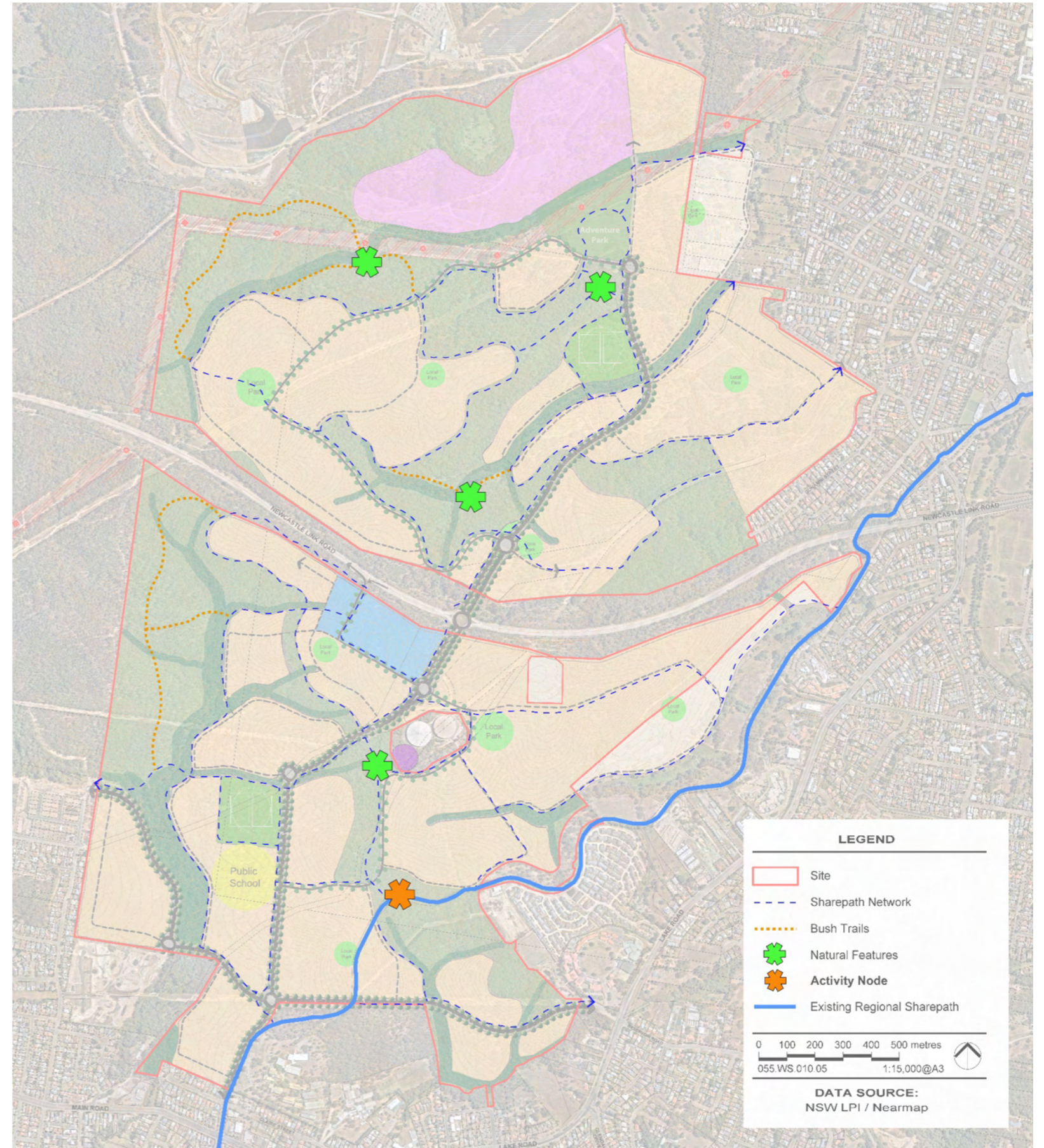


Figure 17 – Pathway Network

STRUCTURE PLAN

BIODIVERSITY CONSERVATION & LINKS

The health and integrity of native fauna and flora within the site is a priority for the Structure Plan design. Conserving and protecting biodiversity in creeks and riparian areas, waterbodies and the bushland ensures environmentally responsive and responsible development.

The protection of threatened fauna and flora species secures significant biodiversity and values within the site. It also provides habitat for all native species and provides a range of other benefits, such as:

- natural areas for walking paths and trails
- education and interpretation of the environment
- amenity for local residents and their visitors
- an extended tree canopy to create improved microclimate

There are large tracts of bushland to be preserved that are connected with green links throughout the site. The riparian areas and some ridgelines form a framework for the biodiversity areas to be retained and enhanced.

There are three large areas of bushland in the north of varying landform which include Powerful Owl nests, a concentration of the Scrub Turpentine and Southern Myotis habitat.

The largest tract of bushland in the northwest includes one of the creeks and extends to Link Road to the south.

South of Link Road is a connecting large area of bushland along the western boundary forming a biodiversity link to the northern side of Link Road. Two green links extend further south, along a creek and the other along a ridgeline, which transitions into a small creek.

All the bushland areas are linked to create a connected biodiversity network.

Collectively with the preservation of many threatened fauna and flora species and a network of conservation areas, the Structure Plan expresses quality environmental benefits in its design.

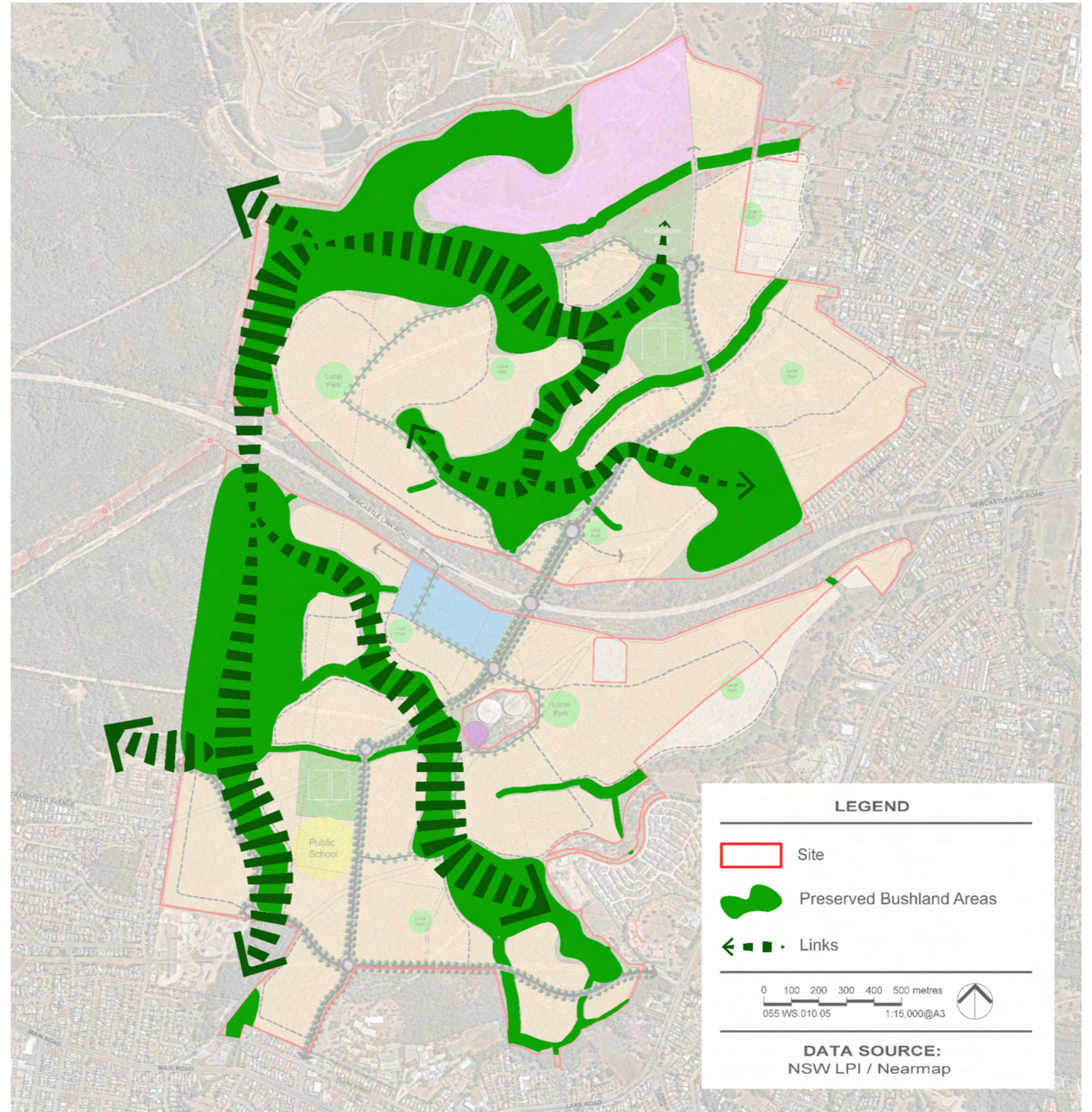


Figure 18 – Biodiversity Conservation & Links

