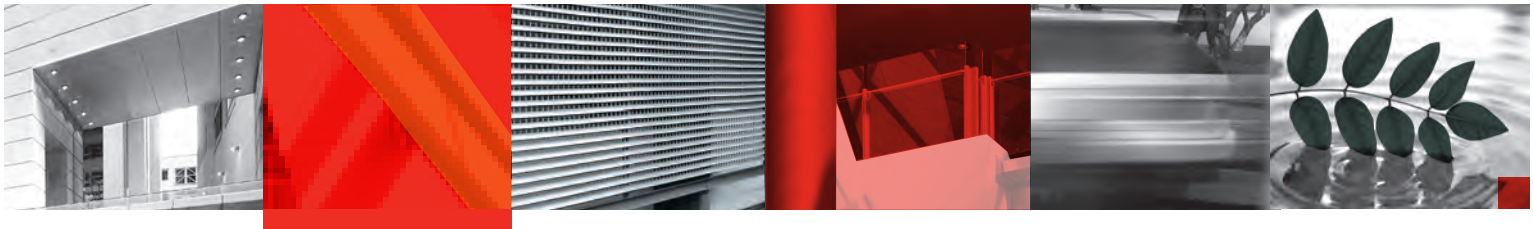


Project Application Environmental Assessment Report



Huntlee Stage 1 Subdivision and Infrastructure Works

Submitted to Minister for Planning
On Behalf of Huntlee Pty Ltd

March 2011 ■ 09516

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This report has been prepared by: Gordon Kirkby

A handwritten signature in blue ink, reading "Gordon Kirkby", is written over a light blue rectangular background.

Signature

Date 14/03/11

Statement of Validity

This Environmental Assessment has been prepared and submitted under Part 3A of the *Environmental Planning and Assessment Act 1979* (as amended) by:

Environmental Assessment prepared by

Name	Gordon Kirkby
Qualifications	BEC Dip URP
Company	JBA Urban Planning Consultants Pty Ltd
Address	Level 7, 77 Berry Street North Sydney NSW 2060
In respect of	Study and Development framework Application

Development Framework

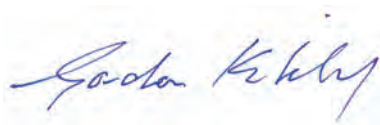
Applicant	Huntlee Pty Ltd
Address	PO Box 199, Branxton NSW 2335
Land to be developed	See Section 2.2 of Report
Proposed development	Huntlee New Town Stage 1 Subdivision and Infrastructure Works.

Environmental Assessment	An Environmental Assessment (EA) is attached
--------------------------	--

Certificate	I certify that I have prepared the content of this Environmental Assessment and to the best of my knowledge:
-------------	--

- It is in accordance with the Environmental Planning and Assessment Act and Regulation.
- It is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

Signature



Name

Gordon Kirkby

Date

14 March 2011

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Executive Summary

Purpose of this Report

To seek the approval of the Minister for Planning under Part 3A of the Environmental Planning and Assessment Act 1979 (the Act) of a Project Application for subdivision and Infrastructure works for Stage 1 of Huntlee, near Branxton in the Hunter Valley. This project application is within the overall planning framework put forward in the Huntlee State Significant Site Study and is consistent with the zoning and development control provisions contained in Schedule 3 of *State Environmental Planning Policy (Major Development) 2005* (the Major Development SEPP) and the *draft Huntlee Development Control Plan 2011* (Huntlee DCP).

This report also responds to the Director- General's Environmental Assessment Requirements which were issued on 19 November 2010.

Project Outline

This application seeks approval for:

- Subdivision for the first residential village to accommodate up to 1700 dwellings, open space and community facilities;
- Superlot subdivision for the first component of the mixed use employment lands (50.5ha);
- Subdivision for the first Town Centre residential development including up to 190 lots to accommodate up to 222 dwellings;
- Subdivision for up to 120 large lot residential lots; and
- Construction of associated community infrastructure including landscaping, open space and recreation areas; and
- Construction of associated physical infrastructure (both on & off site) including:
 - road works and associated intersections;
 - stormwater management; and
 - water supply and sewerage.

The Proponent

The proponent of the development is Huntlee Pty Ltd.

Planning Context

The application represents Stage 1 of the implementation of Huntlee, that was Gazetted as a State Significant Site (SSS) with an amendment to Schedule 3 of *State Environmental Planning Policy (Major Development) 2005* (Major Development SEPP) on 31st December 2010. This document should be read in the context of the SSS Study and the zoning and development controls in the Major Development SEPP.

The SSS Study for Huntlee established the vision, planning and development framework which will be used to assess future development proposals. It articulates what Huntlee Pty Ltd is seeking to achieve for future development and sets the broad parameters for such development. The key parameters of the overall Huntlee SSS development framework are:

- Up to 5600 dwellings in residential zones of varying sizes covering up to 612 hectares;
- Employment lands totalling up to 200 hectares including a mixed use town centre with up to 1,700 residential dwellings;

- Large lot residential development covering up to 93 hectares to achieve 200 lots;
- The provision of associated infrastructure including upgrades to roads, sewerage and water infrastructure and the dedication of land for education, health services, community facilities and utilities;
- Dedication of 780 hectares of conservation land within Huntlee;
- Dedication of Persoonia Park (17 hectares); and
- Dedication of up to 4988 hectares of conservation land elsewhere within the Lower Hunter Region.

Compliance with Statutory Instruments

Huntlee was rezoned as a State Significant Site by way of an amendment to Schedule 3 of the Major Development SEPP on 31st December 2010. The SEPP amendment established land use zoning and development controls for Huntlee and required the preparation of a Development Control Plan (DCP) to further articulate design, landscape and infrastructure principles and controls. The draft DCP has been submitted concurrently with this project application. The proposed Stage 1 land uses are consistent with the Major Development SEPP and Huntlee DCP provisions.

The Site

Huntlee is located to the south of the town of Branxton in the Hunter Valley of NSW. The site straddles Wine Country Drive (MR 220) linking Cessnock with the New England Highway. Within the overall site, the proposed urban area is bounded to the north and east by the Main North Railway and the Hunter Expressway corridor, to the south by the village of North Rothbury and to the west by the Black Creek floodplain.

This Project Application relates to Stage 1 of Huntlee. The first stage residential village located to the east and north of the existing village of North Rothbury. The first stages of the employment lands are located between North Rothbury and Branxton, straddling Wine Country Drive. The 120 large lot residential area is located to the south of the site on Wine Country Drive some 1.5km south of the village of North Rothbury.

Existing Use & Development

All Stage 1 areas are currently subject to agricultural activities, predominantly grazing, and associated farm infrastructure including fences and farm dams etc. There are a small number of individual dwellings. A company currently operates a tourist activity (Bed and Breakfast) from a site wholly surrounded by, but not included in the Large Lot residential development area on Wine Country Drive. Stage 1 does not contain areas associated with former mining and landfill activities. These areas will be remediated and developed as part of future stages.

Design Philosophy & Description of Proposal

The design philosophy behind the Stage 1 subdivision for Huntlee is consistent with that of the overall Huntlee development framework: to create a new Hunter Valley town that retains the character of the place including its natural attributes and rich Aboriginal and European past, and establishes an active and memorable urban core, surrounded by well connected neighbourhoods, each with a community heart that is in easy and safe walking and cycling distance from the homes in that neighbourhood.

Within this philosophy, the project application seeks approval for subdivision and infrastructure works to facilitate the development of the first residential neighbourhood (including a village centre), the first of the large lot residential areas located to the south of the proposed urban area and the creation of super lots to facilitate the first stages of the town centre employment lands.

Infrastructure

There is currently little or no infrastructure within the proposed development areas. The environmental assessment however, puts in place detailed planning for the provision of utility services, roadworks and stormwater management infrastructure, building on the preliminary investigations that underpinned the SSS development framework. While the assessments conclude that the required infrastructure can be put in place for the Stage 1 areas, key issues that need to be addressed during the implementation phase of the project include the timing of upgrades to regional water and wastewater infrastructure and the implications for local and regional traffic management. These issues are examined in the environmental assessment. Staging of the development in line with infrastructure provision is provided for in the Statement of Commitments.

Environmental Impacts

The key environmental impacts identified for the Stage 1 subdivision and works are:

- Urban design and landscaping;
- Local traffic management;
- Public transport provision;
- Stormwater management;
- Utility services;
- Biodiversity;
- Bushfire management; and
- Sustainability.

The assessment concludes that these issues are all able to be managed and mitigated.

Conclusion

Huntlee provides the opportunity to create a new community for the Lower Hunter Region and in doing so implement the key objectives and outcomes of the Lower Hunter Regional Strategy associated with accommodating population and employment growth and environmental conservation outcomes.

Huntlee Pty Ltd is seeking approval for a Project Application for subdivision and infrastructure works associated with the first stage of the development. The information contained in this project application demonstrates that the proposed Stage 1 development is consistent with the sustainable implementation of the overall Huntlee SSS development framework.

1.0 Introduction

This report is submitted to the Department of Planning (DoP) under *Part 3A* of the *Environmental Planning and Assessment Act 1979* (The Act) to support a Project Application for Stage 1 subdivision and infrastructure works for Huntlee.

This application seeks approval for:

- Subdivision for the first residential village to accommodate up to 1700 dwellings, open space and community facilities;
- Superlot subdivision for the first component of the mixed use employment lands (50ha);
- Subdivision for the first Town Centre residential development including up to 190 lots to accommodate up to 222 dwellings;
- Subdivision for up to 120 large lot residential lots; and
- Construction of associated community infrastructure including landscaping, open space and recreation areas; and
- Construction of associated physical infrastructure (both on and off site) including:
 - road works and associated intersections;
 - stormwater management; and
 - water supply and sewerage.

The total capital investment value of the project is \$230 million.

The application represents the first stage of the implementation of Huntlee. This document should read in conjunction with the Huntlee State Significant Site Study (SSS Study) which supported the rezoning of the development under in Schedule 3 of the Major Development SEPP.

The application has been prepared on behalf of the applicant Huntlee Pty Ltd. JBA Urban Planning Consultants Pty Ltd has prepared this report based on plans and information provided by Huntlee Pty Ltd and its team of technical specialists.

This report describes the site and its environs, the proposed development and includes an assessment of the proposal in the context of the SSS development framework and the Director-General's Environmental Assessment Requirements issued for the project on 19 November 2010. It should be read in conjunction with the supporting information and plans appended to this report (refer to Table of Contents).

The report is structured as follows:

Section 1: Introduction to the project.

Section 2: Site Analysis

Section 3: Planning framework and context applying to the site.

Section 4: Consultation

Section 5: Description of the development project.

Section 5: Environmental Assessment of Project Application.

Section 6: Draft Statement of Commitments

Section 7: Conclusion.

1.1 Background and Context

On 31st December 2010, the Minister for Planning gazetted the State Significant site amendment for Huntlee. The amendment to Schedule 3 of the Major Development SEPP provided zoning and land use controls for the following:

- Up to 5600 dwellings in residential zones of varying sizes covering up to 612 hectares;
- Employment lands totalling up to 200 hectares including a mixed use town centre with up to 1,700 residential dwellings;
- Large lot residential development covering up to 93 hectares to achieve 200 lots;
- The provision of associated infrastructure including upgrades to roads, sewerage and water infrastructure and the dedication of land for education, health services, community facilities and utilities;
- Dedication of 780 hectares of conservation land within Huntlee;
- Dedication of Persoonia Park (17 hectares); and
- Dedication of up to 4988 hectares of conservation land elsewhere within the Lower Hunter Region.

This project application represents the first stage of the Huntlee development and is consistent with the strategic planning and environmental assessment undertaken for the rezoning.

1.2 Proponent and Project Team

Huntlee Pty Ltd is the proponent for the proposal.

The preparation of the project has involved contribution from a range of expert specialist consultants, including those in the fields of urban design, ecology, landscape, engineering, traffic, sustainability and bushfire management. The expert project team formed to deliver the project includes the following consultants:

Table 1 – Project Team

Consultant	Specialty
Project / Development Manager	LWP Property Group
Urban Planning	JBA Planning
Urban Design	Roberts Day Cox Richardson Architects
Site Infrastructure	Worley Parsons HDB Town Planning & Design
Quantity Surveyors	Altus Page Kirkland
Landscape	Hassell
Utility Services	Worley Parsons
Stormwater and Flooding Engineers	Worley Parsons
Sustainable Strategy	Sustainable Built Environments
Biodiversity	RPS
Traffic and Transport	Better Transport Futures
Bushfire Management	HDB Town Planning & Design

Submitted as appendices to this report are various supporting technical reports that investigate the environmental implications and determine suitable mitigation and management measures for the project (see Appendices of report).

2.0 Site Analysis

2.1 Site Location and Context

Huntlee, in its regional context is shown in **Figure 1** and is located to the south of the town of Branxton in the Hunter Valley of NSW. The Huntlee site straddles Wine Country Drive, which links Cessnock with the New England Highway. Within the overall Huntlee site, the proposed urban area is bounded to the north and east by the Main North Railway and Hunter Expressway corridor, to the south by the village of North Rothbury and to the west by the Black Creek floodplain. Other adjoining uses include vineyards, rural residential development and general agriculture.

This Project Application relates to the first residential Village (1922 lots) located to the east and north of the existing village of North Rothbury and includes the first 50.5 ha of the Town Centre area and the Wine Country Drive large lot residential area (120 lots). The Stage 1 area in the context of the overall Huntlee development framework is shown in **Figure 2** below.

The first stage of the residential Village will commence on the eastern side of the existing village of North Rothbury.

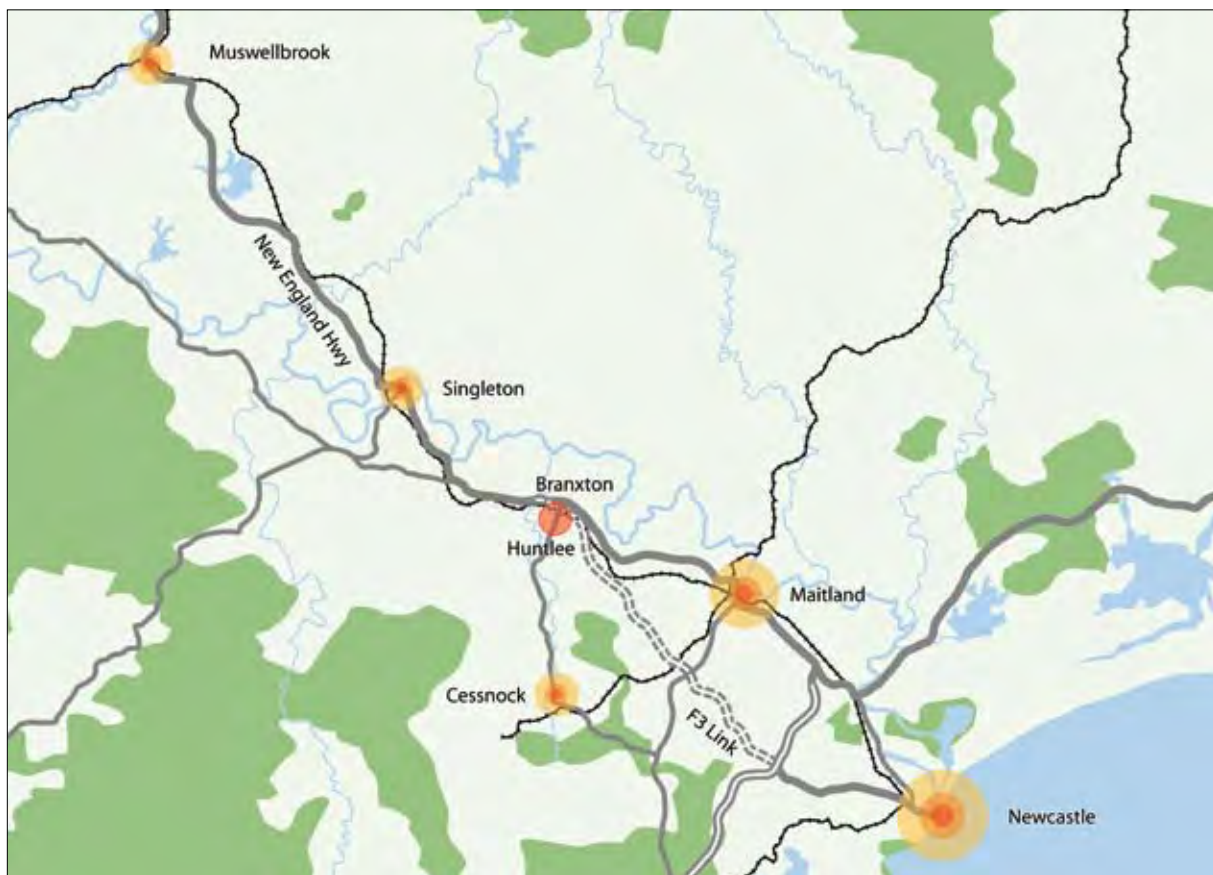


Figure 1 – Huntlee Regional Context

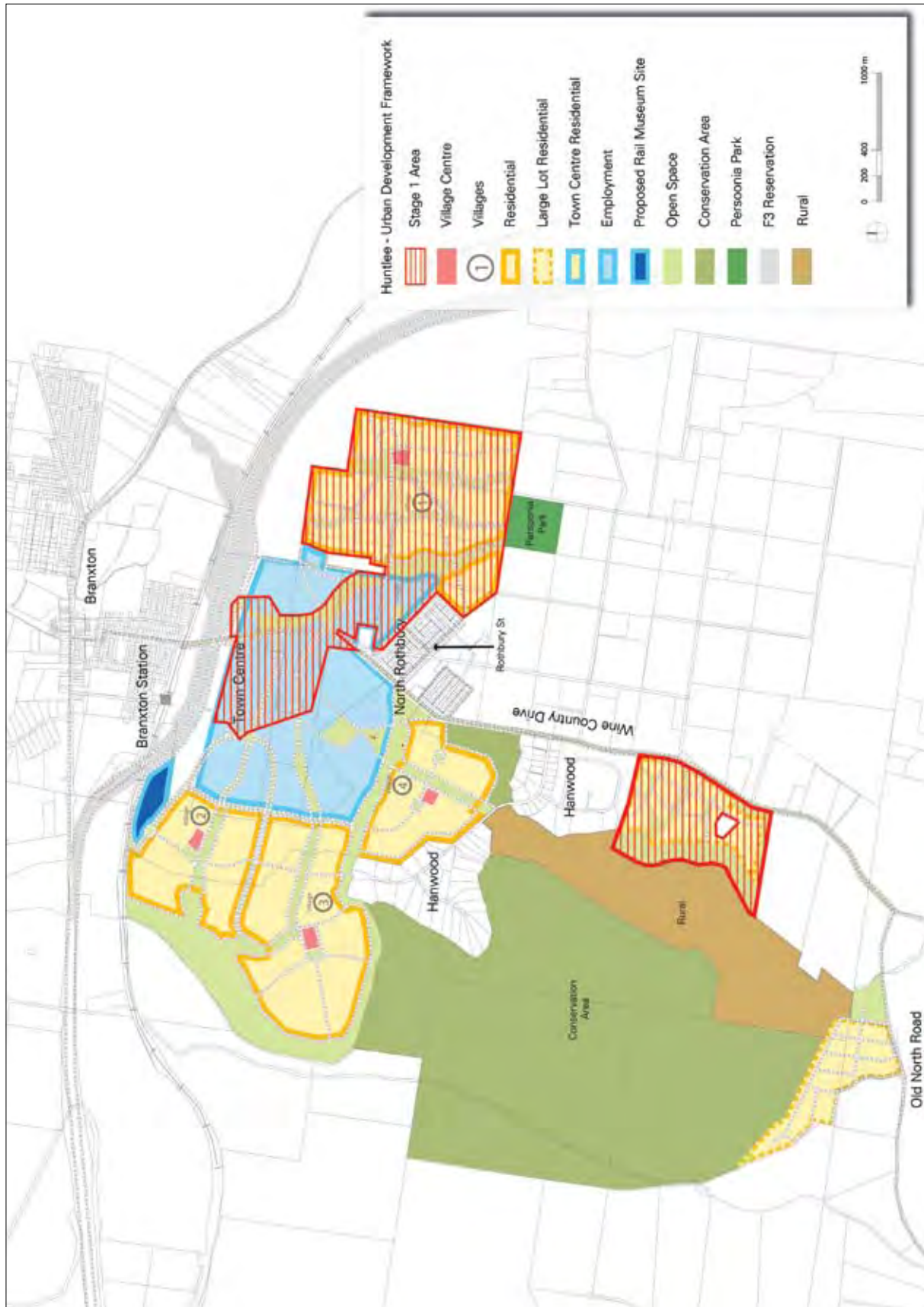


Figure 2 – Stage 1 Project Application areas

2.2 Land Ownership and Legal Description

The legal title description of the Stage 1 areas is in **Table 2** below. All land is owned by Huntlee Pty Ltd.

Table 2 – Stage 1 Land Title Details

Lot	DP
200 (Part)	828486
201	828406
230 (Part)	879198
231	879198
33	755211
34	755211
36	755211
37	755211
38	755211
39	755211
43	755211
211 (Part)	828787
6	729973
7	729973
8	729973
9	729973
10	729973
11	729973
12	729973
1	745450
21 (Part)	1050597
221 (Part)	1064738
10	1105639

2.3 Existing Development

All Stage 1 areas are currently subject to agricultural activities, predominantly grazing, and associated farm infrastructure including fences and farm dams etc. There are a small number of individual dwellings. A company currently operates a tourist activity (Bed and Breakfast) from a site wholly surrounded by, but not included in the large lot residential development area on Wine Country Drive.

2.4 Summary of Site Opportunities and Constraints

The Stage 1 development is generally located outside of the areas identified as being constrained in the Huntlee State Significant Site study. The Stage 1 areas are not affected by mine subsidence, quarrying activities or contamination associated with previous mining and landfill activities. The Stage 1 residential areas are located over 450 metres from the Main Northern Railway line.

Key issues that require consideration in the design and layout of the Stage 1 Project Application area are:

- Urban design and landscaping
- Local traffic management;
- Public transport provision;
- Stormwater management;
- Utility services;
- Biodiversity;
- Bushfire management; and
- Sustainability.

These issues are addressed in detail in Section 6 of this report.

3.0 Planning Framework and Context

The Project Application for Stage 1 of Huntlee is submitted under Part 3A of the EP&A Act. The relevant environmental legislation, strategies and planning controls pertaining to the Huntlee are summarised below insofar as they relate to Stage 1.

3.1 Commonwealth Legislation

3.1.1 Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)

Under the EPBC Act, it is necessary to obtain an approval from the Federal Minister for the Environment and Heritage to carry out a 'controlled action' where it is likely to have a significant impact on a 'matter of national environmental significance'. Under the Act, matters of National Environmental Significance include listed threatened species, ecological communities and migratory species.

The Ecological Constraints Master Plan (ECMP) prepared by RPS that accompanied the State Significant Site Study (see **Appendix I**) identifies various species that are listed under the EPBC Act that have been identified on the site. Therefore future project and development applications to facilitate development at Huntlee will be subject to the provisions of the EPBC Act. In terms of flora, the species identified as listed threatened species under the EPBC Act include:

- *Acacia bynoeana* - Bynoe's Wattle (vulnerable)
- *Eucalyptus glaucina* – Slatey Red Gum (vulnerable)
- *Eucalyptus parramattensis* subsp. *decadens* – Drooping Red Gum (vulnerable)
- *Persoonia pauciflora* - North Rothbury Persoonia (critically endangered)

In terms of fauna, the following EPBC listed species have been recorded within or in the vicinity of the site include:

- *Xanthomyza phrygia* - Regent Honeyeater (endangered)
- *Lthamus discolor* - Swift Parrot (endangered)
- *Pteropus poliocephalus* - Grey-headed Flying-fox (vulnerable)

Targeted surveys by RPS have also identified that the *Xanthomyza phrygia* (Regent Honeyeater) as being within the site. This species is a listed migratory species under the EPBC Act.

The Department of Sustainability, Environment, Water, Population and Communities has advised Huntlee Pty Ltd that its preference is to consider development at Huntlee in one process (ie. all stages) rather than on a stage by stage basis. A referral has been made to the Commonwealth Government on this basis.

The nature and extent of likely impacts of the proposed development on listed threatened species and communities is considered in Section 6.6 of this report.

3.2 Strategic Framework

3.2.1 Lower Hunter Regional Strategy 2006

The Lower Hunter Regional Strategy 2006 (LHRS) was released in October 2006 by DoP with the purpose of ensuring that adequate land is available and appropriately located to sustainably accommodate the projected housing and employment needs of the region's population over the next 25 years. The Huntlee proposal is specifically identified in the Strategy as a major urban release area able to accommodate up to 7,200 residential dwellings. This represents 6.1% of the total new dwellings required under the Strategy and 10.4% of all new dwellings in new release areas across the Region. In addition, Huntlee will contribute up to 200 hectares of employment land to the region, which is capable of generating in excess of 3000 jobs.

This is consistent with the Regional Strategy objective of ensuring the availability of sufficient employment lands and maintaining or improving the employment self sufficiency of the region. The Stage 1 development areas are within the parameters of the Development framework and consistent with its outcomes.

3.2.2 Lower Hunter Regional Conservation Plan

This plan sets out a 25-year program to direct and drive conservation efforts in the Lower Hunter Valley. It is a partner document to the NSW Government's Lower Hunter Regional Strategy. The proposed conservation offsets that will be dedicated as part of the Huntlee SSS rezoning process and associated Voluntary Planning Agreement (VPA) are identified in the Strategy. These conservation offsets support the development of the urban footprint for the Huntlee New Town including the proposed Stage 1 development areas.

3.2.3 Local Strategies

The current Cessnock City Wide Settlement Strategy (CWSS) dates from 2003 and does not take into account the settlement and economic development outcomes proposed in the 2006 Lower Hunter Regional Strategy. Cessnock City Council is currently in the process of revising its CWSS to incorporate and accommodate the residential and employment targets set by the Regional Strategy. The draft Revised CWSS 2009 has been publicly exhibited but has yet to be finalised and endorsed. The draft CWSS 2009 identifies Huntlee as a major urban release area accommodating up to 6840 residential dwellings and 225 rural residential dwellings within Cessnock LGA.

The Singleton Land Use Strategy was endorsed by Council in April 2008. The draft Strategy acknowledges the Huntlee New Town site as being part of the Regional Strategy and does not propose to rezone any additional residential land in the Branxton locality. No Stage 1 development areas are within Singleton LGA.

3.3 Statutory Framework

This section summarises the relevant state, regional and local environmental planning instruments and policies that apply to the site. The following planning instruments and planning policy documents are of key relevance to the proposed development:

- State Environmental Planning Policy (Major Development) 2005 (Major Development SEPP);
- State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP);
- State Environmental Planning Policy No.55 - Remediation of Land (SEPP 55);

3.3.1 Major Development SEPP

Schedule 1 – Part 3A Projects

The Major Development SEPP identifies certain categories of development and certain specified sites that are subject to assessment and determination under Part 3A of the EP&A Act. The Minister for Planning is the approval authority for Part 3A projects.

Pursuant to Clause 6 of the Major Project SEPP, The Minister for Planning formed the opinion that Stage 1 of the Huntlee development is a project to which Part 3A applies on the basis that the project meets the criteria in Clause 13 of Schedule 1 of the SEPP as a development for the purposes of residential, commercial or retail with a capital investment value greater than \$50 million that is important in achieving State and regional objectives. The Project Applications the subject of this Environmental Assessment both fall within the Minister's declaration.

Schedule 3 – Huntlee Development Controls

Schedule 3 of the Major Development SEPP identifies a number of sites in NSW that are determined to be State Significant Sites. This schedule rezones these sites and determines appropriate development controls to take forward development. On 31st December 2010 an amendment to Schedule 3 was listed on the NSW Government Legislation Website to include land use zoning and development control provisions to the entire Huntlee development. The Huntlee Stage 1 development has been designed to be consistent with the Schedule 3 provisions.

The Schedule 3 provisions require the preparation of a Development Control Plan (DCP) for Huntlee to further refine the development principles and controls that will be applied to all future development. Draft Huntlee DCP has been prepared and is submitted with this Project Application for approval (**Appendix C**). Stage 1 of the Huntlee Development has been assessed against the principles and controls contained in the DCP. A schedule of compliance with the draft DCP is at **Appendix D**.

Table 3 shows the current zoning provisions for the various components of Stage 1. The proposed zoning under the Major Development SEPP is shown in **Figure 3**.

Table 3 – Zoning Controls

Stage 1 Areas	Major Development SEPP Zoning
Stage 1 Residential Neighbourhood	R1 General Residential
Stage 1 Town Centre including Town Centre residential development (Entry Village)	B4 Mixed Use
Residential Village Centre	R1 General Residential
Rural Residential Areas	R5 Large Lot Residential

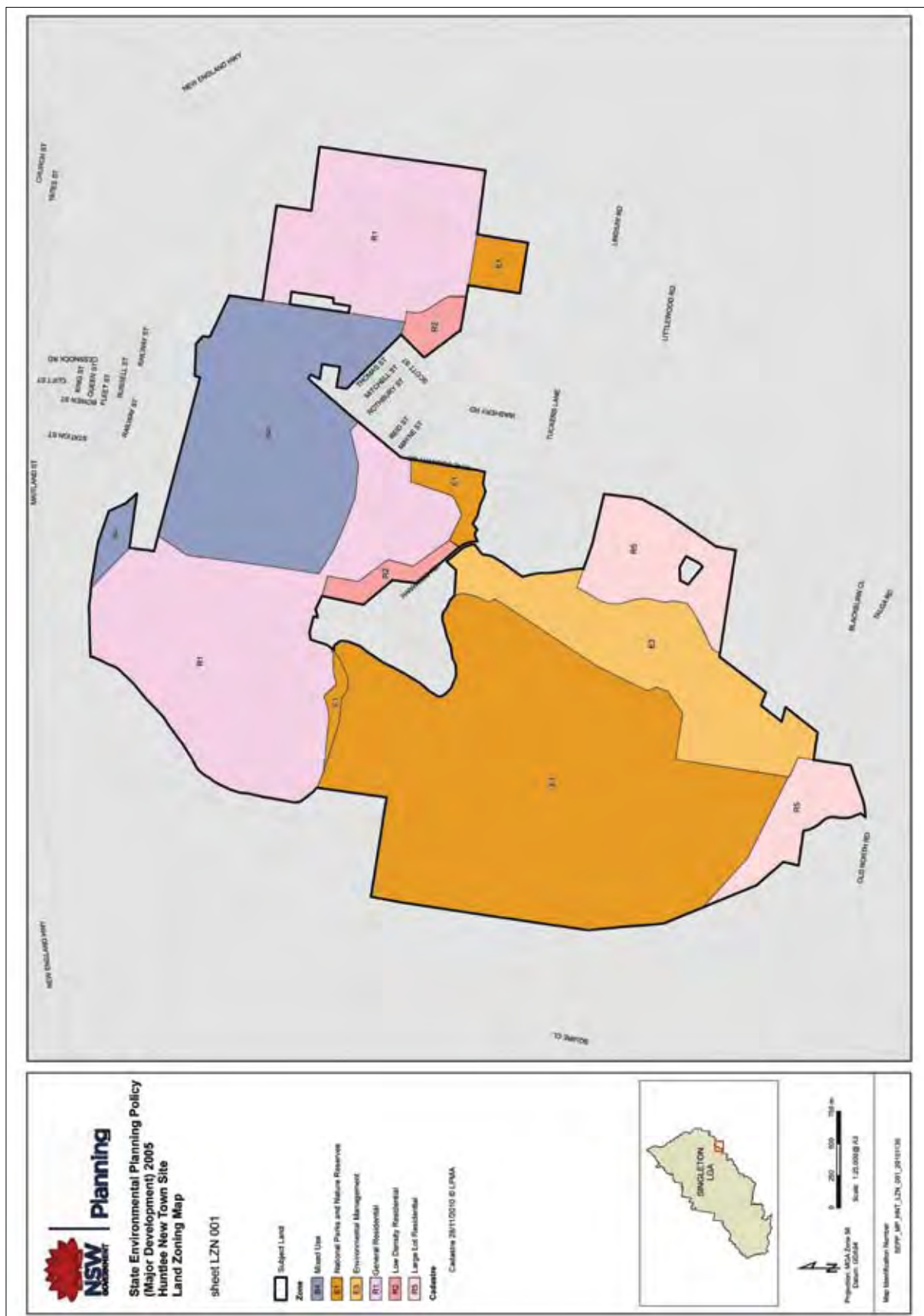


Figure 3 – Major Development SEPP zoning

Source: Department of Planning

3.3.2 Infrastructure SEPP

This policy ensures amongst other things that applications for specific types of development are referred to the relevant Traffic Authority for its comments prior to determination. Under the provisions of this SEPP, these Project Applications under Part 3A of the Act will be referred to the RTA for comment based on the size and quantum of residential and employment lands proposed.

The Traffic Authority for the site is the NSW Roads and Traffic Authority (RTA). The traffic impacts of the proposed development for Huntlee have been considered and are detailed in the Huntlee Transport Management and Accessibility Plan (TMAP) prepared by Better Transport Futures at **Appendix E**. The specific impacts of the Stage 1 Project Application proposals are addressed in Section 6.2 of this report.

3.3.3 SEPP 55 – Remediation of Land

The aim of SEPP 55 is to promote the remediation of contaminated land for the purpose of reducing risk of harm to human health or any other part of the environment. The policy specifies considerations that are relevant to consent and approval authorities in the rezoning of land and in determining development applications.

In accordance with this policy, the Minister in considering whether to approve development must be satisfied that the land is suitable for its proposed use or the land will be remediated before it is used for that purpose.

A Phase 1 Environmental Assessment of the Huntlee Stage 1 development area has been undertaken and is addressed in Section 6.10.

4.0 Consultation

Extensive consultation has been undertaken with the community, Councils and Government agencies during the formulation of development proposals for Huntlee New Town since July 2010. All issues raised during this period to 2011 have informed the current planning application for Huntlee Stage 1.

The State Significant Site Study for Huntlee was publicly exhibited between 29 September and 17 November 2010. 77 submissions were received (68 from the public) and the issues raised in those submissions were considered by Huntlee Pty Ltd both for the SSS process as well as in the preparation of this Project Application.

During the public exhibition period the Huntlee office received the public enquiries and also provided detailed copies of information for display at the offices of Cessnock City Council and Singleton Council.

In summary, since mid 2007 Huntlee has worked collaboratively and proactively with:

Department of Environment Climate Change and Water

Key issues discussed with DECCW are:

- Conservation lands at the Huntlee site and management process moving forward.
- The draft "Recovery Plan" for the *Persoonia pauciflora* including protection and collection of *Persoonia pauciflora* seeds for propagation
- Aboriginal Cultural Heritage
- Remediation and Rehabilitation programs for the Ayrfield Colliery No.3. This included monitoring of dust, leachates and methane generation from an existing landfill site.
- Stormwater Management including stormwater detention design and riparian corridor management (NSW Office of Water).

Some of the above issues such as the remediation programs at the former Ayrfield Colliery do not directly relate to Stage 1 and are on-going. The outcomes of the discussions with DECCW are reflected in the specialist studies and addressed in Section 6.

Hunter Water Corporation

Discussions with the HWC related to the establishment of Water and Wastewater Servicing Agreements. These discussions are addressed in Section 6.5 and **Appendix G**.

Roads and Traffic Authority

There has been on-going consultation with the RTA regarding the appropriate scope of traffic modelling for the development. Following on from these discussions, Huntlee Pty Ltd commissioned Colin Buchanan (China) to undertake a review of the RTA's TransCAD model inputting the Huntlee development parameters. The modelling was then compared to the Paramics modelling undertaken. The results of the modelling are discussed in Section 6.2.

Discussions have also been held with the RTA regarding Hunter Expressway corridor which will traverse adjacent to the Huntlee site.

Department of Education and Training

Discussions have been held with the Department of Education and Training, TAFE, University of Newcastle, Anglican Schools, Catholic Diocese, Singleton and Rutherford High Schools, Branxton and Greta Primary Schools to establish the Huntlee Education Panel that looked at synergies and opportunities for an integrated education strategy in the region.

Cessnock Council

Cessnock Council staff were briefed on the Stage 1 development on 18 January 2011. Key issues raised by Council include:

- Biodiversity offsets (Section 6.6)
- Traffic (Section 6.2)
- Utility services (Section 6.5)
- Size of the town centre (Section 5)
- Residential amenity of future stages along the Hunter Expressway / Railway corridor (not relevant to Stage 1)
- Contamination (Section 6.10)
- Local governance and contributions (Section 6.12)

Other Groups

- The indigenous communities of, Lower Wonnarua Council, Upper Wonnarua Council, Wonnarua Elders Council and Mindaribba Local Aboriginal Land Council, through the establishment of the Huntlee Aboriginal Reference Group, to guide opportunities for the indigenous communities in training, employment and business development.
- The Business Chambers of Hunter, Maitland, Singleton, Cessnock, Mindaribba, Kurri Kurri and Branxton Greta.
- The Economic Business Development Managers of Cessnock and Singleton in aligning their economic strategies and the importance of affordable land supply in their LGA's.

Huntlee will continue to have on-going consultation strategy that encompasses Councils, Government agencies and the community.

Aboriginal Consultation

There has been on-going consultation with the local Aboriginal community through the indigenous communities of, Lower Wonnarua Council, Upper Wonnarua Council, Wonnarua Elders Council and Mindaribba Local Aboriginal Land Council, through the establishment of the Huntlee Aboriginal Reference Group (HARG) in 2007. This guided opportunities for the indigenous communities in training, employment and business development. As Huntlee has been rezoned as a State Significant Site, the HARG will continue its function once the Stage 1 Projects Approvals are in place.

Huntlee Pty Ltd is committed to achieving strong and sustainable outcomes for indigenous communities in the Hunter Valley.

Huntlee Pty Ltd supports the future involvement of the Mindaribba Local Aboriginal Land Council in the possible future management of the proposed Huntlee site specific conservation lands. A sum of \$1million has been allocated through the Regional Voluntary Planning Agreement to the management of the 5,812 hectares of conservation lands, which includes the Huntlee site specific lands.

5.0 Description of Huntlee Stage 1 Project Application

The Project Application for Stage 1 of Huntlee seeks to facilitate the initial roll out of the Huntlee Concept Plan application and State Significant Site listing.

Stage 1 seeks project approval for:

- Subdivision for the first residential village to accommodate up to 1700 dwellings, open space and community facilities;
- Superlot subdivision for the first component of the mixed use employment lands (50.5ha);
- Subdivision for the first stage Town Centre residential development including up to 190 lots to accommodate up to 222 dwellings;
- Subdivision for up to 120 large lot residential lots; and
- Construction of associated community infrastructure including landscaping, open space and recreation areas; and
- Construction of associated physical infrastructure (both on and off site) including:
 - road works and associated intersections;
 - stormwater management; and
 - water supply and sewerage.

Relevant plans of the proposed subdivision and infrastructure works for this Project Application are included at **Appendix A** with more detailed plans included for the first sub-stage of the development being the 190 residential lots in the Entry Village (see Section 5.3).

It should be noted that throughout the document there will be references to “lots” and “dwellings” with apparent differences in numbers for each. The discrepancy comes about through the presence of lots designated for medium density development which will ultimately contain multiple dwellings. Therefore, for example, subdivision for the first stage Town Centre Residential development will be for 190 lots however up to 22 dwelling will be accommodated.

The draft Huntlee Development Control Plan which establishes detailed planning principles and controls for future development within Huntlee is included at **Appendix C** and a Landscape Concept Report is at **Appendix F**.

5.1 Overall Huntlee Vision

As outlined in the State Significant Site Study, the vision for Huntlee is to create a new Hunter Valley town that:

- retains the character of the place including its natural attributes and rich Aboriginal and European past; and
- establishes an active and memorable urban core, surrounded by well connected neighbourhoods, each with a community heart that is in easy and safe walking and cycling distance from the homes in that neighbourhood; and,
- is united by its high quality public domain of connected streets, parks, and recreational open space links ensuring that Huntlee is an attractive urban environment.

The natural attributes of the site include an undulating topography affording panoramic views, extensive areas of vegetation and future environmental conservation areas. The man made heritage of the site includes pre-European remnants as well as the memory of the site's very significant industrial past – an important part of the Hunter's development as an industrial mining centre in New South Wales. While parts of the site's topography have been significantly altered by mining activity, these areas offer the opportunity to create interesting places.

The vision for the Huntlee Town Centre is to create an exciting township in the Hunter Valley combining community, commercial, local shopping and educational facilities around a Town Park that is connected to the neighbouring towns of Branxton and North Rothbury. Supporting this will be four (4) villages each with strong links to the Huntlee Town Centre. Each village will be distinctive in character, being located within a different landscape within the larger site. Some villages will be on ridge tops, others along watercourses and areas of vegetation. The Huntlee Urban Development Framework is shown in **Figure 4**.

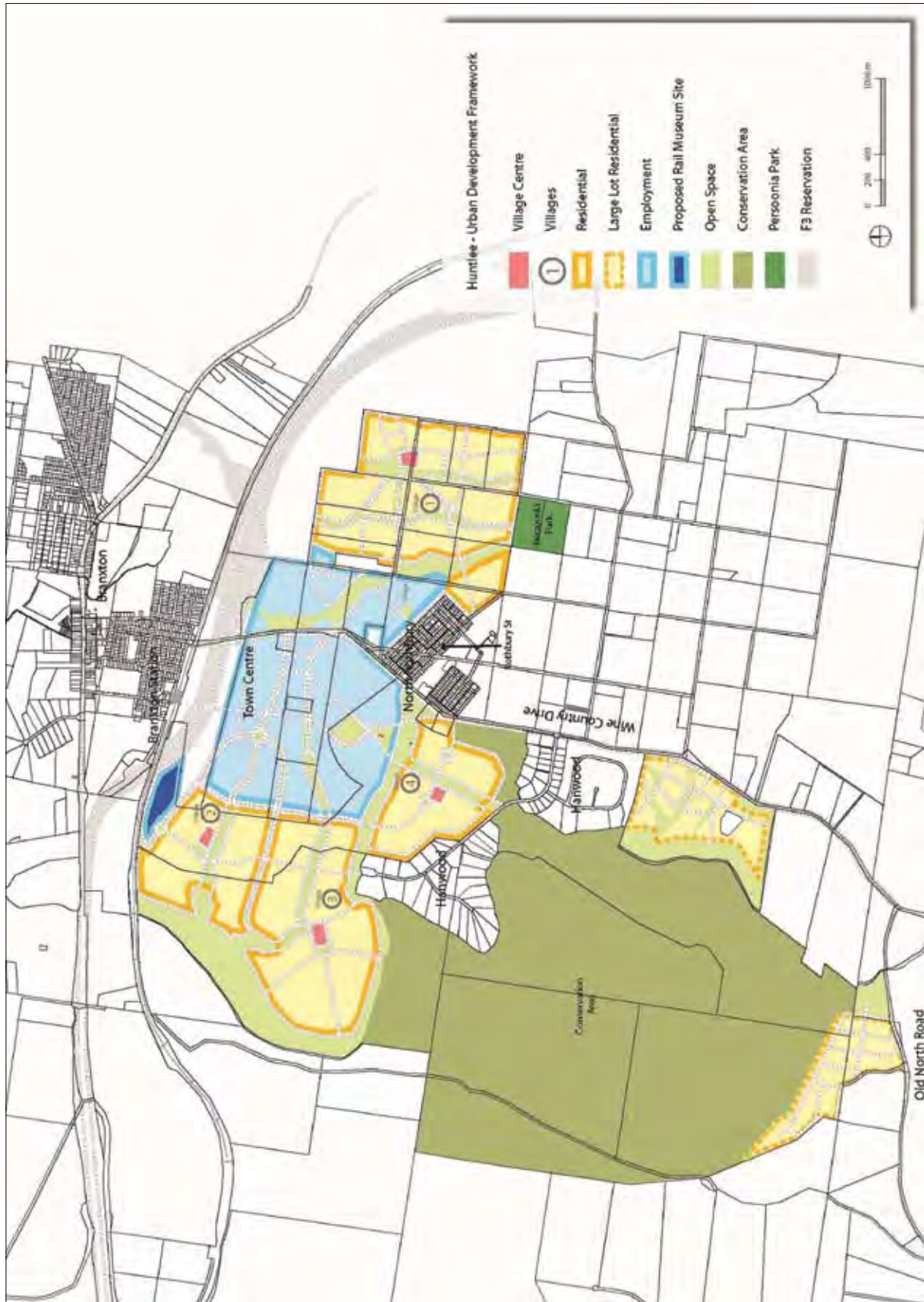


Figure 4 – Huntlee Urban Development Framework

Source: Cox Richardson

5.2 Urban Design Concept

Consistent with the overall Urban Development Framework, the location and inter-relationship of subdivision patterns, road networks, pedestrian and cycle movement, community facilities and open space for Stage 1 are underpinned by a number of key urban design principles that create a viable and sustainable community. These include:

- Creating a well connected street pattern that responds to the site's topography;
- Streets that generally terminate on an open space;
- Creating streets with generous green verges with street trees and footpaths on both sides of the street;
- A series of linear open space areas that preserve ridges, hilltops and significant areas of vegetation;
- Open spaces surrounded by public streets;
- Planning neighbourhoods where residents can easily walk or cycle to the neighbourhood core, a local shop, community centre, open space or school generally within 400 metres; and
- Providing a mixture of housing options to create diversity in the built form and accommodation choice.

As outlined earlier, a detailed draft Development Control Plan (**Appendix C**) and a Landscape Concept (**Appendix F**) have been prepared for the Stage 1 areas. These documents address:

- building form;
- heights;
- road widths;
- streetscape character;
- civic spaces;
- landscape treatment;
- water sensitive urban design; and
- Energy efficiency.

The documents are to be used to guide future development within the Stage 1.

5.3 Stage 1 Development

5.3.1 Overview

Stage 1 development will involve the initial development of the mixed use Town Centre, including a component of residential development, as well as the development of the first residential village and the first component of the large lot residential areas.

Village One will comprise up to 1391 lots with a development potential of 1700 dwellings, associated roads and utility infrastructure, open space areas and includes the first major village centre to be developed for the Huntlee New Town. It will contain a range of lot types and sizes which will cater for traditional residential dwellings through to smaller multi-unit housing.

The Project Application provides for the creation of 10 super allotments to enable the initial infrastructure development of the Town Centre and facilitate future detailed planning and development for core retail, service industry, bulky goods and mixed use development. Stage 1 of the mixed use area will also include subdivision and infrastructure works for up to 190 residential lots (with a development potential of 222 dwellings) which will be known as the "Entry Village" and are additional to the Village One lots. Three superlots are also proposed to be created in this locality for future subdivision.

An initial large lot residential area located to the south of the Huntlee on Wine Country Drive will be developed as part of Stage 1.

This Project Application seeks approval for:

- Subdivision both for residential lots and a number of super lots;
- construction of associated community infrastructure including landscaping, open space and recreation areas; and,
- construction of associated physical infrastructure (both on and off site) including:
 - road works and associated intersections;
 - stormwater management; and,
 - water supply and sewerage.

Key development information pertaining to Stage 1 is provided in **Table 4** below:

Table 4 – Key Development Information for Stage 1

Component	Proposal
Total Site area, including: - Residential Village One - Town Centre (including Entry Village) - Wine Country Drive Large Lot Residential Area - Open space areas	367 hectares
Site area Wine Country Drive large lot residential area	80 hectares
Maximum No. of residential dwellings - Village One	1700
Maximum No. Of residential dwellings - Town Centre (Entry Village)	222
No. of large lot residential lots	120
Landscape /open space areas (excluding Persoonia Park)	80 hectares
Open space area Wine Country Drive large lot residential area	28 hectares
Employment Area	50.5 hectares
Neighbourhood Village Centre	5 hectares

The overall Urban Structure for Stage 1 is shown in **Figure 5**.

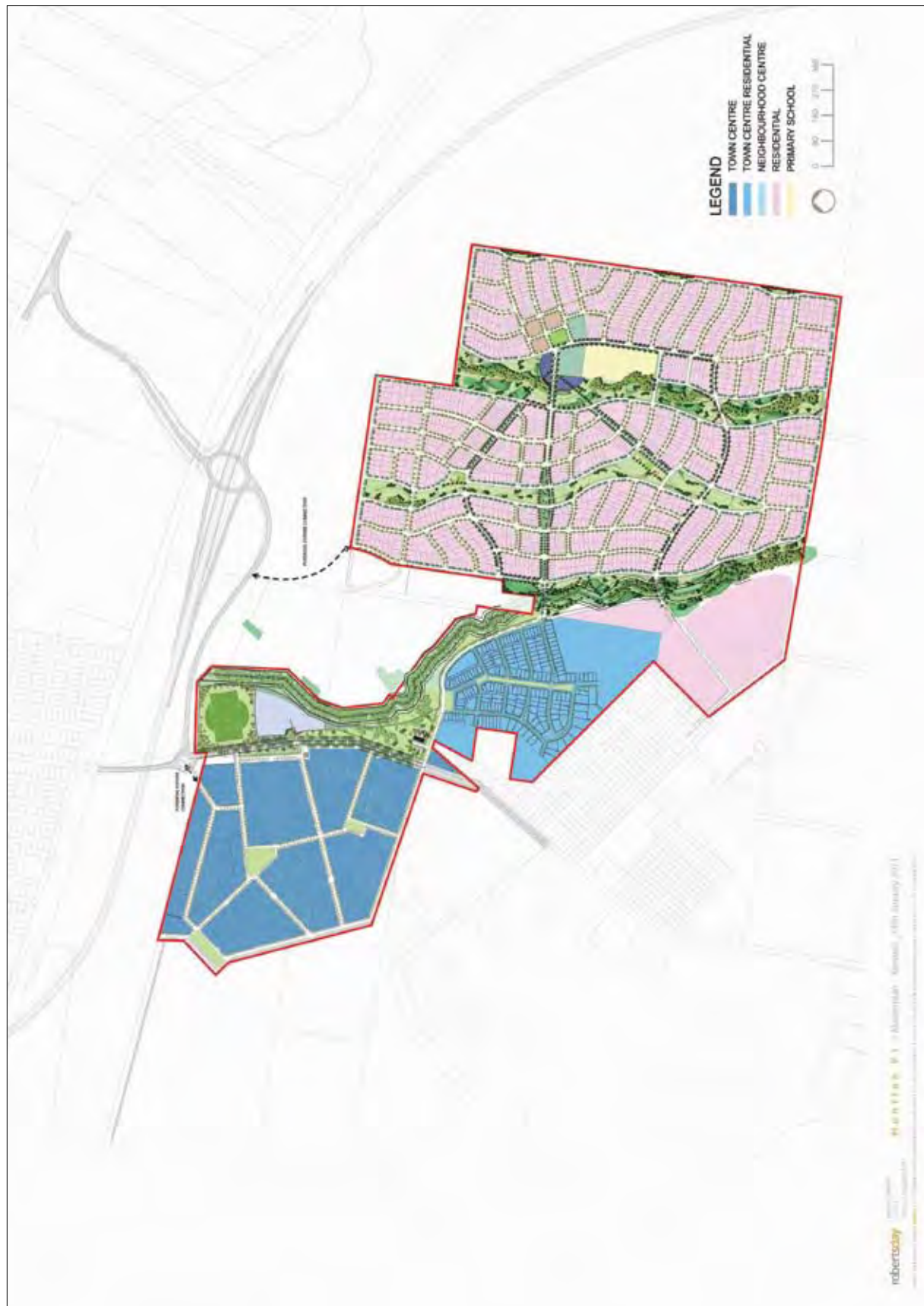


Figure 5 – Stage 1 Urban Structure

Source: Roberts Day / HDB

5.3.2 Stage 1 – Residential Village One

The proposed development pattern for the Village One residential neighbourhood follows the Huntlee urban design concept by responding to the site's gently undulating topography. In particular the proposed settlement pattern responds to the precinct's key features:

- A north-south ridge line that was formerly used as an airstrip and is currently largely cleared of vegetation. This ridgeline creates a sense of enclosure for most of the village when viewed from the west of the site and creates significant views along its length, particularly to the north.
- Two visually significant drainage lines that run north-south either side of the ridgeline;
- An existing farm dam/water storage area which is located along the drainage line in a central position in the precinct and forming a visual focus;
- Surrounding areas of bushland, particularly to the north, east of the precinct providing opportunities for natural views.

The following sections outline the various components of the urban design structure of the Village One residential neighbourhood. An overall urban structure for Stage 1 is shown in **Figure 5**.

The key principles behind the proposed residential density distribution for Village One are:

- To provide a variety of housing types to meet the needs of the community and for a range of demographics including cottage lots and multi-unit lots for retirees and young professionals and more traditional lots for families;
- To provide for varying housing styles which will promote housing affordability;
- Ensure larger lots (to cater for medium density development) are generally located on corners near local centres, local parks, schools, on collector roads, and near bus routes.
- To provide for larger, lower density lots on the perimeter of the site fronting the Asset Protection Zones.

The density distribution for the Stage 1 residential areas is shown in **Figure 6**.



Figure 6 – Stage 1 Residential Village One Dwelling Density Distribution

Lots within the Village 1 area are divided into four principle types as outlined in **Table 5** below:

Table 5 – Stage 1 Village One Residential Lot Types

Lot Type	Minimum Allotment Size	Number of Allotments	Number of Dwellings
Country	800m ²	196	196
Traditional lots	450m ²	842	842
Cottage Lots	360m ²	304	304
Duplex Lots	300m ²	24	48
Medium Density	200m ²	25	310
Total		1391	1700

5.3.3 Stage 1 Village Centre

The Village Centre is located in the north eastern part of Stage 1 adjacent to the existing natural drainage line running north south through the site. This village is identified in the Huntlee DCP as a Village Centre.

The centre will form one of four village centres in the overall Huntlee development which will provide a combination of low level local retail and community facilities complementing the major functions of the Town Centre.

The Village 1 Centre will be approximately 5 hectares and contain the following:

- Neighbourhood retail premises (maximum retail floorspace 3,000m²);
- Community facilities such as a community centre, childcare facilities etc
- A primary school; and
- A Village Centre Park.

It is proposed that the village centre be located adjacent to a hard edged waterbody that will be a key feature of the Village Centre Park.

Buildings that comprise the Village Centre will be the subject future detailed development applications consistent with the draft DCP (**Appendix C**). The proposed Village Centre location is shown in **Figure 7**. An indicative plan of the Village 1 Centre is shown in **Figure 8**.



Figure 7 – Village One Neighbourhood Centre location



Figure 8 – Stage 1 Village One Centre Indicative Plan

Source Cox Richardson

5.3.4 Stage 1 Town Centre

The Town Centre layout has been prepared by Roberts Day and is shown in **Figure 9**. The Town Centre area is located to the west of Wine Country Drive and south of the Hunter Expressway Corridor. The proposed land uses within this component of the overall Town Centre are outlined in **Table 6** below:

Table 6 – Stage 1 Town Centre land use

Land Use	Area
Core Retail / Mixed Use	12.32 hectares
Service Industry / Bulky Goods	10.81 hectares
Town Centre Support / Mixed Use	17.13 hectares
Town Centre Open Space	1.77 hectares
Estimate Total	50.5 hectares

The Stage 1 development includes the subdivision to create 10 super lots within the Huntlee Town Centre area. These super lots vary in size from 0.17 hectares to 6.35 hectares and will facilitate the initial development of the Town Centre. This part of Stage 1 development site comprises a total of approximately 50.5 hectares.

The proposed layout responds to a detailed consideration of access and movement opportunities and the celebration of key site features including:

- Riparian and valley systems;
- Ridge systems providing high points and distant view opportunities for the community;
- Regional transit opportunities, especially the Hunter Expressway interchange, Wine Country Drive, New England Highway and improved commuter services over time at the Branxton Railway Station (as coal demand falls);
- Pedestrian, cyclist and vehicular connectivity between the four villages and the Huntlee Town Centre;
- Supporting public bus transport access and movement throughout the four villages and the Huntlee Town Centre, including movement to other major centres outside Huntlee;
- Creating a vibrant town centre with defined “quarters”.

It is proposed that within the Town Centre quarters, streets will be laid out as a permeable network that promotes choice of movement between key destinations. Community orientated buildings and uses shall be sited on the most prominent locations within the town centre, particularly within and adjacent to important public spaces.

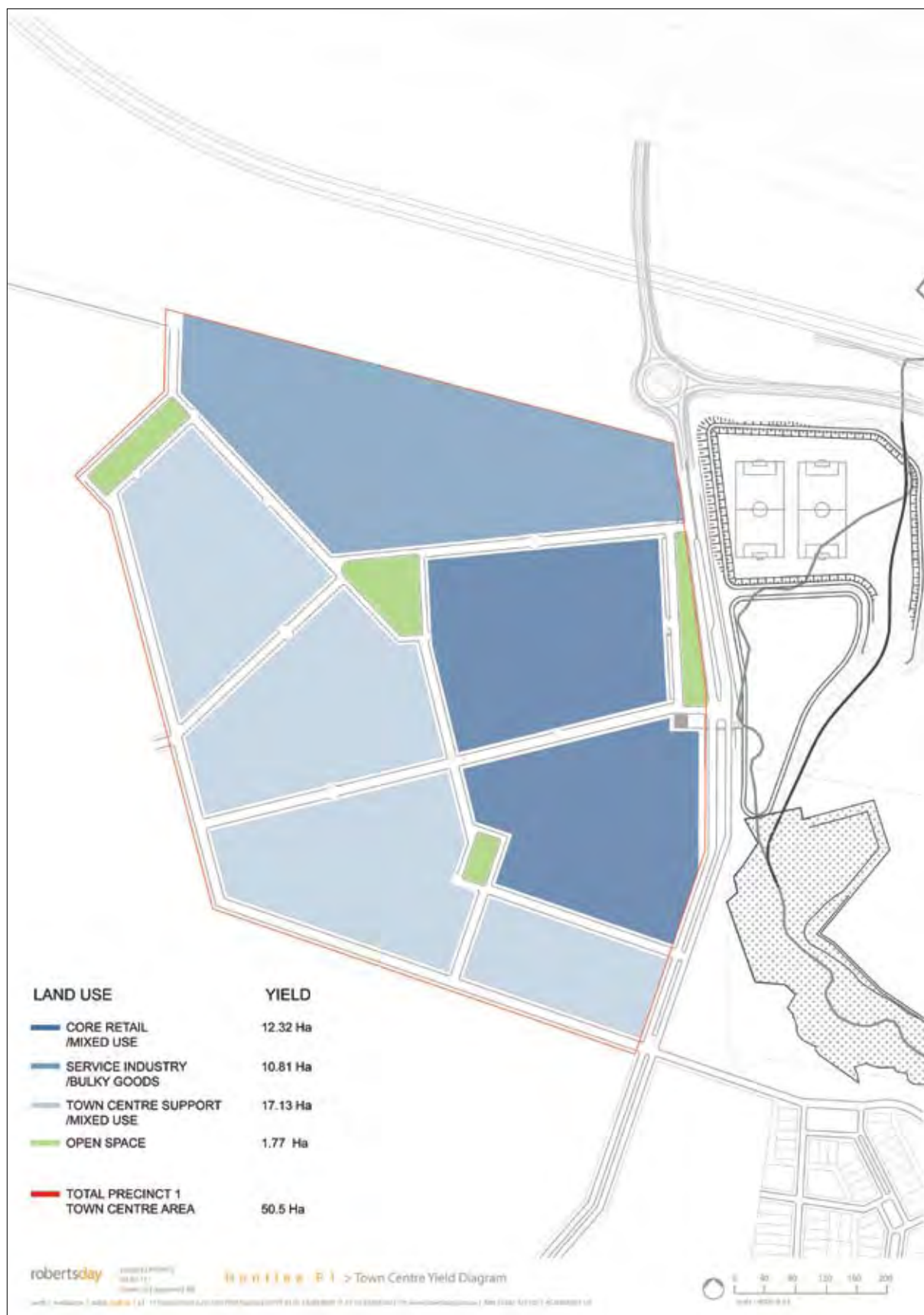


Figure 9 – Stage 1 Town Centre land use

Source: Roberts Day

Core Retail / Mixed Use Area

Land use within the Stage 1 Town Centre has been designed to ensure that a mix of retail, commercial, educational, recreational, entertainment and residential uses will be concentrated in a core retail/mixed use area concentrated along Main Street. Main Street is configured to represent the optimal response to the above opportunities and will be recognisable as the most important street in Huntlee, terminating at a Civic Park to the east. It is proposed that key civic buildings will be located at this eastern end adjacent to Wine Country Drive. The proposed street layout in this area creates a visual focus for traffic travelling along Wine Country Drive, clearly identifying Main Street and the Town Centre core.

Service Industry / Bulky Good Area

Employment generating service uses and light industry are proposed to be located adjacent to the Hunter Expressway corridor for optimal access to the State and Regional road network as well as providing a suitable transitional land use from the expressway to the high quality urban amenity of Main Street

Town Centre Support / Mixed Use

These areas will support lower intensity uses than the core retail centre that will support the town centre functions. Such uses will include education, health and community services, commercial and medium density residential development.

Subdivision of the Stage 1 Town Centre area into 10 super lots enables the broad structure of the Town Centre, including linkages and open space areas to be established and initial infrastructure such as collector roads and utilities to be constructed. The individual super lots will be planned in detail prior to development. The draft Huntlee DCP sets in place detailed principles and controls for development in the Town Centre. The DCP also provides for site specific amendments. It is proposed that such amendments to the DCP will be prepared as part of future development proposals.

5.3.5 Stage 1 Town Centre Residential - Entry Village

The State Significant Site Study for Huntlee proposed a mixed use Town Centre area for Huntlee within which up to 1700 dwellings with a range of type and density would be developed. Included in this application is subdivision for 190 lots to accommodate the first 222 dwellings for the Town Centre area. The Stage 1 Residential area is located in the south east section of the Town Centre on land to the east of Wine Country Drive and immediately north of the village of North Rothbury. The first stage of the Town Centre residential ("Entry Village") will also be the first sub-stage of the development to be constructed.

Entry Village will be bounded to the north by the Entry Road and the proposed Regional Park area. The site has a sloping northerly aspect that will enhance residential amenity through the provision of views and good access to public transport, pedestrian and cycleways connecting with Village One and the Main Street area. The proposed subdivision provides for a range of lot sizes and housing types including medium density and cottage housing adjacent to Entry Road transitioning to traditional lots in the centre of the site and larger country lots adjacent to North Rothbury to complement the historic subdivision size and pattern in that village.

The density distribution for the Stage 1 Town Centre residential area is shown in **Figure 10**.



Figure 10 – Stage 1 Town Centre Residential area

As part of this application, in addition to the proposed residential subdivision, approval is sought for three superlot subdivisions for the balance of the Town Centre area east of Wine Country Drive. These superlots will be the subject of future residential and mixed use subdivision as part of future stage applications. The location and areas of the proposed superlots are outlined in Section 5.3.6 below.

Table 7 – Stage 1 Town Centre Residential Lot Types

Lot Type	Minimum Allotment Size	Number of Allotments	Number of Dwellings
Country	800m ²	27	27
Traditional lots	450m ²	90	90
Cottage Lots	360m ²	70	70
Medium Density	200m ²	3	35
Total		190	222

5.3.6 Stage 1 Proposed Superlots

As outlined in previous sections, this application seeks approval for a number of superlots within the Stage 1 development area. These lots will be subject to detailed planning as part of future applications, however these areas require subdivision as part of this application to facilitate initial infrastructure provision and to also facilitate the development of adjoining areas. The superlots are primarily located in the Town Centre (see Section 5.3.4 above) however other lots are located in the Town Centre residential area as well as Village One.

The location of the proposed superlots is shown in **Figure 11** and the area of each lot are outlined in **Table 8**.

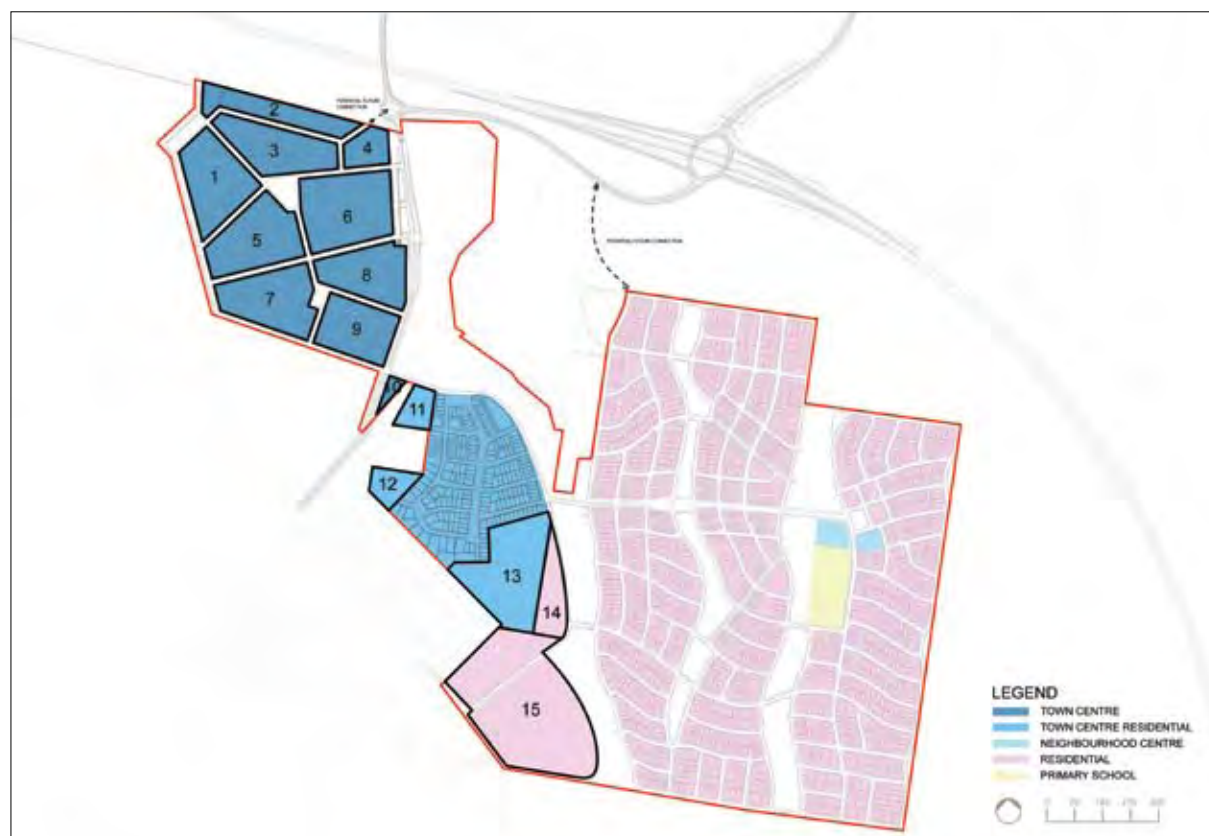


Figure 11 – Stage 1 Proposed Superlots

Source: Roberts Day

Table 8 – Stage 1 Superlot Areas

Superlot	Area (ha)
1	4.9
2	3.2
3	4.5
4	1.8
5	5.2
6	6.3
7	5.0
8	4.2
9	4.0
10	0.4
11	1.2
12	1.3
13	6.9
14	2.5
15	14.8

5.3.7 Wine Country Drive Large Lot Residential Area

This component of Stage 1 is located on cleared land with Black Creek forming the western boundary and Wine Country Drive the eastern boundary. Some lots on the western sections of the site are affected by flooding from Black Creek, however adequate flood free housing sites and access is provided to all lots. The development is designed on a minimum 2,000m² lot which provides varied housing opportunities within a garden-like setting. It is proposed to subdivide the site into 120 lots. The proposed subdivision plan is shown in **Figure 12**.

The site layout and urban design outcomes reflect the constraints and the opportunities of the site. Wine Country Drive to the eastern side of the site has a potential to impact on the development. As this is a main road within an 80km/h area, direct access to individual lots is not desired. In addition, the road creates a noise component and lots have been set back from the main road creating a buffer strip to reduce this impact.

Lots fronting a service road, which will provide a front yard view of the lots to present a positive visual appearance from the main road. The main distributor road within the subdivision has been aligned in a north-south direction, approximately on the line of the existing power easement and fibre optic cable. Relocation of the cable and the power line to underground will be required within this general area and the location of the internal road in this location reduces adverse impacts of having to move these services elsewhere.

Lots are generally orientated in an east-west direction, which although not critical for 2000m² lots, improves solar access. One primary and a possible secondary access option is provided for the site in a location that maximises site distance north and south on Wine Country Drive.

Open space linkages are created in an east-west direction within the existing drainage lines creating a permeable subdivision pattern linking Wine Country Drive through to Black Creek and the proposed open space network.

5.3.8 Open Space and Public Domain

A Landscape Concept has been developed for Stage 1 by Hassell, and is included at **Appendix F**. The key landscape principles which underpin the public domain development within Stage 1 are:

- Create and overall landscape setting that responds to the site's natural assets including natural systems, topography and vegetation;
- Protect flora and fauna habitats through the creation of conservation areas;
- Protect and enhance watercourses and significant riparian vegetation;
- Create parks and streets that celebrate the natural landscape and the needs of the surrounding community;
- Create parks and streets that are of a high quality and which promote local character and identity;
- Provide pedestrian and cycleway connections through the conservation lands and beyond the site; and
- Provide large shady trees as a relief from the new urban environment.

The overall Landscape Concept for Stage 1 is shown in **Figure 13** and in greater detail in **Appendix F**.

The key components of the Landscape Master Plan are outlined below.

Anvil Creek Regional Park

A major new regional park will be created as part of Stage 1 in the Anvil Creek Floodplain to the east of the Town Centre and Wine Country Drive. This park will be highly visible and accessible and become a memorable civic focus for the new Town Centre celebrating the natural features of the local creek system and vegetation communities, accommodate significant water related functions and offer and provide for a range of recreational activities to suit community, family and individual pursuits.

Three main activity areas will be created within the park:

- Village Green
- Civic Park
- Community Park

Village Green

The lowest area of the Anvil Creek catchment will be recontoured to create a large 4.5 hectare detention basin which will be occupied by local sporting fields and a central village green. Features of the park will include car parking and amenities, broad amphitheatre / bleachers and seating in a natural setting to possibly cater for local festivals, market days, large community gatherings and celebrations, picnicking and interpretation.



Figure 13 – Stage 1 Landscape Concept

Source: Hassell

Civic Park

A primary focus of the new Town Centre will be a new 3 hectare lake and civic park. The lake is located at the confluence of view corridors from the new Main Street and from Wine Country Drive on approach from south and north. The proposed Lake will receive runoff from the town centre and from Anil Creek upstream, and provide water quality control via fringing wetlands and bio-retention. The Civic Park is a place for lunching, relaxation, promenading and escape from the action of the busy town centre. Features will include a jetty structure, promenade and boardwalks, paved and seating areas with access to the water's edge, a lakeside walk and possibly boating / canoeing.

Community Park

Significant new facilities are proposed in the southern portion of the Regional Park which is envisaged as a major new destination for communities within and outside the new town of Huntlee. Proposed facilities will include a kiosk / cafe, regional standard adventure or themed playground, major cycleway and pedestrian link, amenities, car parking and picnicking facilities to cater for family and group gatherings and celebrations. This park is a place for lingering and relaxing where there is a choice of activities to be enjoyed by a variety of users and age groups.

Other Stage 1 Local Parks

Ridge Top Park

The key principles and features which underpin the Ridge Top Park are:

- Large and open in scale, taking advantage of existing long vistas framed by vegetation;
- Use of large scale "land art" to take advantage of the park's size;
- The existing "meadow" character to be maintained and upgraded, with a managed mowing regime creating informal paths and rooms through the park;
- Proposed uses include BBQ shelters, look outs, informal kick about areas and passive recreation.
- Cycleway network through the reserve and linking to adjoining residential precincts

Eastern Riparian Corridor

The key principles and features which underpin the Creek Line Reserves are:

- Creek Line Park to be naturally themed reflecting the existing creek line and the Lower Hunter Redgum Forest (EEC) on site;
- Through the effective delivery of Water Sensitive Urban Design principles, the Creek Line Reserve provides stormwater management and cleansing;
- Dry basin bio-retention swales divide the reserve into a series of "rooms" providing a variety of uses;
- The existing creek to be reinforced and upgraded where required;
- Proposed uses include BBQ shelters, informal kick about areas, passive recreation, informal amphitheatre spaces.

Village Centre Park

The key principles and features which underpin the Village Centre Park are:

- Urban style central park, provides a centre piece to the village as well as accent point for long distance vistas down the main village entry road and diagonal roads;
- A large hard edged waterbody to provide visual amenity with required detention capacity;
- Proposed uses include BBQ shelters, look outs, terraced waterbody, terraced play area, amphitheatre;
- The park to reflect the Contemporary Australian theme of the Village Centre and an overall theme of vineyard living.

Neighbourhood Parks

The key principles and features which underpin the Neighbourhood Parks are:

- Neighbourhood parks to reflect the contemporary Australian Style of the Village Centre, and provide small scale play and gathering facilities for individual housing precincts;
- Uses to include BBQ shelters, play, informal gathering spaces and lookouts with provision for seating, interpretive elements, lighting, fencing and signage;
- Where appropriate parks to incorporate Water Sensitive Urban Design principles;

5.3.9 Road Hierarchy, Circulation and Public Transport

The road hierarchy has been designed to comply with the design environment appropriate to road function and facilitate a safe environment for all users, including pedestrians and cyclists. The road hierarchy responds to the particular local topography to provide for streetscape environments that facilitate a range of experiences including view penetration, sense of entry to the precincts and visual connectivity within the Village One neighbourhood and with the village centre. The street pattern and layout has also been designed to facilitate the location and efficient function of local utility services and drainage as well as the provision of bus services such that routes are located within close proximity and access to residences.

A key requirement of the Huntlee development will the upgrade to Wine Country Drive which is proposed to be duplicated from the Hunter Expressway Link Road roundabout in the north to the proposed entry to Residential Village One just north of North Rothbury. Initially the duplication will be to dual carriageway with 2 lanes in each direction. The road reservation width will be increased to 32 metres to accommodate this upgrade and a potential further upgrade to 3 lanes carriageway for later stages of the development if required. Key intersections along Wine Country Drive that will be implemented or upgraded are:

Rothbury Street / Wine Country Drive

Ultimately a fully signalised 4 way intersection is required at this location but not until future sections of the Town centre and / or Village 1 are progressed. This intersection will function as a secondary access for Huntlee Stage One allowing access for traffic onto Wine Country Drive to be dispersed across more than one location. It will also provide access for North Rothbury to the new facilities within Huntlee.

Wine Country Drive / Rural Residential Land Parcel 1

A new 3 leg Channelised Right turn intersection (Type CHR) is planned on Wine Country Drive to satisfactory access to the northern rural residential land parcel.

Wine Country Drive/ Huntlee Stage One Main Access

A fully signalised 4 way intersection is required at this location, and is able to be constructed off line because of the proposed road widening to improve the horizontal alignment of WCD. This intersection will also function satisfactorily until 1000 dwellings in Village One are occupied, at which time a second access will be required on to Wine Country Drive.

Wine Country Drive/ Main Street Access

A signalised 3 leg intersection is proposed, and will be required as soon as development of the Huntlee Town Centre proceeds. This intersection will function satisfactorily until 1000 lots of Huntlee Stage One are operational, at which time a second access will be required to avoid congestion on the Wine Country Drive intersections.

Hunter Expressway Link Rd / Huntlee Stage One Secondary Access

A 3 leg roundabout is proposed for this intersection. Intersection modelling has indicated an offset roundabout will function satisfactorily under full development loadings. This intersection will also function satisfactorily until 1000 dwellings in Village 1 are occupied, at which time a second access will be required on to Wine Country Drive.

The general arrangement for the upgrade of Wine Country Drive, including key intersections is at **Appendix A**.

Within the development areas, the following road hierarchy is proposed:

Residential Village 1

- Entry Street connecting the Stage 1A Residential Village with the Town Centre and Wine Country Drive;
- Collector Roads characterised as wide residential streets with a leafy parkway character. The Collector Roads also function as bus routes through the precinct;
- Avenue Streets which are wide residential streets that form view corridors linking high points along the ridgeline to the Village Centre;
- Local Streets;
- Local Park Edge Streets which are local streets adjacent to open space areas; and
- Access Lanes.

Town Centre

- Wine Country Drive Boulevard which links Huntlee with the Hunter Expressway Link Road to the north and North Rothbury / Cessnock to the south and forms an important edge to the Town Centre and Regional Park;
- Town Centre Street (Type 1) which includes Main Street;
- Town Centre Street (Type 2);
- Civic Streets which form the perimeter of

The design and layout of the road system and associated hierarchy will accommodate a proposed bus route. The bus route, shown in **Figure 14** will undertake a loop through the Village 1 area via the Village centre, including school, community facilities and neighbourhood shops. The route will ensure the vast majority of all dwellings within the residential area are within 400m of the bus stop.



Figure 14 – Stage 1 Proposed Bus Routes

Source: Roberts Day

The Road hierarchy and corresponding street cross sections for Stage 1 is shown in **Figures 15 to 18**. The proposed road carriageway and reserve widths are outlined in **Table 9**.

Table 9 – Stage 1 Road Carriageway and Reserve Widths

Road Type	Minimum Carriageway Width (M)	Minimum Verge Width (M) Each Side	Minimum Road Reserve (M)	Minimum Footpath Required (M)
Wine Country Drive	8.8m (northbound) 10.9m (southbound)	3.5m	32m	1.5m
Town Centre Type 1 Street	12m (incl possible rain garden)	5m	22m	3m
Town Centre Type 2 Street	11.2m	4.5-5m	19.2-21.2	3m
Entry Street	9.1m	5m & 1.5m	15.6m	1.5m
Avenue Street	5.1m (each direction)	4.5m (3m-10.8m Central Median)	23m	1.5m (2.5m including cycleway)
Collector Roads	11m	4.5m	20m	1.5m (2.5m including cycleway)
Local Streets	7.7m	4 – 4.5m	15.7 – 16.7m	15m
Edge Street	7.7m	4 – 4.5m	13.2-13.7m	1.2 – 1.5m
Laneways	5m	1.5m	8m	Nil



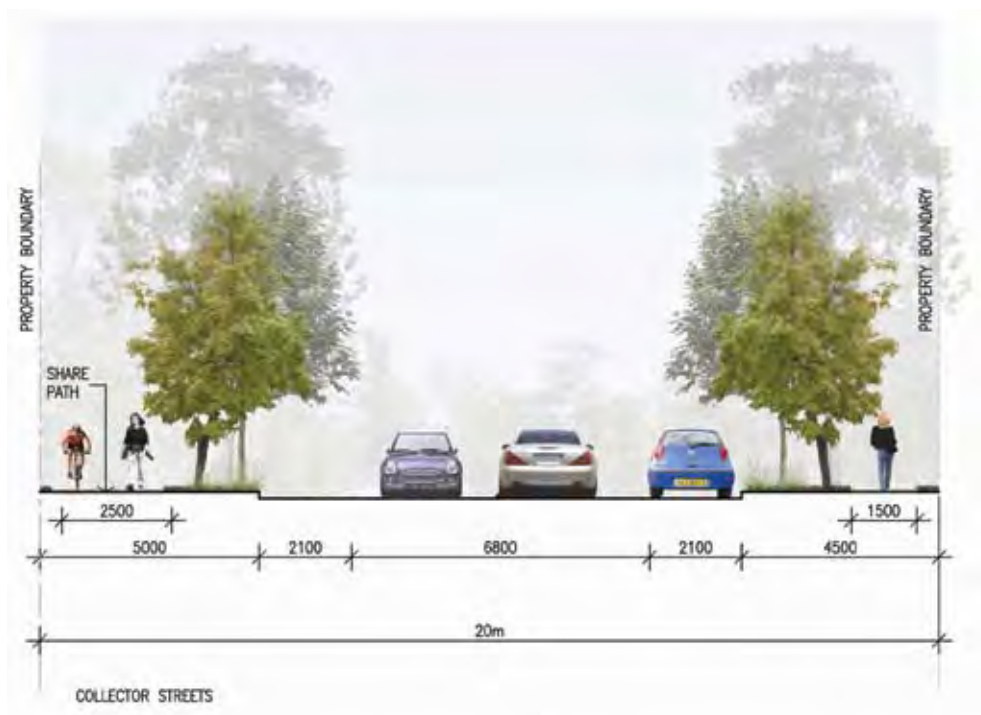
Figure 15 – Stage 1 Street Hierarchy

Source: Hassell



Figure 16 – Stage 1 Wine Country Drive Road Carriageway and Reserve Widths
Source: Hassell





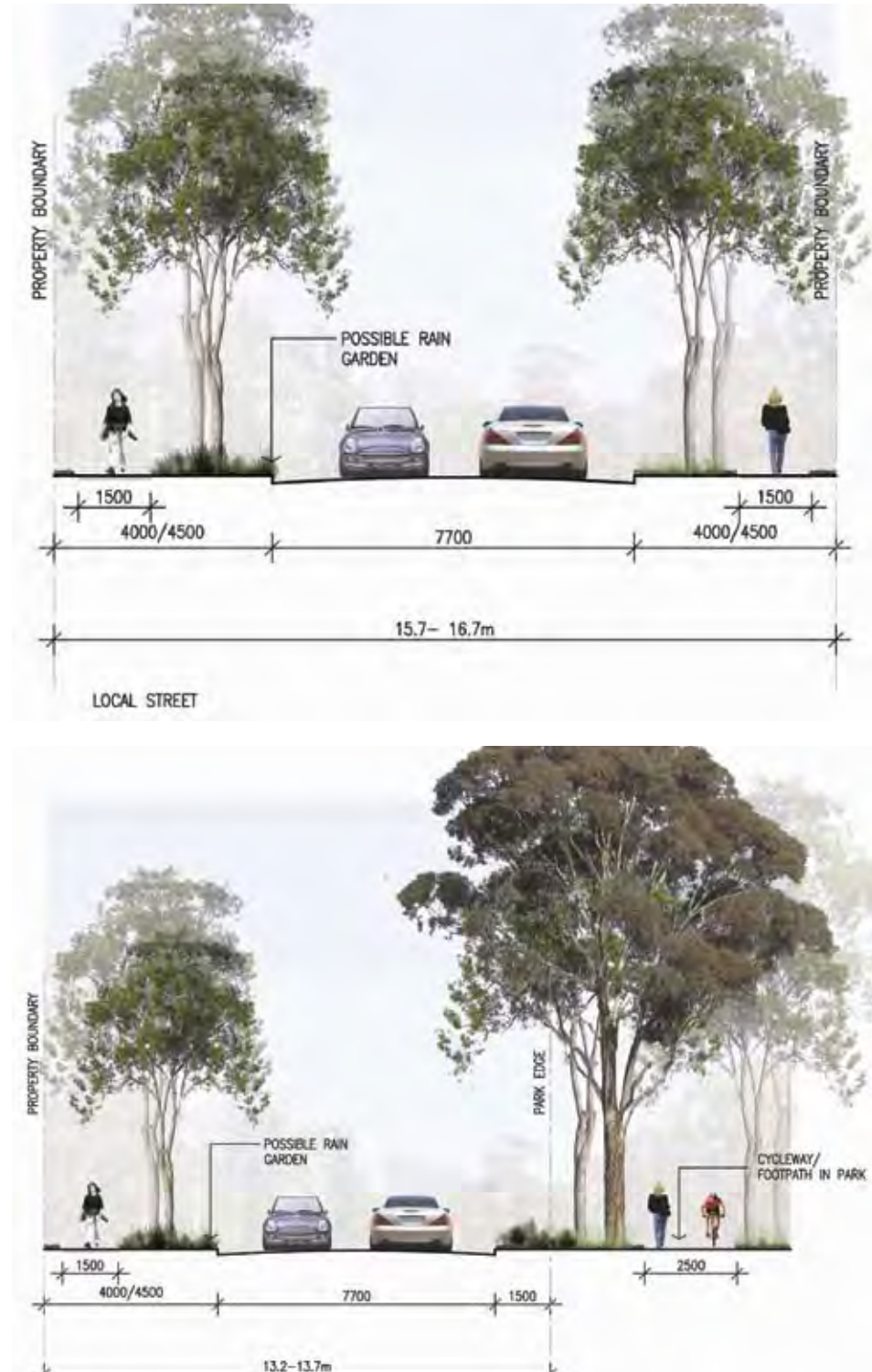


Figure 17 – Stage 1 Residential Village - Road Carriageway and Reserve Widths

Source: Hassell

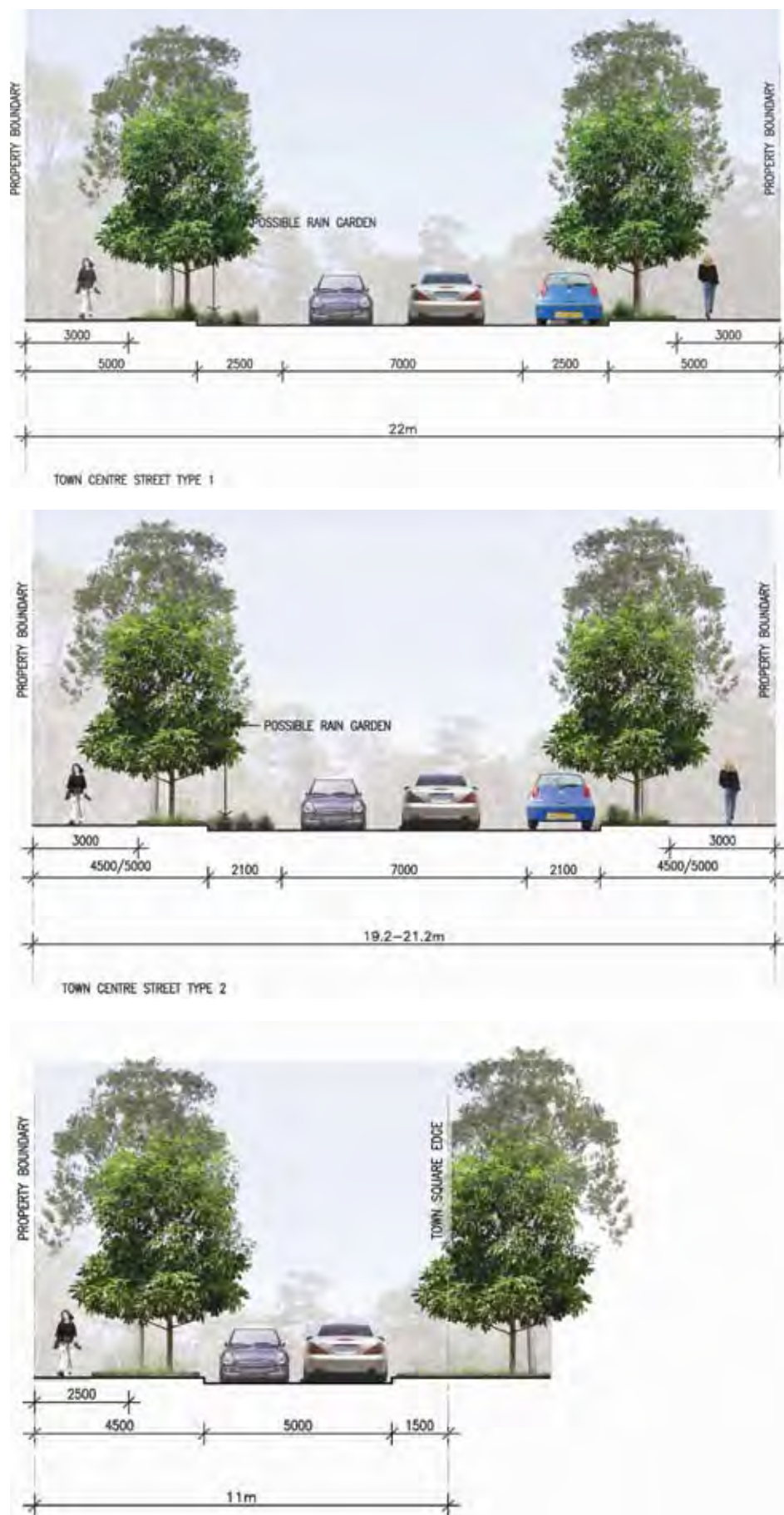


Figure 18 – Stage 1 Town Centre - Road Carriageway and Reserve Widths

Source: Hassell

5.3.10 Pedestrian and Cycle Network

A key component of the overall layout for Stage 1 is the planned network of pedestrian and cycle linkages, which aim to encourage walking and cycling as much as possible for on-site movement, as well as providing links both within the site and to surrounding precincts and beyond, in particular the Town Centre and employment areas.

Pedestrian and cycle links will be important public spaces and principal movement corridors through the site. Pedestrian only areas will be incorporated into the design of important public spaces such as the Village centre. The network takes advantage of the open space corridors running through the site, maximising their activities, views and vistas and natural vegetation features. The network also takes advantage of the street pattern, to connect with public transport and to take advantage of the desire lines created by the Regional Park, Entry Street and Diagonal View Corridors that focus on the Village Centre. Generous landscaped verges along road corridors will further add to their attractiveness. The dedicated cycle network proposed for Stage 1 is shown in **Figure 19**.

5.3.11 Utilities and Services

Internal service networks for the development for wastewater, potable water, combined services (electricity, telecommunications and gas) and inter-allotment drainage for the Stage1 area have been developed. A full description and assessment of the provision of utility services both internal to the site and in terms of regional capacity is at Section 6.5.

5.3.12 Staging

Figure 20 illustrates the proposed staging framework for the first 6 years of the Stage 1 development. It is proposed to broadly develop Stage 1 of Huntlee over a number of sub-stages. Each sub-stage contains a variety of lot types. This will ensure a diversity of housing is developed early in the life of the project.

Sub-Stage 1

Development will commence in the Town Centre residential area immediately east of Wine Country Drive between the Regional Park (and the Entry Road) and the Village of North Rothbury. This sub-stage will be known as “Entry Village”. Entry Village will contain 190 lots of varying types including larger country lots of at least 1000m² to the south of the release area forming a transition to the existing Village of North Rothbury.

Within the Town Centre, Sub-stage 1A will see the implementation of the first section of Main Street including the construction of its intersection with Wine Country Drive. Stage 1B which will be implemented concurrently, will see the provision of infrastructure to support development of the first section of the service industry area.

The Upgrade to Wine Country Drive and associated intersections with the Town Centre and Residential Village 1 will commence as part of Sub-stage 1. In terms of the provision of open space and landscaping, the Anvil Creek Regional Park will be constructed as part of Sub-stage 1.



Figure 19 – Stage 1 Cycle Network

Source: Hassell

Future Sub-stages

In terms of the remainder of Residential Village One, as can be seen from **Figure 20**, development of Sub-stage 2 will progress immediately east of the Entry Village on the other side of the Anvil Creek Tributary. Subsequent stages (3,4 and 5) will be developed on the western side of this ridge to ensure efficient roll out of water, sewer and stormwater infrastructure. Development will then progress eastwards across Ridgetop Park down the hill on the eastern side (substages 6-9). Development of the Village 1 Neighbourhood Centre and surrounding area will be sub-stages 10-14.

The number of lots to be developed for sub-stages 1-14 are shown in **Table 10**.

For the Town Centre, Stage 2A infrastructure will be implemented to facilitate the planning and development of an education precinct at the western end of Main Street. Concurrently, Stage 2B infrastructure will be implemented to facilitate planning and development for medium density housing and mixed uses.

Stage 3A / 3B will be an extension of infrastructure to the western end of Main Street to facilitate planning and development of additional retail and mixed uses to support the growing population. Stage 4 infrastructure will complete the Main Street.

A full Infrastructure Costing and Stage Delivery Plan is at Appendix M and addresses the stage delivery of serviced lots and superlots as well as the provision of water and wastewater infrastructure and roadworks.

Table 10 – Residential Village One Sub-stage Lot Yield

Sub-stage	Number of Lots
1	190
2	75
3	60
4	51
5	43
6	54
7	45
8	44
9	77
10	48
11	47
12	63
13	53
14	74

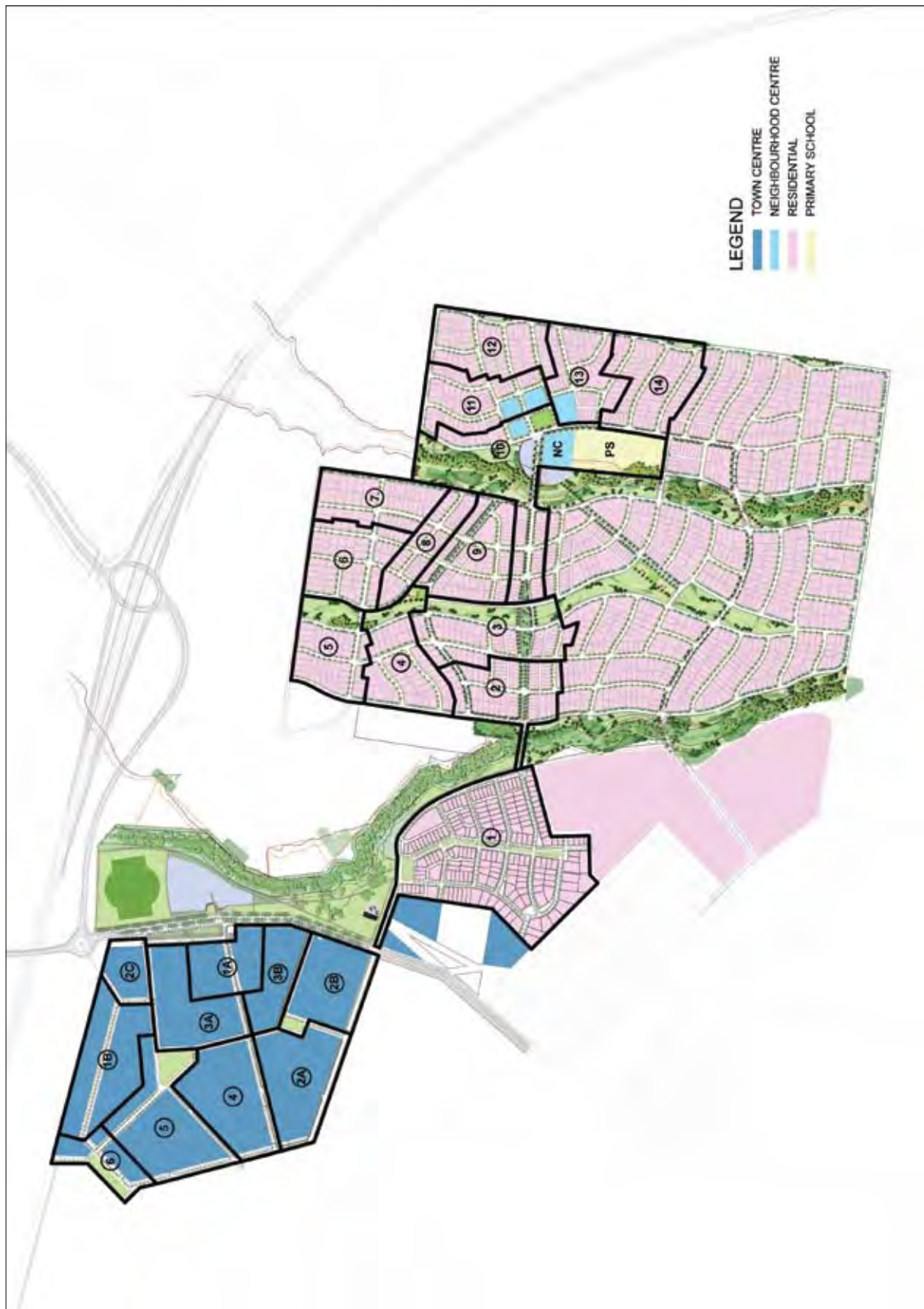


Figure 20 – Proposed Staging Framework

Source: Roberts Day

5.4 Consideration of Alternatives

The following outlines the various development alternatives considered for the Stage 1 Huntlee development. These have largely been the result of progressive discussions with the NSW Government, and detailed analysis of the site's attributes to determine the suitable locality for land uses and formulate urban design outcomes for the site.

5.4.1 Alternative Land Use Configurations

The development framework for Huntlee takes into consideration the site's relationship to adjoining land uses particularly the interface with state highway infrastructure (both the New England Highway and the Hunter Expressway) and proximity to North Rothbury and Branxton townships. Throughout this process a number of different urban and landscape designs have been considered and tested to develop the proposed urban development framework, to select the most suitable development option for the site.

More specifically, the proposed development footprint for the site was determined on suitability for development based upon areas of the site with the least environmental constraints, good accessibility, good access to services and appropriate interface with surrounding lands. This was also weighted with the requirement to provide at least 797ha of high conservation land within the site.

5.4.2 Consequences of Not Proceeding

Should the proposed Huntlee development not proceed the following economic, social and environmental benefits would not be attained:

- the provision of new residential and employment land within the Lower Hunter Region;
- the provision of large areas of conservation lands to be conserved and dedicated to the public;
- provision of improvements in infrastructure and service for nearby areas, such as North Rothbury ;
- fulfilment of the expectations of the Lower Hunter Regional Strategy to provide a suitable quantum of employment lands, and resultant job opportunities;
- restoration and rehabilitation of drainage corridors across the site; and
- remediation of previous mining and land fill operations across the site.

6.0 Assessment of Planning Issues

The following is our assessment of the environmental effects of the proposed Project Application development as described in the preceding sections of this report. The assessment addresses the Director General's Requirements issued on 19 November 2010 (**Appendix B**).

The key planning issues associated with Stage 1 of Huntlee are as follows:

- Traffic and Transport;
- Flooding and Stormwater Management;
- Utility Services
- Biodiversity;
- Energy Efficiency; and
- Bushfire Management.

6.1 Director General's Environmental Assessment Requirements

Table 11 provides a summary of the matters listed in the DGRs and where each requirement has been addressed in this document.

Table 11 – Director General's Requirements

Director Generals Requirements	Report Section
The Environmental Assessment (EA) must include - An executive summary;	Executive Summary
A detailed description of the project including the: - details of and justification for works proposed; - alternatives considered; and - infrastructure staging;	Section 5
A consideration of the following with any variations to be justified: - all relevant State Environmental Planning Policies, and - relevant legislation and policies.	Section 3
A draft Statement of Commitments, outlining commitments to the project's management, mitigation and monitoring measures with a clear identification of timeframes and who is responsible for these measures;	Section 7
A detailed conclusion justifying the project, taking into consideration the environmental impacts of the proposal, mitigation measures to address these impacts, the cumulative impacts of the proposal, the suitability of the site, and whether or not the project is in the public interest;	Section 8
Identify the development contributions applicable to the site and, if relevant, and any public benefits to be provided with the development, and consider any relevant development contributions plans prepared to date;	Section 6.12
A signed statement from the author of the EA certifying that the information contained in the report is neither false nor misleading; and	Statement of Validity
A report from a quantity surveyor identifying the correct capital investment value for the stage 1 project application.	Appendix M
The EA must address the following key issues and discuss how the proposed development is consistent with the Development Control Plan prepared for this part of the site:	

Director Generals Requirements	Report Section
Urban Structure Provide an assessment of the detailed urban structure, analysing the following issues: - Land use (residential, employment, community, etc) - Residential mix in terms of lot size and dwelling density - Subdivision patterns and utilisation of the site's setting - Recreation and open space provision - Road layout, hierarchy and local access points - Pedestrian and cycle access and circulation Outline principles for built form, urban design and the public domain for the town centre and employment lands.	Section 5
Subdivision - Provide a detailed subdivision layout, including (but not limited to) easements, boundary lengths, lot areas - Provide detailed design of infrastructure including roads (including a selection of typical cross sections and long sections), drainage, open space, pedestrian and bicycle infrastructure.	Section 6 / Appendix A / Appendix G
Transport and Accessibility Prepare a detailed Traffic Study that includes (but is not limited to) the following: - Identify all relevant vehicular traffic routes and intersection for access and egress; - The anticipated vehicular traffic generated from the proposed lots and the distribution on the road network. - An analysis of the cumulative traffic and transport impacts of this development on the existing township taking into consideration other proposed developments; - identify the necessary the road network infrastructure upgrades required to maintain existing levels of service on the local and classified road network. - Proposed pedestrian and cycle access and circulation within and to the site.	Section 6.2 / Appendix E
Management and Maintenance of Open Space Outline the long-term management and maintenance of any areas of open space, riparian corridors or conservation (including any offset areas).	Section 6.12.2
Biodiversity Address the impact of the development of existing threatened and endangered native flora and fauna and their habitats, especially <i>Persoonia pauciflora</i>, and outline proposed mitigation measures.	Section 6.6 / Appendix I
Bushfire Risk Assessment Provide an assessment against Planning for Bush Fire Protection 2006 and identify the ongoing management arrangements of any proposed APZs.	Section 6.7 / Appendix J
Geotechnical and Mine Subsidence - Identify and assess geotechnical issues, noting the implications for slope stability, rehabilitation (compaction) and the presence of potential and actual acid sulfate soils. - Identify and assess mine subsidence issues noting any risk factors associated with the former mining uses at or near the site - Outline measures that would be implemented to avoid, minimise, manage or remediate potential subsidence or geotechnical issues encountered at the site.	Section 6.10 / Appendix G

Director Generals Requirements	Report Section
Flooding Identify any flood risk associated with the site and demonstrate that the proposed development is suitable in terms of flooding and evacuation and is consistent with the NSW Floodplain Development Manual; the management of flood liable land (2005). Identify the building footprints above 1:100 flood level for flood affected lots.	Section 6.4 / Appendix H
Ecologically Sustainable Development (ESD) Demonstrate how this stage of the development will commit to ESD principles in design and construction, and outline commitments to sustainability including water re-use, waste minimisation, the minimisation of energy use and car dependency.	Section 6.11
Drainage and Stormwater Management Address drainage and stormwater management issues, including: on site detention of stormwater; water sensitive urban design (WSUD); waste water re-use; drainage infrastructure and groundwater.	Section 6.3 / Appendix H
Contamination Identify and detail any measures to be undertaken to appropriately remediate the site in accordance with State Environmental Planning Policy No 55 - Remediation of Land (SEPP 55) and any existing remediation notices.	Section 6.10
Construction Impacts - Outline ongoing principles and proposed management for construction for access, earthworks, open space construction, drainage and riparian corridors and conservation interface areas. - Outline how construction impacts, including (but not limited to) noise, vibration, dust, erosion will be managed in relation to the amenity of existing and future residents.	Section 6.13.2 / Appendix G
Infrastructure Delivery Plan - Prepare an Infrastructure Delivery Plan identifying community infrastructure requirements including associated costings and apportionment and delivery timeframes. - Prepare a utility and infrastructure servicing strategy that provides evidence that the development can be adequately serviced in terms of water, sewerage, stormwater, gas (if appropriate), electricity and telecommunications services and outline staging for delivery.	Section 6.5 / Appendix M
Developer Contributions - Identify and address the additional demand created by the development on existing public facilities and infrastructure. - Detail the likely scope of any planning agreement and/or developer contributions between the proponent, Council and State agencies.	Section 6.12
Consultation The EA should reference any consultation undertaken with relevant parties. You should undertake an appropriate level of consultation with local Councils, relevant State and Commonwealth agencies, utility providers, emergency services, adjoining landowners and the local community and provide written evidence/documentation of any consultation carried out. The EA shall clearly indicate issues raised by stakeholders during consultation and how those matters have been addressed in the proposal.	Section 4

6.2 Traffic and Transport

Consistent with the overall traffic framework proposed in the Huntlee SSS Study, Better Transport Futures has prepared a Transport Management and Accessibility Plan (TMAP) for the Huntlee development. The TMAP addresses transport issues for the overall Huntlee development, including Stage 1. The full TMAP is at **Appendix E**. The following section includes extracts from the full study.

6.2.1 Stage 1 Traffic Assessment

Modelling Process and Road Infrastructure Assumptions

To assess the road traffic impacts of Huntlee, a Paramics model has been developed in conjunction with SIDRA intersection modelling. This modelling in turn was compared with modelling undertaken by Colin Buchanan (China) applying the RTA Hunter Regional (TransCAD) Model.

This multi level modelling approach has allowed consideration of regional movements and planned improvements such as the Hunter Expressway, to guide the localised modelling tools which have been applied to determine the required level of road infrastructure to support Huntlee's development.

A number of key assumptions have been made as part of the modelling process. The following external infrastructure upgrades have been assumed to be completed before Huntlee Stage 1 is occupied:

- Hunter Expressway, a four lane dual carriageway freeway standard road, linking the New England highway at Branxton to the F3 Sydney Newcastle Freeway at Seahampton, and to Newcastle via the Newcastle Link Road;
- Full interchange facilities adjacent to the town of Branxton, connecting to the New England Highway, and to Wine Country Drive. This will provide a full by pass of the existing Branxton village for east west and north south main road traffic.
- Completion of the Hunter Expressway link road, connecting Wine Country Drive to the planned Branxton Interchange, and providing a bypass of the town.

In terms of internal road infrastructure to be provided as part of the Stage 1 development, a number of key assumptions have been made as part of the modelling process, including:

The planned road network improvements that will support Huntlee include:

- A dual carriageway between the Hunter Expressway off ramp roundabout and Wine Country Drive south to the entry into Residential Village 1 just north of North Rothbury. The road reservation width has been increased to 32 metres, with some localised widening at intersections.
- Four (4) new intersections, three (23) on Wine Country Drive and one (1) on the Hunter Expressway link Road to service access into the Town Centre and Residential Village 1.
- Separate intersections with Wine Country Drive and Old North Road for access to the isolate rural residential precincts to the south of the Huntlee.

The effect of these assumptions and sensitivity testing is to allow for a degree of flexibility in the form of the base road infrastructure, so that future service levels can be maintained at satisfactory levels.

Local Network modelling for the project has been completed using two models.

- A Paramics traffic model has been completed on the road network, for the critical PM Peak network. The base model was calibrated against existing traffic counts completed as part of this study. The Paramics model has been run for the future design years of 2020, 2026 and 2031.
- Sidra analysis has been completed for the future 2020PM peak design year to assess road upgrade requirements for the road network within the study area. This Sidra analysis has been completed for each of the intersections identified within the study brief as well as a number of other intersections identified as critical to the overall network.

In addition to the above, in consultation with the NSW RTA Huntlee Pty Ltd has formerly requested access to the Hunter Region transport (TransCAD) model. This license is now in place and allows a third level of modelling to be completed, to add rigour by way of directly referencing the recently completed modelling work into the Lower Hunter Transport Needs Study.

There are several areas of potential variance in traffic generation associated with the Huntlee Master Planning process and provide an additional level of rigour by way of directly referencing the recently completed modelling work as part of the Lower Hunter Transport Needs Study.

There are several areas of potential variance in traffic generation associated with the Huntlee project. These include;

Trip Containment

- In the context of the Huntlee Stage 1 this has been assumed to be zero initially increasing to the RTA accepted 25% level. This is because initially it is expected the ability to contain trips at this early stage will be minimal, but with development local schools and shops this will increase to traditional subdivision levels.
- For the Rural Residential parcels of Huntlee Stage 1, this has also been assumed to be zero, with no ability to contain trips from these isolated development parcels.
- For the Town Centre the attraction of trips is assumed as from Huntlee Stage 1 as above, with the balance from external sources.

Mode Split

- In the context of Huntlee Stage 1 this has been assumed to be as per RTA current standards, with no allowance for any levels of improved public transport. This is conservative but presents a worst case scenario in terms of road and intersection capacity requirements.

Traffic Generation and Flows – Paramics Modelling

The RTA Guide to Traffic Generating Developments has been used to identify the capacity of key links in the road network. Table 4.5 from the Guide (reproduced below as **Table 11**). Specifies the peak hour flow capacity for one and two lane carriageways. This has been to calculate the capacity/flow ratio of each key link in the study area and identify where capacity issues develop over the next 20-25 years.

Applying **Table 12** indicates where Levels of Service are deteriorating and in what timeframe these reductions in Levels of Service are occurring.

Table 12 – Urban Road Peak Hour Flows per Direction

Level of Service	One Lane (vehs per hour)	Two Lanes (vehs per hour)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Source: Table 4.5, RTA Guide to Traffic Generating Developments, version 2.2 dated October 2002

The Paramics model forecast of traffic flows on Wine Country Drive, Hunter Expressway Link Road and Old North Road with full Stage 1 development at Huntlee in the AM peak hour is shown in **Figure 21**. It should be noted that the analysis includes flows from the Old North Road large lot residential area, which will not form part of Stage 1.

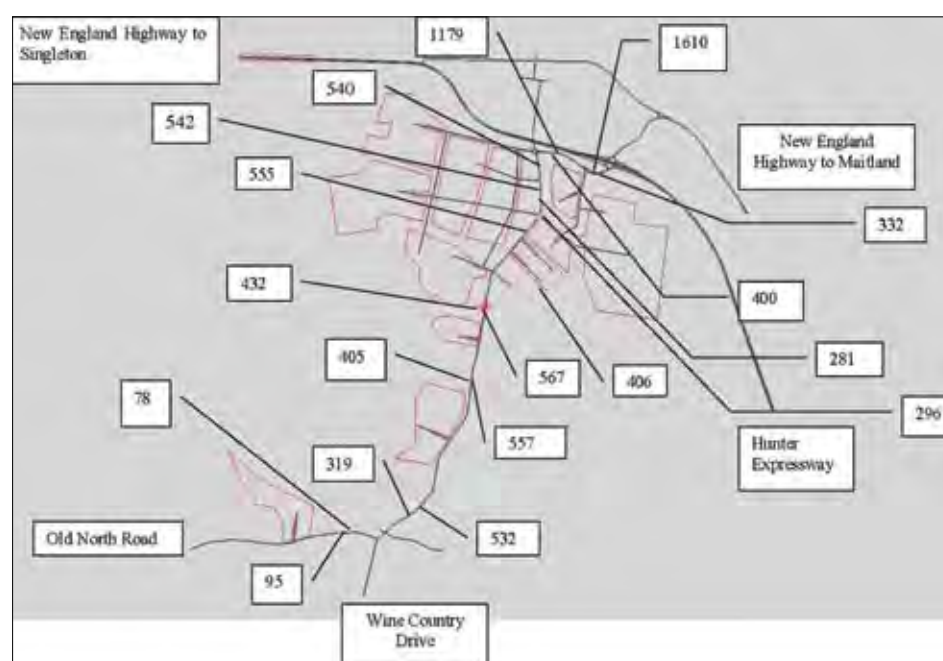


Figure 21 – Paramics Model AM Peak Forecast Traffic Flows for Stage 1 Development

Source: Better Transport Futures

Based on the Paramics modelling the following conclusions are drawn:

- The Hunter Expressway Link Road is required to operate as a 4 lane dual carriageway under Huntlee Full development;
- Forecast flow levels on Wine Country Drive are within 2 lane carriageway service levels. This would suggest that full duplication of Wine Country Drive is not required until the latter stages of development, provided the access staging applied here is adopted;
- The impact of the access choices on Wine Country has a significant influence on the levels of flow on this road. For example, once Access Intersection 3 serving Huntlee Village 1 is built, this takes considerable pressure off the traffic flows along Wine Country Drive. The intersection performances however dictate the timing of this access being required, so that junction performance along Wine Country Drive remains at satisfactory levels. Forecast Intersection Operation – SIDEA Analysis.

The forecast performance of proposed intersection of the Huntlee road network with external roads has been considered as required by the road authorities, with full intersection analysis by movement and approach using SIDRA modelling. **Table 13** below provides a summary of the overall intersection performance as an indicator to potential performance of the proposed new and upgraded intersections.)

Table 13 – Summary of Intersection Performance

Location	Cross Street	Movement	LoS Stage 1	Ave Delay (sec) Stage 1	95% Queue (m) Stage 1	LoS FULL PM	Ave Delay (sec) FULL PM
WCD	Main Street	All Vehicles	C	29.7	217.7	A	11.7
		Worst Movement	D	46.7	14	D	43.3
WCD	Stage 1	All Vehicles	C	30.5	202.6	C	30.6
		Worst Movement	B	27.3	74	D	52.6
WCD	RR A	All Vehicles	-	-	-	B	1.4
		Worst Movement	-	-	-	B	27.2

Notes:

- Results present overall junction performance and worst movement for each nominated intersection
- Results of SIDRA analysis drawn Huntlee Stage 1 SIDRA modelling
- Results given for Full Development Scenario drawn from Full Huntlee Model Paramics with HE operational.
- Intersections 10,11 tested only for full development as type CHR intersections
- Intersection 12 Old North Road/RR B not tested – assumed as operating under free flow conditions

Road Network Upgrade Requirements for Stage 1

Wine Country Drive

To be built as a dual carriageway between the Hunter Expressway off ramp roundabout and on Wine Country Drive south to the entry into Village 1 just north of North Rothbury. Road reservation width on Wine Country Drive has been increased to 32 metres, with some localised widening at intersections. (Further upgrading for Huntlee Stages 2, 3, and 4 would occur in line with development staging and approvals for those villages).

Hunter Expressway

Whilst already approved and under construction, this project is fundamental road infrastructure required to support the Lower Hunter regional Strategy, and consequently was always assumed as required to support Huntlee. It will be constructed as a 4 lane dual carriageway freeway standard road, linking the New England Highway at Branxton to the F3 Sydney Newcastle Freeway at Seahampton. It will have a full interchange adjacent to the town of Branxton, connecting to the New England highway, and to Wine Country Drive. This will provide a full bypass of the existing Branxton village for east west and north south main road traffic.

Existing Intersection Upgrades for Huntlee Stage 1

Rothbury Street/Wine Country Drive

Ultimately a fully signalised four way intersection is required at this location but not until future sections of the Town centre and / or Village Four are progressed. This intersection will function as a secondary access for Huntlee Stage One allowing access for traffic onto Wine Country Drive to be dispersed across more than one location. It will also provide access for North Rothbury to the new facilities within Huntlee.

Wine Country Drive/Large Lot Residential

A new three leg channelised right turn intersection (Type CHR) is planned on Wine Country Drive to satisfactory access to the northern large lot residential land parcel.

New Links/New Intersections

Wine Country Drive/Huntlee Residential Village 1 Main Access

A fully signalised four way intersection is required at this location, and is able to be constructed off line because of the proposed road widening to improve the horizontal alignment of WCD. This intersection will function satisfactorily until 1000 dwellings in Village One are occupied, at which time a second access will be required on to Wine Country Drive.

Wine Country Drive/Main Street Access

A signalised three leg intersection is proposed, and will be required as soon as development of the Huntlee Town Centre proceeds. This intersection will also function satisfactorily until 1000 dwellings in Village One are occupied, at which time a second access will be required onto Wine Country Drive.

Hunter Expressway Link Rd / Huntlee Stage One Secondary Access

A three leg roundabout is proposed for this intersection. Intersection modelling has indicated an offset roundabout will function satisfactorily under full development loadings. This intersection will also function satisfactorily until 1000 dwellings in Village One are occupied, at which time a second access will be required onto Wine Country Drive.

TransCAD Modelling

An assessment of the Huntlee development by way of a review of the RTA TransCAD model was undertaken by Colin Buchanan (China). The TransCAD model uses the regional distribution of land use (represented as population and employment) to determine distributions of movement across the Lower Hunter Region. The Paramics model by contrast uses past experience and assessment of existing traffic distributions from the existing traffic data available at the time of compiling the model.

Hence the two models are almost certainly likely to have different distribution of trips.

The following is the TransCAD split of traffic from the development:

- 25% of the traffic will head south from the Huntlee development;
- 75% of the traffic will head north from the Huntlee development;
- 20% of the traffic will head west along the New England Highway towards Singleton;
- 37% of the traffic will head east along the Hunter Expressway; and
- 18% of the traffic will head east along the New England Highway towards Maitland.

This compares favourably with the assumptions made in the DA submission report prepared by BTF:

- South via Wine Country Drive - 15%
- To attractions in Branxton 10%
- West via the New England Highway - 20%
- East via the New England Hwy / Hunter Expressway corridor - 55%

The significant difference in the assumed BTF Paramics trip distributions is the flow south on Wine Country Drive, where the assumed 15% is less than the RTA TransCAD prediction of 25%.

The implications of this difference are considered as follows:

- The higher forecast of 1150 vehicles per hour one way is still within the limits of peak hour urban capacity for a single traffic lane, with controlled access (which is the RTA's requirement for Wine Country Drive).
- It is likely, based on the overarching Government (and Proponent) objectives to secure higher proportions of travel (i.e. Higher Mode Splits) to non car based travel, that this forecast traffic flow is an upper limit worst case scenario.

The conclusion therefore is that even if the most conservative approach is taken in terms of estimating the future (full development) traffic flows from Huntlee (which is the very conservative approach adopted by the RTA) then there will still not be a need to upgrade Wine Country Drive south of the Huntlee development (with the possible exception of specific intersection improvements, as identified for Huntlee).

The conclusion from the review of the BTF traffic report and the Colin Buchanan TransCAD modelling work is that the two separate models provide similar forecasts in terms of traffic flows and traffic distribution on the key infrastructure links requiring upgrading as a direct result of the Huntlee development (i.e. Wine Country Drive and Hunter Expressway Link Road.)

The implications of the key differences in the 2031 forecasts have been considered and it is concluded that the level of infrastructure upgrade and improvement recommended for the external road network to support the development of Huntlee would remain the same as that previously determined by BTF, irrespective of the differences in forecasts from the Colin Buchanan TransCAD modelling work.

6.2.2 Public Transport

Public Transport is addressed in detail in the TMAP at Appendix E. Public transport in the vicinity of the site is currently limited, mainly due to the low density residential and limited commercial development within the locality of Branxton and North Rothbury.

Public transport is an integral component of Huntlee's masterplanned urban design and social and economic investment into reduced car dependency. A bus network will commence from Stage 1.

Huntlee is committed to a high quality local public transport system, providing good access for residents and workers within the site. The response being a significant reduction in demand on neighbouring local roads within Branxton and North Rothbury, as well as other regional road infrastructure.

Links from the Huntlee Bus Transport Network onto the external network reduce private vehicle demands along the existing road network. There will be commuter demands to and from the site to Maitland, Newcastle, Cessnock, Kurri Kurri and Singleton.

The basic principles of the public transport facilities proposed in the Huntlee TMAP include the following:

- Priority internal routes connecting high intensity centres e.g. town centre, schools, shops, business park area;
- Bus Interchange located centrally within the Huntlee Town Centre, connecting internal Village bus routes with trunk routes to major centres external to the site;
- Cycling & Walking Network as an integral component of the development of Huntlee to supplement and support local public transport initiatives
- Consultation with Council and existing public transport providers to ensure delivery of adequate services as required.

The existing rail network and local Branxton station provides limited services and will remain so for the medium term as coal transport is the major priority in this rail corridor.

Bus Service Provision and Development Staging

It is recommended that a bus service linking Village One to the Huntlee Town Centre be commenced early in the development of the Town Centre, to encourage use of public transport by Huntlee residents. The bus route would connect Village One to the Huntlee Town Centre, and provide connection to the regional destinations of Cessnock, Maitland, Newcastle and Singleton.

The provision of services of this nature is consistent with other applications in the Greater Sydney Metropolitan Region as part of recent development considerations in Sydney. (It is envisaged as further villages of the Huntlee are developed, that local bus services developed in conjunction with operators and Transport NSW would be extended to also provide coverage of these areas.

Good quality bus stops will be provided at the requisite intervals (400 metres) along all agreed bus routes. Stops will be placed efficiently to serve major attractors (local shops, schools, parks) and also within the Town Centre. A dedicated Bus Interchange Facility will be provided in the Huntlee Town Centre.

6.3 Stormwater Management

6.3.1 Hydrology

Worley Parsons undertook a hydrological assessment (**Appendix H**) using the Runoff Analysis and Flow Training Simulation ((RAFTS) software to determine the likely impacts of the proposed Stage 1 Huntlee development on Tributary 1 and Tributary 2 catchments which both flow into Anvil Creek. The Tributary 1 and 2 catchment areas and their sub-catchments are shown in **Figure 22**.

Tributary 1 has a contributing catchment area of approximately 205ha which incorporates a portion of the Stage One Project Application area, including the Stage One Neighbourhood Centre. Tributary 2 has a contributing catchment area of approximately 315ha and incorporates parts of Stage One, including the Town Centre.

The proposed Huntlee development will ultimately encompass a significant portion of the Tributary 1 catchment and nearly the entire Tributary 2 catchment. Additionally, the RTA proposes to construct a dual carriage-way freeway to the north of the proposed Huntlee site. The initial Stage One Project Application area encompasses a significant portion of the ultimate development area in the Tributary 2 catchment. Therefore, it is essential that the hydrologic assessment for the Stage One Project Application considers both the initial Stage One development as well as the ultimate catchment development.

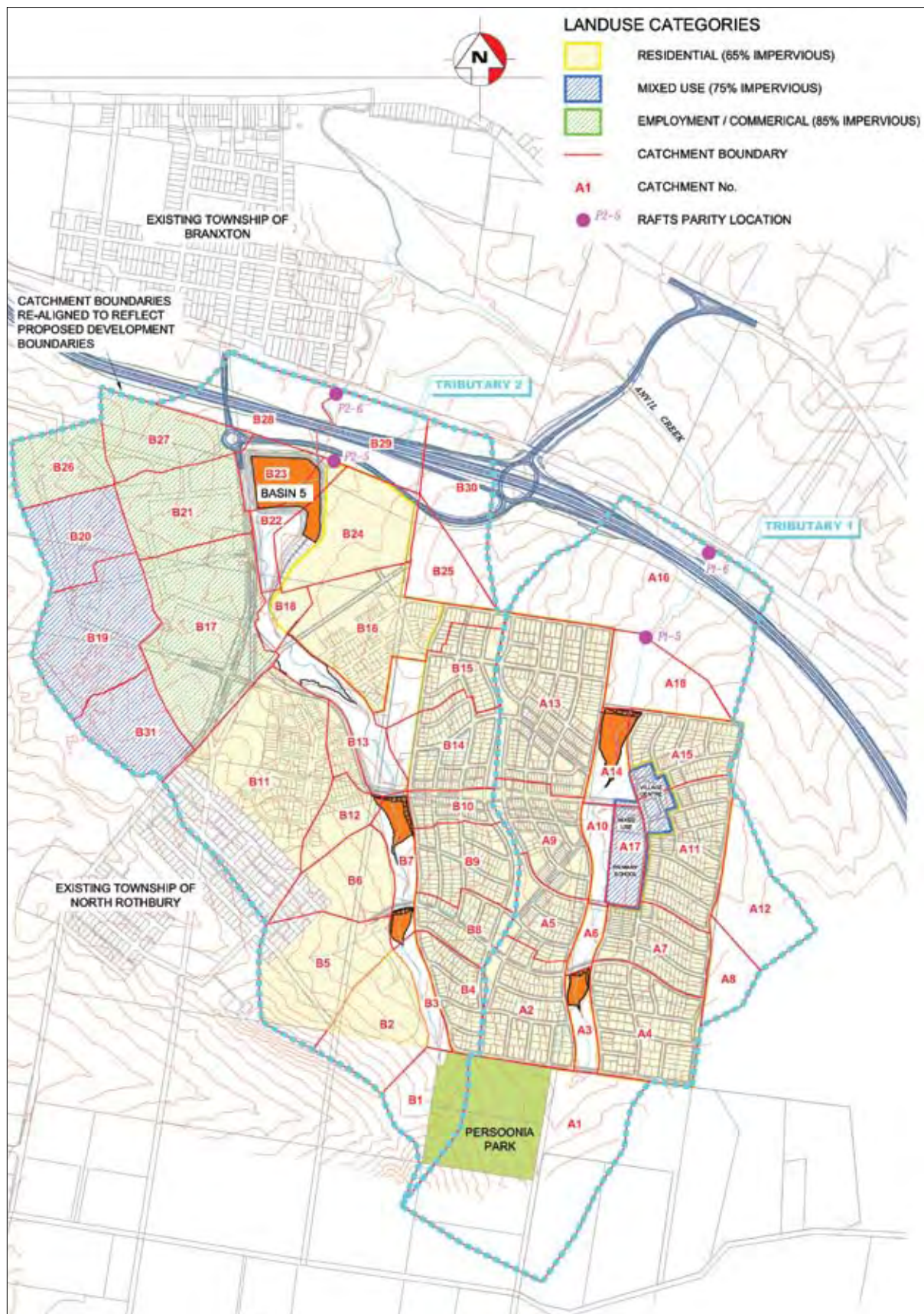


Figure 22 – Tributary 1 and 2 Catchment Areas

Source: Worley Parsons

The hydrological assessment adopted the following objectives:

- *Assessment of the existing and developed state hydrology, including an assessment of the likely impacts of the development on local and regional hydrology;*
- *Establishment of an appropriate detention basin policy to minimise the effects of urban development on local and downstream flooding.*

The modelling provided peak flow predictions at the downstream parity location (the railway embankment) for both existing state and developed state for both tributaries. The modelling predicted that with the proposed Stage 1 development, mitigation measures would be required to minimise the impact on local and regional hydrology.

In terms of mitigation, it is proposed to construct the following on-line detention basins to alleviate the peak flow resulting from the development:

- **Tributary 1 Catchment:** Two dry online detention basins with the following active storage:
 - Basin 1 – 5, 600m³
 - Basin 2 – 20, 000m³
- **Tributary 2 Catchment:** Three on-line detention basins with the following:
 - Basin 3 – 8, 100m³
 - Basin 4 – 11, 500m³
 - Basin 5 - 80,000m³

As discussed earlier, the detention basins in Tributary 2 have been designed to be able to accommodate the ultimate proposed development for the catchment and are oversized for the initial (Stage 1 development). Locations of proposed detention basins are shown in **Figure 23**.

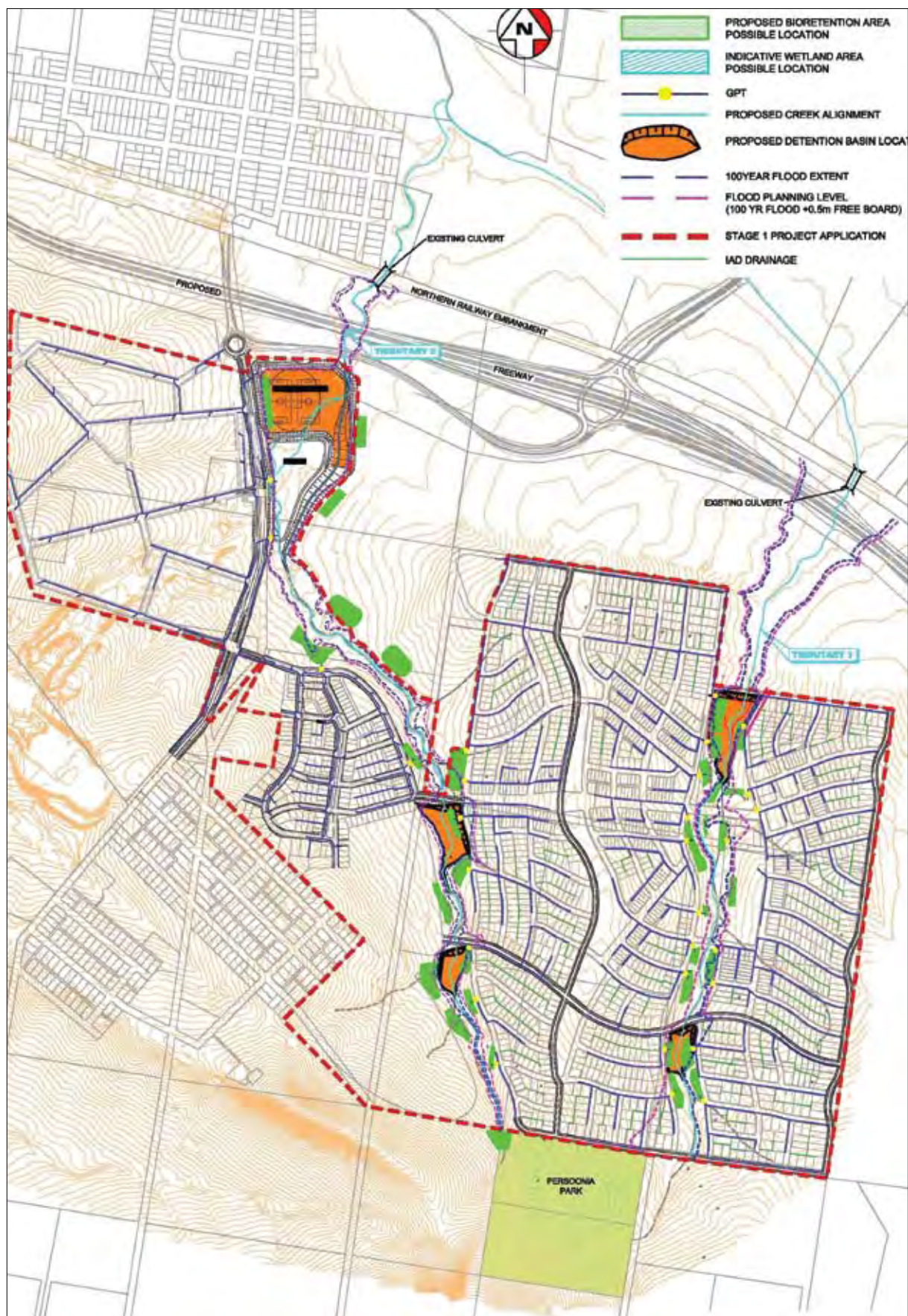


Figure 23 – Stage 1 Stormwater Management Plan

Source: Worley Parsons

Tables 14 and 15 show the predicted peak flows at the rail embankment for the existing state, developed state (no controls) and developed state (with controls). The modelling summarised in the table shows that for Tributary 1, the attenuation of flow provided by the proposed detention basins would reduce peak flows at the railway embankment to at least existing-state levels for all ARI rainfall events considered.

For Tributary 2, results show that the post development peak discharges can be reduced down to existing state peak discharges with the proposed on-line detention basins in place for the higher ARI events. However, peak discharges in the 2 year ARI storm event at locations P2-5 and P2-6 (see **Figure 20**) are slightly greater than those in the existing state. This is considered acceptable, given the fact that the modelling ignores the effect of proposed offline water quality control (bio-retention) basins that will effectively control peak discharges up to the 2 year ARI event. Furthermore, the design of outlet controls from the on-line basins within Tributary 2 can be further refined accordingly (*at a more detailed stage*) to further reduce peak discharges at the lower ARI events, as required.

Table 14 – Developed State Tributary 1 – with detention basins

ARI	Tributary 1 (RAFTS node P1-6)		
	Existing State	Developed State (no controls)	Developed State (with controls)
	Peak flow (m³/s) / Critical Storm Duration		
2 year	6.7	11.6	6.6
	540 min	120 min	540 min
5 year	9.9	16.3	9.9
	540 min	120 min	540 min
20 year	13.9	22.5	13.9
	540 min	120 min	540 min
100 year	20.0	29.6	18.8
	120 min	120 min	120 min

Table 15 – Developed State Tributary 2 - With Detention Basins

ARI	Tributary 2 (RAFTS node P2-5)			Tributary 2 (RAFTS node P2-6)		
	Existing State	Developed State (no controls)	Developed State (controls)	Existing State	Developed State (no controls)	Developed State (controls)
	Peak flow (m³/s) / Critical Storm Duration					
2 year	9.7	20.5	11.2	10.4	18.3	12.1
	540 min	120 min	120 min	540 min	120 min	120 min
5 year	14.1	27.6	13.4	14.7	22.1	14.3
	540 min	90 min	120 min	540 min	120 min	120 min
20 year	20.1	37.4	15.7	19.7	25.4	16.6
	360 min	90 min	120 min	540 min	120 min	120 min
100 year	30.2	48.8	18.3	23.8	28.1	19.3
	120 min	90 min	120 min	120 min	120 min	180 min

Sensitivity Analysis for F3 Freeway & Climate Change Scenario

A sensitivity analysis was also undertaken to assess the potential impacts as a result of the future Hunter Expressway which would sit within the flood storage area immediately upstream of the rail embankment within Tributary 2. Based on the limited data available of the proposed freeway, hydrologic modelling results for this scenario suggest that the freeway would have negligible impact on peak discharges at P2-6 (*increase from 19.3m³/s to 19.4m³/s for the 100 year ARI in the developed case – with controls*), provided adequate culvert structures beneath the road ways are provided for in the Freeway design.

A sensitivity analysis was also undertaken to model the impacts of climate change on peak discharges from the development site. To do this, the average rainfall intensities in the hydrologic model were increased by 10% and 30% for the critical storm duration for the 100 year ARI event. Results for the more conservative 30% rainfall intensity increase scenario suggest that the 100 year ARI peak discharge at P2-5 would increase from 30.2m³/s (*Existing case*) to 31.0m³/s (*Developed with controls + 30% increase in average rainfall intensity*). The 100 year ARI peak discharge at P2-6 would increase from 23.8m³/s (*Existing case*) to 25.2m³/s (*Developed with controls + 30% increase in average rainfall intensity*). However, an increase in average rainfall intensities of 10% is typically adopted for hydrologic models in the Hunter Valley. The case for 10% increase in rainfall intensity results in no significant change to peak discharge levels compared to existing conditions at the parity locations.

Water Quality

The overall water quality objective is to achieve a no net increase in pollutant export loads from development areas. The existing water quality in some areas of the site is likely to be poor due to the former mining activities and current agriculture land-uses, while runoff from forested areas is likely to be of reasonable quality. However, it is not possible to quantify the existing water quality conditions without comprehensive water quality sampling data collected over an extended period of time. As such, a more reasonable approach is to adopt long term water quality treatment targets recommended in current best management guidelines. Best practice guidelines such as ARQ (IEAust, 2006), recommend the following water quality treatment targets:

- Suspended Solids (TSS) - 85% retention of the developed average annual load;
- Total Phosphorous (TP) - 45% retention of the developed average annual load; and
- Total Nitrogen (TN) - 45% retention of the developed average annual load.

The above water quality treatment targets would be adopted as design objectives when sizing stormwater controls. It is noted that stormwater controls designed to achieve the above water quality treatment targets will also remove a substantial portion of the other stormwater pollutants through bio-chemical processes. In addition to the water control targets listed above, a range of preventative measures and source controls would also be integrated into the development design and ongoing management procedures.

The following stormwater controls have been identified as suitable for implementation within the Stage 1 Project Area:

Preventative Measures – applied at the subdivision scale include:

- **Minimising areas of Impervious Surfaces** - by reduced road widths and increased landscaping around dwellings.
- **Native Landscaping** – Native species are generally drought tolerant and do not require frequent fertilisation. As such, native landscaping should be encouraged in both public open space and on individual allotments. This will assist in minimising nutrient concentrations in storm water runoff.

- **Public Education** – information can be provided to residents to inform them of stormwater management issues and provide recommendations on how they can minimise their impact.

Source Controls - applied at the lot level include:

- **Rainwater Tanks** - can be installed at the lot scale to capture roof water runoff for reuse for non-potable uses within the allotment. Rainwater tanks reduce the runoff volume from the allotment, reducing the size of downstream controls. Rainwater tanks will be installed at all dwellings that are not serviced by the proposed reticulated recycled waste-water network.
- **Permeable Pavers** - can be implemented into driveways, parking bays, car parks and on roads with low traffic loads. The pavers allow stormwater to infiltrate into the sub-base, where stormwater retention and treatment is provided. As permeable pavers can be integrated into the streetscape, they generally have no net land take and are therefore well suited to high density areas such as the proposed Town Centre.
- **Landscaping Features** – such as contour banks and soak-a-ways are suitable for rural residential lots where runoff from impervious surface can be directed onto grassed areas and slowly infiltrated.

Conveyance Controls - applied at the street level and include:

- **Bio-Filtration Swales** – can be integrated into the urban landscape in a longitudinal swale or a small basin area (*commonly referred to as rain gardens*). The bio-filtration areas would consist of vegetated areas with enhanced filtration media which would typically be 500-600mm deep. Filtered stormwater would be collected in an underlying subsurface drainage system and directed into roadside drainage. The bio-retention areas could be designed to provide 2 year retention storage, negating the need for downstream basins in some catchment areas; and
- **Road Side Swales** – can replace traditional kerb and guttering in residential and rural residential areas. Swales provide water quality and water quantity benefits as well as providing landscaping opportunities.

End of Line Controls - applied at the end of the stormwater system and include:

- **Gross Pollutant Traps (GPTs)** – can be installed at the end of piped drainage systems. GPTs primarily remove gross pollutants (*i.e litter*) and coarse sediments and provide pre-treatment for other downstream controls.
- **Bio-Filtration Basins** – incorporate a similar concept to the bio-filtration swales, but are constructed on a larger scale at the end of a stormwater drainage line.
- **Constructed Wetlands** – can be implemented to treat stormwater prior to discharge into receiving waters. Wetlands would be designed to incorporate sediment fore bays, deep water zones and ephemeral (*'wet and dry'*) macrophyte beds to achieve maximum pollutant removal efficiencies. Extended and active detention can also be provided above the permanent pool to meet water quantity management objectives.

Stage 1 of the Huntlee development would incorporate varied land-uses including low density rural residential allotments, medium density residential allotments and higher density residential and commercial areas.

Worley Parsons undertook an assessment using the MUSIC Model to determine the sizes of stormwater management controls required for the end of line controls (Gross Pollutant Traps, Bio-filtration Basins and Constructed Wetlands). These controls are sized to provide adequate hydraulic resistance time to meet the water quality treatment targets outlined earlier in this section. The modelling found that the proposed water quality control structures would act to equal or exceed the level of water quality treatment required as outlined below:

Table 16 – Stage 1 Stormwater Quality Management Model Results

Pollutant	Target (reduction)	Tributary 1	Tributary 2
TSS Removal	85%	89%	89%
TP Removal	45%	57%	59%
TN Removal	45%	45%	45%

6.3.2 Assessment under the Water Management Act 2000

The WMA specifies riparian corridor requirements based on the stream order. Both Tributary 1 and 2 have been determined to be first order streams in the upper reaches, becoming second order stream within a few hundred metres of the southern Project Application area boundary. This stream order determination has been adopted for this study and is presented in **Figure 24** in context with the proposed development layout.

The WMA stipulates that the riparian corridors should be determined through consideration of three riparian corridor zones, being the Core Riparian Zone (CRZ), Vegetated Buffer and Asset Protection Zone (APZ). The following sections discuss each of these zones in the context of the development proposal.

Core Riparian Zones (CRZ)

The CRZ refers to land contained within and adjacent to a water course. It is proposed to provide the following CRZ setbacks:

- 1st order water courses would incorporate a 10 meter CRZ setback from the top of bank. A channel width of 5 meters is adopted resulting in a total CRZ width of 25 metres.
- 2nd order water courses would incorporate a 20 meter CRZ setback from the top of bank. A channel width of 5 meters is adopted resulting in a total CRZ width of 45 metres.

The above setbacks are in accordance with the recommended CRZ widths in the WMA. **Figure 22** indicates the adopted CRZs within the Stage One Project Application area.

In accordance with the WMA, it is proposed to rehabilitate the CRZs, with the following rehabilitation measures proposed:

- Remove any exotic weeds from existing riparian corridors;
- Retain existing native riparian vegetation;
- Where required, enhance riparian vegetation to consist of a fully structured vegetation corridor, including ground cover, shrubs and trees;
- Where required provide bed and bank stabilisation; and
- Decommission all existing farm dams.

The above rehabilitation measures are likely to enhance the environmental function of the existing riparian corridors, which have been degraded from cattle grazing and land clearing. With reference to **Figure 24** it is proposed to construct a number of detention basins within the CRZ. **Table 17** discusses the potential impacts of on-line basins on riparian functions and outlines proposed mitigation measures.

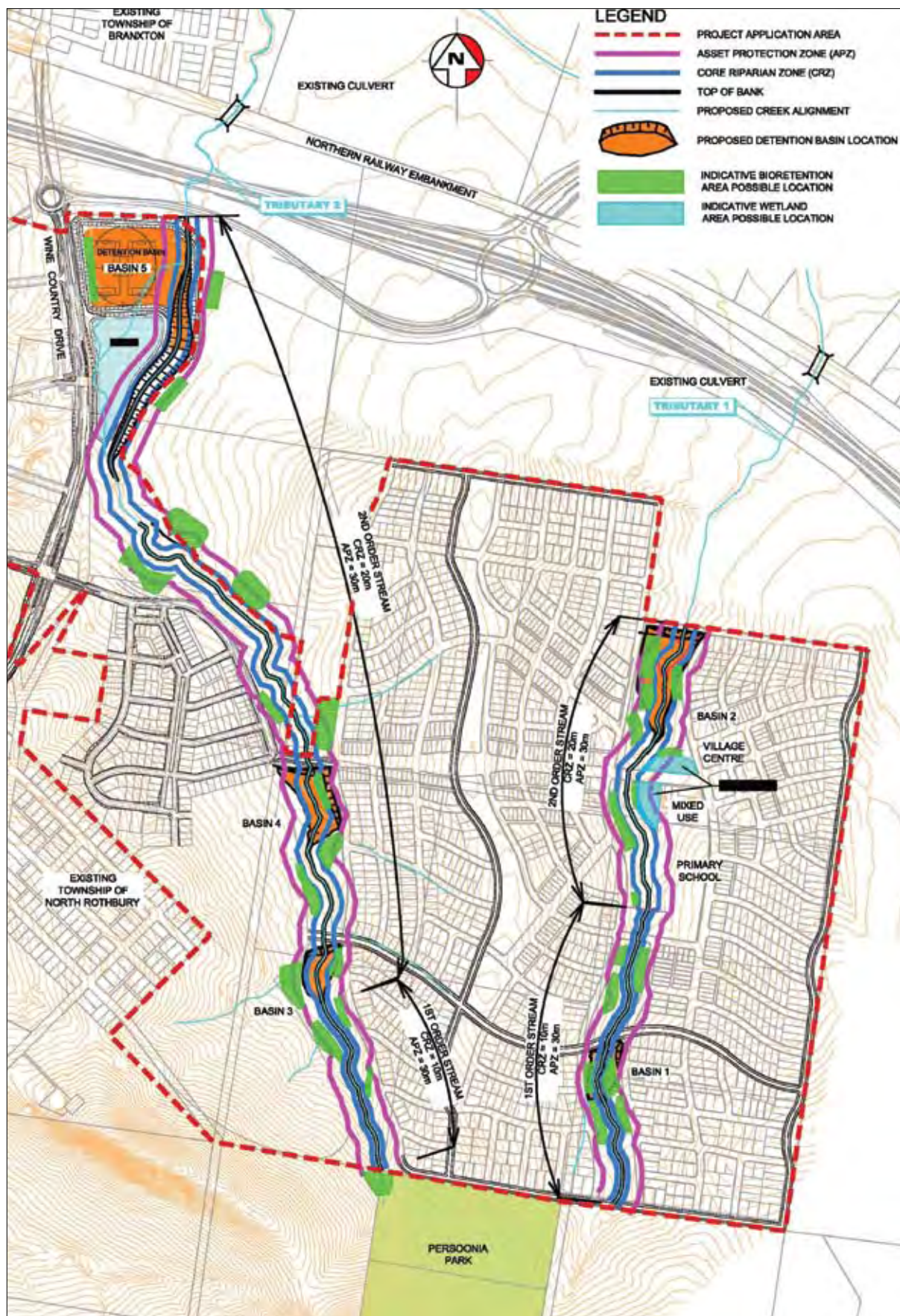


Figure 24 – Stage 1 Residential Village and Town Centre Riparian Corridors

Source: Worley Parsons

Table 17 – Potential Impact of On-line Basins

Potential Impact on Riparian Corridors	Proposed Mitigation Measures
Disruption of natural flow regime	The proposed online detention basins are for flood mitigation purposes only. They would provide an important function in mitigating peak flows during high return period rainfall events, minimising the impact on downstream flooding. As the basins would be designed for flood mitigation purposes, ponding would only occur when flows within the watercourse exceed the existing state, 2 year ARI peak flow rate. Water quality controls, located off-line from the water course would provide retention storage to mitigate the increased flow rates and runoff volume during lower return period rainfall events.
Disruption of natural geomorphologic functions such as sediment movement	As the proposed basins are not permanent water bodies, they are not likely to pose a barrier for sediment flow through the water course.
Introduction of barriers to the dispersal of biota and the loss of continuity between up-stream and downstream communities	It is possible to utilise open channel controls such as baffle weirs to allow for fauna connectivity through the basin controls. However, this is subject to further investigation at the detailed design stage.
Loss of riparian habitat	The basins would generally be constructed at proposed road crossings, resulting in no additional loss of riparian habitat due to the construction of the embankments (<i>assuming the proposed roads would be constructed</i>). Inundation behind the embankments would only temporarily occur during high return period rainfall events.

Vegetation Buffer

The vegetation buffer function is to protect the environmental integrity of the CRZ. The proposed vegetation buffer would contain offline bio-retention basins, which would be vegetated with indigenous riparian species. Measures would be undertaken to discourage access to the bio-retention basins.

Figure 24 indicates the proposed locality of bio-retention basins within the Stage One Project Application area.

Riparian Asset Protection Zone (APZ)

The APZ is a requirement of the NSW Rural Fire Service and is designed to protect assets from potential bushfire damage. A minimum 30 meter APZ has been assumed from the outer CRZ boundary. It is proposed that the APZ would contain stormwater infrastructure, roads and open space, but no building structures.

Figure 24 indicates the adopted riparian APZ within the Stage One Project Application area. APZ's are discussed in further detail in Section 6.7.

In conclusion, the development proposal would:

- Provide CRZ and APZ setbacks in compliance with the WMA specifications;
- Construct managed bio-retention areas, vegetated with indigenous riparian vegetation, adjacent to the CRZ to provide a buffer between public areas and the CRZ;
- Increase the coverage of riparian vegetation within the Stage One Project Application Area, through retaining existing riparian vegetation and rehabilitating degraded areas;
- Decommission all online permanent water bodies (*i.e. existing farm dams*);
- Rehabilitate the existing channel where degraded;

- Construct five on-line detention basins (*for flood mitigation purposes only*) within the riparian corridors. The following mitigation measures would be adopted to address the potential impact of on-line stormwater controls on riparian functions:
 - Online basins would be designed to only detain water when flow exceeds the existing state 2 year ARI peak flow;
 - Online basins would not have a permanent water body;
 - Detention basins would utilise proposed road crossings for embankments to minimise the loss of riparian vegetation areas; and
 - Potential to implement open channel controls such as baffle weirs to allow for fauna connectivity through the embankment.

As discussed, the proposed online basins do not technically comply with the WMA (2000). However, with the proposed mitigation measures listed above, there would be no significant impact on the creekline corridors.

Farm Dam Assessment

It is proposed to decommission all existing farm dams within the Stage One Project Application area. Hence, an assessment of the existing harvestable rights is not required. With reference to the DWE website (*Farm dams in NSW*), the following dams are exempt from harvestable rights calculations:

- Dams for flood detention and mitigation. This applies to all proposed detention basins.
- Dams for the capture, containment and recirculation of drainage and/or effluent. This applies to all proposed water quality controls.

It is noted that no extraction is proposed from water quality controls for irrigation or other uses.

As all existing farm dams within the Stage One Project Application area are to be decommissioned, therefore a harvestable rights assessment of the existing farm dams is not required.

As discussed in Section 6.3.1, the development proposal would not include any online permanent water bodies in the form of detention basins, however, there would be one permanent water body (*Pond 1*) for water quality purposes.

Water Rights Assessment

It is proposed to construct three permanent water bodies in the Stage 1 Project Application Area (*Ponds 1 - 3*). A water rights assessment was undertaken in order to determine whether these permanent water bodies would be required to be licensed under the WMA. Accordingly, an assessment was undertaken to determine the maximum dam volume permissible using the *Maximum harvestable right dam calculator* on the NSW Office of Water (NOW) website. Based on a multiplier of 0.075ML/ha and contributing catchment area of approximately 500ha (*catchment area of Tributary 1 and 2, excluding the existing township of North Rothbury which partly falls within the Tributary 2 catchment area*). The results of the calculation are shown in **Table 18**.

Table 18 – Harvestable Rights Assessment

Proposed Water Bodies	Project Application Area	Maximum Harvestable Rights (ML)	Proposed Permanent Water Volume (ML)
Ponds 1, 2 & 3	505	37.8	Pond 1 20–30ML Ponds 2 & 3 5–10ML

As indicated in **Table 17**, the proposed permanent water volume is less than that permitted using the maximum harvestable rights calculator. Hence, the proposed permanent water bodies will not be required to be licensed under the WMA. In addition, as the Pond 1 water body will be principally for water quality control, it should be exempt from harvestable rights calculations.

6.4 Flooding

The assessment of the flooding impacts of Stage 1 was undertaken by Worley Parsons and is at **Appendix H**. A flood hydraulics model was created to assess the 100 year ARI flood events over the Stage 1 areas in both Tributaries 1 and 2 which form part of the Anvil Creek catchment. The model adopted the developed-state landforms and included proposed detention basins, proposed bridge locations and other possible ground level modifications such as filling and minor creek re-alignment.

The flood modelling work carried out to date for Stage 1 of the Huntlee Project has considered the provisions of the NSW Floodplain Development Manual (2005) in relation to selection of flood planning levels and consideration of potential evacuation routes during extreme events.

In terms of the Residential Village area and the Town Centre, the predicted flood extents and indicative flood planning levels are shown in **Figure 25**. The main Stage 1 development area contains two minor tributaries of Anvil Creek and is therefore not affected by flooding from any major creeks or rivers. All flooding issues within the site are due to local flooding characteristics of the two Anvil Creek tributaries.

In accordance with the NSW Floodplain Development Manual (2005), Flood Planning Levels (FPL's) equal to the 1% AEP plus 500mm freeboard will be applied to all development lots within Stage 1. For storm events greater than the 1% AEP, the development and road layout is such that continuously rising evacuation routes to higher ground are available to areas immediately adjacent to the Anvil Creek tributaries. The modelling shows that, with the exception of minor areas which will require fill (particularly around detention basins), the development is above the flood planning level. Predicted flood events would be generally confined to the designated drainage corridors.

The large lot residential area is affected by flooding from Black Creek and similarly to the main residential area, FPL's equal to the 1% AEP plus 500mm freeboard have been applied to these lots. As per previous modelling which was undertaken on Black Creek (Worley Parsons August 2010), the large lot area will also be impacted by the PMF event in Black Creek. Whilst a specific Flood Emergency Evacuation Plan has not been prepared for the large lot area, a continuously rising evacuation route would be achievable back to Wine Country Drive. The time to peak for Hunter River flood events would normally be in the order of at least 1 to 2 days and therefore there would be sufficient warning time to allow for evacuation of the large lot area during a PMF event. The proposed subdivision pattern has been designed to ensure that each proposed lot has sufficient flood free land for a dwelling and associated access. The 100 ARI flood extent for the Northern Large lot residential area is shown in the report **Figure 26**.

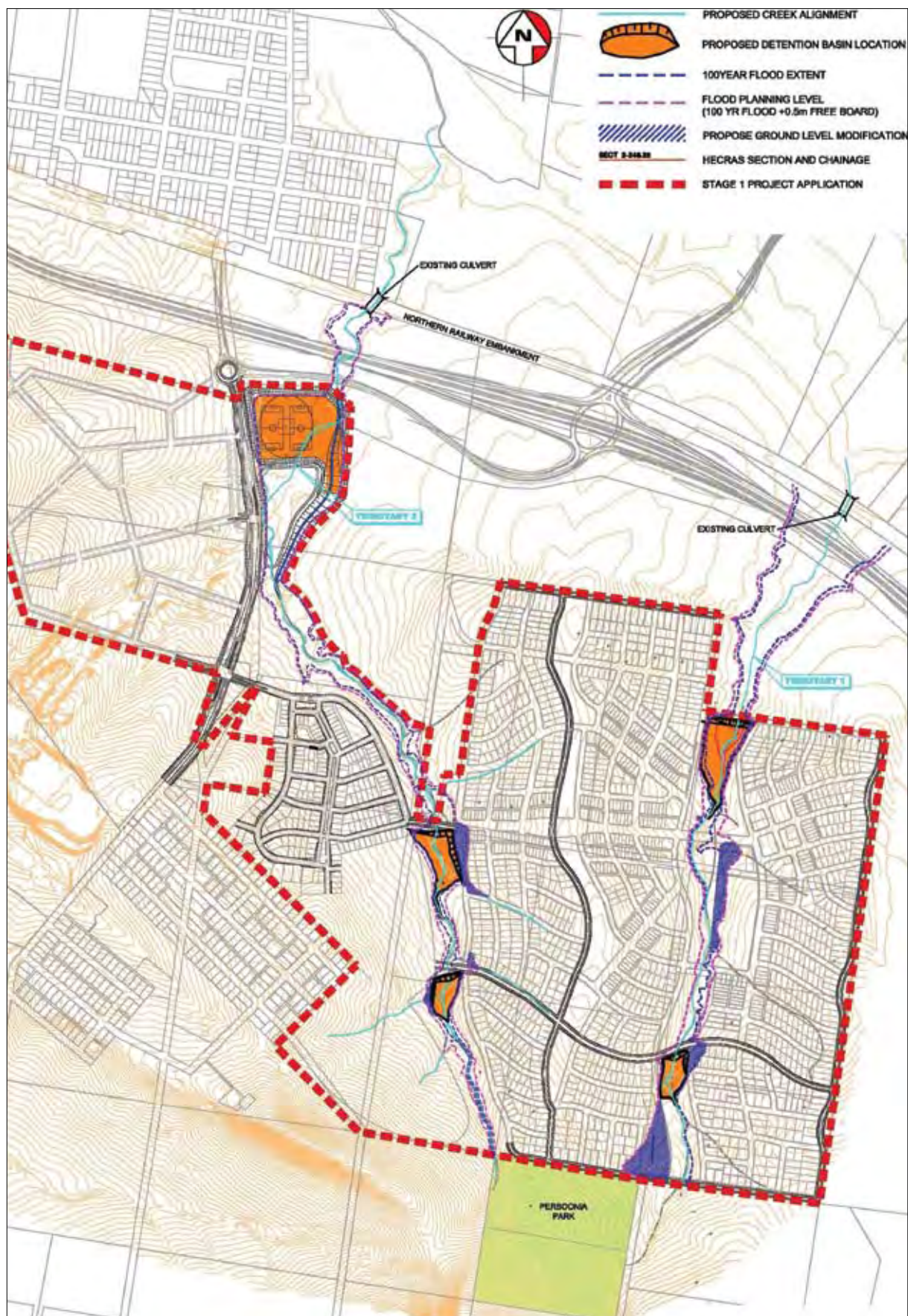


Figure 25 – Stages 1 Residential Village and Town Centre Predicted Flooding Extent

Source: Worley Parsons

6.5 Utility Services

Worley Parsons has prepared a Physical Infrastructure Report for the Stage 1 Project Development (**Appendix G**) that addresses both internal and external arrangements for the provision of the following:

- Potable water;
- Wastewater;
- Recycled Water;
- Electricity;
- Telecommunications; and
- Natural Gas

There are currently no utilities infrastructure servicing or affecting the Stage 1 area. The following sections are extracts from the Worley Parsons report.

6.5.1 Potable Water Infrastructure

Regional

The proposed Huntlee site is located at the extremity of the existing Maitland North Rothbury water supply network. Water is supplied to the existing township of Branxton via trunk water mains along the New England Highway from Harpers Hill Reservoir. North Rothbury is serviced from the North Rothbury Reservoir, with a small portion of the town serviced off the North Rothbury Water Pumping Station (WPS).

The demands identified exceed any existing infrastructure capabilities in the vicinity of the site.

Hunter Water have completed forward infrastructure planning for the Maitland North Rothbury water network, with a planning horizon of 20 years. Ultimately, upgrades planned for the Branxton trunk water supply system include:

- Stage 2 upgrade works downstream of Harpers Hill, including 1100m of DN375 main through Greta and 1500m of DN300 main from Branxton to North Rothbury. Once these works are complete, 200 ET capacity will be available. It is understood these works were completed in 2010 (TBC by Hunter Water).
- Stage 4 upgrade works include construction of DN375 main from Harpers Hill to Branxton and will yield approximately 3000 to 3500 ET downstream of Harpers Hill. These works are currently scheduled for completion in 2013.
- Stage 6 upgrade works where an additional 3500 ET can be connected after the completion of the other future works that include an additional 5ML reservoir at Harpers Hill and DN375 main from Harpers Hill to Branxton (additional to that constructed in Stage 4).

It is pertinent to note that current Hunter Water Corporation water infrastructure planning for Branxton will ultimately see a future demand of 7,000 ET connected to the proposed upgraded New England Highway water supply trunk system. However, the current Huntlee plans will see an ultimate water demand for Huntlee of 9,100 ET.

It is understood that Hunter Water is considering establishing a strategic link between the Maitland North Rothbury water supply system and the Cessnock water supply system. This will provide a greater flexibility and a higher level of security of supply within the area in the long term. Therefore, the potential connection point for the final stage of the proposed development may be in the Cessnock system via Pokolbin. As such, boundary conditions beyond 6,000 ET (Stage 6 of upgrade works) have not yet been provided to Worley Parsons by Hunter Water, as they will change if this connection proceeds.

Internal

Due to the difference in elevation across the site, two pressure zones will be required to meet Hunter Water requirements. A reservoir is proposed to service the high-level zone, and will be sited on the ridge line adjacent to the existing North Rothbury Reservoir. The lower zone will be directly fed from the New England Highway connection. For Stage 1, there will be a single connection to the New England Highway and emergency storage will be supplied by the proposed Huntlee reservoir. In later stages, additional connection points will be brought across from the New England Highway, providing security of supply to the low-level zone. Security of supply for the high level zone will still be provided from the reservoir. Additionally, a small high-level tank is required for the Old North Road rural residential lots (80 lots), as they are too high to be serviced by the proposed Huntlee reservoir.

The proposed Huntlee Water Servicing Strategy is shown in **Figure 27**. The concept potable water reticulation plans for the Stage 1 development areas is at **Appendix A**).

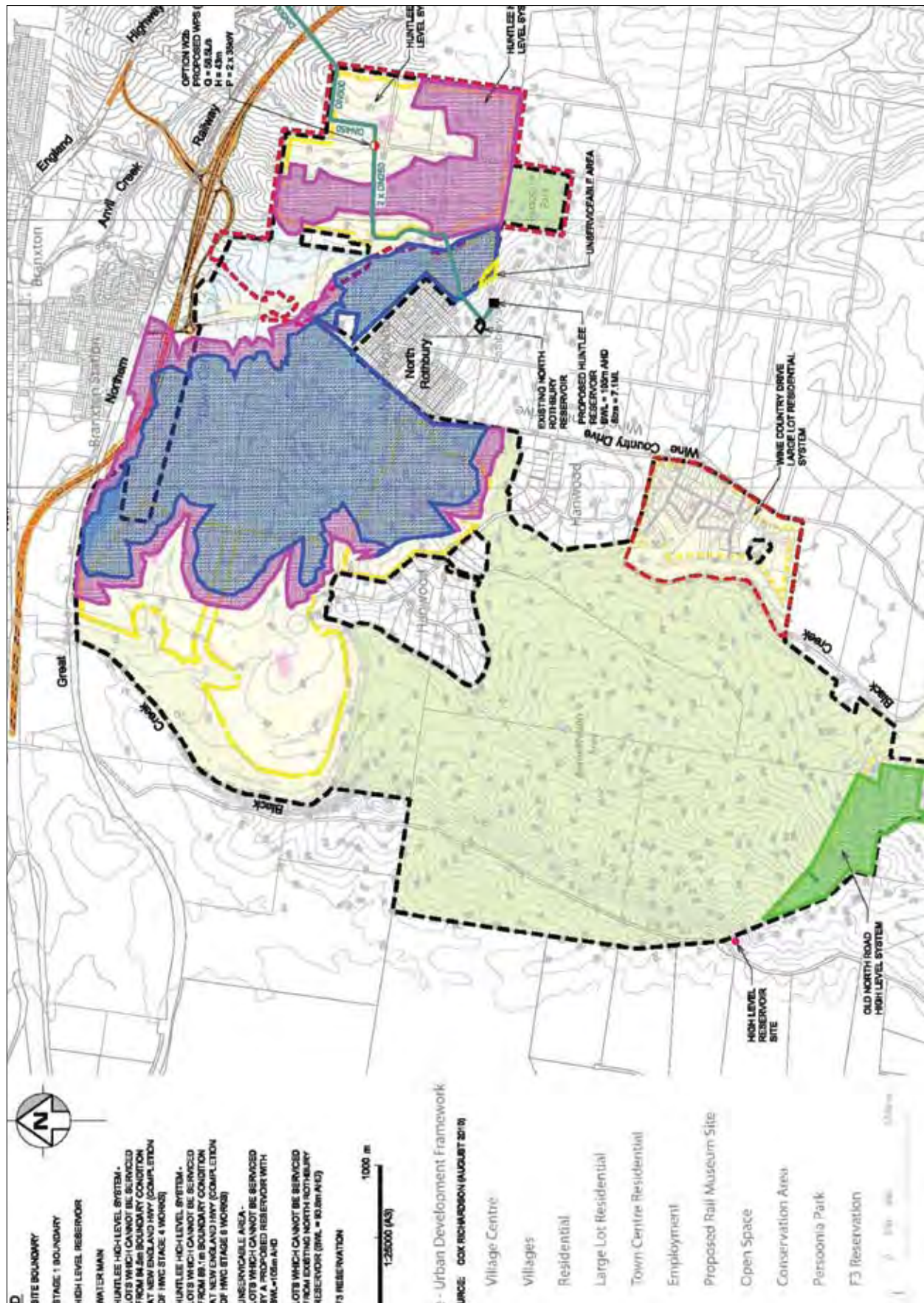


Figure 27 – Huntlee Water Servicing Strategy

Source: Worley Parsons

6.5.2 Wastewater Infrastructure

The wastewater supply authority responsible for the proposed development area is Hunter Water Corporation (HWC).

Extensive engagement with Hunter Water has been undertaken to date with regard to provision of wastewater services to the Huntlee Development. A developer-funded servicing strategy has been approved by Hunter Water (21 May 2009). This strategy was prepared for Stage 1 (~2,400 ET), with a high-level approach taken for the remaining stages.

Regional

The nearest reticulated wastewater system to the Huntlee Development Area is located at Branxton. There is no reticulated wastewater infrastructure south of the Main Northern Railway, with the township of North Rothbury and Hanwood currently not sewered. It is understood that there are no plans in place to sewer these areas in the short term. The proposed development site has not been identified as part of the current Hunter Water Developer Servicing Plan (DSP) for Branxton. Hunter Water have nominated Branxton Wastewater Treatment Works as the wastewater connection point for the Huntlee development.

There are approximately 1,809 equivalent tenements (ETs) currently connected to the Branxton sewerage transportation system. The existing township is serviced mainly by gravity, with 3 pump stations (Branxton 1, Branxton 2 and Branxton 3) delivering wastewater to Branxton Wastewater Treatment Works. Huntlee would include a Wastewater Pumping Station (WWPS) that would pump flows directly to the Branxton WWTW.

At the time of strategy, optimisation works were proposed to be undertaken in 2008/09, to increase the planned capacity to approximately 7,000 EP. Hydraulic constraints at the treatment works will require inflows to be limited to 88 L/s.

Stage 3 of the Branxton WWTW upgrade works was scheduled to be commissioned in 2012 to increase plant capacity to 13,000 EP. It is noted that HWC advised most recently in September 2008 that this may be postponed until after 2012. Further upgrades beyond 13,000 EP will be required to meet the ultimate projected development within the WWTW catchment. The staging and timing of these upgrades will be determined based on the observed rate of development within the catchment. Hunter Water have indicated that this provides sufficient lead time to ensure that wastewater treatment capacity is not a constraint to development at Huntlee.

Internal

The internal sewer system is proposed to be developed on a sub-catchment basis, with each sub-catchment draining to a wastewater pumping station (WWPS). At this stage, 11 WWPS sites have been identified, each located at the low point of the particular catchment.

Investigation was undertaken into the use of low pressure sewer in the southern large lot areas. It was found economically preferable to service the majority of the lots with conventional gravity sewage, with pump stations and rising mains. A small portion of land at the very southern extent, which grades away from the remainder of the Huntlee site will need low pressure sewer, as the number of lots are too small for a conventional wastewater pump station.

The proposed Huntlee Wastewater Servicing Strategy is shown in **Figure 28**. The concept potable water reticulation plans for the Stage 1 development areas is at **Appendix A**.

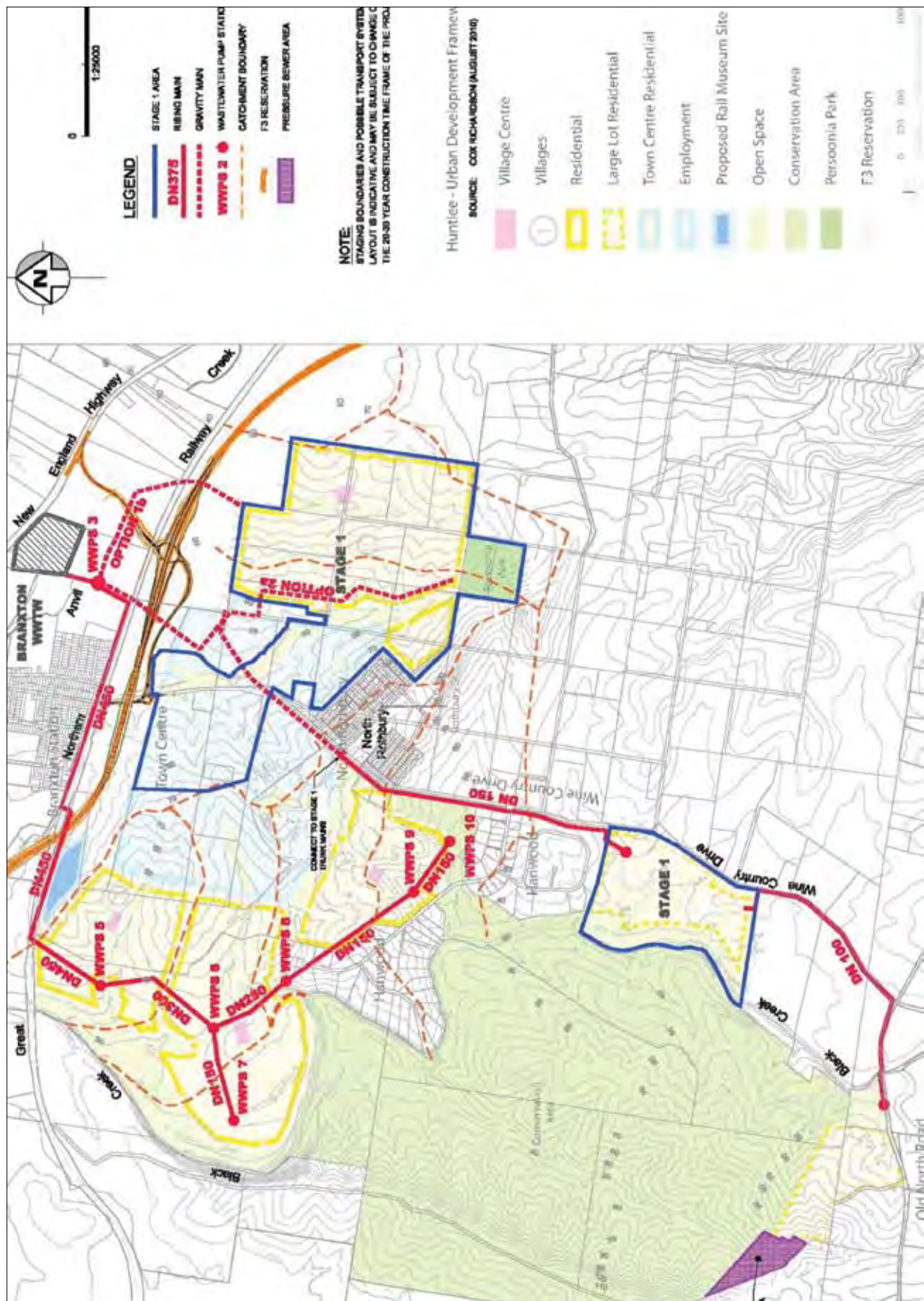


Figure 28 – Huntlee Wastewater Servicing Strategy

Source: Worley Parsons

6.5.3 Recycled Water

Hunter Water is supportive of the potential use of dual reticulated recycled water in the Braxton area. Generally the use of dual reticulated recycled water is technical feasible and has the potential to become a viable water-saving measure for this development – thereby reducing overall potable water demands.

The supply of recycled water will be from the Branxton WWTW. An upgrade of this WWTW is currently underway and is due for completion in 2011. As part of this upgrade, a membrane bioreactor (MBR) will be installed that will allow the treatment of wastewater effluent for distribution to The Vintage Golf Club at Rothbury. Supply to The Vintage will be via a dedicated pumping station and rising main. Currently, effluent discharging to Branxton WWTW will be fully utilised by The Vintage and other existing customers.

Huntlee is progressing negotiations regarding the provision of recycled water with Hunter Water. Full details of the negotiations with Hunter Water are contained within **Appendix G**.

6.5.4 Telecommunication Infrastructure

With the government announcement of the National Broadband Network (NBN), changes have also been made to the way the telecommunications infrastructure will be provided in greenfield developments. Telstra will no longer be deploying copper infrastructure as standard practice. All new greenfield developments will require fibre-to-the-premises (FTTP) infrastructure to be installed.

NBN Co will act as wholesale provider of last resort in new developments constructed within, or adjacent to, NBN Co's long term fibre footprint. Developers will be required to cover the costs of trenching and ducting. NBN Co will cover the other costs of installing fibre infrastructure in the development, including backhaul (*the mid-to-long-distance transport of data from a series of disparate locations back to a more centralised location*).

These arrangements will not prevent developers from using other companies to roll-out fibre networks in new developments if they wish, but such networks will need to comply with the technical specifications of the NBN and be operated on an open access basis, and just like the NBN wholesale services would be offered on an equivalent basis.

As part of the detailed design phase, Huntlee will negotiate with relevant authorities to determine detailed infrastructure requirements for the development.

Full details of the negotiations with Telstra are contained within **Appendix G**.

6.5.6 Electricity Infrastructure

The energy supply authority responsible for network supply to the proposed development area is Energy Australia (EA).

Energy Australia has carried out preliminary studies to determine a concept plan to supply electricity to the development. The required electricity supply upgrade works would be constructed in stages as needed to service the staged development of the Huntlee site.

The existing feeder from the North Rothbury Zone Substation can supply around 400 lots in its present configuration. With a conductor upgrade, this feeder could supply up to 1200 lots. Beyond this, a new Zone Substation would need to be constructed in the Huntlee development.

The Huntlee substation would require approximately 200x200m of land. The 132kV overhead feeders would be constructed as overhead lines following easement routes, normally 30m wide. Around ten 11kV underground feeders may be needed from the new substation to service the final development.

Design and construction of a zone substation is anticipated to take approximately 5 years. EA have indicated that the large-lot residential areas can be serviced from the existing North Rothbury Substation.

The internal electrical reticulation within the development will be designed by the developer and typically handed over to Energy Australia to maintain and operate as the network authority. Full details of the negotiations with Energy Australia are contained within Appendix G.

6.5.6 Natural Gas Infrastructure

AGL Energy Limited currently provide reticulated gas to the townships of Branxton and Rothbury. It is proposed that natural gas will be provided throughout Huntlee to facilitate efficient and sustainable energy usage. Natural gas will be designed, constructed and funded by AGL as part of the normal land development process. Further consultation with AGL regarding takeoff locations, sizing and programming will be undertaken during the detailed design and assessment phase.

6.6 Biodiversity

An Ecological Constraints Master Plan (ECMP) report was prepared by RPS for the Huntlee State Significant Site Study (see **Appendix I**). The ECMP provided an assessment of flora and fauna within the site and surrounding areas and to identify potential constraints and opportunities associated with the entire Huntlee development. The study also examined the ecological attributes of the conservation lands proposed for dedication in accordance the Huntlee Environmental lands Offset Strategy to implemented through a Voluntary Planning Agreement (VPA) with the NSW Government.

The ECMP assessment concluded that the impacts of the development of Huntlee as proposed in the SSS Study with the Environmental Lands Offset Strategy are sustainable. The assessment showed that the large majority of threatened species and ecological communities found at Huntlee are represented in the proposed conservation areas in the south of the site. Further the Environmental Lands Offset Agreement, involving the dedication of up to 780 hectares at Huntlee and up to a further 4,988 hectares of conservation land in a number of locations in the Lower Hunter Valley Region provides robust ecological outcomes for threatened species and ecological communities and is consistent with the outcomes proposed in the Lower Hunter Regional Strategy and the Lower Hunter Regional Conservation Plan.

6.6.1 Vegetation Communities

Three endangered ecological community listed under the *Threatened Species Conservation Act 1995* (TSC Act) have been identified within the Stage 1 project areas; the Hunter Lowlands Redgum Forest, Central Hunter Ironbark - Spotted Gum - Grey Box Forest and the Central Hunter Riparian Forest. Vegetation Communities in Stage 1 are shown in **Figure 29**.

Hunter Lowlands Redgum Forest

The Hunter Lowlands Redgum Forest is present in three areas within the Stage 1 development area:

- along the length of the drainage line in the eastern section of Residential Village 1;
- a small area on the ridge top in the north east of the Residential Village 1; and
- within the western drainage corridor to the south east of the "Entry Village".

The total area of the community in Stage 1 is 5.05 hectares. Notwithstanding the overall environmental offsets proposed in the offset strategy and VPA , the Hunter Lowlands Redgum Forest is, on its own, not offset in the proposed conservation areas which contain only approximately 1.05 hectares of the community. The proposed areas are almost entirely located within proposed open space areas along riparian corridors and Ridgeway Park. These communities have been incorporated into the design of these open space areas.

Central Hunter Riparian Forest

Small pockets of the Central Hunter Riparian Forest areas are located in the Wine Country Drive large lot residential area, in particular along the Black Creek corridor and in the south east corner. These areas are designated as open space and will not be disturbed. Notwithstanding this, in terms of the entire Huntlee development, this community has been offset adequately dealt with through the Environmental Offsets Strategy.

Central Hunter Ironbark - Spotted Gum - Grey Box Forest

This is the predominant vegetation community within the overall Huntlee development area. 568 hectares which is approximately 60% of the community within Huntlee is will be dedicated to the NSW Government through voluntary planning agreements. In terms of Stage 1 development, the community is present throughout most of the Town Centre area as well as being present in the southern section of Residential Village 1 and in the north east corner of the large lot residential area. In terms of the entire Huntlee development, this community has been offset adequately dealt with through the Environmental Offsets Strategy.



Figure 29 – Existing Vegetation in Village 1

Source: Hassell

6.6.2 Persoonia Pauciflora

Persoonia pauciflora or the North Rothbury Persoonia is listed as a critically endangered species under both the TSC Act and the EPBC Act. A detailed inventory of individual plants occurring within or immediately adjacent to the Huntlee site has been undertaken by RPS in 2005 and estimated that there was a population of some 550 individual plants. Since that time, some 277 plants have been lost through removal on a nearby site, not owned by Huntlee Pty Ltd.

In 2007, a further survey was undertaken of all known plants within the Huntlee Pty Ltd lands. The survey found a total of 23 plants, the majority of which were located in areas to be dedicated to the government either in the proposed Persoonia Park or within dedication areas to north of the Hanwood Estate boundary. Further surveys were undertaken in 2009 and 2010 to report on the status of the identified plants.

Section 5.2.1 of the ECMP (**Appendix I**) addresses the impact of the proposed Huntlee development on *P. pauciflora*. The proposed mitigation and management measures proposed by Huntlee have been assessed against the heads of consideration contained in the Draft National Recovery Plan (2009) prepared by DECCW for the species.

Proposed management and mitigation measures committed to by Huntlee Pty Ltd as part of a conservation strategy are:

- The dedication as part of the SEPP VPA an area of 17 hectares (Persoonia Park) as a reserve to retain in-situ specimens of *P. pauciflora* and to provide an area of habitat where research of the species would be undertaken;
- Protection of all in-situ occurrences of *P. pauciflora*. Protection will consist of the following measures:
- Development of a 30m diameter buffer surrounding each plant; and,
- Collection of seeds and cuttings with the view to achieving successful propagation;
- Contribute \$100,000 to the Minister for the Environment and Climate Change for the North Rothbury Recovery Plan, to enable DECCW and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities to develop reliable propagation techniques that can be used to help re-establish *P. pauciflora* on suitable habitat across what is believed to be its normal range;
- Since 2007, no stock has been agisted on the land, and cessation of any activities that will have a negative impact on *P. Pauciflora*; and,
- Seed and cutting collections in 2009 and 2010 have resulted in the successful propagation of 22 plants through the Annan Botanical Gardens.

Huntlee Pty Ltd has been working with DECCW since 2007 and established protective measures to the satisfaction of DECCW for those *P. pauciflora* on the Huntlee land. Seed surveys and collections in 2009 and 2010 have resulted in successful propagation. Huntlee Pty Ltd has offered \$100,000 towards the Recovery Plan as part of the SEPP VPA. The collaboration with DECCW on the preservation and propagation programmes is strongly documented between DECCW and Huntlee.

In terms of Stage 1 of the Huntlee development, no *P. pauciflora* plants have been identified as being within the Stage 1 Residential Village or Town Centre areas. Three plants are identified in the proposed Persoonia Park located immediately south of the Residential Village 1 area and a further two plants on adjoining land (not owned by Huntlee Pty Ltd) also immediately south of Residential Village 1. These plants will not be affected by the development. Three plants are located in the north east corner of the Wine Country Drive large lot residential area. A further two plants are located within the road reserve immediately adjacent to this area. The proposed subdivision of this area proposes to designate this part of the site as open space to prevent development within the buffer area of the plants.

6.6.3 Threatened Fauna

The following threatened species, listed in the TSC Act were identified within the Stage 1 areas during the surveys that underpinned the Concept Plan:

- Grey-crowned Babbler (Residential Village 1)
- Speckled Warbler (Wine Country Drive)

The assessment contained in the ECMP concludes that adequate habitat would be provided within the proposed conservation areas and offset areas to ensure that there was not likely to be a significant effect to these species.

6.6.4 Aquatic Habitat

An aquatic habitat assessment was undertaken as part of the ECMP by RPS for the Huntlee development as a whole. The assessment concluded that the larger and more important watercourses and aquatic features are to be retained within the development framework as open space and drainage corridors.

In terms of the Stage 1 development areas, the majority of water courses are intermittently flowing watercourses contributing to larger watercourses, representing opportunistic feeding and dispersal habitat, and contributing to maintaining main stream water quality. With the exception of Small Intermittent Creeks, most of the water courses (within Stage 1 Development Area) are likely to provide at least some habitat opportunities for aquatic species, i.e. Class 2 'Moderate Fish Habitat' and Class 3 'Minimal Fish Habitat'.

For the Village 1 and Town Centre areas the proposed subdivision pattern will conserve the existing two large intermittent creeks flowing south to the north through this part of the Huntlee site to Anvil Creek. These creeks will be buffered from development by open space areas. These creeks will also include existing dams that are located along these corridors.

Black Creek forms the western boundary of the Wine Country Drive large lot residential area. This section of the site is proposed to be an open space corridor. The nearest lots will be located approximately 80m from the creek.

6.6.5 Mitigation Measures

Notwithstanding that offset measures were adopted by the NSW Government as part of the rezoning of the land, the ECMP recommended a range of principle mitigation considerations that could be adopted during the development phase to supplement the primary biodiversity protection measures (dedication of high conservation lands and measures associated with the conservation strategy for *Persoonia pauciflora*). These measures are outlined in Section 6 of the ECMP (**Appendix I**) and include:

- Erosion and sediment control measures;
- Fencing between construction areas and adjacent retained vegetation,
- Minimisation of clearing in the development, particularly any areas that currently contain threatened species or ecological communities;
- Strict weed management, monitoring and control practices;
- A tree felling protocol to minimise harm to all fauna species during clearing of trees for the proposal;
- An assessment of tree hollow provision in areas surrounding clearing for the development and, if required, local supplementing of hollows, using salvaged tree hollows or nest boxes of a range of sizes;
- On-going management and monitoring nest boxes;

- Timing of clearing to avoid removal of hollow bearing trees during the breeding season of threatened species;
- An annual fauna monitoring program
- protection and enhancement of wetland and riparian areas;
- pest management;
- stormwater and effluent management
- Restoration and maintenance of riparian buffers
- Design and construction of watercourse crossings.

The above mitigation measures will be addressed as part of the management plans to be prepared for the site prior to construction. These management plans are included in the Statement of Commitments (Section 7) and include:

- Construction Management Plan;
- Vegetation Management Plan;
- Soil and Water Management Plan.

6.7 Bushfire Management

A Bushfire Threat Assessment for the SSS Study was prepared by HDB Town Planning and Design. The assessment was prepared to demonstrate the site's ability to accommodate bushfire protection measures and therefore facilitate future residential development throughout the site for the Huntlee development. The assessment was undertaken to ensure that the development of Stage 1 of Huntlee would meet the requirements of *Planning for Bushfire Protection 2006*. To this effect, the assessment methodology addressed the following:

- Vegetation assemblages on and adjoining the development area and categorisation based on the amount of fuel that can be found in each vegetation classification;
- Topography, including an assessment of the slope of the site, over a distance of 100m from the proposed building areas towards the vegetation communities which are bushfire prone;
- A bushfire protection assessment combining the dominant vegetation assemblage with the slope of the site to determine the appropriate asset protection zones required;
- An assessment of roads and access to the site;
- An assessment of water supply for fire fighting purposes; and
- Standards of construction.

The assessment concluded that, provided a number of key recommendations were implemented in the subdivision and road design, the development would be consistent with the provisions of *Planning for Bushfire Protection 2006*.

The proposed Huntlee Stage 1 areas are located within bushfire prone areas as indicated on Cessnock Council's Bushfire Prone Land Map. Current legislation requires that a Bushfire Threat Assessment be undertaken for new residential development within bushfire prone land. HDB Town planning and design has undertaken Bushfire Threat Assessments for all Stage 1 areas (see **Appendix J**).

The extent of the Asset Protection Zone (APZ) has been determined based on the assessment of Vegetation Assemblages and the site's topography which is generally within a 0-10% slope for all areas to be developed. The required APZ for any lot within Stage 1 is detailed in **Table 19**. APZs are delineated between Inner Protection Zones (IPZ) and Outer Protection Zones (OPZ).

Table 19 – APZ Requirements

Vegetation Type	Slope (from fire threat)	APZ (m)	
		IPZ	OPZ
Grasslands	All upslope vegetation considered 0° (flat)	10m IPA*	N/A
	>0° to 5° downslope		
	>5° to 10° downslope		
	>10° to 15° downslope		
	>18° downslope		
Grassy Woodlands	All upslope vegetation considered 0° (flat)	10m IPA*	N/A
	>0° to 5° downslope	15m IPA*	
	>5° to 10° downslope	20m IPA*	
	>10° to 15° downslope	25m IPA*	
	>18° downslope	30m IPA*	
Dry Sclerophyll Forest	All upslope vegetation considered 0° (flat)	20m APZ	10m OPZ optional within 20m APZ
	>0° to 5° downslope	25m APZ	10m OPZ optional
	>5° to 10° downslope	35m APZ	15m OPZ optional
	>10° to 15° downslope	50m APZ	25m OPZ optional
	>18° downslope	60m APZ	30m

*Maintained as an Inner Protection Area (IPA)

The above APZs have been incorporated into the subdivision design of the Stage 1 areas. This has largely been achieved through the design of perimeter roads around the Village 1 residential subdivision. The APZs are shown in **Figure 30**.


Figure 30 – Stage 1 APZs

Source: HDB

The Bushfire Threat Assessment for Stage 1 identified the subject areas as being subject to potential bushfire attack. Vegetation and slope within the areas vary considerably and Asset Protection Zones will be necessary around the Village 1 and large lot residential areas. The following recommendations have been would be required for future development of dwellings within Huntlee.

The key recommendations can be summarised as follows:

- The APZ's (detailed in **Table 19**) are to be implemented for proposed subdivision boundaries and future dwelling houses for the corresponding slope and vegetation.
- All created lots who share boundaries with vegetation will require the corresponding APZ on any boundary which is exposed to a possible fire threat.
- All APZ's are to be contained in respective lots i.e. within individual lot boundaries.
- Access is to be provided in line with the requirements of the RFS (as detailed in the Bushfire Threat Assessment), and *Planning for Bushfire Protection 2006*.
- The use of perimeter roads will provide a buffer between all residential allotments and vegetation, in and around the site.
- The urban design prevents the occurrence of dead-end roads/streets which can cause evacuation problems in a fire event and be hard to negotiate for RFS vehicles. Where avoidable dead-end streets should not be used in the subdivision design.
- The road widths and turning radiuses conform to the requirements of the RFS (as detailed in the Bushfire Threat Assessment).
- In providing water for fire fighting purposes, residential allotments will be serviced by hydrant system, built in accordance with AS2419.1-2005.
- Whilst further evaluation of the level of construction of structures will be undertaken as part of the detailed design stages, if the minimum APZ has been achieved, level 3 construction is used.
- The overall development of Huntlee requires successive stages of development after Stage 1. As part of the construction period and phasing of Huntlee staged release areas will each be exposed to a bushfire threat prior to the development of the next stage. In such circumstances, concentric APZ's are recommended around each release area which faces a bushfire hazard.

6.8 Salinity

The Huntlee SSS Study was supported by a Preliminary Geotechnical Assessment prepared by Douglas Partners in light of the *Hunter Priority Aquatic Health Catchment* diagrams identifying the site as high hazard area for salinity.

Despite little evidence of salinity being identified during a walk over survey of the site, the Huntlee Concept Plan committed to further testing prior to commencement of physical works to assess the presence of salinity and potential impacts to and from the proposed development.

Worley Parsons reviewed the Douglas Partners report and has reiterated the necessity for further salinity investigations to be undertaken to categorise the level of salinity across the site prior to the detailed design of infrastructure and servicing. Huntlee Pty Ltd has committed to undertaking these investigations as outlined in the Statement of Commitments as part of the erosion and sediment control measures.

The following management strategies will also be implemented through various aspects of the development to further limit the impacts of saline / sodic soils:

- Maintaining natural water balance and good drainage to prevent interference of subsoil and surface drainage pathways, and to prevent rising groundwater levels;
- Avoiding disturbance or exposure of sensitive soils to minimise erosion potential;
- Appropriate management of earthworks;
- Retaining and where appropriate increasing native vegetation in strategic areas such as along creek lines and drainage paths;
- Implementing building controls and engineering responses where appropriate;
- Avoiding water collection in low lying areas which have been earmarked for construction (eg: depressions, behind embankments or services trenches, etc);
- Location of stormwater quality ponds outside areas of moderate salinity, or in instances where this cannot be avoided implementation of mitigation measures that will minimise the risk of structural degradation and other impacts;
- Designing roads and shoulder areas well to ensure drainage of surface water and using materials which have minimal or no salt; and
- Choosing construction materials following an assessment of the site's salinity, aggressivity or corrosivity.

Preliminary investigations suggest the Stage 1 Project Application Area exhibits little or no evidence of salinity. Notwithstanding, Huntlee Pty Ltd has committed to a series of actions including detailed investigations and implementation of various management strategies to mitigate the impacts of salinity. It is our view that the salinity issues associated with the site can be managed effectively.

6.9 Groundwater Management

Despite there being no intention to extract groundwater or use it for domestic purposes, the Huntlee SSS Study confirmed that there are no groundwater bores within the Stage 1 Project Application areas.

Notwithstanding this, groundwater on the subject site is likely to coincide with natural surface drainage paths, with surface aquifers being generally confined over relatively impermeable unweathered rock strata.

Huntlee Pty Ltd had reaffirmed that there is no intention to harvest existing groundwater resources at the site to facilitate the Stage 1 Project Application. The clay soils on the site and introduction of new impermeable surfaces further limit the potential to recharge to the groundwater aquifer.

The proposal's drainage strategy will ensure that no surface ponding occurs, whilst also guaranteeing adequate through flow of near surface aquifers. This will reduce the risk of groundwater "backing up", and consequently concentrating saline groundwater.

The proposed Stage 1 development is unlikely to interfere with, or impact upon existing groundwater resources. The site's natural attributes and the proposed built form and infrastructure will mitigate the effects of the proposed urban development on the groundwater.

6.10 Contamination and Subsidence

Contamination

In accordance with *State Environmental Planning policy No. 55 - Remediation of Land*, a limited Phase 1 Environmental Site Assessment was undertaken for the proposed development area by AECOM (**Appendix K**). This report was in addition to the assessments undertaken for both contamination and mine subsidence for the Huntlee SSS Study. It should be noted that the Stage 1 development area is not located on land previously used for mining activities associated with the Ayrfield Colliery nor landfill areas currently subject to the Remediation and Rehabilitation Plan approved by the Department of Planning in August 2009.

The Stage 1 site assessment comprised a site inspection and review of historical information to assess potential risks at the site with respect to contamination and identify where additional investigations and/or remediation may be necessary. Based on this assessment a Preliminary Conceptual Site Model (CSM) was developed which identified areas of environmental concern (AECs) and contaminants of potential concern (CoPCs), potential exposure pathways and sensitive receptors.

While the assessment found that, based on site history, there was no evidence of potentially contaminating activities, the preliminary CSM identified a number of AECs across the development area including a metal scraps storage area, two above ground storage tanks which may contain fuel, a shed and surrounding area used for timber furniture manufacture, a derelict shed, a car wreck and a rusted drum.

In terms of CoPCs, these include:

- Heavy metals which are commonly found in fill materials and rusted metal objects including the scrap metal area, rusted drum and furniture manufacturing shed;
- Organochlorine and organophosphate potentially used in previous farming practices on the site;
- Asbestos - may be present in fill materials around the site;
- Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene and Xylenes associated with former fuel storage in above ground storage tanks.

The report also considered potential exposure pathways to humans and environmentally sensitive receptors including ground and surface water, flora and fauna. A qualitative risk assessment was undertaken to assess the nature of potential risks identified on the site with respect to contamination and hazardous construction materials. The findings of the risk assessment were used to determine an appropriate level of further investigation and / or remediation at the site. The risk assessment found that there was a moderate risk (further investigation and possible remediation required) associated with the following:

- Areas surrounding above ground storage tanks;
- The metal scrap storage area ;
- The timber furniture manufacturing area; and
- A derelict shed and abandoned residence.

The report recommends that further Phase 2 investigations be undertaken for these areas prior to demolition or development. This has been included in the Statement of Commitments.

Subsidence

The Stage 1 areas are located above previous mining activities and not subject to mine subsidence restrictions.

6.11 Sustainability

An assessment of the potential greenhouse gas emissions of the total Huntlee development was prepared by Sustainable Built Environments (SBE) for the Concept Plan (see concept plan Section 7.12). The Sustainability Strategy considered a range of factors which may contribute to greenhouse gas emissions based on the technical reports and advice prepared by relevant technical consultants.

The Sustainability Strategy considered the use of:

- energy;
- water;
- materials and waste;
- transport;
- land and biodiversity;
- emissions;
- social impact; and
- management.

The estimated greenhouse gas emissions based the quantum of the Huntlee development were provided. They were calculated on the CO₂ emissions that can be attributed to a mixed-use development, such as Huntlee new town, over its life cycle as follows:

- transport energy i.e. travel to, from and around Huntlee by residents, workers and visitors;
- emissions associated with the embodied energy of construction materials;
- due to on-site construction energy;
- operational energy i.e. the energy required to operate, manage and maintain buildings once constructed; and
- associated with a buildings demolition.

The predicted CO₂ emissions for residential and employment lands for Huntlee is summarised in **Tables 20** and **21**.

Table 20 – Predicted CO₂ residential emissions, over a 40yr period

Operational Energy	Predicted CO ₂ emissions
Based on:	- No. dwellings x Average dwelling size x Av energy use
- 7,500 dwellings	- 7,500 x 215 x 8t CO ₂ /m ² /year = 12,384,000t CO ₂ /yr
- Average dwelling size 215m ²	- 12,384,000t CO ₂ /yr x 40 yrs
- Average energy use/household at 8 tonnes CO ₂ ³ (per year)	- = 495,360,000t CO ₂
Total Residential CO₂ emissions	495,360,000t CO₂

The Total CO₂ emissions detailed in Table 22 excludes transport energy and CO₂ emissions associated with the buildings' demolition as these measures are unable to be quantified at this stage.

Different business sectors (i.e. commercial, industrial, mixed-use) within the Employment Lands have been calculated using the same methodology as the breakdown (in terms of NLA etc) of each use is not yet known. The Huntlee Sustainability Strategy is at **Appendix M**.

Table 21 – Predicted CO₂ employment lands emissions, over a 40yr period

CO ₂ Generator	Significance*	Predicted CO ₂ emissions
Embodied energy of construction materials	(moderate impact) Approx. 0.5 – 2t CO ₂ /m ² . Average is 1.25t CO ₂ /m ²	100,000 (NLA) x 1.25t CO ₂ /m ² =125,000t CO ₂
On-site construction energy	(low impact) Approx. 10% of embodied energy. Therefore 0.05-0.2t CO ₂ /m ² . Average is 0.125t CO ₂ /m ²	100,000 (NLA) x 1.25t CO ₂ /m ² =125,000t CO ₂
Operational energy	(moderate to large impact) Approx 0.3t CO ₂ /m ² /yr for an average office building	100,000 (NLA) x 0.3t CO ₂ /m ² /yr =30,000t CO ₂ /yr Assuming a buildings lifespan is 40yrs = 1,200,000t CO ₂
Total Employment Lands CO ₂ emission		1,337,500t CO ₂
* Source: "Major greenhouse emission issues associated with commercial and industrial buildings"		

6.11.1 Stage 1 Assessment

The green house gas emissions associated with Stage 1 of the Huntlee New Town are included within the total figures in **Tables 20** and **21** above. To achieve these targets, a Sustainability Strategy has been prepared for Huntlee that provides a range of targets. The compliance with these targets is summarised in **Table 22** below:

Table 22 – Sustainability Targets

Sustainability Strategy Target	Compliance
Energy	
To incorporate best practice passive solar designs into the subdivision layout and building	Village 1 residential subdivision pattern is characterised by a predominance of east west street and maximising opportunities for dwelling s to have a northern aspect
To exceed BASIX energy requirements	To be addressed at building development stage
To supply a percentage of the site's energy from renewable sources	To be addressed at building development stage
All residences to be installed with solar hot water systems	To be addressed at building development stage
Water	
To incorporate Best practice Water Sensitive Urban Design principles	Addressed in Stormwater management strategy
To exceed BASIX water requirements;	Huntlee Pty Ltd is in discussion re the design of a wastewater re-use scheme to be implemented during Stage 1. A "Third pipe" system is able to be implemented.
No potable water to be used for landscape irrigation;	Huntlee Pty Ltd is in discussion re the design of a wastewater re-use scheme to be implemented during Stage 1. A "Third pipe" system is able to be implemented
No potable water to be used for toilet flushing and urinals;	Huntlee Pty Ltd is in discussion re the design of a wastewater re-use scheme to be implemented during Stage 1. A "Third pipe" system is able to be implemented

Sustainability Strategy Target	Compliance
Material and Waste	
To maximise material re-use on-site;	Target to be included in the Construction Management Plan
To recycle a high percentage of construction waste, diverting it from landfill	Target to be included in the Construction Management Plan
Transport	
To prioritise personal mobility routes;	Village 1 has been designed to provide priority for pedestrians and cyclists in terms of segregated pathways and easy access to facilities.
To locate dwellings and commercial premises within easy walking distance of public transport stops;	All lots in Village 1 are located within 400m of public transport.
To locate all dwellings within easy walking distance of a convenience store	Village 1 incorporates a Village Centre containing neighbourhood retail services. Pedestrian and cycle movement is designed to provide easy access to this centre
Land and Biodiversity	
To protect and enhance the site's biodiversity.	Achieved through the Huntlee Environmental Offsets Strategy. In Stage 1, the majority of the Hunter Lowland Redgum Forest (EEC) is protected by an open space zoning. 17 hectares is set aside in Stage 1 for the conservation and propagation of <i>Persoonia pauciflora</i> .
To plant a high percentage of the site with indigenous drought-tolerant species	The Landscape Strategy recommends a number of local species for street tree planting and parkland planting.
Emissions	
To minimise emissions to air, water and soil;	Incorporated into the Stage 1 design through - Convenient pedestrian and cycle movement - Convenient public transport access - WSUD principles in stormwater management
Social	
To integrate a percentage of affordable housing into the development;	Stage 1 provides for a range of lot sizes to accommodate a life cycle of housing types for residents and promote affordability.
To integrate best practice Crime Prevention Through Environmental Design (CPTED) principles into buildings and urban design.	These have been considered in the design of the Stage 1 areas.
Management	
New commercial, retail, educational, health and industrial buildings constructed on the site are to achieve a minimum of 5 Green Stars using Green Building Council of Australia's Green Star tools.	To be addressed at building approval stage.

The Sustainability Strategy for Huntlee will be subject to on-going development through the staged planning process. The ESD opportunities described and the targets have been considered in the design and technical assessments of the Stage 1 areas. Elements of the Sustainability Strategy have been incorporated into the draft Development Control Plan (**Appendix C**). Huntlee Pty Ltd commits to the further development and implementation of the Sustainability Strategy and its integration into the future planning and design of Huntlee.

6.11.2 Principles of Ecologically Sustainable Development

An assessment of the proposed Stage 1 development of Huntlee has been assessed against the key heads of consideration in the definition of Ecologically Sustainable Development (ESD) incorporated into the *Environmental Planning and Assessment Act 1979*, as follows:

Precautionary Principle - namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation:

- all supporting technical reports are based on careful evaluation of the proposed impacts on the environment through measures such as analysis of historic documentation, field surveys and technical modelling. Based on this evaluation management and mitigation measures have been formulated based on best practice and in accordance with relevant policies and guidelines to avoid serious or irreversible damage to the environment.
- a conservation area adjacent to Stage 1 will be dedicated for *P.pauciflora* as part of the Regional VPA with the NSW Government even though all individuals will be protected and there is some evidence that translocation is possible.
- the principle has also been applied by RPS in its ecological assessment. For example RPS:
 - assumed certain parts of the Huntlee development areas contain habitat for threatened species even when those species could not be located during extensive surveys,
 - assumed that certain ecological communities were groundwater dependent ecosystems even if though it could not be confirmed.
 - proposing mitigation measures for any future development.
- it has also been considered in that the large conservation offset areas (particularly those that adjoin or constitute 'stepping stones' to National Parks or other reserves) could provide refugia to assist species adapt to human induced climate change. This is consistent with some of the priorities of the NSW Priorities for Biodiversity Adaptation to Climate Change in that it will assist in protecting a diverse range of habitats by building a comprehensive, adequate and representative (CAR) reserve system and increasing opportunities for species to move across landscapes.
- by applying the DECCW Guideline titled *Floodplain Risk Management: the Practical Consideration of Climate Change (2007)* and undertaking a sensitivity analysis of increased rainfall densities as a result of climate change as part of the floodplain risk assessment for the Black Creek catchment.
- by restoring degraded habitat which can reduce the impacts of invasive species (which are likely to increase as a result of climate change)

Inter-Generational Equity – namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations

- this has been satisfied through:
 - creation of a safe, healthy and high quality living environment with housing diversity and choice;
 - employment generation and opportunities;
 - delivery of biodiversity outcomes which will see significant high conservation areas dedicated for public ownership;

Conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration

- this is satisfied through:
 - protection of significant habitat that is considered to be of high or strategic conservation value;
 - dedication of conservation offset lands;
 - creation of conservation measures for *P.pauciflora* including the creation and dedication of Persoonia Park and funding for research and propagation of the species;
 - habitat preservation and creation; and
 - provision of wildlife corridors.

Improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services,

- The Sustainability Strategy for Huntlee incorporates key environmental objectives that are required to be considered in decisions relating to the future design, construction and on-going management of Huntlee. These objectives address the principles of polluter pays, full life cycle pricing and establishing goals and incentive structures to enable those best placed to maximise environmental benefits of minimise environmental costs to develop solutions and responses to environmental problems. The key objectives in the Sustainability Strategy relate to:
 - Energy
 - Water
 - Materials and Waste
 - Transport
 - Emissions
 - Land and biodiversity
 - Social environment; and,
 - Management goals.

6.12 Regional and Community Infrastructure Provision and Funding

The Huntlee development areas are divided between the LGAs of Cessnock and Singleton. The SSS Study identified the potential for governance arrangements in the new town to be an issue in terms of the provision of infrastructure and community services, particularly where the community service is being utilised by ratepayers of the adjoining Council. There is clearly a need for a consistent, equitable and streamlined approach.

Huntlee Pty Ltd has held a number of discussions with both Cessnock and Singleton Councils and the DoP. Huntlee Pty Ltd has briefed both Councils on the overall development and in briefing the Cessnock City Council officers on 18th January 2011 pertaining to Stage 1. It has been agreed that with regard to the provision of regional and community infrastructure and services, a voluntary planning agreement framework would provide the flexibility to incorporate equitable future governance arrangements across the site.

Voluntary Planning Agreements (VPA) under Section 93(F) of the EP&A Act will be prepared to provide for regional and local infrastructure. The VPAs will relate to development and associated infrastructure and community services for each stage of the project.

It has been agreed that two VPAs be prepared for each stage; one between Huntlee Pty Ltd for regional infrastructure provision and a second VPA between Huntlee and Cessnock and Singleton Councils for local infrastructure provision. It should be noted that Stage 1 development is located wholly within Cessnock Council and therefore the Stage 1 VPA will be with that Council only.

It should be noted that the NSW Department of Planning has developed a draft plan to streamline the contributions process for regional infrastructure in the Lower Hunter region. The Government's policy on contributions for State infrastructure is one of the implementation actions in the Lower Hunter Regional Strategy.

It is proposed to introduce a uniform special infrastructure contribution (SIC) scheme to replace the current process where contributions are negotiated site-by-site. The aim is to reduce costs and delays, and promote long-term infrastructure planning. The plan is proposed for those non-urban lands that are rezoned to residential and industrial purposes. It will fund a wide range of road, education, emergency services, health and regional open space infrastructure.

The proposed SIC was recently publicly exhibited by the Department of Planning but has yet to be enacted. Should it be enacted by the NSW Government prior to the determination of Huntlee Stage 1, regional contributions will be in accordance with that scheme.

6.12.1 Regional Planning Agreement

A VPA to address funding and delivery of regional infrastructure for Stage 1 of Huntlee has will be negotiated between Huntlee Pty Ltd and the Minister for Planning.

The Stage 1 VPA for regional infrastructure provides for the following contributions outlined in **Table 23** below.

Table 23 – Stage 1 Regional VPA Infrastructure Contributions

Item	Works	Contribution
Regional Road	- Regional Road infrastructure works - Duplication of Wine Country Drive between North Rothbury and the Hunter Expressway Link Road	- Per lot contribution towards regional road infrastructure works - Works in kind
Education	- Primary School	- provision of a fully serviced primary school site
Environmental	- Conservation offsets	- dedication of Lot 2 DP 1042240 (172 ha) to the NSW Government

The tables to the VPA will specify set contribution amounts or items that are required to be paid at specified stages of the project.

6.12.1 Local Planning Agreement

The local VPA will be negotiated between Huntlee Pty Ltd and Cessnock City Council for Stages 1 development.

The local VPA will provide the following contributions:

Table 24 – Local VPA Infrastructure Contributions

Item	Works	Contribution
Community Facilities	- Neighbourhood centre - Town Centre Community Building	Dedication of 0.5ha and monetary contributions towards construction of centre. Dedication of 0.9ha of land and monetary contribution towards the staged construction of the building.
Education	- Dedication of land and the provision of a public pre-school	Dedication of 0.1ha and monetary contributions towards construction of pre-school.
Recreation	- Neighbourhood parks (incl landscape and maintenance for 3 years)	Dedication of land
	- Public open space and cycleways	Material public benefit towards provision and 3yr maintenance of open space, cycleways, playgrounds and park infrastructure.

6.13 Other Issues

6.13.1 Heritage and Archaeology

The assessment of European and archaeology undertaken by HDB Town Planning and Design as part of the SSS Study for the overall Huntlee development did not identify any listed heritage items or other items of significance within the proposed Stage 1 project areas.

In terms of Aboriginal archaeology, the assessment undertaken by Myall Coast Archaeological Services did not identify any significant Aboriginal sites or objects within the Stage 1 project areas. Notwithstanding this, the Statement of Commitments will address procedures to be followed should a site be discovered during any works associated with this application.

6.13.2 Demolition, Earthworks and Construction Impacts

A detailed Construction Management Plan will be required to be prepared by Huntlee Pty Ltd prior to works being undertaken. A construction Management Plan Framework for Huntlee has been prepared by Worley Parsons as part of the Physical Infrastructure Report (**Appendix G**)

The Construction Management Plan will include the following considerations:

- Air quality;
- Erosion and Sediment Control;
- Ecological;
- Heritage;
- Site Safety and Emergency Response;
- Construction Waste;
- Construction Noise;
- Construction Vibration;
- Hazardous Materials; and
- Traffic Management.

7.0 Stage 1 Project Application Statement of Commitments

The following commitments have been compiled based on the environmental assessment undertaken in the preparation of this report and outlined in Section 5. They provide a commitment by Huntlee Pty Ltd indicating the responsibilities and timing to implement measures to prevent potential environmental impacts that have been identified through this assessment to ensure that the project is environmentally, socially and economically sustainable, and to outline a program of works to take forward the staged development of the Huntlee site under future project applications.

Subject	Commitments	Responsibility	Approved by Whom	Timing
General	Huntlee Pty Ltd will carry out the development in accordance with this Project Application and Environmental Assessment Report (EAR) prepared by JBA Urban Planning Consultants and dated January 2011 and associated plans and supporting reports.	Huntlee Pty Ltd	Various	Duration of the subdivision and infrastructure works
Regional Planning Agreements	A Voluntary Planning Agreement for Stage 1 will be executed between Huntlee Pty Ltd and the Minister for Planning to provide for the timely delivery of regional infrastructure.	Huntlee Pty Ltd	Minister for Planning	The Voluntary Planning Agreement will be executed at the time the Project Application is determined or thereafter.
Local Planning Agreement	A Voluntary Planning Agreement for Stage 1 will be executed between Huntlee Pty Ltd and Cessnock City Council to provide for the timely delivery of local infrastructure and community services.	Huntlee Pty Ltd and Cessnock City Council	Cessnock City Council	The Voluntary Planning Agreement will be executed at the time the Project Application is determined or thereafter.
Road Works	Prior to the issue of a Subdivision Certificate in respect of land upon which residential dwelling is to be developed within Stage 1, Huntlee Pty Ltd will enter into a Roadworks Agreement with the RTA, or such other legally binding agreement as approved by the Minister at his discretion, in respect of the carrying out and completion of the following Road Improvement works: Duplication of Wine Country Drive between the Hunter Expressway Link Road and North Rothbury; Construction of the intersection of Wine Country Drive and Main Street; Construction of the intersection of Wine Country Drive and the Village 1 Entry Road Construction of the intersection of Wine Country Drive and the access to the WCD Large Lot Residential Area.	Huntlee Pty Ltd	RTA	Prior to relevant Subdivision Certificates
Legislative Controls and Approvals	Huntlee Pty Ltd will obtain and maintain the following licences, permits and approvals for the residential subdivision: - Relevant Council – Construction Certificates for engineering works for each stage of the subdivision. The application for Construction Certificates will contain Design Drawings submitted containing, where relevant, detailed designs relating to earthworks, drainage, Soil erosion and Sediment Control and site rehabilitation, tree clearing and site stability, roadworks, footpaths/cycleways, water supply (both potable and use of reclaimed water) and sewerage works, and landscaping;	Huntlee Pty Ltd	Various	Duration of subdivision

Subject	Commitments	Responsibility	Approved by Whom	Timing
Legislative Controls and Approvals	- Relevant Council - Road Opening Permit from Cessnock City Council as required; - Relevant Council - Section 138 Consent for roadworks (Roads Act 1993); - Energy Australia - Design Certification; - Energy Australia - Notification of Arrangement; - Telstra - Compliance Certificate; - Hunter Water Corporation - Compliance Certificate; and, - Relevant Council – Subdivision Certificates for each stage.	Huntlee Pty Ltd	Various	Duration of subdivision
Staging Plans	Prior to the issue of a subdivision certificate for each sub-stage of the development, an up-dated staging plan shall be submitted showing at a minimum the next five sub-stages of the development.	Huntlee Pty Ltd	Department of Planning	Prior to the issue of each Subdivision Certificate
Detailed Engineering and Subdivision Plans	Huntlee Pty Ltd will prepare and submit detailed engineering and subdivision plans for each sub-stage of the development prior to the issue of the relevant Construction Certificate or Subdivision Certificate. The detailed plans shall include the following: - Lot areas - Lot dimensions - Road cross sections and long sections - Cut/fill and finished levels - Bulk earthworks plan	Huntlee Pty Ltd	Department of Planning	Prior to issue of relevant Construction or Subdivision Certificate
Final Plans of Subdivision	Huntlee Pty Ltd will prepare a final plan of subdivision and Section 88B instrument for each sub-stage of the development in accordance with the recommendations of the Environmental Assessment and requirements of the relevant Council.	Huntlee Pty Ltd	Cessnock Council	Prior to the issue of Subdivision Certificates
Construction Management Plan	Prior to the issue of a Construction Certificate, a Construction Management Plan shall be submitted to and approved by the relevant Council. The Plan shall address, but not be limited to, the following matters where relevant: - hours of work, - contact details of site manager, - construction traffic management, - noise and vibration management, - waste management, - erosion and sediment control - Vegetation management. The CMP shall be consistent with the Construction Management Plan Framework outlined in <i>Huntlee Project Stage 1 - Physical Infrastructure Report</i> prepared by Worley Parsons dated December 2010 (Appendix G of the EAR)	Huntlee Pty Ltd	Council	Prior to issue of construction certificate

Subject	Commitments	Responsibility	Approved by Whom	Timing
Vegetation Management Plan	Prior to the commencement of works, a Vegetation Management Plan must be prepared and submitted to and approved by the relevant Council. The Plan must address protective measures during the construction phase, potential impacts of the adjoining residential development and means of control, weed removal, revegetation, threatened species protection (especially Hunter Lowland Redgum Forest). The VMP shall address the mitigation measures outlined in Section 6 of the <i>Ecological Assessment Report</i> - Huntlee prepared by RPS dated September 2010 (Appendix I of the EAR)	Huntlee Pty Ltd	Council	Prior to commencement of works
Erosion and Sedimentation Control	Soil erosion and sediment control measures shall be designed in accordance with the document Managing Urban Stormwater–Soils & Construction Volume 1 (2004) by Landcom. Details are to be submitted of a Soil and Water Management Plan to the satisfaction of the Council prior to the issue of the Construction Certificate. All erosion and sediment control measures are to be effectively implemented and maintained at or above design capacity for the duration of the construction works and until such time as all ground disturbed by the works has been stabilised and rehabilitated so that it no longer acts as a source of sediment. Salinity investigations will be undertaken to categorise the level of salinity across the site prior to the detailed design of infrastructure and servicing. The Soil and Water Management Plan shall include the management and mitigation measures contained in: <i>Huntlee Project Trunk Stormwater and Flooding Assessment - Stage 1 Project Application</i> prepared by Worley Parsons and dated December 2010 (Appendix H of the EAR) <i>Ecological Assessment Report</i> - Huntlee prepared by RPS dated September 2010 (Appendix I of the EAR)	Huntlee Pty Ltd	Council	Prior to issue of construction certificate
Traffic & Pedestrian Management	Prior to the issue of a Construction Certificate, a Traffic and Pedestrian Management Plan prepared by a suitably qualified person shall be submitted to and approved by the Council. The Plan shall address, but not be limited to, the following matters: - ingress and egress of vehicles to the site, - loading and unloading, including construction zones, - predicted traffic volumes, types and routes, and, - pedestrian and traffic management methods. The <i>Transport Management and Accessibility Plan</i> prepared by Better Transport Futures dated December 2010 (Appendix E of the EAR)	Huntlee Pty Ltd	Council	Prior to issue of construction certificate

Subject	Commitments	Responsibility	Approved by Whom	Timing
Noise and Vibration Management Plan	Prior to the issue of a Construction Certificate, a Noise and Vibration Management Plan prepared by a suitably qualified person shall be submitted to and approved by the Council. - The Plan shall address, but not be limited to, the following matters: - Identification of the specific activities that will be carried out and associated noise sources, - Identification of all potentially affected sensitive receivers including residences, schools, and properties containing noise sensitive equipment, - The construction noise objective, - The construction vibration criteria, - Determination of appropriate noise and vibration objectives for each identified sensitive receiver, - Noise and vibration monitoring, reporting and response procedures, - Assessment of potential noise and vibration from the proposed construction activities including noise from construction vehicles and any traffic diversions, - Description of specific mitigation treatments, management methods, and procedures that will be implemented to control noise and vibration during construction, - Construction timetabling to minimise noise impacts including time and duration restrictions, respite periods, and frequency, - Procedures for notifying residents of construction activities that are likely to affect their amenity through noise and vibration, and - Contingency plans to be implemented in the event of non-compliances and/or noise complaints.	Huntlee Pty Ltd	Council	Prior to issue of construction certificate
Construction Waste Management Plan	Prior to the issue of a Construction Certificate, the Proponent shall submit to the satisfaction of the Council a Waste Management Plan prepared by a suitably qualified person in accordance with Council requirements.	Huntlee Pty Ltd	Council	Prior to issue of construction certificate
Stormwater and Drainage Works Design	Final design plans of the stormwater drainage systems within the proposed subdivision, consistent with the stormwater management objectives and controls in Section 5.4 of the Environmental Assessment and prepared by a qualified practicing Civil Engineer and in accordance with the requirements of Council shall be submitted to and approved prior to issue of a Construction Certificate.	Huntlee Pty Ltd	Council	Prior to issue of construction certificate

Subject	Commitments	Responsibility	Approved by Whom	Timing
Contamination	A Phase 2 Investigation shall be undertaken for each area identified as "moderate risk" in <i>Limited Phase 1 Environmental Site Investigation - North Rothbury</i> prepared by AECOM dated March 2011. Should the Phase 2 investigation recommend remediation measures be implemented, a remediation action plan shall be submitted and approved prior to any works being undertaken on the site.	Huntlee	Department of Planning	Prior to a Construction Certificate for any demolition or construction works at that location.
Road Design	All roads shall be designed in consultation with Council and with the relevant requirements of Council and / or Roads and Traffic Authority as appropriate. Final road design plans shall be prepared by a qualified practising Civil Engineer and submitted to the Council prior to the issue of a Construction Certificate.	Huntlee Pty Ltd	Council and / or RTA where works occur	Prior to issue of construction certificate
Compliance	Prior to the issue of a Construction Certificate, the Proponent, or any party acting upon this approval, shall submit to the Department of Planning a report addressing compliance with all relevant conditions of this Part.	Huntlee Pty Ltd	Department of Planning	Prior to issue of a Construction Certificate.

8.0 Conclusion

This environmental assessment report for Stage 1 subdivision and infrastructure works for the Huntlee development addresses the following:

Section 1 of the report provides an introduction to the Huntlee Stage 1 project including the scope of what approval is sought for, a background to the Huntlee New Town development and details of the proponent and project team

Section 2 of the report provides a detailed analysis of the Stage 1 development area including its location in the context of the overall Huntlee development, land ownership and legal description, existing development on and surrounding the site and a summary of constraints and opportunities.

Section 3 of the report outlines the planning framework and statutory context of the development including Commonwealth Legislation, State and regional strategic planning and local planning strategies.

Section 4 of the report provides an outline of community, Council, agency and Aboriginal consultation that has been undertaken for the project to date and the consultation process moving forward should approval be granted.

Section 5 of the report provides a detailed description of the proposed Huntlee Stage 1 development including the overall Huntlee vision, the specific components of the Stage 1 development, urban design, landscaping and public domain, proposed road layout and hierarchy, pedestrian and cycle movement, public transport, and staging

Section 6 of the report provides an assessment of the planning issues associated with the proposed Stage 1 development and outlines management and mitigation measures that will be employed in the design and construction of the development. The section also addresses ecologically sustainable development and a consideration of alternatives to the development.

Section 7 of the report is the draft Statement of Commitments that details the responsibilities and timing to implement measures to prevent environmental impacts that have been identified through the assessment.

The environmental assessment report and supporting specialist technical studies demonstrate that approval should be granted on the basis that:

- The proposal is specifically identified in the Lower Hunter Regional Strategy as a major urban release area able to accommodate up to 7,200 residential dwellings as part of the proposed Urban Development Program for the region. This Project Application represents the first stage of the development;
- Strategic and ongoing traffic investigations demonstrate that Huntlee New Town can provide appropriate improved modal splits;
- The sustainable urban development framework for Huntlee can be designed and implemented through the implementation of the draft Development Control Plan that will provide detailed guidance and controls for this and each subsequent staged Project Application for subdivision and infrastructure works;
- Regional road, educational and environmental infrastructure / facilities can be funded and implemented through Voluntary Planning Agreement arrangements;
- Detailed Plans of Management for the proposed conservation lands will be prepared in consultation with DECCW and the local community;
- The ecological attributes of the proposal have been well documented and will be protected and enhanced through dedicated of the conservation offset lands;

- The proposal's response to managing impacts on the *Persoonia pauciflora* is addressed through the conservation offsets in the SEPP VPA, proposed on-site management measures including protection of all in-situ occurrences for up to 5 years and proposed measures including \$100,000 funding towards research and propagation techniques;
- The environmental assessment report and the associated specialist studies comprehensively analyse the potential environmental impacts of the proposed Huntlee development and provide a detailed justification for the development including land use, urban design principles and the proposed development staging framework;
- The assessment of the Huntlee proposal has considered potential greenhouse gas emissions from the quantum of the development including embodied energy of construction materials, construction impacts and operational energy; and
- The principles of Ecologically Sustainable Development have also been considered through a Sustainability Strategy that includes a range of targets to address all aspects of the development including energy, water, material and waste, transport, land and biodiversity, emissions and social equity.

Huntlee Pty Ltd requests therefore that the Minister approve the Stage 1 project application for subdivision and associated infrastructure works for the first residential village (up to 1700 dwellings), the large lot residential area (up to 120 dwellings) and the first 68 hectares of the Town Centre (which includes up to 222 dwellings). The preceding environmental assessment demonstrates that the matters for which approval is sought are consistent with the SEPP amendment framework and the Director-General's Requirements.