

**Planning Proposal
& Residential Development**

**98 Coachwood Drive
Medowie**

**Infrastructure
Assessment Report**

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carman
SURVEYORS
surveying • planning • engineering

Prepared by;

**Carman Surveyors Pty Ltd
PO BOX 216
THE JUNCTION NSW 2291**

Ref:2165

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
1. INTRODUCTION	4
1.1. ASSESSMENT OBJECTIVES	4
1.2. SCOPE OF ASSESSMENT	4
1.3. SITE LOCATION AND REGIONAL CONTEXT	4
2. PREVIOUS STUDIES AND INVESTIGATIONS	5
2.1. LOCAL GOVERNMENT STUDIES & PLANS	5
2.2. ENGINEERING DOCUMENTS & SITE INVESTIGATIONS	5
3. EXISTING SITE CONDITIONS AND INFRASTRUCTURE	6
3.1. GENERAL SITE CONDITIONS	6
3.1.1. Cadastral Boundaries and Easements	6
3.1.2. Land Zoning	6
3.1.3. Topographical	8
3.1.4. Ecological	8
3.1.5. Bushfire Hazards	8
3.1.6. Geotechnical	8
3.1.7. Heritage	9
3.1.8. Aircraft Noise	9
3.2. TRANSPORTATION	12
3.2.1. Regional Road Network	12
3.2.2. Local Road Network	12
3.2.3. Site Access	12
3.2.4. Public Transport	12
3.2.5. Cycleways	13
3.2.6. Pedestrian Access	13
3.3. STORMWATER MANAGEMENT	13
3.3.1. Drainage Systems	13
3.3.2. Water Quality	13
3.3.3. Flooding	13
3.4. UTILITIES	14
3.4.1. Sewerage	14
3.4.2. Water Supply	14
3.4.3. Electrical Network	14
3.4.4. Telecommunications	16
3.4.5. Gas Supply	16
3.5. COMMUNITY FACILITIES	16
3.5.1. Education	16
3.5.2. Recreation	16
3.6. PLANNING PROPOSAL & FUTURE DEVELOPMENT	17
3.7. GENERAL SITE CONSTRAINTS	17

3.7.1.	<i>Cadastral</i>	<i>17</i>
3.7.2.	<i>Land Zoning.....</i>	<i>17</i>
3.7.3.	<i>Topographical.....</i>	<i>20</i>
3.7.4.	<i>Ecological</i>	<i>20</i>
3.7.5.	<i>Bushfire Protection</i>	<i>20</i>
3.7.6.	<i>Geotechnical.....</i>	<i>20</i>
3.7.7.	<i>Aircraft Noise</i>	<i>20</i>
3.8.	TRANSPORTATION.....	22
3.8.1.	<i>Regional Road Network.....</i>	<i>22</i>
3.8.2.	<i>Local Road Network</i>	<i>22</i>
3.8.3.	<i>Site Access.....</i>	<i>23</i>
3.8.4.	<i>Public Transport.....</i>	<i>23</i>
3.8.5.	<i>Cycleways.....</i>	<i>23</i>
3.8.6.	<i>Pedestrian Access.....</i>	<i>23</i>
3.9.	STORMWATER MANAGEMENT	24
3.9.1.	<i>Drainage Systems</i>	<i>24</i>
3.9.2.	<i>Water Quality.....</i>	<i>24</i>
3.9.3.	<i>Flooding</i>	<i>24</i>
	UTILITIES	25
3.9.4.	<i>Sewerage.....</i>	<i>25</i>
3.9.5.	<i>Water Supply</i>	<i>25</i>
3.9.6.	<i>Electrical</i>	<i>25</i>
3.9.7.	<i>Telecommunications.....</i>	<i>25</i>
3.10.	COMMUNITY FACILITIES.....	27
3.10.1.	<i>Education.....</i>	<i>27</i>
3.10.2.	<i>Religion.....</i>	<i>27</i>
3.10.3.	<i>Recreation</i>	<i>27</i>
4.	RECOMMENDATIONS	28
5.	APPENDICES.....	29

FIGURES

Figure 3.1 Current Zoning - Local Environmental Plan 2013	7
Figure 3.2 Topographical Survey	10
Figure 3.3 General Site Constraints	11
Figure 3.4 Existing Utilities	15
Figure 3.5 Proposed Zoning	18
Figure 3.6 Conceptual Developed Zoning	19
Figure 3.7 Indicative Bushfire Protection Requirements	21
Figure 3.8 Waste Water Pumping Station Drainable Areas	26

EXECUTIVE SUMMARY

The purpose of this Infrastructure Assessment Report is to provide a high level review of existing infrastructure and community services available to the planning proposal and the constraints and opportunities driving the urban planning process.

The likely developable area resulting from the assessment is a function of utilising available and constructing additional infrastructure in accordance with currently acceptable sustainability principles. That is, extensive requirements and costs relating to additional infrastructure and community services are identified as urban planning constraints and may diminish potential planning outcomes.

A summary of the primary issues relevant to the planning proposal are discussed below;

Transportation – The proposal utilises two road entry points off Coachwood Drive created under the original Kindlebark Estate masterplan and characterised by the standard chamfered corners as per the Council subdivision code. The road formation and reserve widths of Medowie Road, Ferodale Road, Coachwood Drive and the two “stub” roads are compliant with the code for the proposed traffic volumes.

Public transport in the form of bus services are available on an hourly basis to Coachwood Drive adjacent to the site.

Pedestrian paths and dual usage paths between the site and the Medowie town centre will require some augmentation under the proposal to remove current discontinuities. Additional DUPs have been identified in the proposed masterplan to connect passive and active recreational facilities in the vicinity.

Stormwater Management – The planning proposal is limited to topography above the 1:100 yr ARI flood zone.

Two dilapidated water quality management ponds constructed to treat stormwater flows from existing upstream development are to be removed in the masterplan and replaced with a series of linear self maintained constructed wetland features modelled to take up capacity for both the planning proposal and upstream urbanised flows.

Utilities – Public service utilities sewer, water, power, telcoms are immediately available to the site and provide sufficient capacity for the proposal.

Community Facilities – The planning proposal will provide support and grow existing community services such as public and private schools, commercial centre, health services, sporting clubs and social activity groups operating in the Medowie area. Raymond Terrace and Newcastle provide a higher level of community and commercial services.

The proximity of the planning proposal to the adjoining Kindlebark Estate and broader Medowie village characterise it as “infill development”. The opportunity to utilise and fund existing public infrastructure and provide additional community services satisfies the objectives of current sustainability principles.

1. INTRODUCTION

This Infrastructure Assessment has been commissioned by Paxria Pty Ltd in regards to a planning proposal for the rezoning of a property known as 98 Coachwood Drive, Medowie (Lot 1 D.P.1019113). It is proposed that the current E2 Environment Conservation zoning (Port Stephens LEP 2013) shall be rezoned as a combination of E1 Nature Reserve and R2 Low Density Residential, as defined by the Draft Port Stephens LEP 2013.

1.1. ASSESSMENT OBJECTIVES

The main objectives of this Infrastructure Assessment are to provide an initial overview of;

- Existing local and regional infrastructure that can be utilised to support the planning proposal.
- New infrastructure that may be required to facilitate the proposed land uses and future development within the site.
- Constraints and opportunities relevant to the site in terms of infrastructure, topography and environmental factors.

Further studies may need to be undertaken for specific infrastructure issues identified within this report. These studies may include specialist investigations to determine the specific requirements, or analysis to investigate the impacts upon development costs.

1.2. SCOPE OF ASSESSMENT

This assessment involves investigation of the general site conditions and the following key components of infrastructure;

- Transportation
- Stormwater Management
- Utilities
- Community Facilities

1.3. SITE LOCATION AND REGIONAL CONTEXT

The site is known as 98 Coachwood Drive, Medowie (Lot 1 D.P.1019113) in the Local Government Area of Port Stephens and has an area of 61.93 hectares. The site is bounded to the west by the existing Kindlebark residential subdivision, to the north-west by a portion of State Forest, to the north by Defence land, to the east by Moffats Swamp, and to the south by a rural residential subdivision. A small, isolated portion of land owned by Hunter Water Corporation is centrally located within the subject property, for the purposes of a Waste Water Pumping Station. A larger portion of HWC land also adjoins to the south-east of the subject property, which contains a decommissioned Waste Water treatment works and settling ponds and an operational Waste Water Pumping Station.

In a broader context, the site is situated 2km east of the Medowie Town Centre. Medowie is approximately central to the Port Stephens Local Government Area, being located 34km

from Nelson Bay, 33km from Newcastle, 15km from Raymond Terrace, and 7km from Williamtown (Newcastle Airport and RAAF Base Williamtown).

2. PREVIOUS STUDIES AND INVESTIGATIONS

2.1. LOCAL GOVERNMENT STUDIES & PLANS

There are a number of Local Government studies, plans, and strategies that are significant to the subject site or the immediate surrounds;

- Port Stephens Local Environmental Plan (LEP) 2013,
- Port Stephens Development Control Plan (DCP), May 2007
- Medowie Strategy, Port Stephens Council, March 2009
- Comprehensive Koala Plan of Management, Port Stephens Council, June 2002
- Aircraft Noise Policy 2010, Port Stephens Council, September 2011
- Medowie Drainage and Flood Study, WMA Water, May 2012
- Lower Hunter Transport Needs Study - Traffic Analysis, Hyder, 2008

2.2. ENGINEERING DOCUMENTS & SITE INVESTIGATIONS

The following Engineering Documents and Site investigations provide detail of particular aspects of the site Infrastructure and Constraints;

- Proposed Subdivision, Coachwood Drive, Medowie, M. O'Sullivan and Associates Pty Ltd, March 1996
- Proposed Public Reserve Drainage and Nutrient Pond, Paul Clarke & Associates Pty Ltd, May 1994
- Flora and Fauna Assessment, RPS Australia East Pty Ltd, July 2013
- Water Cycle Management Plan, BMT WBM Pty Ltd, July 2013

3. EXISTING SITE CONDITIONS AND INFRASTRUCTURE

3.1. GENERAL SITE CONDITIONS

3.1.1. Cadastral Boundaries and Easements

The property is a Torrens Title lot, registered as Lot 1 in Deposited Plan 1019113. A copy of the plan can be seen in *Appendix A*. The total site area is shown on the plan as 61.93 hectares.

There are several Easements and Restrictions noted on the Certificate of Title including;

- Right of Carriageway 20.115 wide (Q565321) – Provides access for Hunter Water Corporation (HWC) through the site, along the southern boundary, to an isolated HWC Lot containing a Waste Water Pumping Station, and disused Waste Water Treatment Ponds.
- Easement for Sewermain, Watermain & Overhead Powerline 20.115 wide (Q565321) - Provides utilities to the aforementioned HWC Lot.
- Easement to drain water 4 wide (DP648132) - Within the southern portion of the site, containing a constructed channel that is an outflow point for runoff from Barrington Close.
- Easement to drain water variable width (DP844507) – Within the southern portion of the site, containing a large constructed channel and stormwater basin that captures runoff from the adjoining residential area of Coachwood Drive.
- Easement for services variable width (DP850127) - Provides utilities and access for Hunter Water Corporation (HWC) to an isolated HWC Lot centrally located within the site, containing a Waste Water Pumping Station.
- Right of Carriageway and Easement to Drain Water 15 meter(s) wide (DP1019113) - Within the central portion of the site, containing a constructed channel and stormwater basin that captures runoff from the adjoining residential area of Coachwood Drive.

The locations of these easements are shown in *Figure 3.2 Topographical Survey*.

3.1.2. Land Zoning

The current land zoning is E2 Environment Conservation as defined by the Port Stephens Local Environment Plan (LEP) 2013. *Figure 3.1 Current Zoning - Local Environmental Plan 20* shows the current zoning of properties surrounding the site.

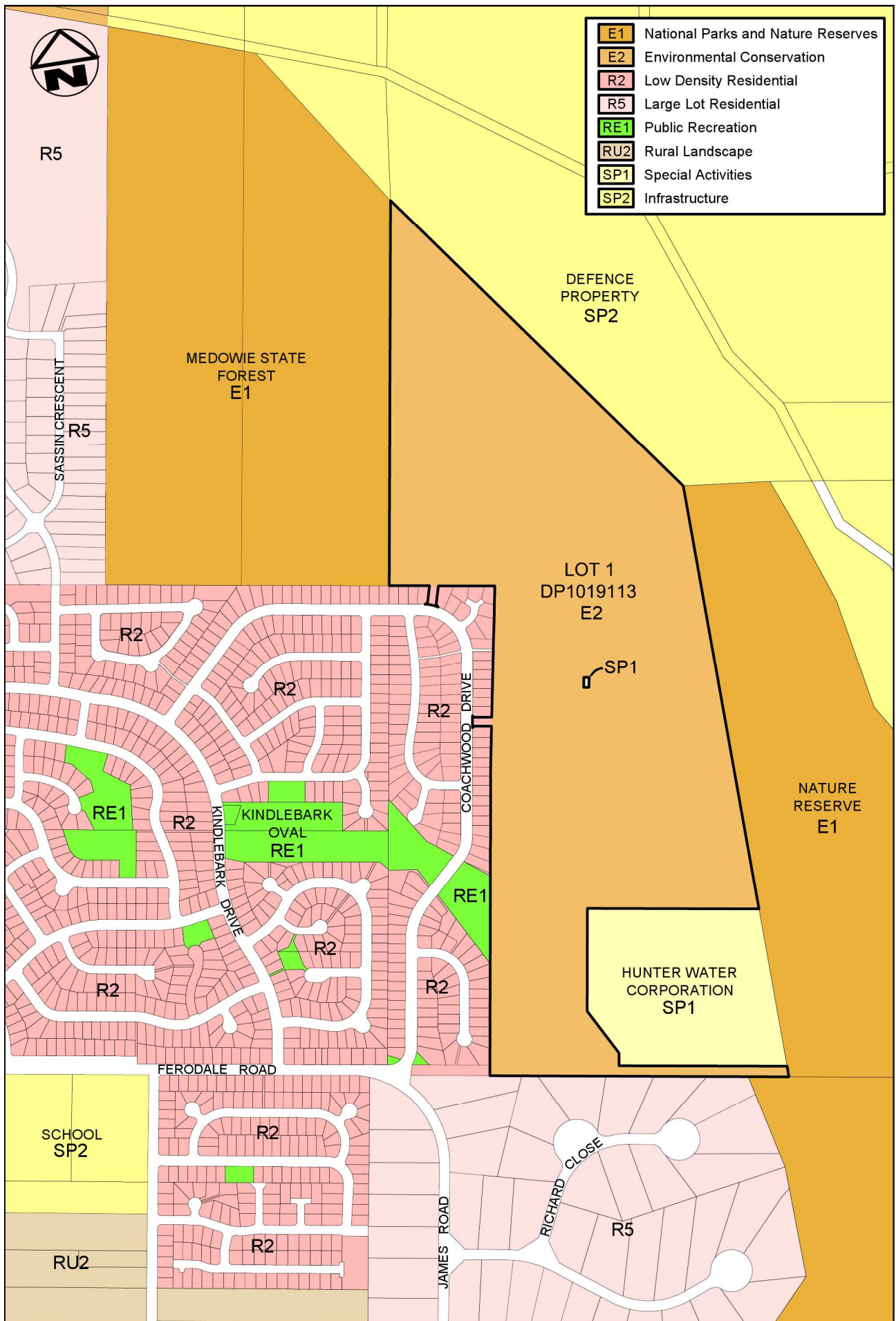


Figure 3.1 Current Zoning - Local Environmental Plan 2013

3.1.3. Topographical

The site consists of gently sloping land that grades from Coachwood Drive at around 5%, and becomes flat as it approaches a broad ephemeral waterway to the east of the site, and Moffets Swamp towards the eastern site boundary. There are several 4WD tracks through the site, the majority of which were most likely created during the construction of sewer mains.

A Detail Survey has been undertaken over the anticipated area of future development, which can be seen in *Figure 3.2 Topographical Survey*. The locations of existing tracks are shown on this plan along with the location of two existing stormwater basins that capture runoff from the adjoining residential areas.

3.1.4. Ecological

A Flora and Fauna Assessment has been undertaken by RPS Australia East Pty Ltd, which has identified the main vegetation communities within the site and investigated the possibility of threatened species occurring within the site. No threatened plant species were identified during the ecological surveys. The fauna survey identified three threatened species of fauna including Glossy Black-Cockatoo, Grey-headed Flying-fox, and Little Bentwing-bat as occurring on the site.

It was confirmed that preferred Koala Habitat is present within the eastern portion of the site, as indicated by PSC's Koala Habitat Planning Map. The extent of the preferred habitat has been defined by ground-truthing the location of preferred feed trees. No koalas or evidence of koala activity was observed during the Flora and Fauna surveys.

The primary ecological constraint, as identified in the Flora and Fauna Assessment by RPS Australia East, is the presence of Swamp Mahogany – Paperbark Forest vegetation communities. RPS have identified this community as an Endangered Ecological Community (EEC). The extents of the EEC within the site are shown in *Figure 3.3 General Site Constraints*.

3.1.5. Bushfire Hazards

The site is located within Bushfire Prone Land. PSC's Bushfire Prone Land maps (July 2004) show that the majority of the site is comprised of Vegetation Category 1, with small areas of Vegetation Buffer. The Flora Assessment has found that the site comprises of Woodland, Forest, Swamp Woodland and Heath environments. This vegetation is currently a bushfire hazard to the adjoining Kindlebark Estate residential areas.

3.1.6. Geotechnical

PSC's Acid Sulphate Soil Planning Map shows the eastern portion of the site as Class 4 (development consent required for works 2m below the surface). The majority of the site is categorised as Class 5 (development consent required for works likely to lower watertable below 1 metre AHD on the adjacent Class 4 land). The extent of the Class 4 land is shown in *Figure 3.3 General Site Constraints*.

3.1.7. Heritage

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that there are no Aboriginal Sites or Places recorded in or near the subject property.

The property is not located within PSC's Heritage Conservation Areas.

3.1.8. Aircraft Noise

The site is outside of PSC's Aircraft Noise Planning Area, apart from a very small portion in the south-east corner of the site, to the east of the Hunter Water Corporation owned land. According to the endorsed ANEF maps published by the Department of Defence, the 2012 ANEF 20 contours and 2025 ANEF 20 contour fall outside the south east corner of the site, as shown in *Figure 3.3 General Site Constraints*.

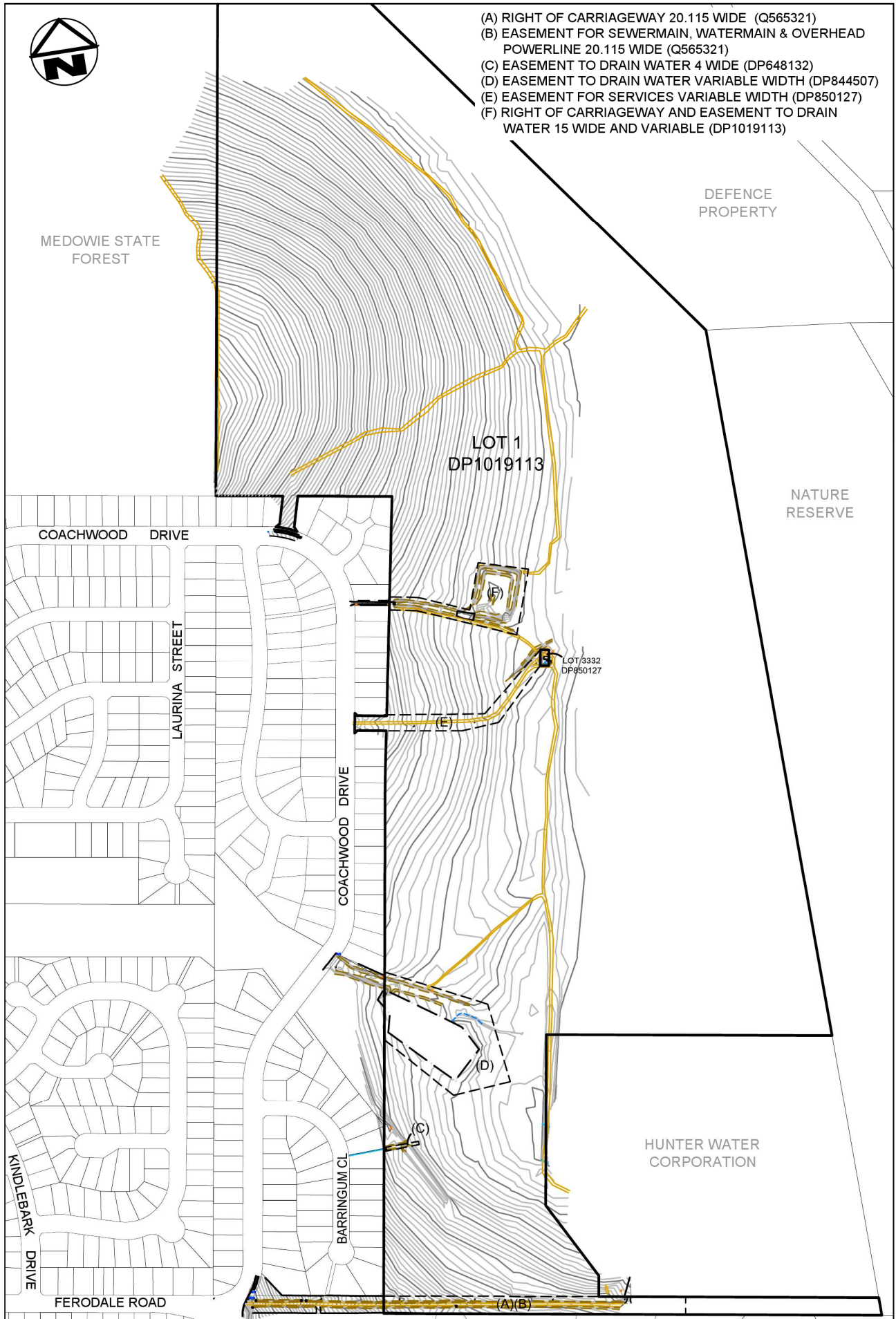


Figure 3.2 Topographical Survey

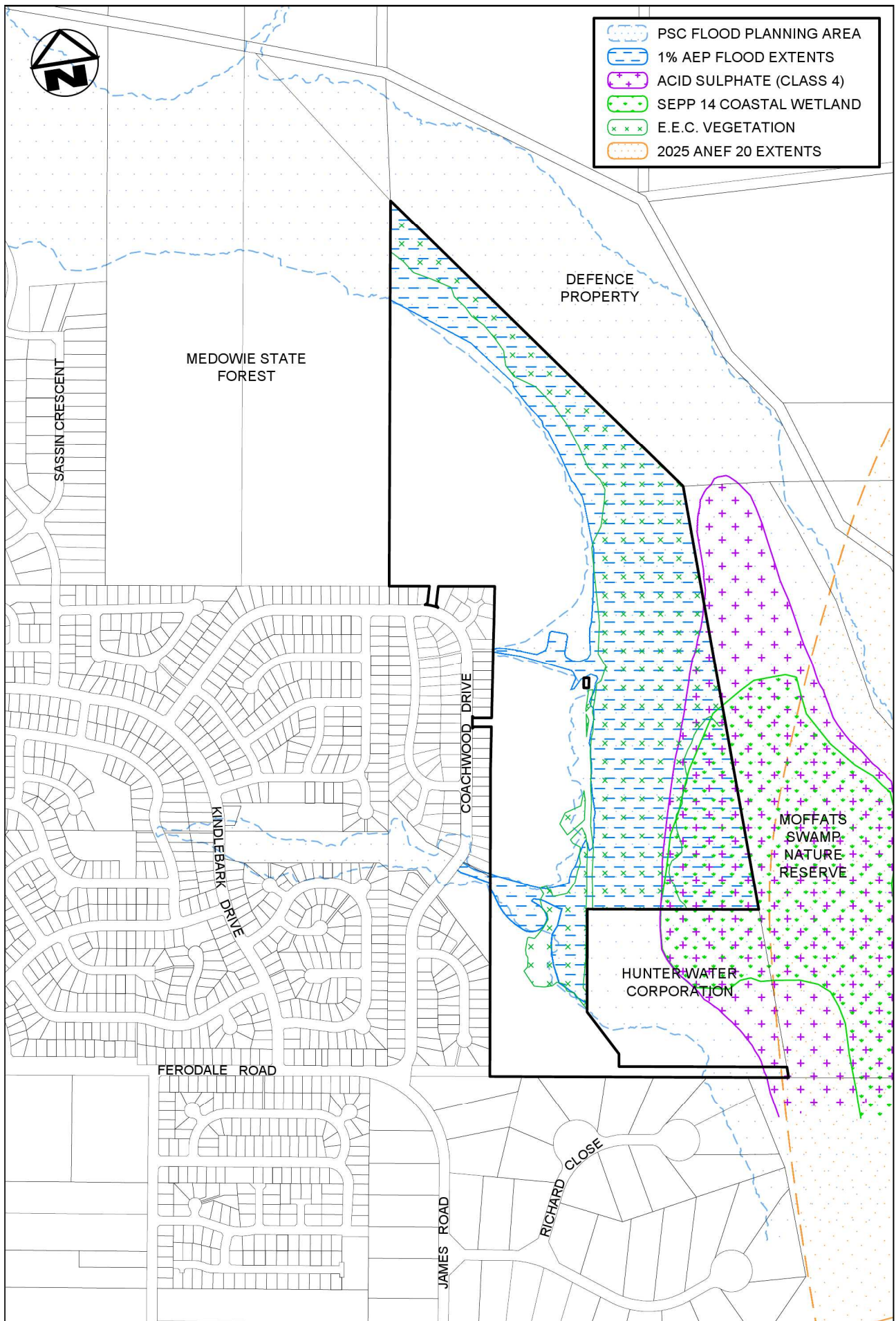


Figure 3.3 General Site Constraints

3.2. TRANSPORTATION

3.2.1. Regional Road Network

Medowie is located approximately 9km south of the Pacific Highway (HW10), the main northern movement corridor from Sydney to Brisbane, and approximately 8km north of Nelson Bay Road (MR108), the classified State Road between Nelson Bay and Newcastle. Raymond Terrace can be reached via Richardson Road (MR104), a classified State Road south of Medowie.

Medowie Road (MR518) is a classified Regional Road that bisects the town and connects to the regional network, but according to PSC's Medowie Strategy, it is not a significant part of the network. It is used primarily by local traffic and is considered to be a sub-arterial road.

3.2.2. Local Road Network

Secondary to the North/South axis of Medowie Road, Ferodale Road forms an East/West axis that services the three main community destinations of Medowie Public School, the Town Centre, and Wirreanda Public School. Ferodale Road is classified in PSC's Structure Plan as a Collector Road east of Medowie Road, and a Distributor Road west of Medowie Road. However, a Dual Use Path / Cycleway is not provided for the section east of Medowie Road, as is suggested by PSC's Development Control Plan (DCP) for Collector Roads.

Coachwood Drive is the nearest formed road to the site, which is classified by the Structure Plan as a Local Street. However, with a carriageway width of 11m and a 22m road reserve, the characteristics of Coachwood Drive are similar to that of a Collector Road.

3.2.3. Site Access

The site has two existing 17m frontages to Coachwood Drive, which were masterplanned and developed as part of the Kindlebark subdivision as future road connections and are configured with the usual "chamfered" corners typical of intersecting roads and required under the PSC Subdivision Code. A road connection to the southern end of the site from Ferodale Road may also be possible through a Public Reserve that currently serves as a formed Right of Carriageway to HWC land adjoining to the southeast.

3.2.4. Public Transport

Hunter Valley Buses provides regular bus services and school bus services to the local areas. Existing bus stops are located at Laurina Street, 300m from the northern site access point and at Ferodale Road, 160m from the potential southern site access point. The following bus services are available:

- Route 136 (Laurina Street & Ferodale Road) - Raymond Terrace to Stockton via Newcastle Airport
- Route 137 (Ferodale Road) - Raymond Terrace to Lemon Tree Passage
- Wirreanda School Service (Laurina Street & Ferodale Road)

3.2.5. Cycleways

The main cycleway to Raymond Terrace commences on Ferodale Road, west of Grey Gum Street, approximately 1km west of the potential southern site access point. There are small isolated sections of cycleway within a number of parklands in the area. The DCP requires a Dual Use Path / Cycleway to be provided for roads classified as Collector Roads or higher.

3.2.6. Pedestrian Access

There is an existing concrete footpath along the eastern side of Coachwood Drive to Ferodale Road, apart from a section near Robina Avenue, where there is no formal footpath provided for approximately 280m. The DCP requirement for Local Streets is a 1.2m footpath on one side of the road reserve.

3.3. STORMWATER MANAGEMENT

3.3.1. Drainage Systems

There are no waterways within the site, as defined by the Water Management (General) Regulation 2011. This is based on inspection of the reference Topographic Map, Karuah (9232-1S) 1976 edition, as specified by Schedule 2 of the regulation.

The site generally drains towards the eastern portion of the site, where there is a State Environmental Planning Policy (SEPP) No. 14 Coastal Wetland known as Moffets Swamp. The required buffer distance between any future development and the wetland is typically 100m, but should be confirmed with the Office of Environment and Heritage.

Stormwater runoff from existing residential areas to the west discharges onto the site from Coachwood Drive and Barrington Close. There are two main outlet pipes that discharge into grassed open channels, which were constructed during the previous residential developments. These channels divert stormwater to constructed water quality treatment ponds located within the site. Runoff from Barrington Close is also discharged onto the site via an open channel, but does not appear to divert to any formed retention pond.

3.3.2. Water Quality

There are two existing water quality treatment ponds within the site that were constructed to treat stormwater runoff from the adjoining residential areas. It is apparent that these ponds may not be performing as originally intended, due to weed infestation, erosion of embankments and sedimentation. Additionally, the build up of waste materials over time has compromised their operability. Runoff originating from the site is not currently treated, as the only development within the site has been construction of sewer mains and access tracks.

3.3.3. Flooding

Port Stephens Council's Flood Prone Land Map (2009) identifies parts of the site as being within the Flood Planning Area. The Flood Planning Level as specified by PSC is the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metres freeboard.

The Medowie Drainage and Flood Study by WMA Water (May 2012) has undertaken extensive modelling of the Medowie catchment areas to determine the nature and extent of the flood problem. The report shows that the predicted 1% Annual Exceedance Probability (AEP) Flood will have a level of approximately 9.5m AHD in the south-east portion of the site, up to approximately 10.5m AHD at the north-west corner of the site. The extents of the 1% AEP Flood, adjusted to surveyed surface levels, is shown in *Figure 3.3 General Site Constraints*.

3.4. UTILITIES

Diagrams have been provided by the relevant utility authorities for existing services in the vicinity of the site. A compiled diagram of the approximate infrastructure locations within and adjoining the site can be found seen in *Figure 3.4 Existing Utilities*.

3.4.1. Sewerage

There are various gravity sewer mains under Hunter Water Corporation (HWC) control that drain waste water from adjoining residential areas, through the site, to HWC Waste Water Pumping Stations (WWPS). An existing sewer rising main runs from the north-western boundary to Medowie No.6 WWPS located centrally within the site, then to Medowie No.9 WWPS near the southern end of the site. Waste water is then pumped from No.9 WWPS, in a rising main along the southern boundary, west towards Medowie No.10 WWPS and the final destination of Raymond Terrace Waste Water Treatment Works.

Hunter Water Corporation advise that Medowie No.6 WWPS and Medowie No.9 WWPS carry sufficient capacity for the development proposal. Raymond Terrace Waste Water Treatment Works has been identified as requiring augmentation in the near future as further development in the catchment provides the necessary funding.

3.4.2. Water Supply

An existing 200mm diameter water main is located on the eastern side of Coachwood Drive. Preliminary advice from Hunter Water Corporation is that there is sufficient capacity in the local water system for the development proposal.

3.4.3. Electrical Network

Inquiries with Ausgrid, the region's electrical authority, have found that electricity is currently supplied to the adjoining residences of Coachwood Drive by underground reticulation. The underground network ends at Ferodale Drive, where there are high voltage overhead powerlines that cross the southern end of the site to the southern HWC owned land. A low voltage overhead line that connects from Coachwood Drive to Medowie No.6 WWPS is located within the easement for services for that pumping station.

CAUTION:
ALL SERVICE LOCATIONS ARE
INDICATIVE ONLY. CURRENT
UTILITY DIAGRAMS SHOULD BE
OBTAINED FOR DESIGN
PURPOSES OR PRIOR TO ANY
EXCAVATION.



- SEWER GRAVITY MAIN
- SEWER RISING MAIN
- WATER MAIN
- UNDERGROUND ELECTRICAL
- OH — OVERHEAD ELECTRICAL
- TELSTRA CABLES
- STORMWATER PIPE
- STORMWATER BASIN

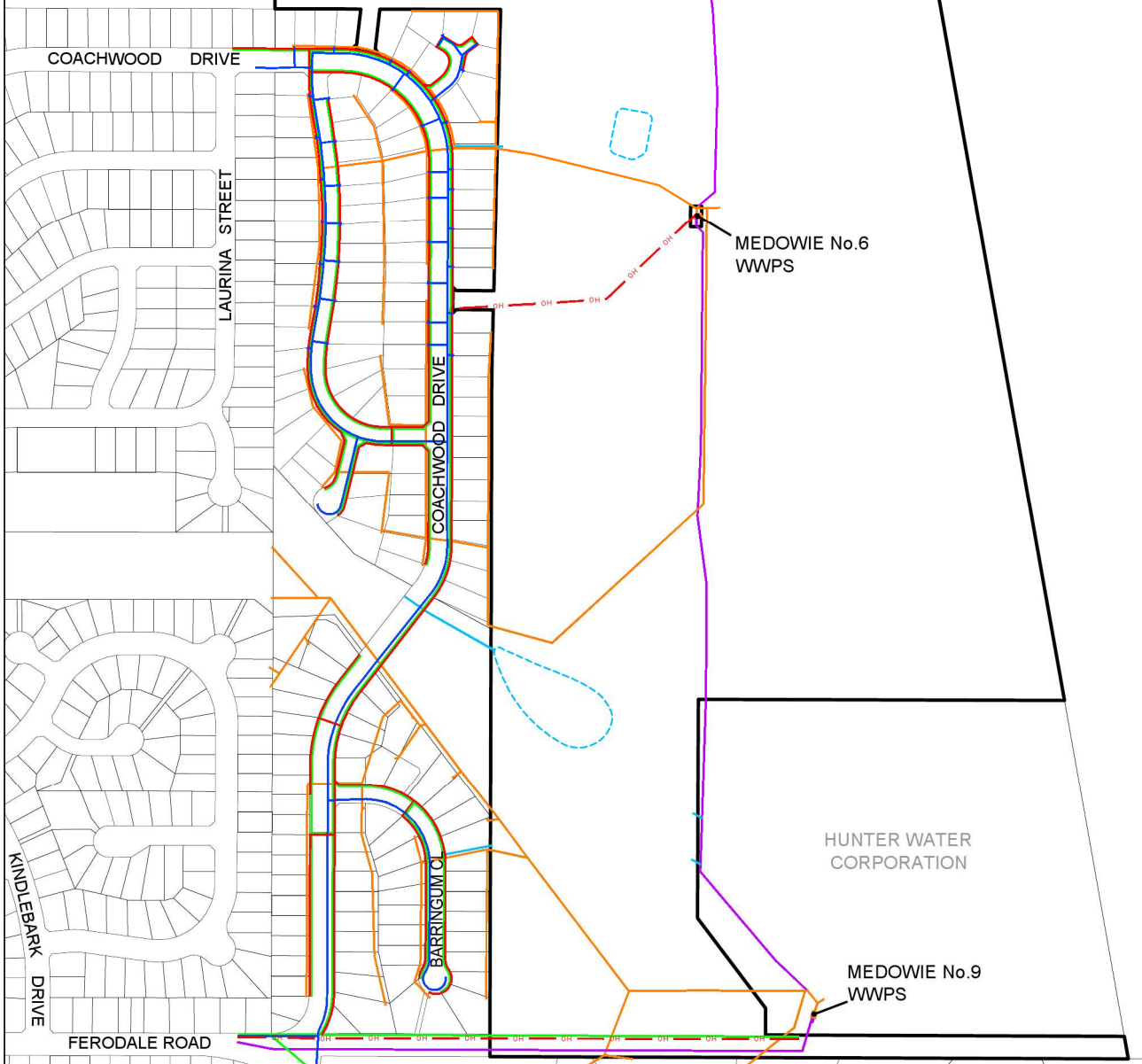


Figure 3.4 Existing Utilities

3.4.4. Telecommunications

Underground Telstra cables provide telephone services to the adjoining residences of Coachwood Drive. There is an underground cable that crosses the southern end of the site to service the Hunter Water Corporation owned land.

The expected commencement date for construction of the National Broadband Network in Medowie is not currently shown on NBN Co's rollout map. The final planned date for connection of all residences in Australia is 2021.

3.4.5. Gas Supply

A reticulated Gas supply is currently not available within the vicinity of the site.

3.5. COMMUNITY FACILITIES

3.5.1. Education

The site is located within the catchment for Wirreanda Public School (K-6), which provides capacity for 600 local students. Before and after school care facilities are also available.

There are two other schools located within Medowie, Medowie Public School (K-6) and Medowie Christian School (Non-Government K-10). Two pre-schools are also located in the area, Medowie Community Pre-School and The Medowie Gumnut Preschool.

3.5.2. Recreation

Kindlebark Oval is located approximately 300m west of the site and provides playground, picnic, and BBQ facilities. The oval has lighting for organised sporting events such as athletics, cricket and soccer.

FUTURE INFRASTRUCTURE REQUIREMENTS

3.6. PLANNING PROPOSAL & FUTURE DEVELOPMENT

The preliminary assessment of future infrastructure requirements is based on the Planning Proposal and possible future development as per the Concept Masterplan (refer to *Appendix B*). It is proposed that the current E2 Environmental Conservation zoning (Port Stephens LEP 2013) shall be rezoned as a combination of E1 Nature Reserve and R2 Low Density Residential (refer to *Figure 3.5 Proposed Zoning*). *Figure 3.6 Conceptual Developed Zoning* shows the possible future zoning outcomes if roads and public reserves are dedicated as per the Concept Masterplan.

3.7. GENERAL SITE CONSTRAINTS

3.7.1. Cadastral

Potential cadastral constraints to the Planning Proposal include, but not limited to;

- The Concept requires extinguishment of Right of Carriageway and Easement to Drain Water 15 meter(s) wide (DP1019113). The Sec.88b Instrument shows that this easement benefits Port Stephens Council.
- The Concept requires extinguishment of Easement for services variable width (DP850127). Hunter Water Corporation will require alternative arrangements for an easement (or direct road frontage) benefiting Lot 3332 DP850127.
- The Concept requires dedication of adjoining Lot 64 DP815722 (Public Reserve) as Public Road for the southern access road. Arrangements would need to be made with Port Stephens Council in regards to construction and dedication of this road.

3.7.2. Land Zoning

The proposed R2 Low Density Residential zoning will allow development within that zone that is similar in density and character to the adjoining Kindlebark Subdivision.

The proposed E1 Nature Reserve zoning will prohibit all development within that zone, including construction of infrastructure. This will need to be taken into consideration during the design phase of drainage infrastructure for the Concept development.

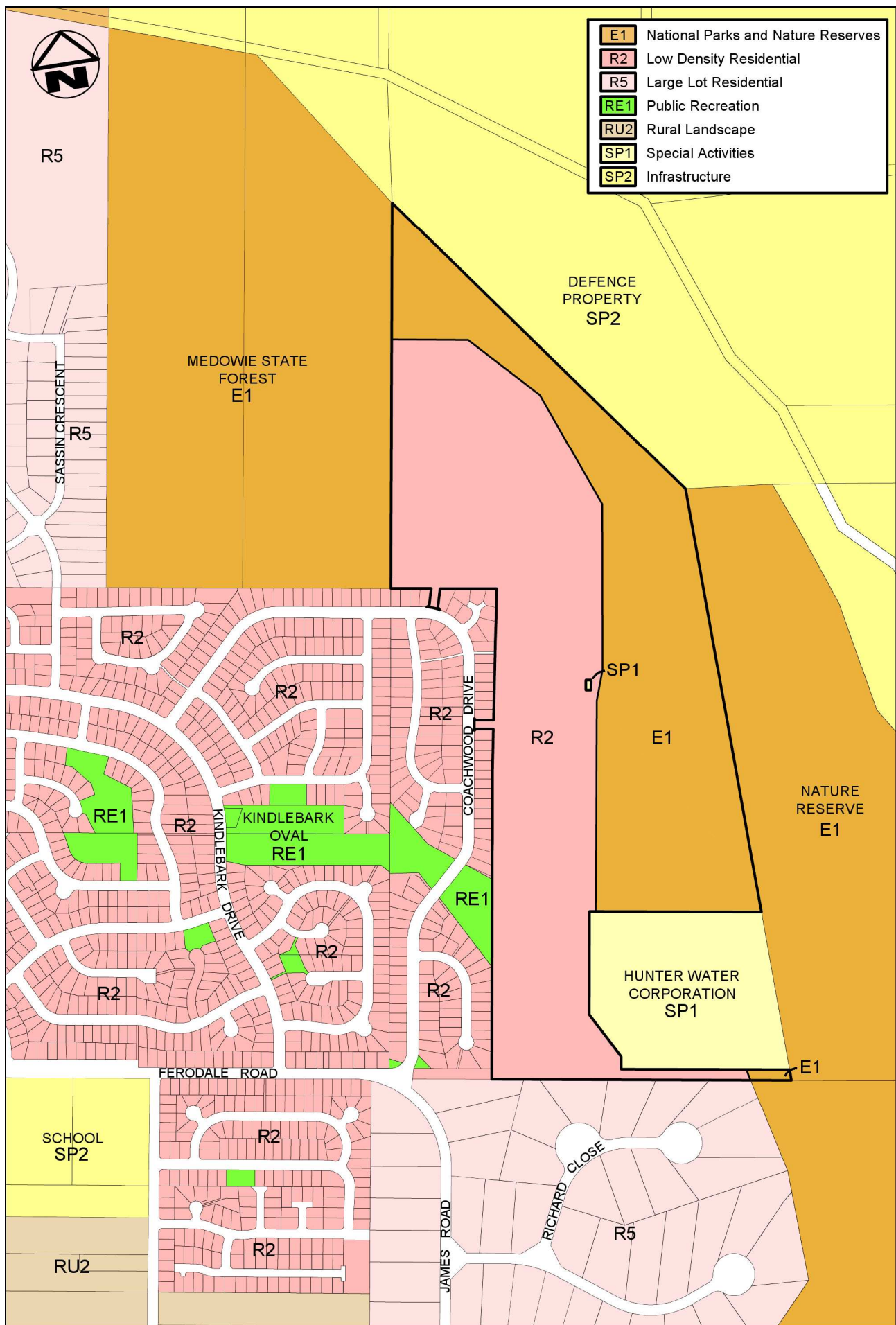


Figure 3.5 Proposed Zoning

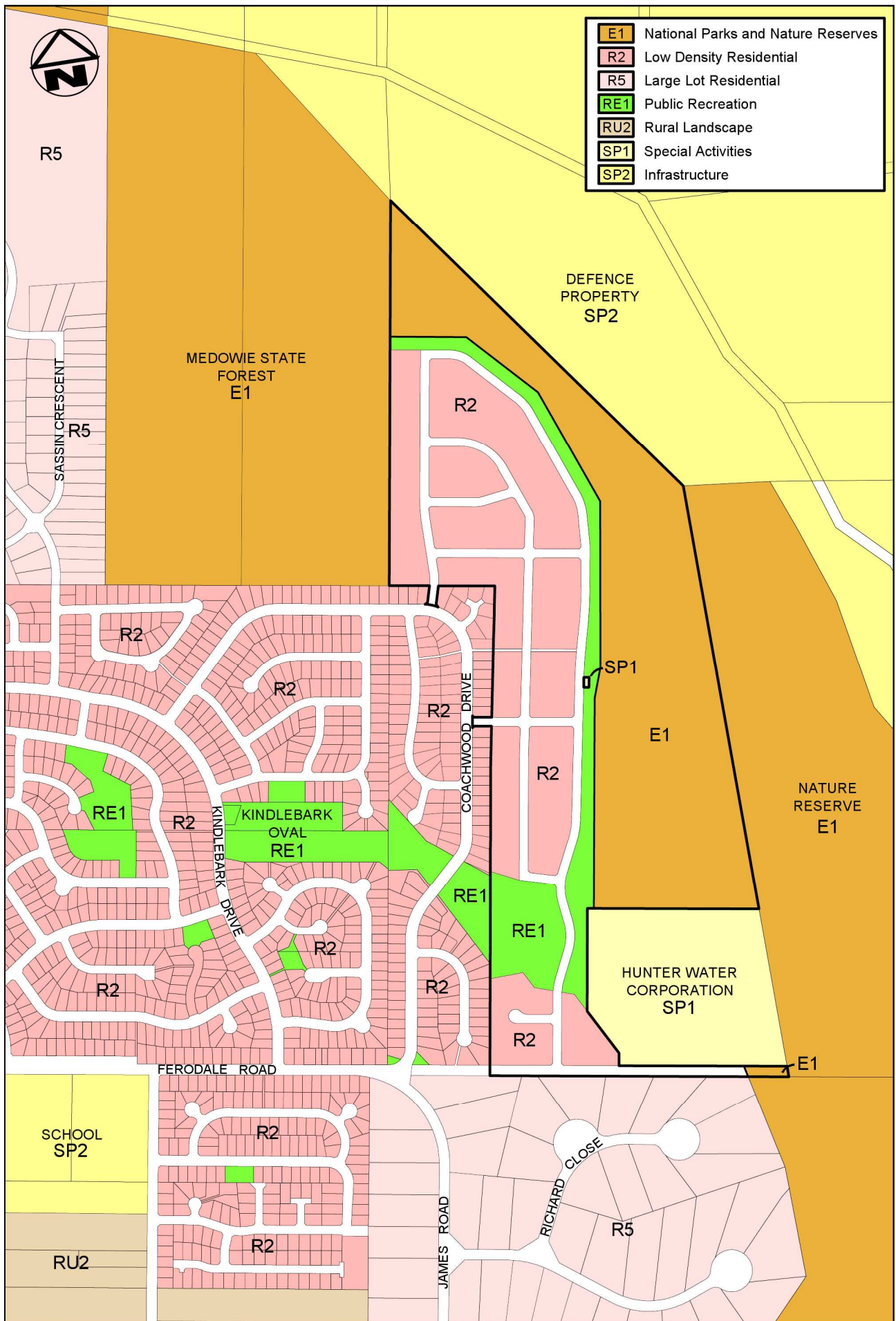


Figure 3.6 Conceptual Developed Zoning

3.7.3. Topographical

The slope of the site will not be prohibitive to development in terms of maximum grades, but careful consideration may be required to ensure sufficient fall is available for surface and piped drainage. The Concept will require earthworks to be carried out for removal of the northern stormwater basin and significant reconstruction works on the southern stormwater basin.

3.7.4. Ecological

The Concept has taken into consideration the existing Endangered Ecological Community (EEC) identified within the site and necessary buffer distances. Any revisions to the Concept and future detailed engineering design should consider any impacts upon the EEC and minimise removal of significant trees.

3.7.5. Bushfire Protection

Development of the site as per the Planning Proposal will generally remove the bushfire hazard to the existing residential areas, however protective measures such as perimeter roads and APZ setbacks will be required.

An initial assessment using the guidelines contained within Planning for Bushfire Protection (2006) has determined probable Asset Protection Zones (APZ) of 20m to 25m. This is based on site slopes of 0 to 5 degrees and "Forest" as the predominant site characteristics. The proposed perimeter road will be form part of the APZ, along with easements within the proposed lots frontages to achieve the required widths.

Buildings within 100m of a bushfire hazard will have certain levels of construction requirements in accordance with AS 3959. *Figure 3.7 Indicative Bushfire Protection Requirements* shows a preliminary calculation of the AS 3959 Construction Levels and APZs that may apply to the Concept Development.

A more detailed Bushfire Hazard Assessment should be carried out to confirm the Bushfire Protection Measures and APZs required for the development. Factors that may affect the final requirements will include the amount of clearing within lots and drainage reserves, and detailed assessment of the adjoining vegetation categories and fuel loadings.

3.7.6. Geotechnical

The proposed Concept is unlikely to have any effect upon Acid Sulphate Soils, but this should be confirmed by a geotechnical investigation.

It is evident that there is generally surface water present in some areas of the site. This may indicate potential issues for construction of road pavements and classification of residential lots.

3.7.7. Aircraft Noise

Although residential areas within the planning proposal are clear of the PSC Aircraft Noise Planning Area, some aircraft noise may be detectable from the site. Subsequent dwelling designs may choose to include noise reduction measures, but this will not be a formal requirement.

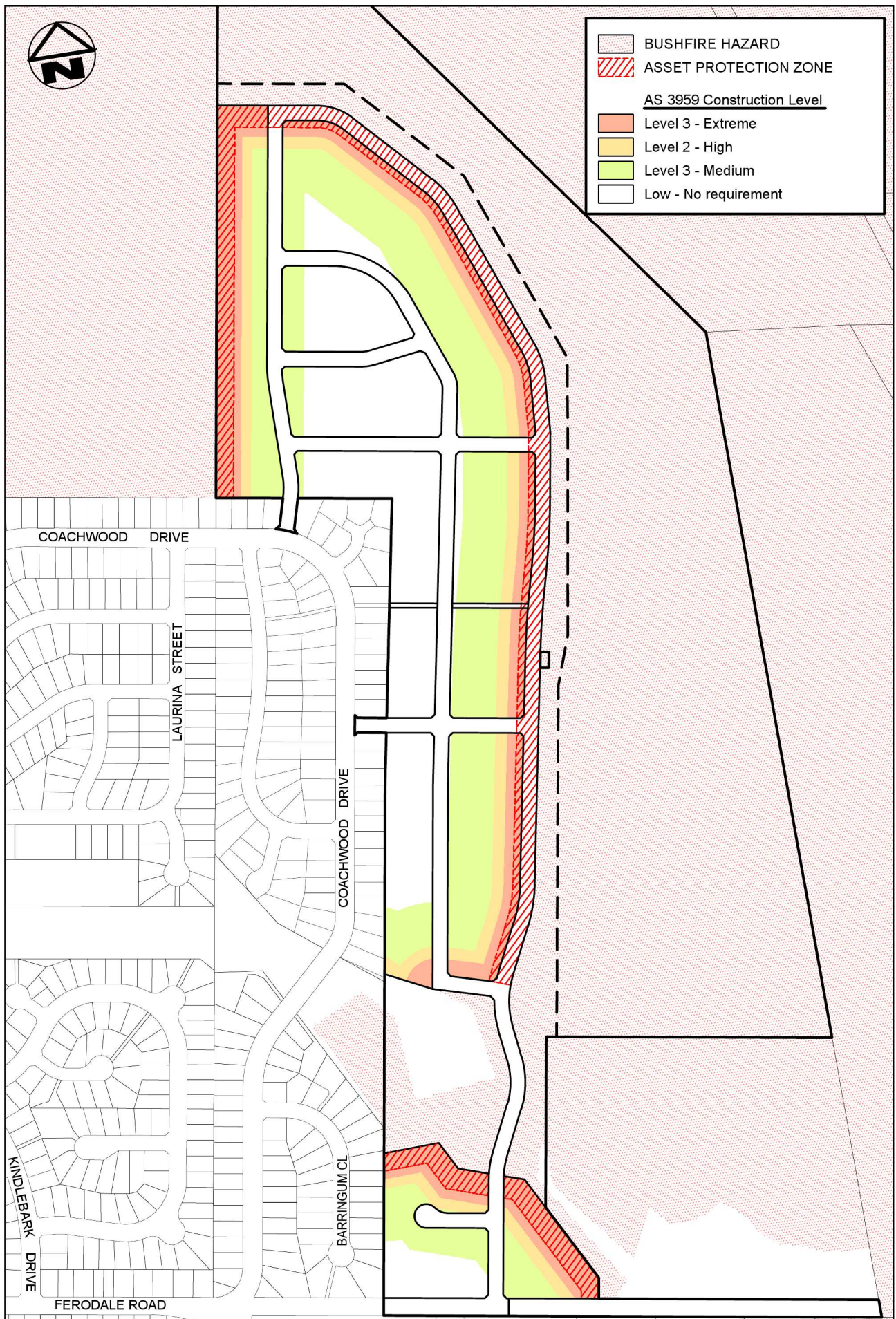


Figure 3.7 Indicative Bushfire Protection Requirements

3.8. TRANSPORTATION

3.8.1. Regional Road Network

Traffic originating from the developed site will result in a small percentage increase of traffic on Medowie Road (MR518), Nelson Bay Road (MR108) and Richardson Road (MR104). Traffic modelling diagrams within the Lower Hunter Traffic Needs Study - Traffic Analysis (2008) suggest that these roads have sufficient capacity for the predicted 2026 traffic volumes.

Portions of the Section 94 Development Contributions, payable to Port Stephens Council upon development of the site, may be used for regional road projects including the following items listed in the Contributions Plan;

PSC Project No.	Project Description	Estimated Value
RC12	MEDOWIE ROAD; RR 518 - Improvements to Blueberry Rd Intersection	\$100,000
RR25	MEDOWIE ROAD; RR 518 - Road Rehabilitation (3.5 - 4.05 From Nelson Bay Rd)	\$569,250
RR53	MEDOWIE ROAD; RR 518 - Road Rehabilitation (8.3 - 9.3 From Nelson Bay Rd)	\$275,000

3.8.2. Local Road Network

The majority of traffic generated from the development is likely to utilise Ferodale Road, either via the southern access road (if constructed) or via Coachwood Drive. North-bound traffic may travel via Coachwood Drive and Kindlebark Drive.

Further investigation into the capacity of the local road network to support the additional traffic movements may be required. However, with a carriageway width of 11m and a 22m road reserve, Coachwood Drive may be able to function as a Collector Road. If the southern access road is constructed, major intersection upgrades would be required at the intersection of Ferodale Road & Coachwood Drive.

Portions of the Section 94 Development Contributions, payable to Port Stephens Council upon development of the site, may be used for local road projects including the following items listed in the Contributions Plan;

PSC Project No.	Project Description	Estimated Value
LR35	FERODALE ROAD - Reconstruction (1.87 to 2.4 east of Medowie Rd)	\$300,000
RH54	FERODALE ROAD - Road Rehabilitation (from Fairlands 2.8 to James 3.23 & 80m of Kindlebark Drive)	\$110,000

3.8.3. Site Access

There are two existing 17m frontages to Coachwood Drive, which were provided by the previous Coachwood Drive subdivision as future road connections. As the Concept is proposing 17m wide road reserves within the site, there are no apparent restrictions for the construction of new intersections and road extensions from the existing frontages.

The proposed access to the southern end of the site from Ferodale Road may be possible through the Public Reserve that currently serves as a formed Right of Carriageway to HWC land. Analysis will be required into the feasibility of construction, including investigation of Council concurrence, adjustment of services, and intersection upgrade requirements.

3.8.4. Public Transport

The current Bus Routes operated by Hunter Valley Buses would be approximately 400m walking distance from the proposed northern lots, and 150m walking distance from the southern lots. Walking distances could be reduced significantly if Hunter Valley Buses altered Bus Route No.136 to travel the full length of Coachwood Drive instead of diverting at Laurina Street, or provided an additional service to travel that route. Preliminary discussions with the company indicate that services will extend to the site.

3.8.5. Cycleways

The Concept proposes to construct Dual Use Pathways (DUP) along the perimeter road and through the southern drainage reserve, towards Kindlebark Oval. There are currently no dedicated cycleways in the immediate vicinity of the site. Upgrading existing footpaths to DUP standards is generally not feasible due to the costs involved with removing the existing concrete and matching the new DUP with existing residential driveways.

3.8.6. Pedestrian Access

The PSC DCP requires 1.2m wide concrete footpaths to be constructed on one side of Local Streets. It is expected that all roads within the proposed development will be constructed to this standard, apart from where DUP are proposed. The grid-like layout of the Concept will also provide pedestrians with easy access and street legibility.

An opportunity for works “in-kind” in lieu of Section 94 Contributions would be the construction of approximately 280m of concrete footpath in Coachwood Drive to complete the pathway link between existing. This would provide more suitable pedestrian access to Ferodale Road for the residents of Coachwood Drive and Robina Avenue.

3.9. STORMWATER MANAGEMENT

3.9.1. Drainage Systems

Water Sensitive Urban Design (WSUD) principles will be applied to the proposed development as described by the Water Cycle Management Plan (WCMP) by BMT WBM. This approach relies upon a series of stormwater quality and quantity measures implemented at lot, street, and subdivision scales.

At lot scale, the WCMP has postulated that the majority of dwellings will require a rainwater tank to satisfy the BASIX water conservation target of 40%. It has been assumed that 3kL tanks will be specified on average, which will each provide some potential for water retention and reuse. The requirement for rainwater tanks is determined at Development Application stage for individual dwellings.

Raingardens will be implemented adjacent to roadways as the initial treatment measure for stormwater runoff from the road pavements. The Raingardens will consist of vegetated filter cells with a small amount of detention capacity. Fine particles and heavy metals will be captured by the filter media and nutrients will be removed through uptake by appropriately planted vegetation. Filtered runoff and overflows will be directed to piped street drainage for transportation and management within a series of constructed linear wetland features.

3.9.2. Water Quality

Wetland Treatment Zones referred to in the Water Cycle Management Plan (WCMP) by BMT WBM will be constructed in series along the northern and eastern extents of the development adjacent to the perimeter road. Utilising similar species to the site and the naturally occurring sandy clay loam soils in these zones will enable them to function with a combination of biofiltration and wetland characteristics to provide water quality control measures.

3.9.3. Flooding

The Moffats Swamp catchment does not represent a flooding risk to the development of the eastern portion of Medowie. However, sufficient management of increased runoff due to the partial urbanisation of the catchment requires consideration to ensure the natural hydrology and water quality characteristics of the site and downstream systems are not adversely impacted.

The combination of on site rainwater tanks, roadside rainwater gardens and linear biofiltration SQIDs will limit stormwater runoff volumes to that of pre-development levels and reduce the impact of wetting and drying cycles of the natural wetlands and watercourses.

UTILITIES

3.9.4. Sewerage

Preliminary servicing advice from Hunter Water Corporation has indicated that, although there is generally enough capacity in the sewer system, upgrades to the local and regional sewer system may be required;

- Medowie No.6 WWPS (Northern Catchment) – Emergency storage upgrade required (within WWPS or pipe network)
- Medowie No.9 WWPS (Southern Catchment) – Sufficient Capacity
- Regional Transfer main to Raymond Terrace Waste Water Treatment Works (WWTW) – Developer funded servicing strategy required to assess capacity limitations in transfer system
- Raymond Terrace WWTW – Currently sufficient capacity. Future development may require planned HWC upgrades.

Analysis of the site topography and WWPS invert levels provided by HWC has indicated that there may be limitations on the ability to drain some areas by gravity sewer mains. There is also evidence of existing sewer mains being built with minimal cover within the site. The areas serviceable by the pumping stations, based on 0.5% sewer main grades, is shown in *Figure 3.8 Waste Water Pumping Station Drainable Areas*. More detailed analysis should be undertaken at design stage, as allowable pipe grades will depend upon the final development outcomes and HWC's current standards.

3.9.5. Water Supply

Preliminary servicing advice from Hunter Water Corporation has indicated that there is enough capacity in the local water supply network to support the development. However, they may have additional requirements when the formal development application is assessed, depending upon the progress of other developments in the area.

3.9.6. Electrical

The electrical network for the Development will be extended from existing Underground Mains within Coachwood Drive. Existing overhead lines servicing Medowie No.6 WWPS will require reconnection to the new network. There may also be a requirement for the undergrounding of overhead lines servicing Medowie No.9 WWPS. Further details of developer contributions and servicing requirements will be provided by Ausgrid at design stage.

3.9.7. Telecommunications

Telecommunications in new developments greater than 100 lots, such as the proposed Concept, shall be constructed to National Broadband Network standards. The developer will be responsible for the design and construction of conduits and service pits, ownership of which will be transferred to NBN Co for installation of fibre.

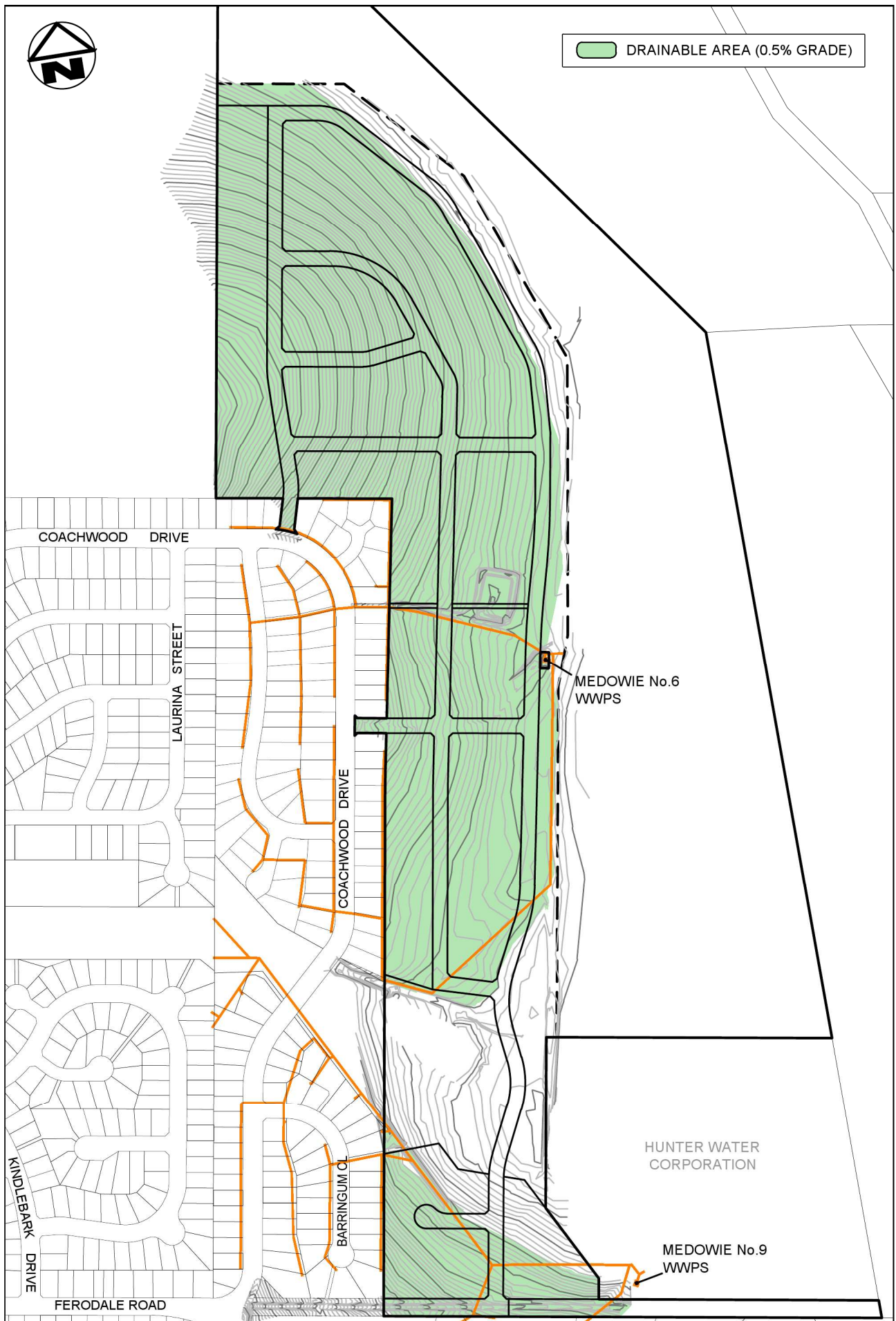


Figure 3.8 Waste Water Pumping Station Drainable Areas

3.10. COMMUNITY FACILITIES

3.10.1. Education

The proposed development will be within the catchment for Wirreanda Public School, which provides education for Kindergarten to Year 6. The Medowie Strategy states that the Department of Education site is sufficient for secondary school expansion, which would be of great benefit to Medowie, as there are currently no local government high schools. The development may help to increase potential enrolments to a point where provision of high school facilities will become viable.

Portions of the Section 94 Development Contributions, payable to Port Stephens Council upon development of the site, may be used for local educational and childcare including the following items listed in the Contributions Plan;

PSC Project No.	Project Description	Estimated Value
CLS46	Medowie Children's Centre (Brush Box Avenue) – Outdoor area	\$25,000
CLS47	Medowie Before & After School Care (Brocklesby Avenue) – Covered verandas	\$30,000

3.10.2. Religion

Churches available to residents of Medowie are located in Medowie, Heatherbrae, Anna Bay and Raymond Terrace.

3.10.3. Recreation

The Concept proposes additional parkland recreational spaces to complement the nearby formal sporting facilities at Kindlebark Oval. The bushland setting around the perimeter road will be an attractive environment for pedestrians and cyclists. The concept Urban Design Report prepared by The Design Partnership identifies a number of “go through places and “go to places” for the purposes of passive recreational use. Destinations or “go to places” provide a series of passive and active recreational uses, create a sense of place and ownership and improve passive surveillance over the public domain. In doing so, they provide opportunities for play, spaces for fitness/wellbeing activities, educational elements and birdwatching/ feeding activities.

Connection to and extension of shared cycleway/pedestrian paths linking the site to the Medowie Town Centre generate not only additional transportation opportunities but also a recreational opportunity for all sectors of the community.

Portions of the Section 94 Development Contributions, payable to Port Stephens Council upon development of the site, may be used for local recreational facilities including the following items listed in the Contributions Plan;

PSC Project No.	Project Description	Estimated Value
SD84	Kindlebark Oval – Irrigation	\$80,000
SD96	Kindlebark Oval – Medowie Sporting amenities upgrades	\$60,000

4. RECOMMENDATIONS

The Infrastructure Assessment Report and environmental studies carried out indicate that the site characterises “infill development” in that it forms the practical extension of the adjoining urban development to the west. The proposal satisfies PSC and NSW Planning sustainability principles in that it utilises existing public and social infrastructure. Additionally, the proposal serves to support the maintenance and upgrade of existing infrastructure through immediate developer contributions and ongoing annual rate collections.

The following recommendations are suggested in the event of more detailed site planning and infrastructure design being implemented;

- 4.1 Changes to the preliminary masterplan will impact the BMTWBM Draft Water cycle Management Plan resulting in revision to the location and levels of stormwater quality control structures (SQIDS). More specific site grading and topographical analysis for the purposes of defining sewer drainage catchments will be required in the event of changes to the preliminary masterplan. Development staging will need to take into account replacement of the existing dilapidated and ineffectual stormwater management systems treating upstream residential areas.
- 4.2 Transport and road hierarchy requirements for the East Medowie residential precinct will require a more detailed investigation when the preliminary masterplan review has progressed. Particularly with respect to pedestrian and shared cycleway facilities. Pedestrian and shared cycleway facilities connecting the East Medowie residential precinct to the town centre through the use of developer contributions or works in kind may need to be considered.
- 4.3 The availability of community and social infrastructure such as use of active and passive destination nodes, provision and maintenance of public domain facilities, recreational and sporting facilities, community buildings and activity group support, Landcare group support and the like will require further investigation with the assistance of the relevant bodies.

5.

APPENDICES

[illegible]

