0 100 m

LEGEND

- Construction footprint
- Compound area
- Cadastre (LPI 2017)
- Proposed water alignment

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George Street, Sydney NSW 2000
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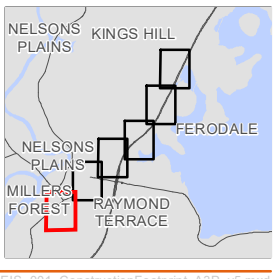
Coordinate System: GDA 1994 MGA Zone 56
Date issued: October 9, 2019

1:3,000 at A3



Construction Footprint

Date: 9/10/2019 Path: \\hc-aus-ns-fs-01\jobs\AA006855\L-GIS\A_Current\B_Maps\EIS\KHD_EIS_001_ConstructionFootprint_A3P_v5.mxd
Created by : RP
QA by : EM

APPENDIX B

Port Stephens Council DCP (2014) Requirements

B4 Drainage and Water Quality

Application
This part applies to ***development*** that: • increases ***impervious surfaces***; or • drains to the ***public drainage*** system; or • involves a ***controlled activity*** within 40m of ***waterfront land***.

Objective		
B4.A	**Stormwater Drainage Plan**	• To ensure a ***stormwater drainage plan*** is submitted when ***development*** either increases ***impervious surfaces*** or drains to the ***public drainage*** system • To ensure the ***stormwater drainage plan*** details a legal and physical point of discharge to minimise impacts on ***water balance***, ***surface water*** and ***groundwater*** flow and volume regimes and flooding • To implement sustainable mitigation systems that can be maintained using resources available to the maintainer
Requirement		
B4.1	***Development*** that applies to this Part is to provide a ***stormwater drainage plan*** and a written description of the proposed drainage system within the ***SEE*** **Note:** C1.H also provides drainage requirements for ***development*** relating to ***subdivision*** **Note:** Hydrological/hydraulic calculations and designs shall be prepared in accordance with the approaches outlined in the current ***Australian Rainfall and Runoff*** Guidelines using the current Hydrologic Soil Mapping data for Port Stephens available from Council. Other current Australian published design guides may also be applied to particular design situations.	
Objective		
B4.B	**On-site Detention / On-site Infiltration**	To regulate the impacts on the capacity of the ***public drainage*** system
Requirements		
B4.2	***On-site detention*** / ***on-site infiltration*** is required where: • the post-development flow rate or volume exceeds the pre-development flow rate or volume; or • ***impervious surfaces*** exceed the total percentage of ***site area*** listed under Figure BD (p. B-29); or • it is identified under Section D Specific Areas of the ***PSDCP 2014***; or • the stormwater catchment is identified to have stormwater issues.	
B4.3	***On-site detention*** / ***on-site infiltration*** is to be: • sized so that the post-development flow rate and volume equals the pre-development flow rate and volume for all storm events up to and including the ***1% Annual Exceedance Probability (AEP)*** storm event • provided by either underground chambers, surface storage or a combination of the two and are generally positioned: - under grassed areas for any ***cellular system*** (which can be easily	

	maintained) - under hardstand areas such as ***driveways*** for any concrete tank structures **Note:** A ***Neutral or Beneficial Effect (NorBE)*** on water quality must be designed for all storm events.	
B4.4	Details of the ***on-site detention*** / ***on-site infiltration*** concept design must be provided in the ***stormwater drainage plan*** and the written description and must include information on: • the location and type of detention / infiltration system • demonstrated flow rate / volume for all design storm events up to the ***1% AEP*** • pipes, pits, ***overland flow*** and discharge point • surface grates and maintenance access points • orifice type, location and screening facility • slope/gradient of the land • post-development flow rate and volume for the site equal to pre-development flow rate and volume for the site **Note:** B4.8 states that ***on-site detention*** / ***on-site infiltration*** may not be required for ***single dwellings*** and ***dual occupancy development*** if the water quality requirements under Figure BF (p. B-29) have been satisfied	
Objectives		
B4.C	**Water Quality**	• To ensure ***development*** does not detrimentally impact on water quality through the use of water quality modelling, such as ***SSSQM*** or ***MUSIC Modelling***, and subsequent ***WSUD*** measures • To safeguard the environment by improving the quality of stormwater run-off • To ensure water quality is protected and maintained during the construction phase through the conditioning of appropriate measures • To provide further guidance to clauses in the local environmental plan relating to water quality for ***development*** in ***drinking water catchments***
Requirements		
B4.5	***Development*** is to provide water quality measures in accordance with Table BF: Water Quality Table (p. B-32), unless: • a **WSUD** Strategy has previously been prepared in accordance with this requirement, which in that case, ***WSUD*** measures in accordance with that ***WSUD*** Strategy are to be implemented **Note:** Refer to Part D – Specific Areas for any ***WSUD*** Strategy previously prepared under this requirement • The ***WSUD*** Strategy includes the following: - Background Information - Site Context - Proposed ***development*** - ***WSUD*** objectives - Best planning practices - Integrated Water Cycle Management - Stormwater management - Costs - ***Operation and Maintenance Plan*** - Modelling	

	- ***MUSIC*** model is provided in digital form - Compliance with AS 3500 – Plumbing and Drainage	
B4.6	***Stormwater Quality Improvement Devices (SQIDs)*** are designed to be taken off-line from minor and major drainage systems	
B4.7	***Development*** submits the evidence of how the water quality targets have been achieved (e.g. ***SSSQM*** Certificate, ***MUSIC*** or ***MUSIC***-LINK Report)	
B4.8	***On-site detention*** / ***on-site infiltration*** may not be required for ***single dwellings*** and ***dual occupancy development*** if the water quality requirements under Figure BF (p. B-29) for sites less than 2,500m^2 have been satisfied	
B4.9	Erosion and sediment measures are provided during the construction phase in accordance with the issued ***conditions of consent***	
B4.10	***Development*** that, in the opinion of the Council, has the potential to significantly adversely affect the water quality of the ***drinking water catchment*** will be referred to Hunter Water under section 51 of the *Hunter Water Act 1991*. Hunter Water is provided with a period of 21 days to provide a submission. After a period of 21 days, no response is deemed as a non-objection. ***Development*** or activities which pose unacceptable risks to a ***drinking water catchment*** are not likely to be supported by Hunter Water. **Note:** Refer to Hunter Waters' document 'Guidelines for developments in the drinking water catchments' for ***development types*** that will likely trigger referral to Hunter Water. **Note:** B1.5 requires a ***Vegetation Management Plan (VMP)*** when a proposal to remove 20 or more trees is submitted to Council	
Objective		
B4.D	**Riparian Corridors**	To protect and retain ***riparian corridors*** as localities of environmental importance
Requirements		
B4.11	***Development*** involving a ***controlled activity*** within ***waterfront land*** (within 40m from the highest bank of the river, lake or estuary) adheres to the *Water Management Act 2000* **Note:** Council can advise on the location and order of ***waterfront land***	
B4.12	***Development*** provides the following ***buffers*** to ***riparian corridors*** that are generally consistent with the recommendations of the NSW Office of Water. 2012, 'Guidelines for riparian corridors on waterfront land'[15]: • 50m ***buffer*** from ***3rd order water courses*** or above with a 40m ***vegetated riparian zone*** and 10m vegetated ***buffer*** • 30m ***buffer*** from ***1st-2nd order water courses*** with a 20m ***vegetated riparian zone*** and 10m vegetated ***buffer***	
B4.13	***Riparian corridors*** are dedicated as ***public open space*** when Council agrees to take ownership of that land	

Figure BD: Maximum ***Impervious Surface*** Table

Land-Use Zone	Maximum Impervious Area (%)
E4, R5, RU1, RU2 & RU3	Refer to Table BE (below)
E1, E2, E3, IN4, RE1, RE2, SP1, SP2, W1 & W2	***merit-based approach***
R1, R2 & RU5	60
R3	75
B5, B7, IN1 & IN2	90
B1, B2, B3 & B4	100

Figure BE: Lot Area ***Impervious Surface*** Table

Lot Area (m^2)	Maximum Impervious Area (%)
>5000	7.5
2000 to 5000	30
900 to 2000	40
<900	60

Note: Figure BE above only applies to land zoned E4, R5, RU1, RU2 and RU3

Figure BF: Water Quality Table

Type of Development or Site Area	Water Quality Targets		Tool used to achieve target
	Development within a Drinking Water Catchment	Development outside a Drinking Water Catchment	
Minor alterations and/or additions on a lot with a ***site area*** less than $250m^2$	No water quality measures are required	No water quality measures are required	-
Lots with a ***site area*** greater than $250m^2$ and less than $2,500m^2$	Before water is released into ***public drainage,*** the water quality outcomes shall achieve: • ***NorBE***; or • Council's ***water quality stripping targets*** whichever achieves the better water quality outcome.	Before water is released into ***public drainage*** it must achieve Council's ***water quality stripping targets***	Water Quality Modelling, such as: • ***SSSQM***; or • ***MUSIC***; or • Compliance with Figure BG (for sites equal to or less than $1,000\ m^2$)
Lots with a ***site area*** equal to or greater than $2,500m^2$	Before water is released into ***public drainage,*** the water quality outcomes shall achieve: • ***NorBE***; or • Council's ***water quality stripping targets*** whichever achieves the better water quality outcome.	Before water is released into ***public drainage*** it must achieve Council's ***water quality stripping targets***	Water Quality Modelling, such as ***MUSIC Modelling***

Figure BG: Deemed to Comply Provisions – Raingardens / Infiltrating Raingardens & Water Tanks

Council has developed these deemed to comply provisions utilising a simplified sizing methodology for all soil types, provided the criteria can be met.

The deemed to comply provisions provided in the table below apply only where all of the following criteria are satisfied:

- The ***development*** is connected to a ***sewerage reticulation system***;
- Minimum of 75% of the roof area is connected to the rainwater tank with the remaining 25% of the roof area directly connect to a raingarden;
- The ***driveway*** area is connected to a raingarden;
- Water from the rainwater tank supplies the toilet and laundry facilities within the ***development*** at a minimum; and
- Rainwater tank overflow is directed to a raingarden.

Note: Where the lot size and/or roof size are not identical to the areas listed the next largest lot and/or roof size must be used.

Note: The raingarden size is measured based on the planted area.

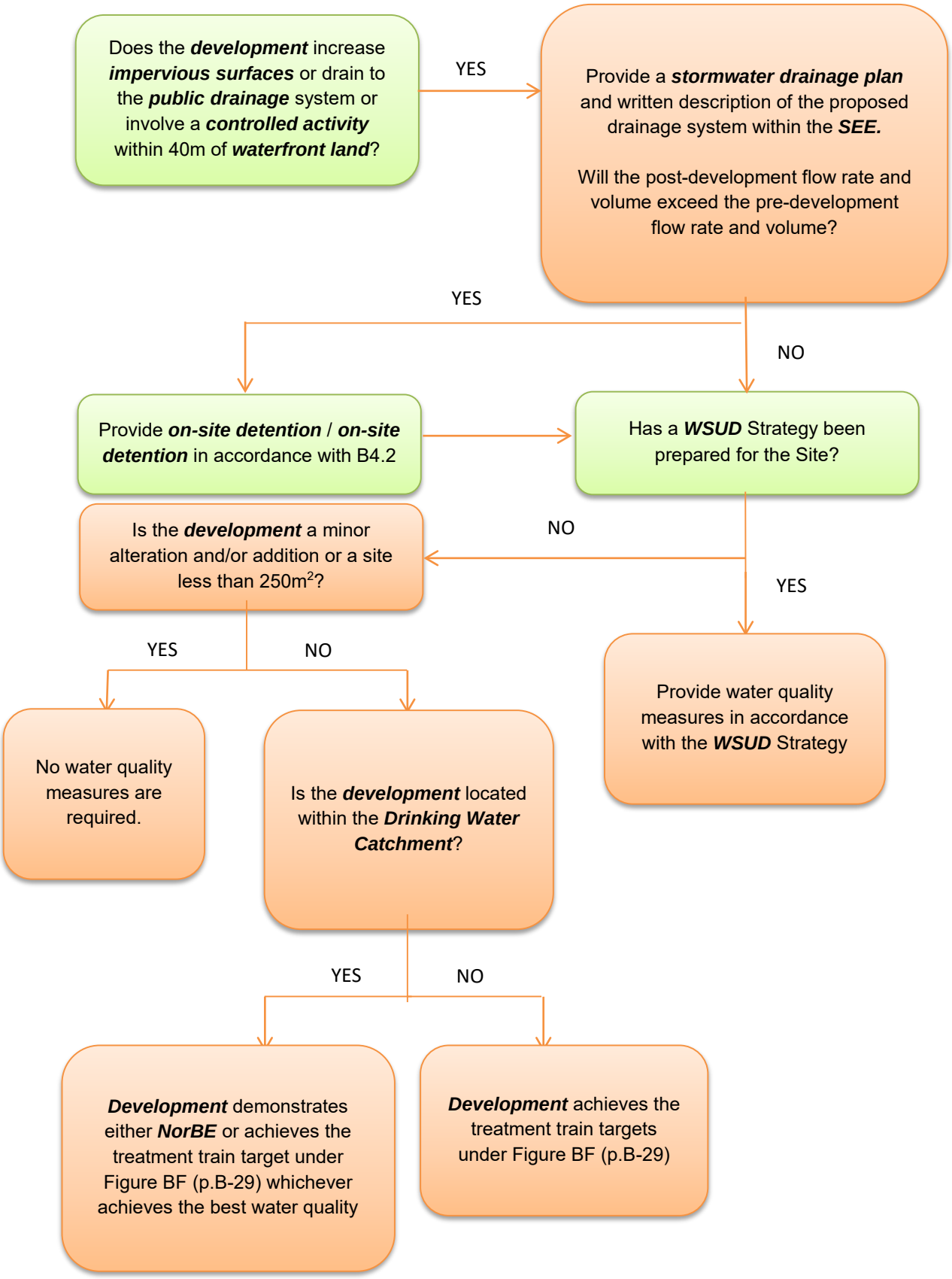
Note: Raingarden standard drawings are available on Council's website.

Note: Council encourages proponents to prepare an ***operation and maintenance plan*** for raingardens to ensure they function properly throughout the life of the ***development***.

Lot Area (m^2)	Roof Area (m^2)	Tank (kL)	Minimum Raingarden Area (m^2)
400	150	2	7
400	200	2	8
400	150	3	6
400	200	3	7
400	150	5	6
400	200	5	7
400	150	10	5
400	200	10	6
500	150	2	8
500	200	2	9
500	250	2	10
500	150	3	7
500	200	3	8
500	250	3	9
500	150	5	7
500	200	5	8
500	250	5	8
500	150	10	6
500	200	10	7
500	250	10	7
600	150	2	9
600	200	2	10
600	250	2	10
600	300	2	12
600	150	3	8
600	200	3	9
600	250	3	10
600	300	3	11
600	150	5	8
600	200	5	9
600	250	5	9
600	300	5	10
600	150	10	7
600	200	10	8
600	250	10	8
600	300	10	9
800	200	2	12
800	250	2	12
800	300	2	13

Lot Area (m^2)	Roof Area (m^2)	Tank (kL)	Minimum Raingarden Area (m^2)
800	400	2	16
800	500	2	18
800	200	3	11
800	250	3	12
800	300	3	13
800	400	3	15
800	500	3	17
800	200	5	11
800	250	5	11
800	300	5	12
800	400	5	14
800	500	5	16
800	200	10	10
800	250	10	10
800	300	10	11
800	400	10	13
800	500	10	15
1000	200	2	13
1000	250	2	14
1000	300	2	15
1000	400	2	18
1000	500	2	20
1000	200	3	13
1000	250	3	14
1000	300	3	15
1000	400	3	17
1000	500	3	19
1000	200	5	12
1000	250	5	13
1000	300	5	14
1000	400	5	16
1000	500	5	18
1000	200	10	12
1000	250	10	12
1000	300	10	13
1000	400	10	15
1000	500	10	17

Figure BH: Drainage and Water Quality – Flow Chart



B5 Flooding

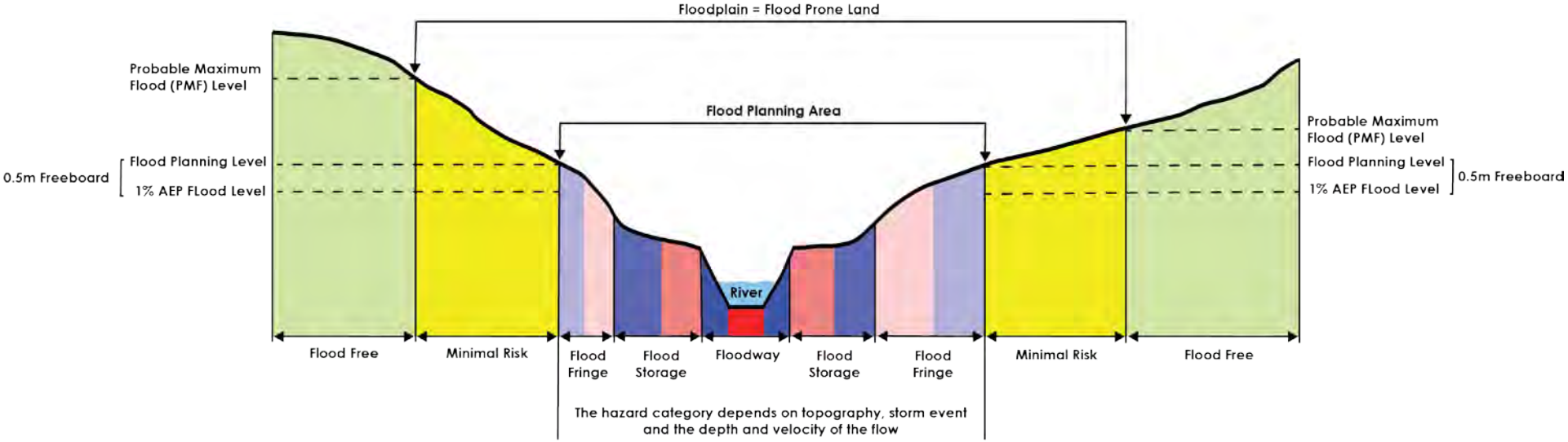
Application
This Part applies to ***development*** to which the ***Local Environmental Plan*** applies being land that is situated within the ***flood planning area*** or at/or below the ***Flood Planning Level (FPL)***

Objectives		
B5.A	**Flood Planning**	• To reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property. • To recognise flood prone land as a valuable resource that should not be sterilised by unnecessarily precluding its ***development***. • That flood risk is considered as early as possible in the planning and ***development*** process, is based on the best available flood information and is a flexible, locally-specific, ***merit-based approach***. • To ensure that the use and ***development*** of flood prone land has risk consequences that are acceptable to the community, takes into account the full spectrum of flood risks and recognises the social, economic and environmental values of flood prone land. • To implement the principles of the NSW Government 2005, '***Floodplain Development Manual***' into new ***development*** and satisfy the provisions of the ***Local Environmental Plan***.
Requirements		
B5.1	***Flood Hazard***	***Development*** provides consideration to ***flood hazard***, which includes consideration of the following: • Depth of inundation • Flow velocity • Warning time • Evacuation requirements • Access restrictions during flood
B5.2		***Development*** is compatible with the ***flood hazard*** categories illustrated by Figure BI (p. B-37) and as defined in the relevant ***flood study*** or ***floodplain risk management plan*** • Where ***flood hazard*** has not been defined by a ***flood study*** or ***floodplain risk management plan***, the applicant may be required to undertake a ***flood study*** to define ***flood hazard.*** The ***flood study*** is consistent with the principles of the ***Floodplain Development Manual*** and the current version of ***Australian Rainfall and Runoff*** • To determine the ***flood hazard*** for a specific property contact Council's Flood Engineer by emailing floodrequests@portstephens.nsw.gov.au. Where inconsistencies between the subject site and ***flood hazard*** mapping occur, a merit assessment of flood risk and any necessary mitigation measures will apply. In these instances the applicant is required to provide a survey plan showing the sites ***natural ground levels***. All contours and/or spot levels need to refer to ***Australian Height Datum (AHD)*** or an assumed ***Reduced Level (RL)*** Benchmark.
B5.3	All Hazard Categories	New residential ***development*** on land which becomes an island during a flood event must provide ***flood refuge***

		• ***Flood refuge*** incorporates convenient access to flood free ground, which: - is a route that is fail safe, plainly evident and self-directing - is situated above the ***Probable Maximum Flood (PMF)*** - can cater for the number of persons that could reasonably be expected to be on-site - provides emergency lighting - is constructed to withstand hydraulic loading due to flood events up to the ***PMF***
B5.4		Where the proposed ***development*** facilitates ongoing flood adaptation (e.g. where the design facilitates building raising in the future, such as pier and beam housing design) then Council will allow a reduced ***flood planning horizon*** level 50 years from the date of application.
B5.5		***Development*** considers the following: • A ***habitable room*** is accompanied by a Certificate from a Chartered Professional Structural Engineer based on the information provided by a Charted professional Hydraulic Engineer, which certifies the following: - ***Development*** is capable of withstanding the effects of flooding, including immersion, structural stability, buoyancy and impact from debris up to and including the ***(PMF)*** Event - ***Development*** will not adversely affect the flow of floodwaters • A ***non-habitable room*** demonstrates the following: - Electrical fixtures, such as power points, light fittings and switches are located above the ***FPL***, or if possible above the ***PMF*** - Provides an area where goods can be stored above the ***PMF*** - ***Fill*** should not substantially impede the flow of floodwater, and must not contribute to flooding or ponding of water on other properties • A garage or carport demonstrates the following: - Electrical fixtures, such as power points, light fittings and switches are located above the ***FPL***, or if possible above the ***PMF*** - Finished floor height 0.5m above the ***5% AEP***
B5.6	Minimal Risk – Flood Prone Land that is above the ***FPL***	***Development*** located within ***Minimal Risk 1*** considers the location of critical emergency response and recovery facilities, such as evacuation centres and the appropriateness of vulnerable ***development types***, such as aged care and child care facilities
B5.7	Low Hazard 1 - ***Floodway***	***Development*** located within ***Low Hazard 1 – Floodway*** adheres to the following: • Use of ***fill*** is not supported • Minor alterations that will not significantly alter the flow pattern of waters, such as roads, parking, below ground structures & landscaping will be considered • Fences are to be of an permeable 'open type' pattern that does not restrict the flow of flood waters
B5.8	Low Hazard 2 - Storage	***Development*** located within ***Low Hazard 2 – Storage*** adheres to the following:

		• ***Fill*** is not supported unless accompanied by a ***flood study*** • Any other ***development*** is supported by a ***flood risk management report***
B5.9	Low Hazard 3 - Fringe	***Development*** located within ***Low Hazard 3 - Fringe*** considers the location of critical emergency response and recovery facilities, such as evacuation centres and the appropriateness of vulnerable ***development types***, such as aged care and child care facilities
B5.10	High Hazard Categories	***Development*** located within a ***high hazard*** *category* demonstrates the following: • ***Development*** does not become an isolated island during a flood event. A ***flood refuge*** is required where isolation is likely to occur unless at least 40m of the **PMF** event - ***Flood refuge*** incorporates convenient access to flood free ground, which: o is a route that is fail safe, plainly evident and self-directing o is situated above the ***PMF*** o can cater for the number of persons that could reasonably be expected to be on-site o provides emergency lighting o is constructed to withstand hydraulic loading due to flood events up to the ***PMF***
B5.11	High Hazard 1 - ***Floodway***	***Development*** located within ***High Hazard 1 – Floodway*** adheres to the following: • New buildings or structures and ***fill*** are not supported unless accompanied by a **report** **Note:** ***Development*** within a ***floodway*** is not encouraged. An application may only be considered where it demonstrated to have specific community needs/benefits, which does not relate to the provision of housing
B5.12	High Hazard 2 - Storage	***Development*** located within ***High Hazard 2 – Storage*** adheres to the following: • New residential and ***fill*** are not supported unless accompanied by a ***flood study*** and an ***flood emergency response plan*** • Alterations and/or additions are considered when it is demonstrated that flood waters will not be displaced onto adjoining properties **Note:** Land but where a ***flood study*** has not been carried out to determine the ***flood hazard*** will be treated as being located within High Hazard 2 – Storage.
B5.13	High Hazard 3 - Fringe	***Development*** located within ***High Hazard 3 – Fringe*** and below the ***FPL*** provides a ***flood emergency response plan***

Figure BI: ***Flood Hazard*** Categories, Cross-Section



Legend

No	Category	Details
1	No Affects	Not affected by flooding
2	Minimal Risk	Flood prone land that is above the flood planning level
3	Low Hazard 3	Flood fringe area
4	Low Hazard 2	Flood storage area

No	Category	Details
5	Low Hazard 1	Floodway area
6	High Hazard 3	Flood fringe area
7	High Hazard 2	Flood storage area
8	High Hazard 1	Floodway area

Note: Land but where a ***flood study*** has not been carried out to determine the ***flood hazard*** will be treated as being located within High Hazard 2 – Storage.

D14 Kings Hill – Raymond Terrace

Application
This Part applies to the land identified in Figure DAB (p. D-160) as Kings Hill – Raymond Terrace • Kings Hill is an identified ***urban release area*** under Part 6 of the ***Local Environmental Plan***. The purpose of Part 6 is to ensure that ***development*** occurs in a logical and cost-effective manner, in accordance with a staging plan and only after a ***development control plan*** (***DCP***) that specifies specific controls for the land has been prepared • Clause 6.3 of the ***Local Environmental Plan*** sets out the matters that must be provided for in the ***DCP***. This part specifies the additional information required to meet those requirements • The Locality Controls Map at Figure DAC (p. D-161) in this Part sets out the broad ***development*** pattern for Kings Hill. Individual ***development*** precincts are identified on this plan and on the maps in the ***Local Environmental Plan***. • This part specifies the additional information requirements to be included in a detailed ***Precinct Plan*** to be prepared for each Precinct • ***Precinct Plans*** will: - be included as future amendments to this ***DCP***; or - be provided as a ***staged development application*** for each ***development*** precinct. • Subsequent ***development applications*** in each precinct will be consistent with the ***Precinct Plan*** or supported by a revised ***Precinct Plan*** demonstrating consistency with the requirements of clause 6.3 of the ***Local Environmental Plan*** and of this part **Note:** Figure DAA (p. D-159) describes how the requirements of clause 6.3 of the ***Local Environmental Plan*** will be met

Objectives		
D14.A	**Structure Planning and Precinct Planning**	• To ensure consideration is provided to the relationship between ***residential***, ***commercial***, ***mixed use***, ***open space***, biodiversity and important infrastructure, such as the Pacific Highway and Grahamstown Dam • To ensure ***development*** occurs in a logical and coordinated manner • To ensure ***development*** is efficient and results in cost effective infrastructure and adequate access to services by residents • To ensure the Town Centre facilitates a sense of place and community while complementing the economic and community function of the existing higher order Regional Centre of Raymond Terrace • To ensure a hierarchy of centres within the Kings Hill ***urban release area*** with a high quality of design, a high amenity ***public domain*** and excellent connectivity to the adjacent residential areas

Requirements		
D14.1	Residential ***Precinct Plans***	A ***Precinct Plan*** is prepared to accompany the first stage of a ***development application*** in any of the ***development*** precincts identified on the ***Local Environmental Plan***.

D14.2		***Development*** is generally consistent with the Locality Controls Map at Figure DAC (p. D-161)
D14.3		***Development consent*** for the purposes of a ***super lot*** does not require preparation of a ***Precinct Plan***
D14.4		Staging for the ***urban release area*** as a whole will be determined by the provision of ***essential services*** and may involve ***development*** occurring simultaneously in different parts of the locality
D14.5		Each ***Precinct Plan*** is to include a Staging Plan that is lodged with the first stage and provides for the timely and efficient release of urban land making provision for necessary infrastructure and sequencing
D14.6		Each stage of ***development*** may be subdivided into sub-stages. Any sub-stages should be identified in the ***SEE*** to accompany the ***development application*** for ***subdivision***, together with a description of the sub-stages and the impact of the sub-stage sequence on the provision of ***essential services***
D14.7		Detail for any land zoned B2 Local Centre or B4 Mixed Use need not be provide until consent for initial ***subdivision*** of that land is sought.
D14.8	Town Centre and Village Centre ***Precinct Plans***	Consent for initial ***subdivision*** of land zoned B2 Local Centre or B4 Mixed Use requires preparation of a Town or Village Centre ***Precinct Plan*** for the entire zoned area
D14.9		The Town or Village Centre ***Precinct Plan*** is to illustrate the conceptual location of streets, major pathways, major uses, public spaces, built-form and access provision as well as the relationship of the area to adjacent residential and ***open space*** areas
D14.10	***Subdivision*** layout	***Subdivision*** layout enables neighbouring sites/precincts to deliver the outcomes sought by the Locality Controls Map **Note:** C1 Subdivision details principles relating to ***subdivision*** layout and procedure with the following exceptions or qualifications: **Note:** ***Open Space***: to be provided generally in accordance with the Locality Controls Map and with areas consistent with the local infrastructure contributions requirements for Kings Hill
D14.11	Servicing	Consent for the ***subdivision*** of land other than for the creation of a ***super lot*** requires a ***servicing strategy*** which includes (at a minimum) the: • sequence, location and other details of the provision of public utilities; and • availability of urban services and infrastructure to residents, including ***open space***, ***shared paths***
D14.12		All ***commercial*** and ***residential*** allotments are to be serviced by reticulated water, sewerage, electricity and telecommunication services
Objectives		
D14.B	**Traffic and Transport**	• To achieve connectivity between precincts, the local centre and nearby service areas • To ensure Kings Hill has a defined transport structure and

		road hierarchy • To ensure an east west road link is provided between Newline Road and the Pacific Highway in a direct, timely and efficient manner • To ensure the pedestrian and cycle network provides convenient and safe access to the precinct centres, schools, community facilities, ***open space*** and other important destinations outside of Kings Hill to encourage walking and cycling • To ensure the Pacific Highway interchange is the primary access point
Requirements		
D14.13	Transport Movement Hierarchy	Each ***Precinct Plan*** requires preparation of an overall transport movement hierarchy which: • shows the major circulation routes and connections to achieve a simple and safe movement system for private vehicles, public transport, pedestrians and cyclists • is generally consistent with the overall road network and the pedestrian and cycleway networks indicated on the Locality Controls Map at Figure DAC (p. D-161) • indicates progressive provision of the east-west and north-south connector roads as well as direct connections to adjacent precincts
D14.14		Positioning and design of the transport movement network provides priority to facilitating efficient walking, cycling and public transport networks and retaining and complementing natural topography, such as views and drainage
D14.15	Collector Roads	***Development*** within each precinct provides internal ***collector roads*** generally consistent with the Locality Controls Map at Figure DAC (p. D-161)
D14.16		***Subdivisions*** adjacent to ***collector roads*** orientate allotments and ***dwellings*** to face and have access from the collector road
D14.17	East-West Road 4 lane section	The eastern end of the east-west collector road, for a length of approximately one kilometre, is to have two travel lanes in each direction. This section of the east-west road is constructed generally in accordance the Illustration at Figure DZ (p. D-158)
D14.18	***Subdivision Certificate***	Within each precinct, ***collector roads*** are constructed to the boundary of the adjoining precinct prior to the release of a ***subdivision certificate*** for a cumulative total of no more than 75% of the lots
D14.19		Within precinct 6, the east west road is constructed from the western boundary of the Precinct to Newline Road and ***collector roads*** connect to the southern boundary of precinct 7 prior to the release of a ***subdivision certificate*** for a cumulative total of no more than 50% of the lots
D14.20	Newline Road	Maximum number of lots with sole access to Newline Road is 1200. Consent for lots in excess of this number requires connection to the Pacific Highway via the east-west collector road

		Note: The ***Local Environmental Plan*** may include a requirement that ***development consent*** must not be granted for the ***subdivision*** of land in an ***urban release area*** unless arrangements have been made, to the satisfaction of Roads and Maritime Services and the consent authority, for the provision of vehicular access from the ***urban release area*** to the Pacific Highway, including the closure or modification of any existing vehicular access from any land adjoining the Pacific Highway, if necessary
D14.21	Pre- Pacific Highway Interchange Access	***Development*** with sole access from Newline Road requires upgrade works to provide 5% ***AEP*** flood immunity for the Kings Hill ***development*** flood access route consisting of local road raising of two sections of Six Mile Road, being an approximate: • 100 metre section at location K on the Locality Controls Map at Figure DAC (p. D-161) near the intersection of Winston Road. These works also require appropriate raising of Winston Road in the vicinity of the intersection • 60 metre section at location Q on the Locality Controls Map at Figure DAC (p. D-161) near the intersection of Newline Road **Note:** The ***Local Environmental Plan*** may include a requirement that ***development consent*** must not be granted to ***development*** on land identified as 'Kings Hill' on the Precinct Areas Map unless the consent authority is satisfied that there will be suitably located vehicular access from that land to the Pacific Highway, having regard to flood risk **Note:** A "Kings Hill Flood Free Access Study" was prepared on behalf of Council by BMT WBM in 2012 to identify necessary road upgrade requirements
D14.22	Public Transport	Designated public transport routes as identified on the Locality Controls Map at Figure DAC (p. D-161) are constructed as bus routes in accordance with ***infrastructure specification – design***[11]
D14.23		Bus stops are to be identified prior to final completion
D14.24	Paths	Pedestrian and cycle paths (including ***shared paths***) are provided generally in accordance with the Locality Controls Map at Figure DAC (p. D-161)
D14.25	Pedestrian Path	A pedestrian path is provided on one side and a ***shared path*** of all: • collector roads • roads that are within a B2 Local Centre Zone or B4 Mixed Use zone • roads within 400m of and providing the primary frontage to a school or major community facility **Note:** B9 Road Network and Parking generally requires road to be constructed in accordance with ***infrastructure specification design***[11]
D14.26	End of Trip Facilities	End of trip facilities are provided at precinct centres, community facilities and ***regional parks***. End of trip facilities incorporate the following: • One personal secure locker for each bicycle parking space

		under Figure BT (p. B-56) • One shower cubicle, with ancillary change rooms, per 13 bicycle spaces (or part thereof over four spaces) with a minimum of one shower and change facility
Objective		
D14.C	**Social Infrastructure**	Social infrastructure is to be located appropriately to meet the needs of the community
Requirements		
D14.27	Community and Recreation Facilities	***Precinct Plans*** identify the location of required community and recreation facilities, generally in accordance with the Locality Controls Map at Figure DAC (p. D-161)
D14.28	Community Facilities	Community facilities such as the multi-purpose community centre are preferably located within the Town Centre as identified on the Locality Controls Map at Figure DAC (p. D-161)
D14.29	Schools	The preferred locations of schools are identified on the Locality Controls Map at Figure DAC (p. D-161). School sites will be subject to the site-selection criteria and agreement of the NSW Department of Education and Training and will be indicated on the relevant ***Precinct Plans.*** The developer is to consult with the Department of Education and Port Stephens Council to determine a suitable school locations
Objective		
D14.D	**Drainage and Water Quality**	To ensure environmentally sustainable and affordable water management is provided with a catchment based approach that recognises the flows between Precincts, landholdings and the sensitive nature of the receiving waters
Requirements		
D14.30	Eastern Catchment and Grahamstown Dam	All stormwater from ***development*** areas up to 0.2% ***AEP*** design flood event is prevented from discharging into Grahamstown Dam • This may require construction of a watercourse along the eastern extent of developable areas of the Kings Hill ***urban release area*** to divert surface runoff away from Grahamstown Dam and into Irrawang Swamp **Note:** The ***Local Environmental Plan*** may require consideration to be given to impacts on ***Drinking Water Catchments***
D14.31	Water Management Strategy	Consent for ***development*** within the eastern and western catchments first requires lodgement of a ***stormwater drainage plan*** addressing drainage and water quality management for the entire catchment, to the satisfaction of the consent authority **Note:** Kings Hill Urban Release Area Water Management Strategy Guidelines were prepared on behalf of Council by BMT WBM in 2013. The Guidelines identify sub-catchments in the eastern and western catchment of the **urban release *area***. *The* Guidelines include a 'Model Water Management Strategy' for future ***development*** of the ***urban release area***, preliminary stormwater quantity and quality modelling, and identification of options to achieve the required outcomes for the eastern

		catchment. A preferred option is identified
D14.32		Each ***Precinct Plan*** is to identify stormwater drainage and water quality management controls for relevant sub-catchments consistent with the relevant catchment-wide ***stormwater drainage plan*** **Note:** The ***Local Environmental Plan*** may requires consideration of impacts on the ***Drinking Water Catchment***
Objective		
D14.E	**Natural Resources**	To ensure that ***development*** responds to the biodiversity values of the site
Requirements		
D14.33	***Vegetation Management Plan***	Applications for ***development*** on land zoned E2 Environmental Conservation or subject to terrestrial biodiversity controls in the ***Local Environmental Plan*** within each environmental precinct provide a ***VMP*** to the satisfaction of Council in accordance with the ***vegetation management technical specification***[2]. The ***VMP*** is provided with the ***precinct plan*** for the relevant environmental precinct boundaries identified by Figure DAC (p. D-161). The ***VMP*** also addresses the following location specific information: • Requirements to protect the creek line and other areas to be conserved, such as fencing, sediment control devices and appropriate ***signage***; and • Details of re-vegetation, restoration and weed control, including ***riparian corridors***. Areas affected by degradation, erosion and/or rubbish dumping should also be rehabilitated - A draft is provided with the ***development application*** and the final signed off by Council prior to the release of the ***construction certificate***. **Note:** If ***development*** does not pose a ***significant effect*** under 5A of the ***EP&A Act***, but proposes unavoidable vegetation impacts then a ***VMP*** that is consistent with the ***vegetation management technical specification***[2] is required
D14.34	Illegal Dumping	Measures, such as fencing and block configuration seek to restrict unauthorised access to E2 Environmental Conservation land to prevent rubbish dumping and damage by uncontrolled vehicle usage
D14.35	***Riparian Corridors***	***Development*** involving a ***controlled activity*** within ***waterfront land*** is to comply with the requirements of the *Water Management Act 2000* **Note:** B4.D provides further localised detail for ***buffers*** for ***riparian corridors***
Objectives		
D14.F	**Waste Treatment Facility**	• To ensure hazards from former landfills are managed • To ensure appropriate ***buffers*** that will minimise potential land use conflict between existing and proposed ***development***
Requirements		
D14.36	Waste Treatment	All ***development*** within 250m of the Newline Road Waste Disposal Facility or any land in proximity as identified by

	Facility	Council has the potential to have methane concentrations of greater than 1.25% (v/v) in the subsurface and is to be tested with a tested/calibrated methane detector over regular intervals12 months prior to a ***subdivision*** application being lodged with Council for determination
D14.37		***Development*** and monitoring should comply with the relevant sections of the NSW Environmental Protection Agency 'Environmental Guidelines: Solid Waste Landfills', January 1996, or its successor **Note:** The ***Local Environmental Plan*** may require ***development*** to be designed, sited or managed to avoid any adverse odour, noise and visual impacts arising out of the authorised use and operation of any ***public infrastructure***
Objectives		
D14.G	**Pacific Highway Impacts**	• To ensure that ***development*** in Kings Hill is not adversely affected by noise and vibration from the Pacific highway • To ensure ***development*** is buffered from view of traffic on the Pacific Highway
Requirements		
D14.38	Acoustic / Vibration	Consent for ***development*** in precincts 1 to 4 requires an ***acoustic report*** consistent with B3.3 and the following: • ***Development*** meets the requirements of AS 3671-1989 Acoustics – Road Traffic Noise Intrusion – Building, Siting and Construction • Acoustic/Vibration measures undertaken to comply with the conditions of ***development consent*** for a ***subdivision*** may remove the need for additional acoustic/vibration assessments and attenuation measures for subsequent ***developments*** **Note:** B3.3 requires an ***acoustic report*** for ***development*** that has the potential to produce or be impacted by ***offensive noise***
D14.39	Land-Use Buffers	***Development*** at Kings Hill is visually buffered from the Pacific Highway by a minimum of 10m of landscaping. This landscaping will be implemented through individual ***development applications*** and may be indicated on and ***Precinct Plans,*** the ***stormwater drainage plan*** for the eastern catchment, and/or plans for construction of the Highway interchange
Objectives		
D14.H	**Aircraft Noise**	• To ensure ***development*** satisfies the requirements of the ***Local Environmental Plan*** • To ensure appropriate consideration is given to land burdened by aircraft noise
Requirement		
D14.40	Aircraft Noise	**Note:** Kings Hill is located in proximity to the Port Stephens ***aircraft noise planning area***. B7.1 details what is to be considered when ***development*** is located within the ***aircraft noise planning area***.

Figure DY: Illustration of Cross Section of Four Lane part of East West Road

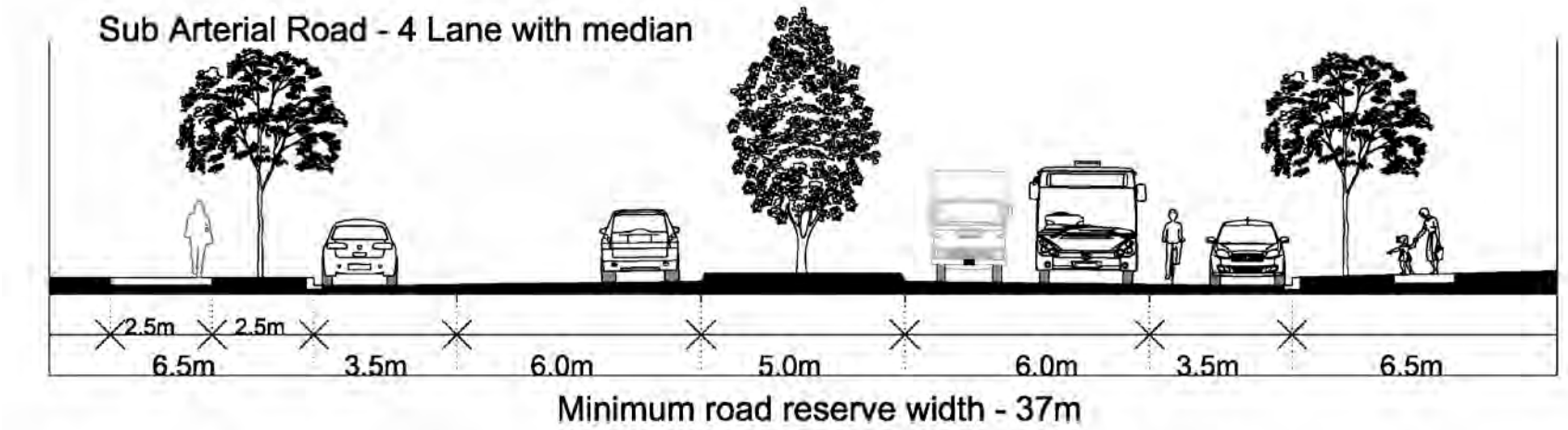


Figure DZ: Illustration of Cross Section of Two Lane part of East West Road

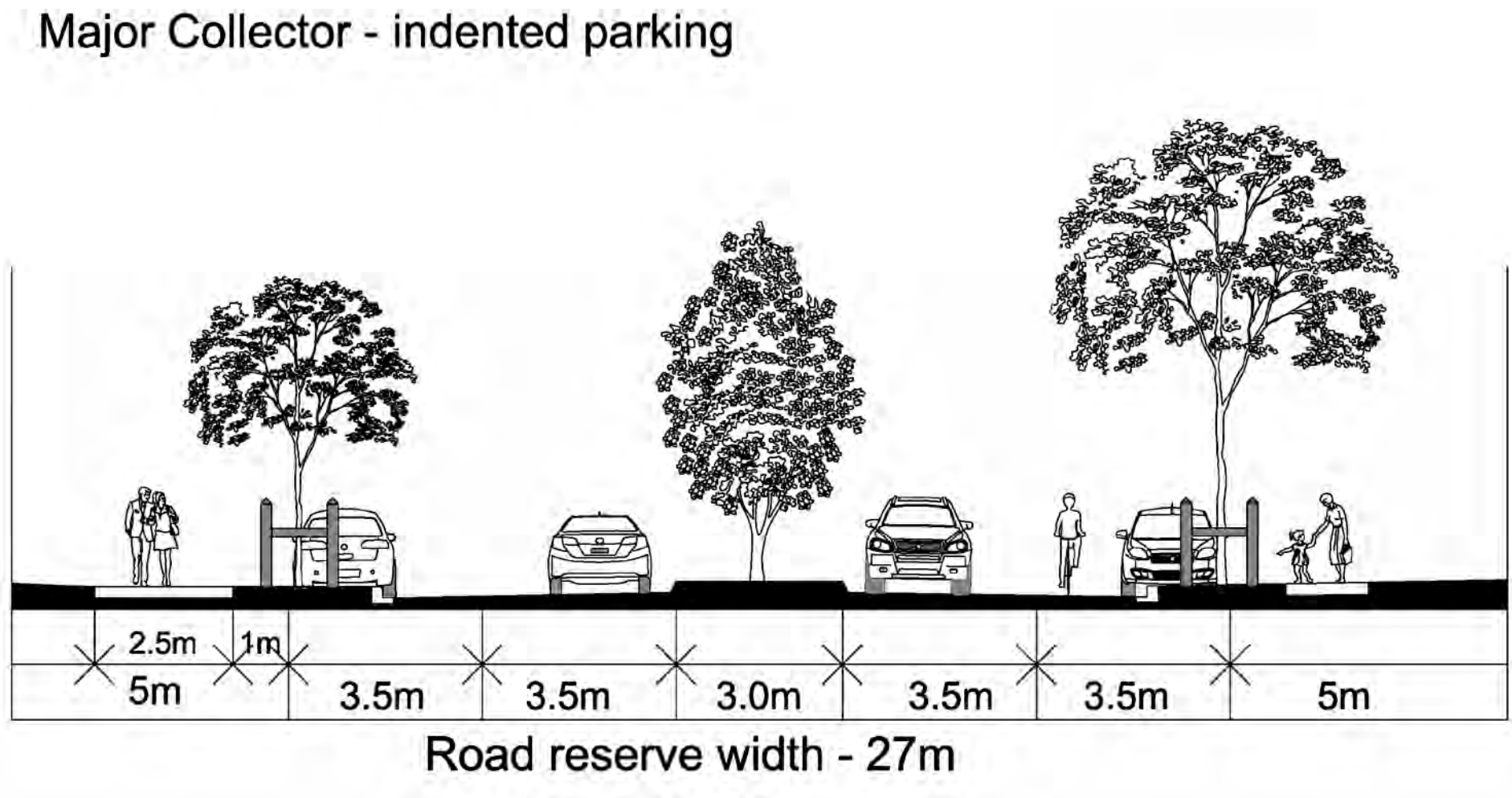


Figure DAA: Meeting the requirements to prepare a DCP under the the ***Local Environmental Plan***

Local Environmental Plan **DCP requirements**	**How requirements are met**
(a) a staging plan for the timely and efficient release of urban land making provision for necessary infrastructure and sequencing	Met by provision of a Staging Plan (D14.5 in this part) with the application for the first stage of ***development*** in each precinct
(b) an overall transport movement hierarchy showing the major circulation routes and connections to achieve a simple and safe movement system for private vehicles, public transport, pedestrians and cyclists	Met by provision of a transport movement hierarchy as part of the ***Precinct Plan*** provided for each precinct (D14.13 in this part)
(c) an overall landscaping strategy for the protection and enhancement of riparian areas and remnant vegetation, including visually prominent locations, and detailed landscaping requirements for both the public and private domain	Met by the requirements of Part C1.F Open Space and by the requirements of D14.33 and D14.35 in this part
(d) a network of passive and active recreational areas	Met by the requirements of D14.8-9, D14.10, D14.33 and D14.35 in this part
(e) stormwater and water quality management controls	Met by the requirements of D14.D and D14.35 in this part
(f) amelioration of natural and environmental hazards, including bush fire, flooding and site contamination and, in relation to natural hazards, the safe occupation of, and the evacuation from, any land so affected	Met by the requirements of D14.D, D14.E and D14.F in this part
(g) detailed urban design controls for significant development sites	Met by the requirement for detailed Town and Village Centre ***Precinct Plans*** in D14.8-9 of this part
(h) measures to encourage higher density living around transport, open space and service nodes	Met by the requirement (D14.1) for ***development*** in each precinct to generally consistent with the structure indicated in the Locality Controls Map at Figure DAC (p. D-161) and for ***Precinct Plans*** to indicate a transport movement hierarchy and servicing strategy; and by provision of detailed Town and Village Centre ***Precinct Plans*** (D14.8-9 in this part)
(i) measures to accommodate and control appropriate neighbourhood commercial and retail uses	Met by the provision of detailed Town and Village Centre ***Precinct Plans*** for all land zoned B2 Local Centre and B4 Mixed Use (D14.8-9 in this part)
(j) suitably located public facilities and services, including provision for appropriate traffic management facilities and parking	Met by provision of Town and Village Centre ***Precinct Plans*** for land zoned B2 Local Centre and B4 Mixed Use (D14.8-9 of this part), and by the requirements of D14.13, D14.24, D14.25, D14.26, D14.C of this part.

Figure DAB: Kings Hill – Raymond Terrace Land Application Map

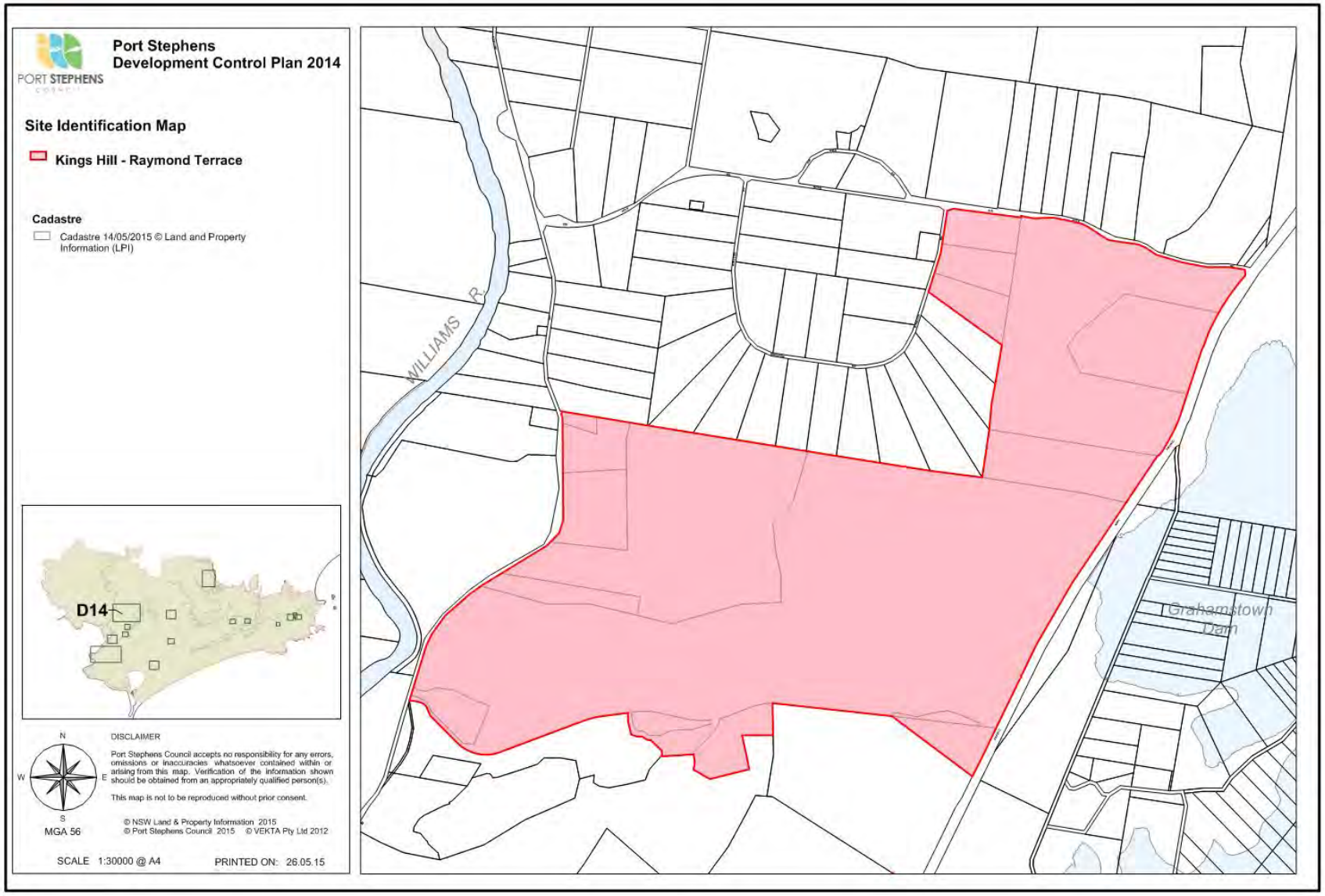


Figure DAC: Kings Hill – Raymond Terrace Locality Controls Map

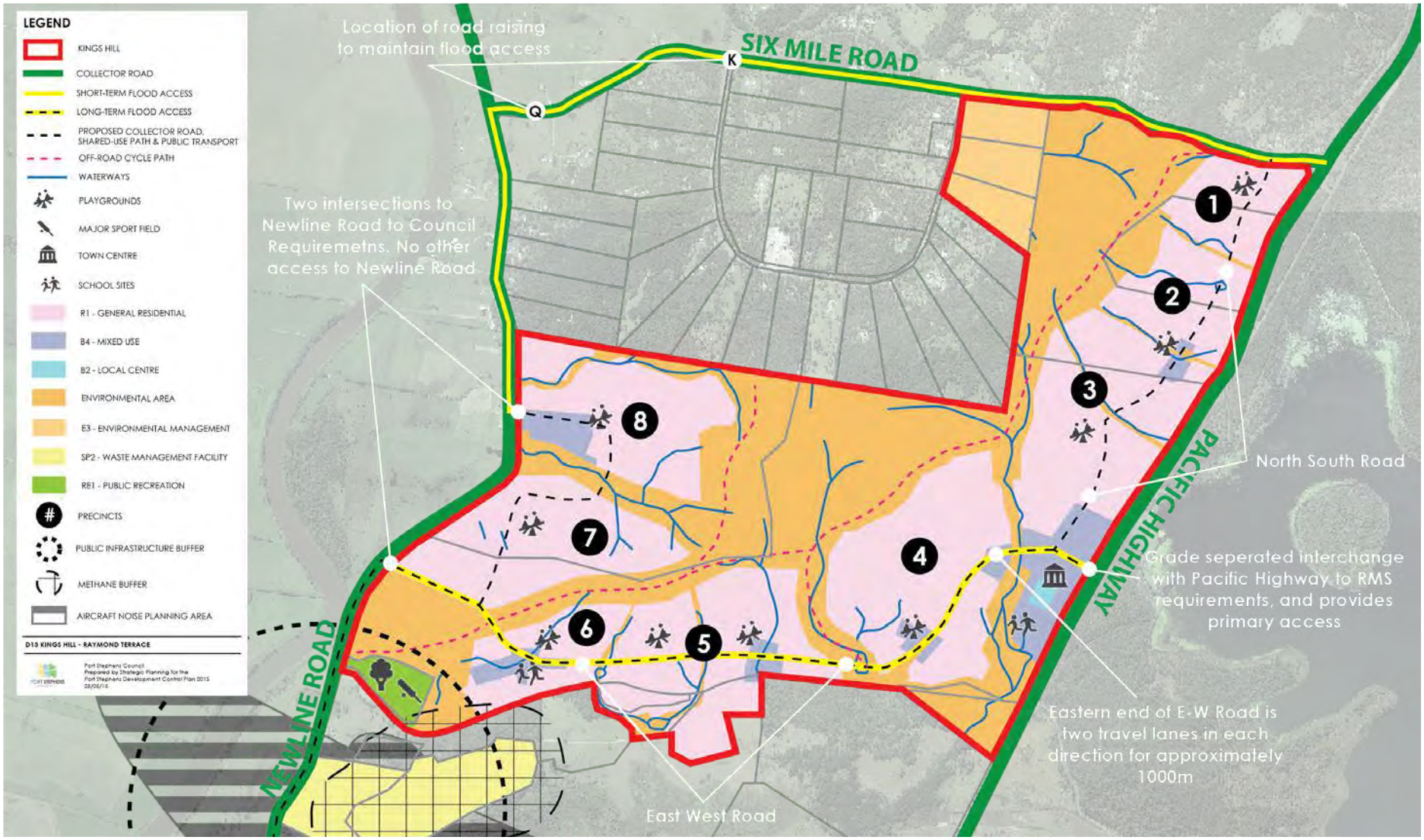
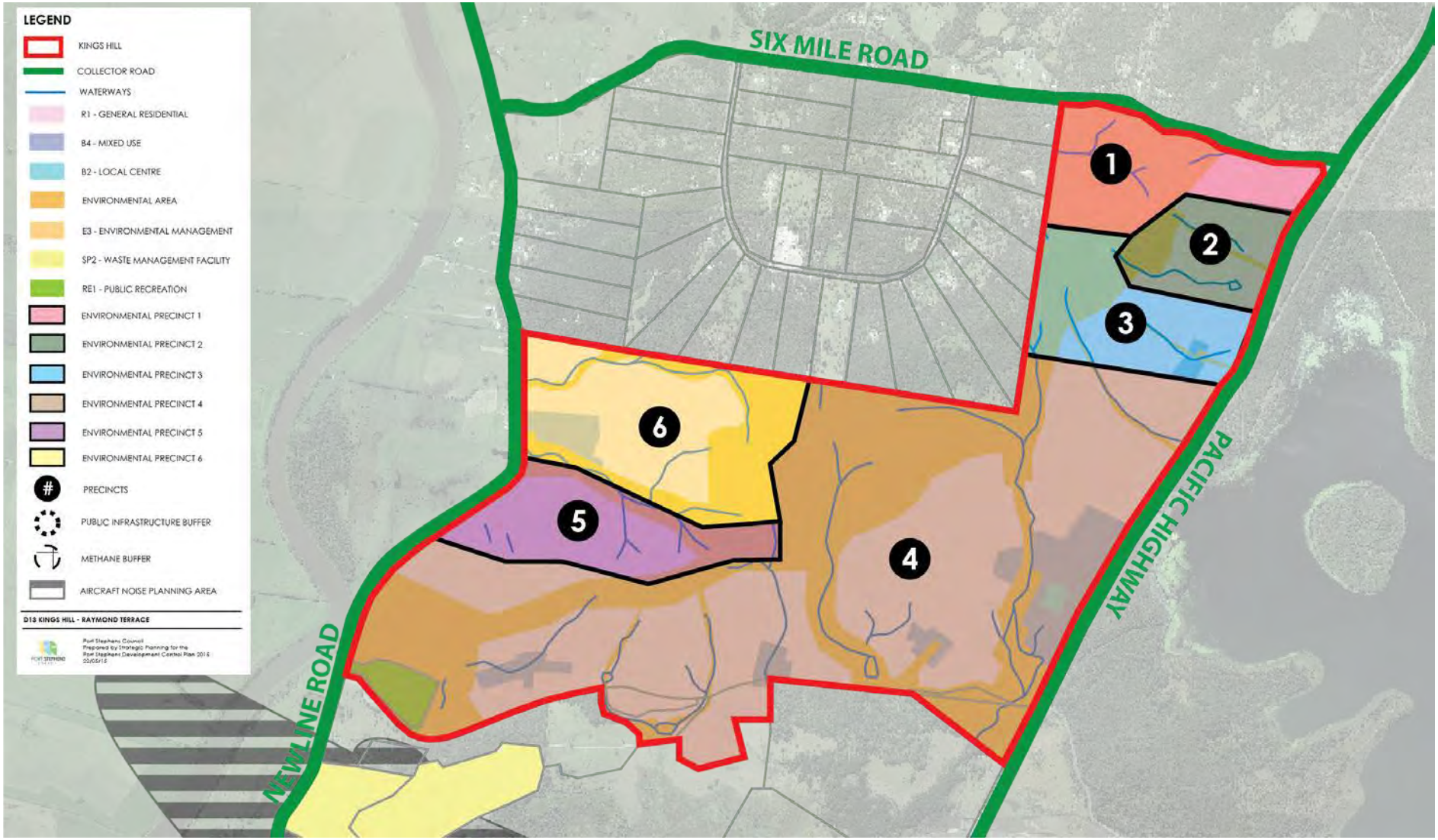


Figure DAD: Kings Hill – Raymond Terrace Locality Controls Map



APPENDIX C

Port Stephens Council LEP (2013) Flood Planning Maps

Port Stephens Flood Hazard Mapping 2016

PORT STEPHENS COUNCIL

Flood Hazard Map - Sheet FHZ_002C

Flood Hazard Categories

- Minimal Risk Flood Prone Land
- Flood Planning Level
- Low Hazard Flood Fringe area
- Low Hazard Flood Storage area
- Low Hazard Overland Flow Path area
- Low Hazard Floodway area
- High Hazard Flood Fringe area
- High Hazard Flood Storage area
- High Hazard Overland Flow Path area
- High Hazard Floodway area
- Flood Prone Land subject to further investigation

Cadastre

Cadastre 17/02/2017 © Land and Property Information (LPI)

NOTES

"High hazard" flood area is the area of flood which poses a possible danger to personal safety, where the evacuation of trucks would be difficult, where able-bodied adults would have difficulty wading to safety or where there is a potential for significant damage to buildings (refer Flood Manual Appendix L).

"Low hazard" flood area is the area of flood where, should it be necessary, a truck could evacuate people and their possessions or an able-bodied adult would have little difficulty in wading to safety (refer Flood Manual Appendix L).

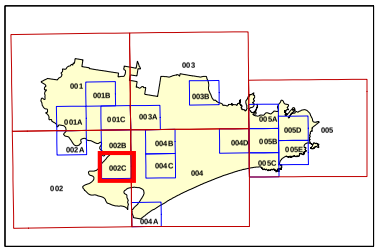
"Floodway area" refers to the land that is a pathway taken by major discharges of floodwaters, the obstruction or partial obstruction of which would cause a significant redistribution of floodwaters, or a significant increase in flood levels. Floodway areas are often aligned with natural channels, are usually characterised by deep and relatively fast flowing water, and have major damage potential.
(refer Flood Manual Section 4)

"Overland flow path" is land inundated by local runoff on its way to a waterway, rather than overbank flow from a stream, river, estuary, lake or dam (refer Flood Manual Section 4).

"Flood storage area" refers to those parts of the floodplain that are important for the temporary storage of flood waters. The loss of flood storage areas can increase the severity of flood impacts by reducing natural flood attenuation.
(refer Flood Manual Section 4)

"Flood fringe area" refers to the remaining area of flood prone land after the Floodway area and Flood storage area have been defined (refer Flood Manual Section 4).

"Flood Prone Land subject to further investigation" refers to the area of land susceptible to flooding where a compreshensive technical investigation of flood behaviour (to define the variation over time of flood levels, extent, velocty, flood hazard and the Flood Planning Level up to and including the probable maximum flood) has not yet been carried out.
(refer Flood Manual Appendix F)



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GDA 1994
MGA Zone 56

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Scale: 1:20000 A3

Map identification number :
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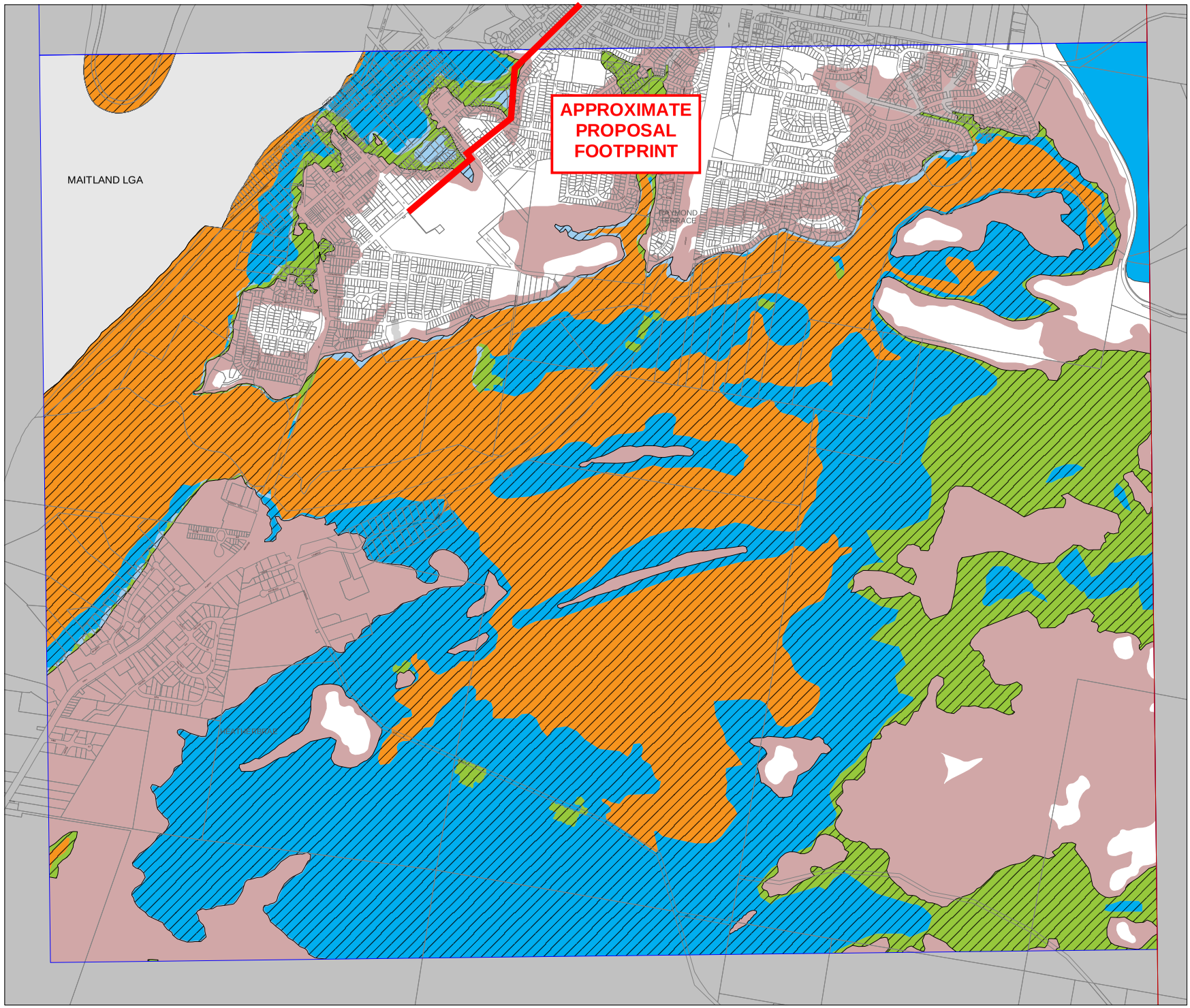

Port Stephens Flood Hazard Mapping 2016

PORT STEPHENS COUNCIL

Flood Hazard Map - Sheet FHZ_002B

Flood Hazard Categories

- Minimal Risk Flood Prone Land
- Flood Planning Level
- Low Hazard Flood Fringe area
- Low Hazard Flood Storage area
- Low Hazard Overland Flow Path area
- Low Hazard Floodway area
- High Hazard Flood Fringe area
- High Hazard Flood Storage area
- High Hazard Overland Flow Path area
- High Hazard Floodway area
- Flood Prone Land subject to further investigation

Cadastre

Cadastre 17/02/2017 © Land and Property Information (LPI)

NOTES

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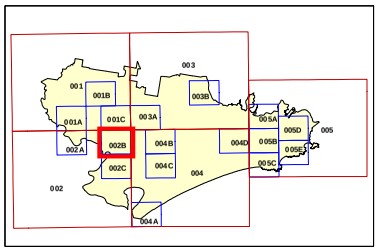
(refer Flood Manual Appendix F)



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Map identification number :
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KINGS HILL

NELSONS PLAINS

MAITLAND LGA

RAYMOND TERRACE

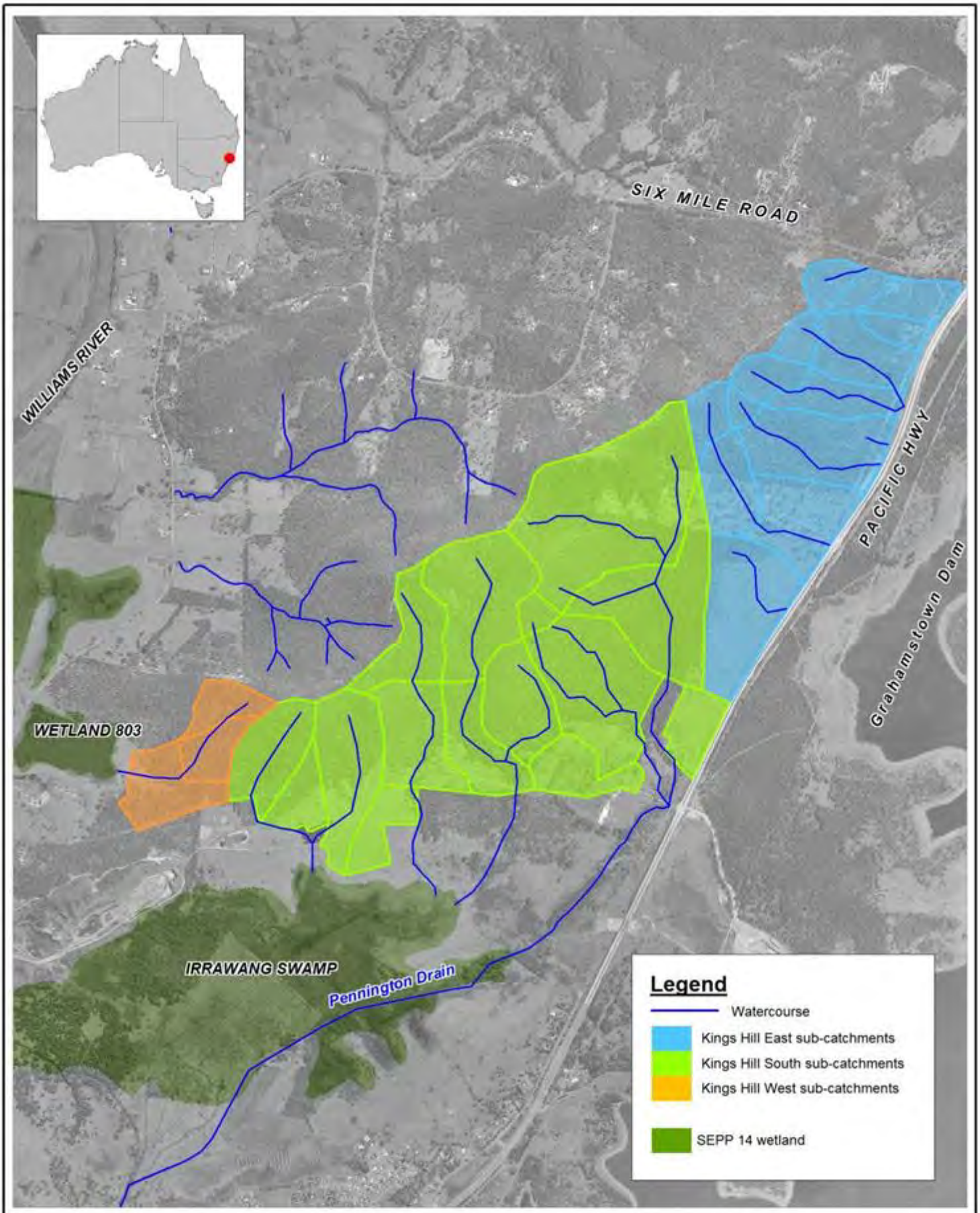
MAITLAND LGA

MAITLAND LGA

APPROXIMATE PROPOSAL FOOTPRINT

APPENDIX D

Kings Hill Urban Release Area Water Management Strategy Guidelines (BMT WBM, 2013)



Title:

Drainage

Figure: 8-5

Rev: A

BMT WBM endeavours to ensure that the information provided in this map is correct at the time of publication. BMT WBM does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

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0 200 400m

Approx. Scale

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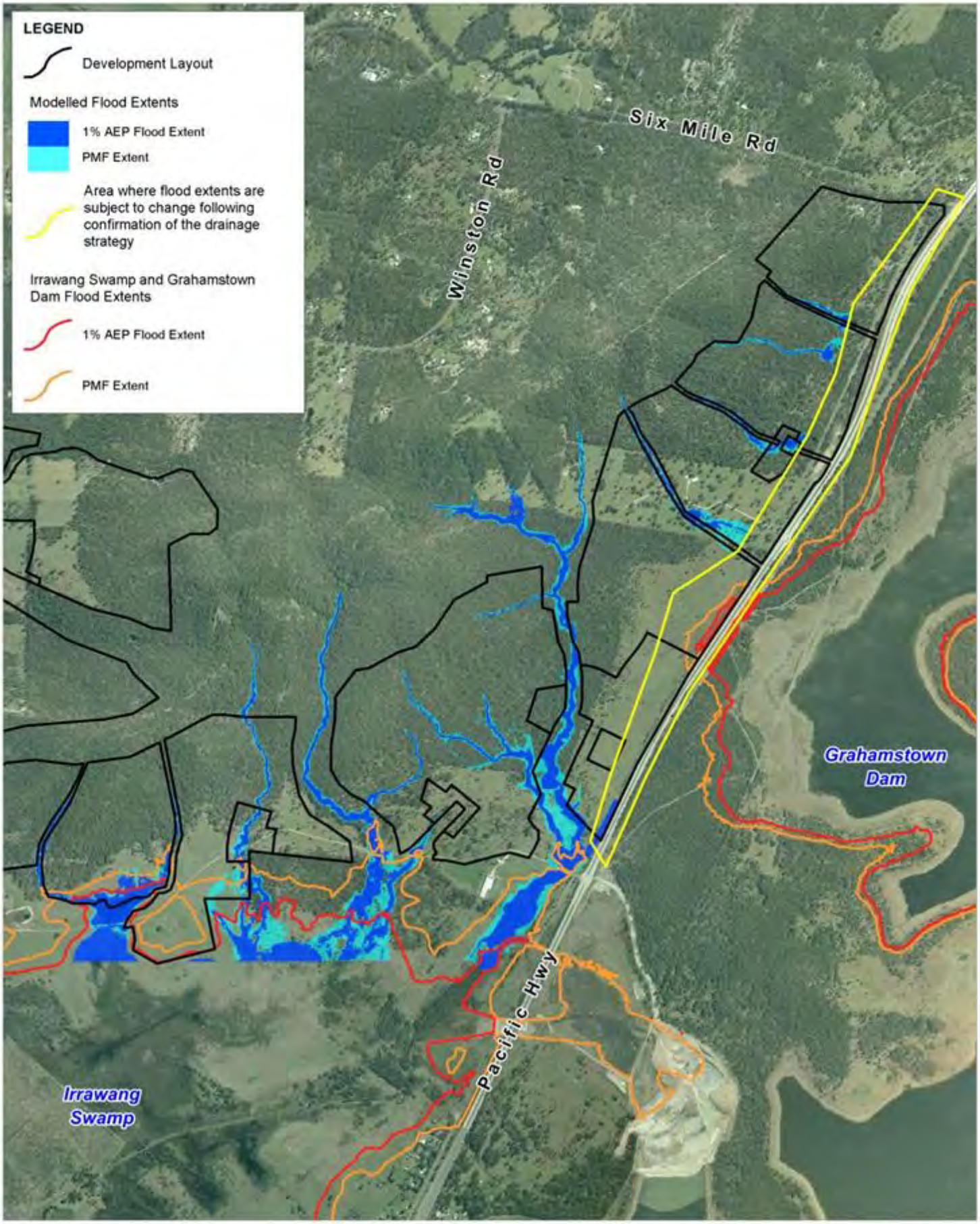
Table 11-1 Model Kings Hill Water Management Strategy

Environmental Objective	Water Management Objectives	Water Management Actions
To minimise impacts on water quality in drinking water supply storages.	• Divert urban runoff away from Grahamstown Dam.	• Design a major drainage system capable of diverting runoff up to the 0.2% AEP design flow away from Grahamstown Dam.
To prevent the clearing of riparian corridors	• Exclude development from riparian corridors.	• Map riparian corridors and include overlays as an attachment to the LEP.
To conserve potable water and match water sources with appropriate uses.	• Incorporate water efficient measures within the development. • Harvest stormwater from development surfaces to replace non-potable water demands within buildings and irrigate public land including open space areas.	• Confirm targets for developments not subject to SEPP BASIX. • Evaluate the potential for all developments to conserve potable water. • Identify locations for stormwater harvesting facilities within public open space areas and private lands.
To provide infrastructure that can be maintained efficiently using Council's resources	• Identify WSUD measures that will be financially sustainable for Council to maintain. • Site access will be available for future maintenance. • Identify WSUD measures that Council has access to maintenance equipment for.	• Confirm Council's available maintenance equipment. • Confirm that legal and physically feasible site access to all WSUD measures is available for maintenance staff, equipment and vehicles. • Estimate lifecycle costs for all planned WSUD measures.
To integrate multiple benefit water cycle management infrastructure into the urban landscape.	• Configure the development layout to minimise the length of road with steep gradients. • Provide footway widths that are sufficient for incorporating WSUD measures, services, pedestrian access and other street furniture. • Provide attractive WSUD measures in public open space areas that will not limit use of the space.	• Align future roads along the site contours and minimise the length of road with a longitudinal gradient exceeding 4%. • Prepare typical road cross sections that incorporate consideration of future WSUD measures. • Prepare a preliminary road grading plan. • Prepare combined landscaping/stormwater concept plans for high use open space areas.
To prevent regular nuisance to the community during frequent runoff events.	• Provide a constructed drainage system that will minimise nuisance flooding in all development areas for all events up to Council's design standard for minor systems.	• Prepare a stormwater drainage concept plan.
To prevent damage by stormwater to property and infrastructure.	• Provide designated overland flow paths to convey runoff from development areas safely to riparian corridors. • Divert overland flow from external environmental conservation areas away from development lots to riparian corridors. • Provide flood detention facilities in circumstances where increased runoff from the development would adversely impact on existing property or reduce the flood immunity for major infrastructure. • Limit infrastructure positioned within overland flow paths to minimise flooding impacts.	• Incorporate overland flow paths within public road reserves, open space areas and/or riparian corridors. • Design/analyse overland flow paths to ensure they are capable of conveying all flows up to Council's major design standard from the development. • Locate WSUD measures and other significant infrastructure outside of major overland flow paths.
To mitigate potential impacts on catchment flooding behaviour.	• Ensure development lots and road reserves are located outside floodways. • Provide flood detention facilities to mitigate potential adverse impacts on downstream properties.	• Refine the preliminary flooding assessment based on the final development configuration. • Complete a floodplain risk management assessment. • Develop a strategy for the management of major flows during flooding events.

Environmental Objective	Water Management Objectives	Water Management Actions
To minimise soil erosion in developing catchments.	• Stage the development to minimise the areas of bare soil exposed to rainfall during subdivision and building construction. • Avoid disturbing existing terrestrial vegetation proposed to be retained within the future development. • Ensure that the development layout minimises surface regrading. • Minimise the development footprint of large WSUD measures. • Avoid concentrating stormwater discharges in areas where highly dispersive and/or sodic soils exist. • Provide sediment and erosion control measures to function over the subdivision construction and building construction phases.	• Prepare a development staging plan. • Map and protect areas of terrestrial vegetation to be retained. • Prepare a preliminary road and lot grading plan that minuses earthworks. • Locate large WSUD measures in the lower gentler grading parts of the site where excavation works can be minimised. • Prepare a construction phase soil and water management plan.
To prevent disturbance of acid sulphate soils.	• Avoid excavating close to SEPP 14 wetland areas and lower reaches of watercourses.	• Complete geotechnical investigations for proposed WSUD measures within development areas near potential acid sulfate soil areas to ascertain the presence and likely extents of these soils.
To minimise impacts on natural wetting and drying cycles.	• Retain/detain stormwater within the development and divert the stormwater to receiving environments that are not susceptible to impacts from increased runoff volumes. • Harvest stormwater from development surfaces to replace non-potable water demands within buildings and irrigate public land including open space areas.	• Evaluate the feasibility of diverting increased stormwater runoff volumes away from Irrawang Swamp. • Evaluate the potential for managing water levels in Irrawang Swamp to protect and enhance the existing ecology. • Prepare a water management strategy for public open space areas to optimise the harvesting and use of stormwater. • Incorporate controls into the DCP for the harvesting and use of roof runoff in developments not subject to SEPP BASIX. • Identify locations for stormwater harvesting facilities within public open space areas and private lands.
To prevent localised scouring at stormwater drainage outlets.	• Retain / detain stormwater within development areas upslope of discharge locations into the watercourses. • Position piped drainage outlets at locations along the watercourses where the potential for scour erosion is lower. • Reduce flow rates, dissipate stormwater energy and spread flow at stormwater outlets. • Reinforce the watercourse bed and banks adjacent to outlets.	• Prepare a drainage concept plan that identifies the locations of piped drainage outlets along the watercourses. • Identify locations of WSUD measures for retaining / detaining stormwater within development areas upslope of discharge locations into the watercourses. • Design measures to minimise outlet scour potential and protect beds/banks adjacent to stormwater outlets.

Environmental Objective	Water Management Objectives	Water Management Actions
To protect watercourses from increased bed and bank erosion, and sedimentation.	• Minimise the area of developed catchment that discharges to elevated steeply grading sections of watercourse. • Limit the imperviousness of development lots. • Minimise road carriageway widths. • Minimise the imperviousness of road reserves, carparks, footways and cycleways. • Provide measures to harvest stormwater runoff. • Provide measures that temporarily detain stormwater prior to slow release into watercourses. • Provide permeable landscaped areas that can assist with increasing evapotranspiration and infiltration of stormwater.	• Prepare a drainage concept plan that outlines how developed area runoff would be directed and discharged into lower more gently grading sections of the watercourses. • Confirm maximum imperviousness ratios for development lots. • Confirm the minimum road carriageway widths for the required level of service. • Prepare landscaping guidelines that incorporate appropriate permeable paving guidelines for pedestrian, cycleway and low traffic areas. • Prepare a development specific water management strategy for lots and road reserves that incorporates measures that would achieve disconnection of impervious surfaces.
To maintain or improve water quality.	• Prevent elevated quantities of organic debris, litter, coarse sediment, suspended solids, heavy metals, nutrients and other common stormwater pollutants being conveyed from the development into watercourses and other receiving environments.	• Provide WSUD measures to retain, detain, infiltrate, harvest, filter and biologically treat stormwater prior to discharge into receiving environments. • Prepare a strategy for the Kings Hill urban release area that outlines the range of WSUD measures that would be acceptable for future development. • Prepare development specific WSUD strategies. • Prepare an education booklet for new owners describing the stormwater pollutant issues and WSUD measures provided to manage the issues and reinforce the key messages with signage throughout the development. • Prepare a community education strategy.
To prevent the smothering of aquatic plants and benthic habitats.	• Prevent elevated quantities of sediment from being conveyed from the development into watercourses and other receiving environments.	• Prepare a construction phase soil and water management plan. • Prepare building phase erosion and sediment control guidelines. • Provide WSUD measures between development surfaces and watercourses to capture sediment from the completed development. • Prepare a community education strategy.
To prevent chemical contamination of benthic habitats and loss of sensitive fauna.	• Prevent elevated quantities of heavy metals and other potentially toxic substances from being conveyed from the development into watercourses and other receiving environments.	• Provide WSUD measures between development surfaces and watercourses to capture sediment from the completed development. • Prepare a community education strategy.
To prevent the establishment of nuisance plants and weeds.	• Prevent elevated quantities of suspended solids and nutrients from being conveyed from the development into watercourses and other receiving environments.	• Provide WSUD measures between development surfaces and watercourses to capture suspended solids and nutrients from the completed development. • Prepare a community education strategy.
To maintain water clarity and light penetration for aquatic flora.	• Prevent elevated quantities of suspended solids and nutrients from being conveyed from the development into watercourses and other receiving environments.	• Provide WSUD measures between development surfaces and watercourses to capture suspended solids and nutrients from the completed development. • Prepare a community education strategy.
To prevent excessive and increased frequency of algal blooms.	• Prevent elevated quantities of suspended solids and nutrients from being conveyed from the development into watercourses and other receiving environments.	• Provide WSUD measures between development surfaces and watercourses to capture suspended solids and nutrients from the completed development. • Prepare a community education strategy.

Environmental Objective	Water Management Objectives	Water Management Actions
To minimise organic debris and litter contacting with aquatic animals and recreational water users.	• Limit the planting of trees and shrubs adjacent to directly connected road pavements that have a potential to generate elevated loads of organic debris. • Prevent elevated quantities of organic debris and litter conveyed in the stormwater drainage system from reaching watercourses and other receiving environments.	• Nominate appropriate tree, grasses and shrub species for planting adjacent to road carriageways and drainage systems. • Prepare a landscaping strategy for road reserves that incorporates appropriate vegetation species. • Provide WSUD measures (debris barriers and GPTs) between development surfaces and watercourses to capture organic debris and litter. • Prepare a community education strategy.
To create/maintain aesthetics of riparian, landscaped and recreational areas.	• Significant open space areas incorporating WSUD measures shall be functional and aesthetically pleasing for the community.	• Landscape concept plans should be prepared outlining the proposed final land form for all significant open space areas incorporating WSUD measures.



Title:

Modelled Flood Extents for the Fully Developed Scenario

Figure: 9-2

Rev: A

N

0 0.5 1km

Approx. Scale

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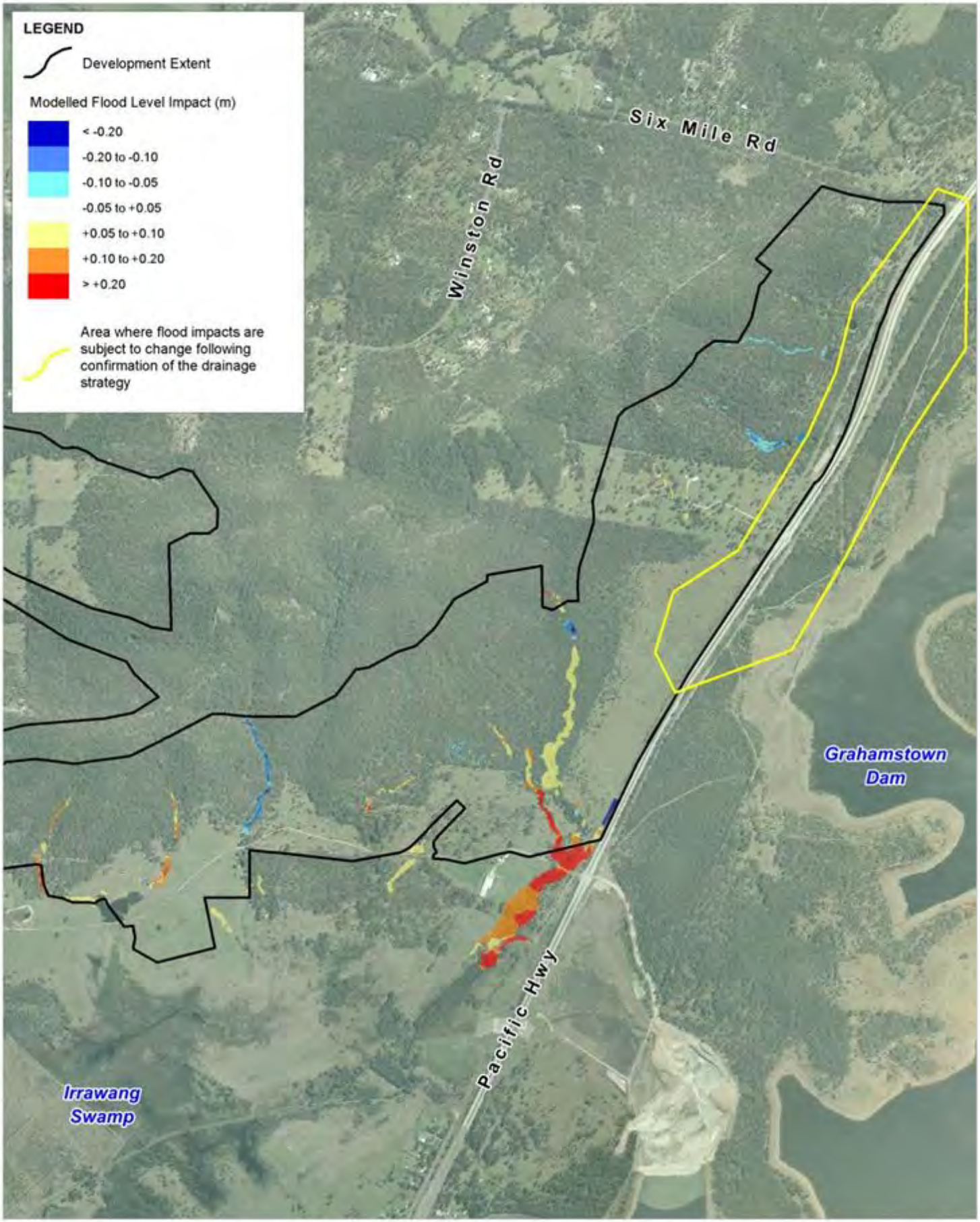

Title:

Modelled Flood Level Impacts for the 1% AEP Event

Figure: 9-3

Rev: A

N

0 0.5 1km

Approx. Scale

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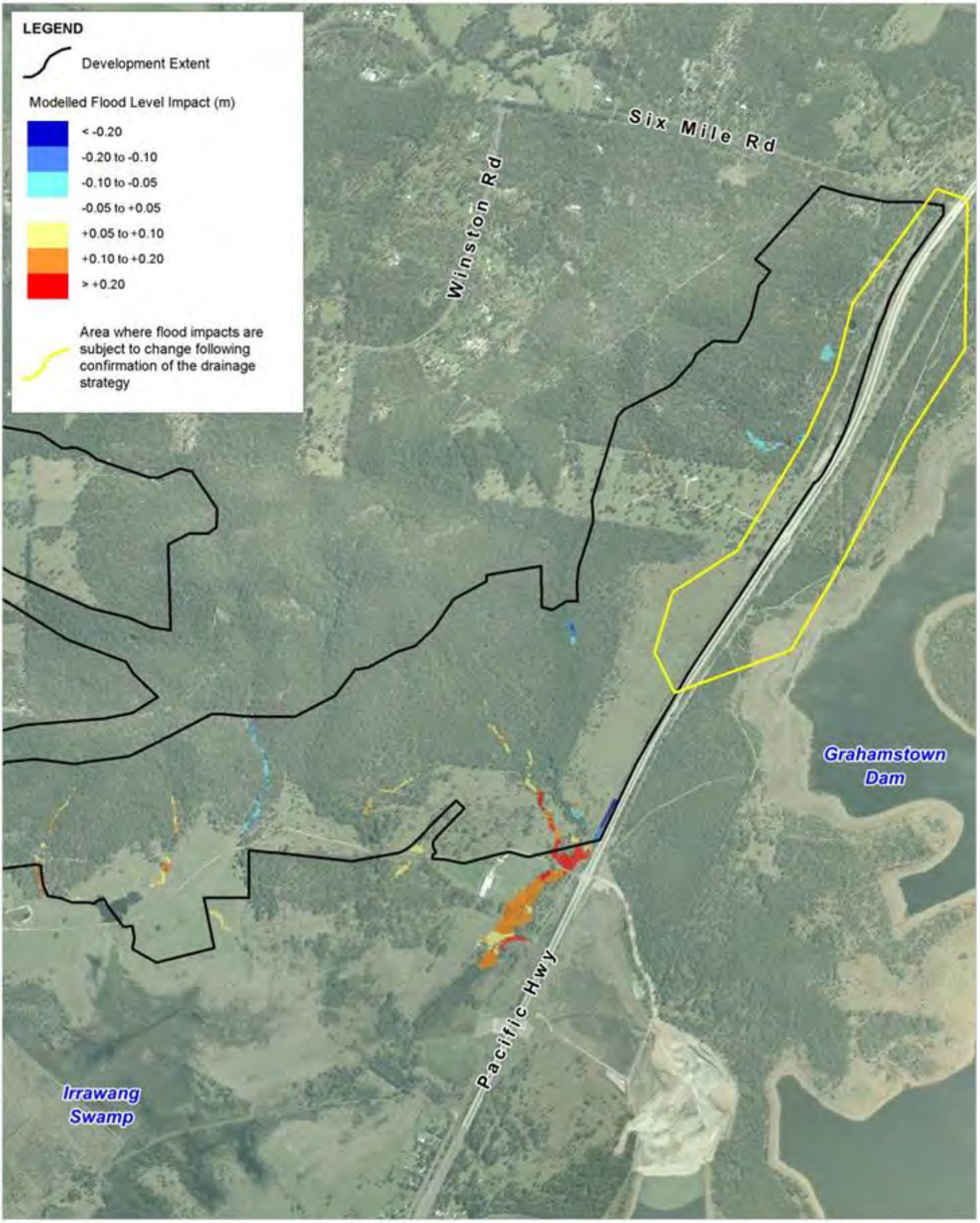

Title:

Modelled Flood Level Impacts for the 20% AEP Event

Figure: 9-4

Rev: A

N

0 0.5 1km

Approx. Scale

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Filepath : K:\N2354_Kings_Hill_Water_Management_Strategy\MI\Workspaces\DRG_008_130829_Flood_Impacts_2.WOR

APPENDIX E

Existing Proposal Site Photos (2018/2019)

Figure 1: Proposal Site – Boomerang Park

Figure 2: Proposal Site – Adelaide Street near Richardson Road

Figure 3: Proposal Site – Rees James Road near Adelaide Street

Figure 4: Proposal Site – South of Grahamstown Spillway