



Warnervale District Development Contributions Plan

Technical Document

May 2021

Contents

A.1	Infrastructure Demand	7
A1.1	Summary of estimated population	7
A1.2	Developable land and density assumptions	8
A1.3	Assumed occupancy rates	10
A1.4	Anticipated Non-Residential Development	12
A2.	Infrastructure Strategies	14
A2.1	Open Space and Community Facilities	16
A2.1.1	Open Space	16
A2.1.2	Community Facilities	18
A2.1.3	Calculation of Open Space and Community Facilities Contributions	21
A2.2	Roads, Traffic Management and Bus Facilities Strategy	23
A2.2.1	Background	23
A2.2.2	Calculation of Contribution Rate for Transport Facilities	24
A2.3	Drainage, Flood Mitigation & Water Quality	30
A2.3.1	Overview	30
A2.3.2	How are infrastructure demands and costs apportioned?	35
A2.4	Environmental Conservation	37
A2.4.1	Floodplain restoration	37
A2.4.2	Wadalba and Wadalba South Environmental Corridor (WEC/WSEC)	38
A2.4.3	Calculation of Contribution Rate for the WEC/SWEC	39
A2.4.4	Addition to Wadalba Environmental Corridor	40
A2.4.5	Calculation of Contribution Rate for Additional Corridor Land	44
A2.5	Studies & Administration	43
A2.5.1	Studies	43
A2.5.2	Administration	43
A2.5.3	Calculation of Contribution Rate for Studies and Administration	44
A3	How have infrastructure costs been derived?	46
A3.1	Works Costs	46
A3.2	Land Costs	46
A4	Works Schedules and Location Maps	48
A4.1	Open Space and Community Facilities	48
A4.1.1	Open Space – Land	48

Table of Contents

A4.1.2	Open Space – Embellishment	56
A4.1.3	Community Facilities – Land	64
A4.1.4	Community Facilities - Works	64
A4.2	Transport Facilities	67
A4.2.1	Roadworks – Land	68
A4.2.2	Roadworks – Capital Works	74
A4.2.3	Intersections – Capital Works only	82
A4.3	Drainage and Water Quality	94
A4.3.1	Drainage and Stormwater Quality Land	94
A4.3.2	Major Floodplain Land	108
A4.3.3	Drainage Works	113
A4.3.4	Water Quality Works	123
A4.4	Environmental Benefit Works	128
A4.4.1	Wadalba Environmental Corridor Land & Works	129
A4.4.2	Wadalba South Environmental Corridor Lands	129
A4.4.3	Additions to Environmental Corridor Lands	133
A4.4.4	Floodplain Restoration Works – Precinct 7A	139
A4.5	Studies and Plan Administration	140
A5	Plan Amendments	141
A6	References	141

Figures

Figure A.1	Porters Creek Catchment	30
Figure A.2	Open Space Land and Works Locations	63
Figure A.3	Community Facilities Locations	69
Figure A.4	Road Works Locations	91
Figure A.5	Road Widening Works Locations	91
Figure A.6	Shared Pathway Locations	92
Figure A.7	Intersection Work Locations	95
Figure A.8	Drainage and Water Quality Land Locations – Warnverale District	107
Figure A.9	Drainage and Water Quality Land Locations – WTC & Precinct 7A	108
Figure A.10	Flood Plain	113
Figure A.11	Drainage Works Locations - WWAHT	123
Figure A.12	Water Quality Works Locations	128
Figure A.13	Water Quality Locations – Wadalba South (WELOG)	106
Figure A.14	Wadalba Environmental Corridor Contribution Catchment	132
Figure A.15	Wadalba Environmental Corridor Land Locations	106
Figure A.16	Wadalba South Environmental Corridor Land Locations	135
Figure A.17	Addition to Wadalba Environmental Corridor Land	106

Tables

Table A.1	Population projections summary for Warnervale District	7
Table A.2	Land budget by catchment and assumed residential densities for residential NDA	8
Table A.3	Dwellings structure by no. of bedrooms in Warnervale-Wadalba, 2016	10
Table A.4	Assumed Occupancy Rates for Dwelling Types (assuming 100 dwellings)	10
Table A.5	Adopted Occupancy Rates in Calculating Contributions	11
Table A.6	Community Infrastructure demanded	18
Table A.7	Planned open space provision for Warnervale District	20
Table A.8	Former community facilities standards	18
Table A.9	Proposed Warnervale District community facilities	26
Table A.10	Recreation Centre Costs (\$Jul18)	21
Table A.11	Assumed number of DVTS by transport catchment	25
Table A.12	Land Use Trip Generation Rates	27
Table A.13	Estimated Cost for Floodplain Restoration Works – Precinct 7A (\$Dec20)	38
Table A.14	Wadalba and Wadalba South Environmental Corridor Contribution Rates (\$Dec20)	40
Table A.15	Cost of Addition to Wadalba Environmental Corridor	43

Table of Contents

Table A.16 Contribution Rate for Clearing Identified Lands 42

Table A.17 Expenditure on Studies (\$Dec20) 43

This **Technical Document** forms an appendix to the **Main Document** for the *Warnervale District Contributions Plan 2021*. **Sections 1 to 3** provides more detail on:

- the demand for infrastructure from the expected development and the assumed densities, occupancy rates and development yields in the plan;
- the non-residential development expected in the District;
- how the infrastructure has been planned and costed;
- the environmental conservation works required and costs involved; and
- the studies and administration costs included in the plan;

Section A4 of this document also includes:

- the schedules of land to be acquired and works to be undertaken;
- maps showing the location of proposed infrastructure;
- amendments to the plan compared with the previous version and historically, and
- references.

A1 Infrastructure Demand

A1.1 Summary of estimated population

Table A.1 comprises the projected populations for precincts rezoned for urban development (Wadalba, Woongarra & Hamlyn Terrace (WWAHT), Precinct 7A and Warnervale Town Centre (WTC), including WTC West. It also includes other rural areas within the Warnervale District that, at the time of this plan's preparation, to be rezoned for urban residential development (South East Wadalba (SEW)) or will likely be rezoned in the future (Bruce Crescent).

Table A.1 provides the dwelling and population yields listed by precinct and transport catchment for the purposes of this plan.

This table also includes the other precincts zoned for non-residential development:

- Warnervale Employment Zone (WEZ) – Mountain Road Precinct,
- Precinct 14,
- WEZ – South and West / Education Precinct, and
- North Wyong Industrial Estate.

In total, there is estimated to be around 11,900 new dwellings and 36,200 more people in the Warnervale District in the 20 years to 2036. A large share of this population growth is forecast to occur in WWAHT. The plan includes this and other completed development (e.g. in WTC, Precinct 7A and the North Wyong Industrial Estate) to ensure that the infrastructure needs for the whole Warnervale District are accounted for, with apportionment of costs to all development accordingly.

Other areas of strong growth are in the East Warnervale Catchment, also east of the railway line, with Precinct 7A, WTC and SEW altogether accounting for almost half of the forecast population yield in the Warnervale District.

Table A.1 Population projections summary for Warnervale District

Development Area	Projected Lots/Dwellings	Projected Population	% of Population
WWHAT	5,339	16,549	46%
Precinct 7A	2,188	6,760	19%
WTC	1,246	3,360	9%
South East Wadalba	2,363	7,324	20%
East Warnervale Contributions Catchment	5,796	17,444	48%
WTC – West	104	285	1%

Development Area	Projected Lots/Dwellings	Projected Population	% of Population
Bruce Crescent	625	1,939	5%
WEZ – Mountain Rd Precinct	0	0	0%
Precinct 14	0	0	0%
West Warnervale Contributions Catchment	729	2,224	6%
WEZ – South/West/Education Precinct	0	0	0%
North Wyong Industrial Estate	0	0	0%
TOTAL	11,864	36,218	100%

The total projected population under this plan is higher than the projected population under the former plan (34,800), owing to a combination of higher dwelling yields in the WTC, SEW and Bruce Crescent precincts (which altogether is only partially offset by lower forecast yields in WWAHT and Precinct 7A) and larger forecast average household sizes for detached dwellings (usually, with 4 bedrooms).

A1.2 Developable land and density assumptions

Table A.2 shows the net developable area (NDA) by residential and non-residential development in each of the precincts, and relevant densities for residential land. This has informed the number of projected lots to be developed, as in **Table A.1**.

Table A.2 Net developable area by catchment and residential densities

Precinct (with zoning)	Non Residential NDA	Residential NDA	Total NDA	Assumed residential dwelling density (dwellings/ha)
WWAHT R2	-	355.9	355.9	15
WWAHT B2	2.8	-	2.8	15
WWHAT (Total)	2.8	355.9	358.7	15
Precinct 7A R1	-	31.7	31.7	18
Precinct 7A R2	-	106.0	106	15
Precinct 7A B2	1.8	-	1.8	15
WTC R1	-	37.2	37.2	18

Precinct (with zoning)	Non Residential NDA	Residential NDA	Total NDA	Assumed residential dwelling density (dwellings/ha)
WTC B2 & B4	18.0	-	18.0	32
South & East Wadalba Residential R2	0.0	157.5	157.5	15
East Warnervale Contributions Catchment	19.8	332.4	352.2	
WEZ – Mountain Rd Precinct	101.1	-	101.1	-
Precinct 14	58.7	-	58.7	-
Bruce Crescent Residential	42.6	41.7	84.3	15
WTC - West R1	0.0	3.4	3.4	18
WTC - West B2	2.8	0.0	2.8	15
West Warnervale Contributions Catchment	205.2	45.1	250.3	
WEZ – South/West /Education Precinct	108.3	-	108.3	-
North Wyong Industrial Estate	24.4	-	24.4	-
TOTAL	360.5	733.4	1,093.9	

There is forecast to be a total of around 733 hectares of NDA for residential development and around 361 hectares for employment generation activities (based on the NDA for non-residential development) across the Warnervale District.

The expected densities on residential land are based on the North Wyong Shire Structure Plan 2021 which adopted a minimum density target of 15 dwellings per hectare of developable land for new residential areas.¹

Overall, it is expected that there will be a variety of dwelling types including detached dwellings at lower densities through to multi dwelling housing, dual occupancies, residential flat buildings, shop top housing, and serviced apartments. Any potential shortfall in achieving the targeted residential densities due to localised development constraints (e.g. surface subsidence controls, biodiversity and flooding) is expected to be offset by medium density development opportunities in and immediately around centres, minor infill development in existing urban areas and development within areas identified for further investigation.²

Smaller lot sizes are encouraged in the areas zoned General Residential (R1) such that the assumed density is 18 dwellings per hectare. The Wyong Local Environmental Plan 2013 (WLEP) and draft Central Coast Local Environment Plan (CLEP) do not specify a minimum lot size for subdivision on R1 zoned land. Therefore, this land provides for a diverse range of housing and tends to be located near significant public transport links where relatively higher densities of residential development are appropriate. Much higher densities (32

¹ North Wyong Shire Structure Plan, p 7.

² North Wyong Shire Structure Plan, p 7.

dwelling per hectare) are assumed in the local centre (B2) and mixed use (B4) zoned areas, allowing for dwellings such as serviced apartments and shop top housing.

A1.3 Assumed occupancy rates

Occupancy rate assumptions underpinning the population estimates and contributions calculations in the plan are based on the Australian Bureau of Statistics average household size data for the Warnervale-Wadalba Statistical Area (WWSA) and Council’s observations regarding occupancies by different type of dwelling in Wyong.

The average number of persons per household in the WWSA was 3.1 in 2016. Most housing is detached dwellings with more than 90% of all dwellings with at least 3 or 4 bedrooms (**Table A.3**).

Table A.3 Dwellings structure by no. of bedrooms in Warnervale-Wadalba, 2016

Dwelling structure	Warnervale-Wadalba	%
None (includes bedsitters)	8	0.2
1 bedroom	97	2.1
2 bedrooms	260	5.6
3 bedrooms	724	15.5
4 or more bedrooms	3,500	74.8
Number of bedrooms not stated	91	1.9
Average no. of bedrooms per dwelling	3.8	-
AVERAGE NO. OF PEOPLE PER HOUSEHOLD	3.1	-

Source: ABS Census, 2016.

The assumed average household sizes which have informed the population projections in **Table A.1**, are:

- **3.1** for residential development on residential zoned land (i.e. with R1 or R2 zoning and most likely to be detached housing) and
- **2.23** for residential development on non-residential land (i.e. with B2 or B4 zoning and most likely to be shop top housing or serviced apartments).

The average occupancy rates for different types of dwellings has been calculated making assumptions about the mix of dwelling sizes and the adopted occupancy rate for those sized dwellings. **Table A.4** below provides the basis for the average occupancy rates assumed for the different types of dwellings and the commercially zoned areas.

Table A.4 Assumed Occupancy Rates for Dwelling Types

Private dwelling type (inc. no. of bedrooms)	Assumed split	No. of dwellings	Occupancy rates	Total population	Average occupancy rate
Separate houses					
Three bedrooms	20%	20	2.50	50	
Four bedrooms	80%	80	3.20	256	3.10
Townhouses					
Two bedrooms	10%	10	1.70	17	
Three bedrooms	90%	90	2.50	225	2.42
Apartments					
Two bedrooms	70%	70	1.70	119	
Three bedrooms	30%	30	2.50	75	1.94
Commercial/mixed use zoning (B2/B4)					
Attached dwellings	60%	60	2.42	145	
Apartments	40%	40	1.94	78	2.23

Specific occupancy rate assumptions by bedroom size inform the actual contributions payable by development, as established in the **Main Document**. These more specific occupancy rate assumptions are in **Table A.5**.

Table A.5 Adopted Occupancy Rates in Calculating Contributions

Residential dwelling size – no. of bedrooms	Assumed occupancy rate	Rationale for Assumed Occupancy Rate
Studio dwelling, long term caravan site	1.05	Rate adopted by Council for these types of dwellings on 24 July 2013.
1.00	1.30	The average 2011 occupancy rate for a one bedroom unit in Wyong was 1.30 persons per dwelling. It is considered still reasonable to adopt this occupancy rate for new dwellings of this type.
2.00	1.70	The average 2011 occupancy rate for a two bedroom unit in Wyong was 1.70 persons per dwelling. It is considered still reasonable to adopt this occupancy rate for new dwellings of this type.
3.00	2.50	The occupancy rate for 3 bedroom dwellings in the Wyong Shire in 2011

Residential dwelling size – no. of bedrooms	Assumed occupancy rate	Rationale for Assumed Occupancy Rate
		averaged 2.41 persons per dwelling. However, this is not likely to reflect the occupancy rate of new 3 bedroom dwellings and it is considered reasonable to assume the higher occupancy rate of 2.5 persons per dwelling for new dwellings of this size.
4.00+	3.20	The average household size for the Warnervale - Wadalba Statistical Area in 2016 was 3.1. Therefore, it is reasonable to assume an average occupancy of around 3.2 persons for 4 bedroom dwellings (given this is the dominant household type in the area).
Self-contained tourist accommodation (i.e. boarding houses, group homes and hostels)	0.5 persons per additional bedroom	

A1.4 Anticipated Non-Residential Development

The Central Coast Regional Strategy had established a minimum employment capacity target for the North Wyong Shire Structure Plan 2021 of 12,000 additional jobs by 2031. This included 1,200 jobs in and around Warnervale Town Centre and 6,000 in the WEZ. New jobs are expected to be located in:

1. Industrial lands with job densities that range between 10 and 20 jobs per hectare;
2. New centres and specialised employment nodes that form around major employment nodes such as education facilities; and
3. Home businesses, either distributed throughout the urban area or in purpose-built housing and employment estates.³

One of the key priorities in the Central Coast Regional Plan 2036 is also to promote Warnervale as a new strategic centre on the Central Coast, plan for its transport interchange and promote industry-focused investment in the WEZ by resolving infrastructure contributions and biodiversity offsets, including finalising biodiversity certification in the zone.

As **Table A.2** showed, there is around 361 hectares of NDA for non-residential development across the Warnervale District concentrated in the areas of:

- The WTC, which will also accommodate up to 20,000m² of retail floor space (largely concentrated in one major retail development), up to 4,000m² of bulky goods floor space and up to 5,000m² of commercial floor space. A small portion of the non-residential development will be in the western part of the WTC, which forms part of the West Warnervale catchment.
- The industrial lands of the West Warnervale catchment, situated west of the Sydney-Newcastle railway line and north of Sparks Road. This includes the Wyong Employment Zone (WEZ) – Mountain Road

³ North Wyong Shire Structure Plan 2021, p 6.

Section A1 Infrastructure Demand

Precinct on the northern side of Sparks Road, which was rezoned in November 2008. It is estimated to include 101.1 hectares of NDA.

On the adjacent side of the motorway extends another 58.7 hectares of employment land in Precinct 14. In addition, there is also estimated to be 42.6 hectares of non-residential NDA as part of the Bruce Crescent precinct, east of the WEZ.

- WEZ – South/West and the Education site, which altogether provides 108.3 hectares of NDA. The southwest segment of the WEZ is also rezoned but has not been developed to date because of the high cost of providing infrastructure, including the need to provide up-front funding for suitable access. There are also environmental constraints that still need to be addressed. The majority of the Education Site is zoned B7 – Business Park, which permits a range of office and light industrial uses and provides further employment opportunities in Warnervale.
- North Wyong Industrial Precinct, which provides 24.4 hectares for industrial use.

There are also small amounts of local centre (B2) land in Precinct 7A and WWAHT.

Non-residential development contributes to the demand for transport and stormwater management works in the Warnervale District, and costs are apportioned to development based on

- NDA in the precincts for stormwater management land and works, and
- Daily vehicle trips (DVTs) and NDA in the precincts for transport infrastructure.

A2 Infrastructure Strategies

Prior to the commencement of the development of the Warnervale District release areas, the public amenities and services that existed at that time were minimal and in keeping with the area's historic role as a rural area.

The Warnervale District is partially developed with the majority of residential development in the WWAHT completed and a large proportion of the industrial development within the North Wyong Industrial Estate (NWIE) also developed. Further urban development is forecast into the future, consistent with the urban zoning of the area under the Wyong Local Environmental Plan 2013.⁴ Development of existing and proposed urban areas will result in approximately 36,200 more residents and potentially, 7,000 more workers.

The incoming resident and worker populations in Warnervale can only be sustained by a significant investment in the provision, extension and augmentation of local infrastructure.

Council has identified that the expected development will generate increased demands for the types of community infrastructure listed in **Table A.6**.

Table A.6 Community infrastructure demand

Community Infrastructure Category	Community Infrastructure Required	Area and Type of Development where Contributions apply
Open space and recreation	Land for open space & recreation facilities Small local parks Large local parks District Parks Local and district sports fields and sports courts. Semi-natural passive open space areas Cycleways and pedestrian access ways	All residential development in the Warnervale District
Community, cultural and social	Land for community, cultural, library & social facilities Multi-purpose community centres (local) Smart Hub/library (district). Indoor recreation centre (including district aquatic facilities)	All residential development in the Warnervale District
Roads, traffic management, bus	Land for roads & traffic management facilities Reconstruction of local roads and some new roads Intersection treatments including roundabouts and traffic signals	All development in the Warnervale District, with distinct traffic network needs reflected by five contribution catchments for transport.

⁴ At the time of this plan's preparation, Council had adopted the Central Coast LEP, but it had not been notified on the NSW legislation website.

Community Infrastructure Category	Community Infrastructure Required	Area and Type of Development where Contributions apply
Drainage and water quality	Land for drainage and stormwater management facilities Road culverts Channel construction and landscaping Detention basins and wetlands	All development in WWAHT, East Warnervale and NWIE catchments, where stormwater management infrastructure has been planned, scoped and costed. ^a
Flood Mitigation	Land for the floodways and floodplain Flood levee (protects the North Wyong Industrial Estate from inundation)	All development in WWAHT, East Warnervale and NWIE catchments, where floodplain mitigation needs apply.
	Floodplain restoration works – Woongarra Creek Flood Plain	All Precinct 7A development only
Other Environmental Protection	Wadalba/South Wadalba Environmental Corridors & Addition to Wadalba Environmental Corridor areas	All development on certain land in the Wadalba and South Wadalba Areas only
Contributions plan administration	Resources to administer the contributions plan Studies and reviews	All development in the Warnervale District

^a Exemptions also apply to certain areas in these catchments from stormwater quality contributions, where the development has already provided treatment infrastructure directly.

Residential development in the Warnervale District results in demand for social infrastructure, including community facilities and open space and recreation facilities. Therefore, the costs of providing this infrastructure under the plan is recouped from residential development. Where facilities (such as the indoor recreation centre) will meet regional demands, the costs of providing the facilities are also shared with other residents outside the Warnervale District.

A significant share of the overall investment in the plan is required to establish a suitable local traffic network throughout all precincts within the District. Council has identified five distinct catchments for this network. Both residential and non-residential development will contribute to the demand for transport infrastructure and are levied contributions for transport accordingly.

For drainage, flood mitigation and stormwater quality treatment infrastructure, the impact of urban development throughout all precincts contributes to the demand as a result of the increased impervious surfaces. However, only the areas that have stormwater infrastructure needs planned for, scoped and costed are levied contributions under the plan. Once the needs of the West Warnervale and WEZ – South and West / Education catchments are better known, Council will amend the plan, as required.

The overall cost of the infrastructure in the plan is \$354.7 million. **Tables 1 and 2** in the **Main Document** of this plan provide a summary of the costs by infrastructure category.

The costs and programs of works relating to these local infrastructure needs were informed by a range of studies, strategies and plans. The details on the planning for each category of infrastructure, as well as the works items, costs and apportionment approaches, are provided in the following sections.

A2.1 Open Space and Community Facilities

A2.1.1 Open Space

Background

Open space and recreation facility needs for Warnervale District were originally identified in the *Wyong Open Space Plan*, the *Warnervale/Wadalba Open Space Plan* and a report prepared by Council's Landscape Planner in September 1991, later supplemented by the *Wyong Open Space Principals Plan (2005)* and the *Wyong Recreation Facilities Strategy (2009)*.

More recently, Council's *Community Strategic Plan 2018-2028* ("One – Central Coast") identifies key objectives for Council related to open space and recreation facilities in the LGA, including to:

- provide signage, public facilities, amenities and playgrounds to encourage usage and enjoyment of public areas (K3), and
- promote healthy living and ensure sport leisure, recreation and aquatic facilities and open spaces are well maintained and activated (L1).

With adherence to these objectives, the approach to establishing open space requirements for the Warnervale District area has been to:

- identify any existing open space land and improvements prior to urban development occurring;
- identify requirements to service existing population and developments for which consent has already been issued;
- determine any spare capacity for future development; and
- determine the additional open space requirements needed to service the urban residential development.

The open space standard adopted under The *Wyong Open Space Plan* identified an open space standard of 3 hectares per 1,000 residents. This standard applies to areas that provide passive and active open space opportunities, including sports fields and courts, as well as natural areas that may provide some residual passive recreational opportunities.

The open space facilities funded by this contributions plan do not reach the standard of provision (as shown in **Table A.7**), but there are other passive recreational opportunities available to residents. However, the partial meeting of the standard does emphasise how important the facilities are in meeting the open space needs of new residents. More than half of the open space area has already been provided to residents, including most of the parks in the WWAHT precinct and district sports fields and courts at the Wadalba Sporting Complex.

The need for any additional local facilities will also be subject to further review once planning and residential development proposals for the Bruce Crescent precinct (with an anticipated population yield of almost 2,000 persons) progresses.

Table A.7 Planned open space provision for Warnervale District

Open space recreation category	Area Type	Area Details	Total Area
Passive & Informal Active	Small Parks	WWAHT	9.37
	Large Parks	WWAHT	6.12
	Small & Large Parks	Precinct 7A	5.48
	Large Parks	WTC – Ridge Park East & Ridge Park West	5.14
	Small & Large Parks	Wadalba South	3.65
	District Parks	Hill Top Park	4.53
Formal Active	Playing Fields & Courts	Wadalba Sporting Complex & WWAHT Sports Fields Jensen Road Playing Fields	30.72
Other	Semi natural areas	Woongarra	0.89
TOTAL PLANNED PROVISION			61.37
FOR AN EXPECTED POPULATION OF 36,218			= 1.69 ha per 1,000 people

Note: The areas and provision rate in this table are based on the total land acquired or to be acquired in the plan for open space purposes plus any additional Council owned land to be embellished for open space purposes in the Warnervale District. This include 0.31 hectares of additional open space embellishment on drainage land (park S6.2 in WWAHT).

Land & Works

The schedule of open space land and works that will be funded under this plan is provided in **Section A4** of this document.

Costs are apportioned evenly across the whole catchment of the Warnervale District given the relatively consistent service standard that will be achieved in different precincts, based on the quantum and accessibility of facilities, particularly the districtwide facilities.

Additional Passive Recreational Opportunities

Additional land is also required to meet drainage and environmental conservation objectives, which will provide opportunities for passive recreation and connections in the shared pathway network.

In the former contribution plan the works schedule provided for the cost of half width road construction and land cost for roads that fronted open space land or the environmental corridor. These costs are no longer recognised under this Plan except in a few exceptional circumstances. It is now assumed that the cost of providing local open space with road frontage will be offset by the increased amenity that the open space offers prospective development.

A2.1.2 Community Facilities

Council’s Community Strategic Plan 2018-2028 (“One – Central Coast”) also identifies key objectives for Council related to community facilities in the LGA, including to:

- Provide equitable, affordable, flexible and co-located community facilities based on community needs (L4).

The approach followed in establishing human service requirements for the Warnervale development area has been to:

- identify any existing community facilities and associated land;
- identify requirements to service existing population, future single dwelling development on existing allotments for which no contribution can be sought and developments for which consent has already been issued;
- determine if there is any spare capacity (in existing facilities) for future development;
- determine the additional community facilities and land requirements, if any, needed to service the future development being considered.

A report was previously prepared by Council’s Strategic Planning Department to review the Strategic Social Planning Framework and Guidelines used by Council in the planning and delivery of community facilities. The report titled *Guidelines for the Planning and Provision of Community Facilities in Wyong Shire* (July 2002) recommends the baseline provision standards presented in **Table A.8**. Based on an expected population of around 36,200 new residents, there will need to be approximately 10,200 m² in community facility floorspace and around 6.4 ha of land to meet these standards.

Table A.8 Community facility provision standards

Facility requirements	m ² per person	Area required for 1m ² of floorspace	Required area (m ²) for Warnervale District population (36,218)
Community facility floor space	0.282	-	10,213
Community facility land	1.76	6.24	63,744

Note: Standards from Guidelines for the Planning & Provision of Community Facilities in Wyong Shire – Amended July 2002.

Council has since reviewed the land requirements for community facilities and determined that it should make the most of the land it owns and co-locate or cluster facilities where possible, to reduce the land requirements.

The proposed provision of community facilities in the plan and associated land acquisition requirements is shown in **Table A.9**. This shows that the total community facilities is higher than the 2002 standard but this does include the total floorspace (7,747 m²) for the Indoor Recreation Centre for which the estimated costs are apportioned only 27% to the Warnervale District.

Section A2 Infrastructure Strategies

The benchmark rate of provision for community facilities without the Indoor Recreation Centre is 144 m² of GFA per 1,000 residents. This level of provision is considered essential to meet the needs of the new population and includes multipurpose facilities and district library space.

The land requirements of 3.25 hectares for community facilities in the plan reflect the fact that:

- the Wadalda Community Centre has been co-located with the Wadalba Community School (such that no additional land was required), and
- two previously proposed facilities (CF5 for multipurpose facilities and CF6 for the Smart Hub) have been clustered to form a single Warnervale Smart Hub comprising multipurpose facilities and a district library.
- The community facility CF8 is to be co-located with district playing fields (D1).

Location

Where possible for all facilities, it is desirable to co-locate or cluster them in highly visible central locations with connectivity to complimentary land uses and public transport to enhance community access and safety and facilitate high levels of usage.

Indoor Recreation Centre

Council has identified the need to provide an Indoor Recreation Centre within the Greater Warnervale District as a regional facility to provide prospective residents with the ability to satisfy a range of passive and active recreational needs.

The principal components of the proposed Indoor Recreation Centre are aquatic facilities, which comprise a main (50m+) competition pool, spectator facilities, leisure pool, spas, saunas and water slides.

Council commissioned a strategic analysis report in 2018 (*Strategic Analysis for New Leisure and Aquatic Provision in the Northern Region of the Central Coast, NSW Final Report, July 2018*) by Otium Planning Group (OPG) to identify, review and recommend the needs of the new aquatic and leisure facilities in the northern region of the LGA.

OPG's study updated the changes in projected population in the project area, reviewed current usage and facility operations and recommended the size and scope of future facilities to meet the regional population area. This included the Indoor Recreation Centre in the Greater Warnervale District.

The study identified that the future Northern Aquatic Leisure Centre (as the Indoor Recreation Centre is referred to) should cater for a much larger catchment population than identified in the 2004/05 feasibility studies – some 134,451 people, or more than 60,000 more people than previously anticipated. It recommended that Council needs to provide a regional size aquatic leisure centre that has the capacity to cater for 600,000 to 750,000 annual visits if operationally sustainable in a high-profile central catchment location.

OPG identified the specific needs of the facility and included indicative cost estimates by Turner and Townsend Quantity Surveyors in its final report (**Table A.10**).

Just over a quarter (27%) of the Indoor Recreation Centre's estimated costs (or \$11.5 million) are apportioned to development in the Warnervale District. This represents the District's share of forecast regional demand for the facility (i.e. the estimated population of 36,218 as a share of the forecast regional population of 134,451).

It should also be noted that the cost estimates do not allow for the construction of indoor sport courts because of the existing facilities at the Lake Haven Recreation Centre, which are accessible to residents in the region. If the Lake Haven Recreation Centre courts are demolished, then OPG recommended that Council develop four multi-purpose indoor courts at the Indoor Recreation Centre. OPG advised that these additional facilities would cost in the order of \$12 to \$13 million, based on industry benchmarks.

Table A.9 Proposed Warnervale District community facilities

Community facilities	Details	Existing GFA (m ²)	Planned GFA (m ²)	Total GFA (m ²)	Land area (m ²)
CF1 Wadalba Community Centre	On Wadalba Community School – Completed 2000	400		400	Nil
CF3 Hamlyn Terrace Community Centre	Completed 2011 and opened May 2012	408		408	2,500
CF5 & CF6 Warnervale Smart Hub (District)	Hub comprises multipurpose community centre, youth space, arts/cultural space, customer service space, technology space and library. Partially relocated from WTC to Education Site		4,000	4,000	10,000
CF7 Indoor Recreation Centre	Facility includes aquatic hall & pools, health & fitness areas, amenities and external areas		7,747	7,747	20,000
CF8 Additional Local Community Centre	Multipurpose centre in South & East Wadalba Central		400	400	-
TOTAL AREA TO BE PROVIDED		808	12,147	12,955	32,500
TOTAL AREA TO BE PROVIDED EXCLUDING INDOOR RECREATION CENTRE		808	4,400	5,208	16,000
PROVISION RATE (excluding Indoor Recreation Centre) per 1,000 persons (based on population of 36,218)				144	

Note: CF8 is proposed to be located on district playing fields (D1).

Table A.10 Recreation Centre Costs (\$Jul18)

Area	Total Area (m ²)	Rate/ m ² or Allowance	Indicative Cost
Aquatic Hall and Pools	4,570 m ²	\$4,650/ m ²	
Health and Fitness Areas	1,310 m ²	\$3,400/ m ²	
Front of House	725 m ²	\$3,700/ m ²	
Amenities and Change	592 m ²	\$3,900/ m ²	
Other Areas	550 m ²	\$2,800/ m ²	
Total Building Area	7,747 m ²	\$4,447/ m ²	\$2,000,000
External Works and Services	150 car park, access road and services	Allowance	
Total Indicative Construction Cost		Allowance – Design 5%; Construction 5%	\$34,235,800
Contingencies			\$3,423,580
Subtotal			\$37,659,380
Professional Fees		Allowance 8%	\$3,765,938
Fees and Permits		Allowance	\$250,000
TOTAL INDICATIVE CAPITAL COST			\$41,673,318

Land & Works

The schedule of community facility land and works that will be funded under this plan is provided in **Schedule 4**.

Costs are apportioned evenly across residential development in the whole catchment of the Warnervale District given relatively consistent service standards that will be achieved in different precincts, based on the quantum and accessibility of facilities.

A2.1.3 Calculation of Open Space and Community Facilities Contributions

Open space and community facilities contributions within the Warnervale District will be determined by the population in accordance with the following formula:

$$\begin{aligned}
 \text{Contribution Rate (\$)} &= \frac{\text{Cost}_{\text{total}}}{P_{\text{total}}} \\
 \text{Contrib}_{\text{dev}} (\$) &= \text{Contribution Rate}_{\text{DU}} (\$) \times P_{\text{number}}.
 \end{aligned}$$

Where:

Contribution Rate is the total contribution payable for open space land, open space embellishment, community facilities land and community facilities per person.

Cost_{total} is the total cost of providing open space land, open space embellishment, community facilities land and community facilities for the existing and future residents.

P_{total} is the total projected population within the Warnervale District.

Contrib_{dev} is the total contribution payable for open space land, open space embellishment, community facilities land and community facilities for every person that is forecast to occupy a development.

P_{number} the total forecast population in a development based on the average assumed occupancy rates in **Table 7** in **Section 2.1** of the **Main Document**.

A2.2 Roads, Traffic Management and Bus Facilities Strategy

A2.2.1 Background

The road network in the Warnervale District was originally designed, constructed, augmented and maintained to serve a rural population up until the mid-1990's when the area was identified for urban expansion.

The transformation of the area from a rural district to an urbanised area will eventually result in almost 148,000 additional daily vehicle trips (DVTs).

Without investment in roads and intersection upgrades the projected additional traffic from the projected development of in the Warnervale District will reduce the safe and efficient operation of the existing road network.

Development in the Warnervale District has, and will continue to, require a significant investment in the road network in terms of:

- new local intersections and upgrades to existing local intersections;
- new and upgraded local road links that meet the needs of the release area as a whole
- widening of existing and proposed collector roads beyond a local road standard (noting only the extra pavement width attributable to higher order roads is to be funded via development contributions); and

The approach to establishing road and intersection requirements for this area has been to:

- identify existing road hierarchy and traffic flows;
- predict future road hierarchy and traffic flows generated by all development including the proposed development in the plan area;
- identify road and intersection improvements necessary to cater for these predicted flows;
- identify additional road and intersection improvements necessary to cater for these predicted flows; and
- apportion the costs of improvements based on assessed daily vehicle trips by different land use types (residential or non-residential development) and transport catchment.

Transport Catchments

Five transport catchments have been identified within the Warnervale District as discrete development areas, which each have their own specific infrastructure demands for the road network. These catchments, are shown in **Figure 2** in **Section 1.8** of the **Main Document**, are:

- WWAHT
- East Warnervale
- West Warnervale

Section A2 Infrastructure Strategies

- WEZ – South and West/ Education Precinct
- NWIE.

Both residential and non-residential development in each catchment will be required to contribute to the cost of each local road and intersection work that it generates the demand for in terms of its total projected Daily Vehicle Trips (DVT) as a proportion of the total projected DVTs from all catchments that impacts each work.

Works Schedule

Schedules showing an estimate of the cost and staging of road works to be delivered under this Plan are shown in **Section A4** of this document.

The works in the Works Schedule comprise of:

- The cost of upgrading existing local collector roads with the widening of the pavement width and the road reserve to facilitate traffic flows, permit bus routes, provide parking lanes and adjoining cycleways.
- A land value for widening the road reserve of local collector roads to facilitate wider pavement width than that of a local road. A value of \$44 per m² (in \$2014) is recognised under the Plan for road widenings required to be dedicated from greenfield development sites. This value was included in the 2014 plan and is based on a valuation undertaken in 2011 by Robertson & Robertson. The purpose of including a land value for widening in the Plan is to recognise that the adjoining developer should not have to bear the full cost of providing the land for widening, when the traffic from other developments will also generate the need for the higher order road and pedestrian standards. There is no guarantee that the value in the Plan represents the full market value for this land.
- The cost of providing new and upgraded local intersections.
- The cost of works that have already been completed in advance of development that provides additional capacity in the road system.

A2.2.2 Calculation of Contribution Rate for Transport Facilities

Contributions will be collected from all residential and non-residential development in the Warnervale District toward roads, traffic management and bus facilities identified under this plan.

The cost of the transport contribution in each catchment is based on trip generation (or the number of DVTs) and is used to calculate the proportion of infrastructure costs allocated to each catchment and determine the:

- contribution per person for all residential development, and
- contribution per hectare of Net Developable Area (NDA) for all non-residential development.

Table A.11 shows Council's assumed number of DVTs in the plan by each catchment and precinct.

Table A.11 Assumed number of DVTS by transport catchment

Precinct/ Catchment	Residential DVTs	Non-residential DVTs	Total DVTs
WWAHT	44,609	722	45,331
Precinct 7A	50,028	182	50,209
WTC	7,835	1,106	8,941
South & East Wadalba	17,483	0	17,483
East Warnervale catchment	75,345	1,288	76,633
WTC - West	770	23	792
Bruce Crescent	4,629	284	4,913
WEZ-Mountain Rd		6,741	6,741
Precinct 14		3,914	3,914
West Warnervale Catchment	5,398	10,962	16,360
WEZ - South-West/Education Precinct	0	7,226	7,226
North Wyong Industrial Estate	0	1,625	1,625
TOTAL	125,352	21,823	147,175

A discount for non-residential development in residential precincts has been factored into the trip generation assumptions underpinning the contribution calculation in the WWAHT and East Warnervale catchments. These developments will still be levied the NDA contribution rate, rather than a discounted DVT rate which was levied in the previous plan. This methodology is explained in more detail below.

The following section also provides the formulas that demonstrate how the contributions are calculated by each method.

Daily Vehicle Trip Cost Method

The determination of the transport contribution based on the cost of providing the transport infrastructure for that catchment based on the share of DVTs for each transport catchment, and its application to a particular development, is calculated via the following formulas:

$$\text{Cost}_{\text{catch-A}} (\$) = \text{Cost}_A (\$) \times \frac{\text{Trips}_{\text{catch-A}}}{\text{Total Trips}_{\text{catchXYZ-A}}}$$

Where:

Cost_{catch-A} is the cost attributable to a particular transport catchment for a particular work.

Cost_A is the total cost of the particular transport work

Trips_{catch-A} - is the total projected DVTs attributable to a particular transport catchment for a particular work

Total Trips_{catchXYZ-A} is the total projected DVTs of all the catchments for which a particular work is attributable to.

The total cost of all works attributable to a particular road catchment can be expressed as the sum of all the proportional costs of all the road works attributable to a particular road catchment:

$$\text{Total Cost}_{\text{catch}} (\$) = \left(\text{Cost}_{\text{catch-A}} \right) + \left(\text{Cost}_{\text{catch-B}} \right) + \text{Etc}$$

Where:

Total Cost_{catch} is the total cost of all works attributable to a particular transport catchment.

Cost_{catch-A} is the cost attributable to a particular transport catchment for work A.

Cost_{catch-B} is the cost attributable to a particular transport catchment for work B.

Etc – is the cost attributable to a particular transport catchment of all remaining work.

Apportionment Approach for Residential Development

The determination of the per person rate for residential development is as follows:

$$\text{Contrib}_{\text{dev}} = \text{Resident Cost}_{\text{catch}} (\$) \times \text{P}_{\text{number}}$$

Where:

Contrib_{dev} is the total transport contributions for residential development in a given catchment

Resident Cost_{catch} is the per person cost of all apportioned infrastructure in the transport catchment based on the residential DVTs share of total DVTs for the catchment

P_{number} the total number of persons expected to reside in the development based on **Table 7** in **Section 2.1** of the **Main Document**.

Residential DVTs

In determining the number of DVTs per residential development, it has been assumed that every resident will account for an average of 2.4 trips per day in the Warnervale District. This is based upon a previous Technical Direction by Transport NSW (August 2013) that a 4-bedroom dwelling generates an average of 7.4 DVTs per day.

Non-Residential DVTs

Council determined the number of non-residential daily trips in each precinct (there can be multiple precincts in a catchment) by examining the likely development at each potential site and the likely trip generation for each land use, with reference to the current Roads and Maritime Services *“Guide to Traffic Generating Developments”* (see **Table A.12**).

Table A.12 Land Use Trip Generation Rates

Section A2 Infrastructure Strategies

Development Type	Average Daily Vehicle Trips	Unit
Office & Commercial	11	100m ² of GLFA
Major offices (inc. government)	12	100m ² of GLFA
Shopping Centre 0-10,000m ²	121	100m ² of GLFA
10,000-20,000m ²	78	100m ² of GLFA
20,000-30,000m ²	63	100m ² of GLFA
30,000-40,000m ²	50	100m ² of GLFA
Restaurant	60	100m ² of GLFA
Fast food not included in shopping centre	60	100m ² of GLFA
Markets	18	Per stall
Retail market	20	100m ² of GLFA
Hospitality facilities	50	100m ² of GLFA
Licensed clubs	100	100m ² of GLFA
Taverns, hotels	110	100m ² of GLFA
Recreation - tennis, gymnasium, squash	45	Court or 100m ² of GLFA
Primary/secondary school	1.4	Enrolment
TAFE college	1.8	Enrolment
Doctor's surgery, medical centres & dentists	50	100m ² of GLFA
Road transport terminal	5	100m ² of GLFA
Factories covered by light industry	5	100m ² of GLFA
Warehouses	4	100m ² of GLFA
General heavy industry	1.5	100m ² of GLFA
Business Park & industrial estate	7.83	100m ² of GLFA
Bulky good retail	17	100m ² of GLFA
Major hardware & building supplies	33	100m ² of GLFA
Garden centre not included in the shopping centre	40	100m ² retail area
Mixed retail showroom	40	100m ² of GLFA
Furniture showroom	10	100m ² of GLFA
Motor showroom	5	100m ² site area

Development Type	Average Daily Vehicle Trips	Unit
Car tyre retail outlet	10	100m ² site area

Source: Roads and Maritime Services (RMS), *RTA Guide to Traffic Generations Development, Version 2.2*, October 2002 supplemented by RMS Technical Direction, *Guide to Traffic Generating Developments Updated traffic surveys*, August 2013 for office & commercial, bulky good retail and major hardware & building supplies.

Any land use not listed will be required to provide a traffic study to determine the number of Average Daily Vehicle Trips.

Apportionment Approach for Non-Residential Development

In determining the trip generation of each non-residential site, Council has applied a discount for development in predominantly residential catchments (e.g. WWAHT and East Warnervale) to recognise that:

- it is important for employment generating development to be economical, and.
- many non-residential developments provide a service for residential development.

Council estimates that it is likely that up to 25% of the DVTs that are attributable to non-residential development in residential precincts will be generated externally from the Warnervale District. To ensure there is an equitable balance in the funding of transport works between residential and non-residential uses and to encourage non-residential uses, Council assumed 10% of the DVTs for non-residential development under the RMS guidelines in determining the aggregate number of DVTs in each predominantly residential catchment.

The transport contribution is to be calculated for catchments on an NDA basis for the:

- subdivision of the land for serviced industrial lots (in West Warnervale, WEZ – South and West / Education Precinct and NWIE catchments); and.
- the development of other existing industrial, commercial or retail sites for which transport contributions have not previously been required and paid (in all catchments including WWAHT and East Warnervale, as relevant).

The determination of the NDA contribution rate for non-residential development in a transport catchment is as follows:

$$\text{Contrib}_x (\$) = \frac{\text{Total Cost}_x (\$)}{\text{NDA}_x}$$

Where:

Contrib_x is the total transport contribution (\$) payable within a particular transport catchment for every hectare of net developable area that is developed for non-residential purposes

Total Cost_x is non-residential developments' share of the total cost (\$) of all works attributable to the particular transport catchment (based on the non-residential DVTs share of total DVTs for the catchment).

NDA_x is the total net developable area for non-residential development within the particular catchment.

Section A2 Infrastructure Strategies

The determination of the transport contribution based on the NDA that is payable for a particular development is as follows:

$$\mathbf{Contrib}_{dev} (\$) = \mathbf{Contrib}_{catch} (\$) \times \mathbf{NDA}_{dev}$$

Where:

Contrib_{dev} is the total transport contribution (\$) for a proposed development

Contrib_{catch} is the total transport contribution (\$) payable for every hectare of NDA that is developed in the transport catchment where the non-residential development is located

NDA_{dev} is the NDA of the site proposed to be developed in hectares.

Where land has already been developed for a non-residential use and a transport contribution has been paid under a previous contribution plan, no further contribution shall be payable.

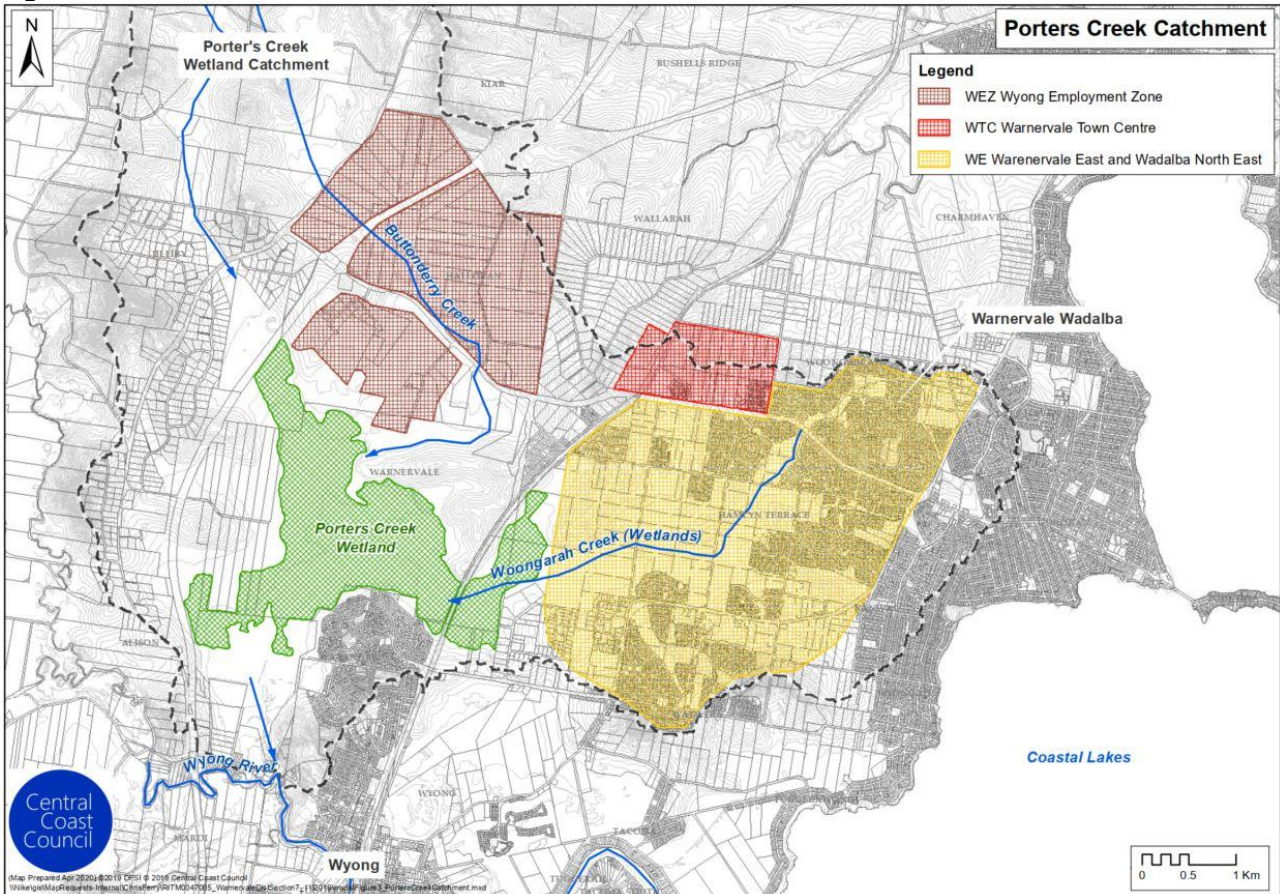
Where land has already been developed as part of serviced industrial estate and no transport contribution were required to be paid at the time of the subdivision, a contribution will be required to be paid for any further development in accordance with this plan.

A2.3 Drainage, Flood Mitigation & Water Quality

A2.3.1 Overview

The majority of the area identified as the Warnervale District is within the Porters Creek Drainage Catchment, where runoff flows into the Porters Creek Wetland continuing into the Wyong River (see **Figure A.1** below).

Figure A.1 Porters Creek Catchment



As rural areas are developed for urban purposes there is an increase in the areas of impervious surfaces. The process of urbanization increases both the volumes and velocity of rainwater runoff, which can impact on stream levels and water quality and extend flood inundation. Water quality from urban areas consists of increased organic matter and chemicals that can change the chemical composition of water, which can alter the natural biological processes and characteristics of water.

The original strategy for addressing stormwater and water quality in the Warnervale District relied on identifying a program of works for culvert upgrades, drainage channel treatments and water quality treatment facilities. The proposed treatment of drainage channels at that time included the “hard engineering” approach to water management that involved piping and the formalization of drainage channel with “end of pipe” treatment solutions. The water quality treatment under the previous stormwater management strategy was to provide a series of treatment facilities at strategic downstream locations in the various sub-catchments as per the Warnervale Wetlands Concept Design Report (Kinhill 2000) and the subsequent 2002 Revision.

A number of factors contributed to the realisation that changes were required to the original approach to stormwater management including:

1. impacts of urban stormwater flows on the environmental health of the Porters Creek Wetland;
2. significant philosophical changes in the Engineering Industry to stormwater management;
3. the need to address stormwater on a catchment wide basis, at a time when consideration was being given to the potential for development of the Warnervale Town Centre and the Wyong Employment Zone;
4. the opportunity to undertake stormwater harvesting to augment water supplies.

Porters Creek Wetland

The Porters Creek Wetland is the largest remaining freshwater wetland on the Central Coast and one of the last of its kind in NSW. Porters Creek Wetland contains large areas of Endangered Ecological Communities (EECs) and significant areas of habitat for a number of threatened species, which are protected under the *Biodiversity Conservation Act 2018* and *Commonwealth Environment Protection and Biodiversity Act, 1999*.

Porters Creek Wetland was also recognised as a wetland of State significance when it was gazetted (now under *State Environmental Planning Policy (Coastal Management Act) 2018*; then in 1999 under *State Environmental Planning Policy No 14 - Coastal Wetland (SEPP 14 – Coastal Wetlands)*). Council has a responsibility under these planning controls to protect this wetland and to properly manage the effects of planned developments within its catchment.

Porters Creek Wetland is exhibiting signs of stress from altered drainage and hydrology from development within the Porters Creek catchment principally in the Warnervale District. Impervious surfaces such as roads, roofs and car parks increase stormwater runoff, which poses a significant threat to the long-term viability of the wetland. Increased runoff from additional development in the catchment, if left unchecked, will result in loss of significant areas of EECs and the consequential reduction in habitat values and natural water quality treatment capacity.

Integrated Water Cycle Management (IWCM) Principals

Integrated Water Cycle Management (IWCM) and Water Sensitive Urban Design (WSUD) is an approach to stormwater management that is directed towards urban development that promotes sustainable and integrated management of land and water resources, and incorporates best practice stormwater management, water conservation and environmental protection. It is directed to mitigating the impacts of stormwater and water quality at all parts of the runoff stream.

The main elements of the revised IWCM scheme as explained in the Eco Logical Engineering Report 2006 are:

Water quality requirements mainly provided by artificial wetlands, the cost of which are collected for under this plan, and also by allotment and streetscape works. These elements are to be provided by developers on their sites at no expense to Council. These are designed to reduce the sediment and nutrient load from runoff entering the Porters Creek Wetland or before being diverted to the regional stormwater harvesting scheme.

Water diversion works consisting of storages, pump stations and pipelines designed to divert stormwater around Porters Creek Wetland to Wyong River. The discharge point into Wyong River is at the Wyong River Weir, which provides the options of discharging stormwater:

- either upstream of the weir for use in directly supplementing the town water supply,
- into the weir as an environmental flow substitution thereby indirectly supplementing the town water supply, or
- or downstream of the weir.

These works comprise the diversion works which are levied for contributions in this plan.

Integrated Water Cycle Management (IWCM) Strategy

An Integrated Water Cycle Management (IWCM) Strategy was formulated in 2006 to mitigate impacts on the Porters Creek Wetland associated with the proposed development of the Warnervale Town Centre and the Wyong Employment Zone. The aim of the IWCM Strategy is to capture and treat urban runoff in accordance with the principals of IWCM, as well as to divert excess stormwater around the Porters Creek Wetland and into Wyong River. This evolved into what is now referred to as the "Porters Creek Stormwater Harvesting Scheme" or the "Regional Porters Creek Wetland IWCM Strategy".

Modelling shows that the IWCM Scheme would significantly contribute to maintaining the wetland in its pre-development condition. Construction of storage and treatment areas together with a piped diversion around the Porters Creek Wetland will also permit a valuable water resource to be tapped whilst permitting further development in the Porters Creek catchment to occur in a sustainable manner.

The aims of the original 2006 IWCM Scheme were amended by Council in 2009 to reflect a change in the operating parameters i.e. reduction in the required stormwater storage and pump rate. Certain elements of the scheme were also removed. Council adopted a revised Porters Creek Stormwater Harvesting scheme in February 2010.

The cost estimate for the Porters Creek Stormwater Harvesting Scheme in 2011 was \$45.5 million of which \$26 million was to be funded by future development contributions apportioned over future development in the Warnervale Town Centre, Precinct 7A and Wyong Employment Zone. It is clear that the cost of this scheme will have a significant impact on the development costs for subdivision and development.

This contributions plan is based on the scheme being modified to remove the water harvesting component. A review of the hydraulic modelling of the Porters Creek Catchment has informed the replacement of the Stormwater Harvesting Scheme with a Wetland Diversion Scheme. An interim cost of \$16.7 million (in \$Dec20) has been adopted for the purpose of levying contributions towards this lower cost scheme.

Strategy for WWAHT and East Warnervale catchments

Prompted by the 2006 Integrated Water Cycle Management (IWCM) Strategy that focused on the WTC and WEZ, a comprehensive review of the stormwater management strategy for the balance of the Porters Creek Catchment comprising WWAHT and Precinct 7A was carried out in 2008. This review was undertaken by EDAW/AECOM/Storm Consulting and produced the report titled *Warnervale-Wadalba Integrated Water Cycle Management Section 94 (2008)*. This review revealed that although the previous water quality strategy based on the Kinhill 2000 report represented the best practice at the time that report was published, it is no longer consistent with contemporary stormwater design and did not support the Regional Porters Creek Wetland IWCM Strategy.

Central to the recommendations in this report was placing greater responsibility on developers to integrate water cycle management elements as part of subdivision design and domestic development (i.e. water tanks, infiltration areas etc).

The report provided a number of options for retrofitting the stormwater management in the WWAHT district including a strategy:

1. for pumping water via a network of pipes from retention basins at the downstream end of drainage sub-catchments to the Wyong River, or
2. for providing storage volumes to be included at the downstream end of the catchments.

Given the cost of undertaking a full retrofitting of the stormwater management in the WWAHT district, which is substantially developed, the second approach (2. above) was adopted.

Further refinement of the IWCM Strategy for WWAHT was provided through the Precinct 7A IWCM Strategy (2012). Under this strategy, a central storage facility within Precinct 7A was designed to accommodate water from sub-catchments within WWAHT where treatment will be otherwise difficult due to existing development and/or environmental constraints.

The design of the central storage facility will address water quality and stormwater storage volumes for existing and proposed development within a number of local drainage catchments within both the WWAHT and Precinct 7A. The central storage facility will thus replace a number of previously planned water quality facilities.

While new greenfield developments throughout the WWAHT will need to address increased stormwater volumes and water quality in accordance with the IWCM principals, some developments will not be able to rely on the storage volumes and water quality opportunities associated with the proposed central water storage facility. Development in these sub-catchments will need to achieve pre-development flows and water quality standards completely within their own areas.

This Plan imposes contributions for developments in the Warnervale District as a single catchment for the cost of:

- Acquiring the floodplain on the southern side of Precinct 7A, and other floodways
- Land and works for other drainage and stormwater quality infrastructure including channels, culverts and basins
- Implementing a Porters Creek Diversion Scheme, and
- A central storage facility.

Section A2 Infrastructure Strategies

- The cost of water quality facilities

While the capacity with the Central Storage Facility is allocated in the Precinct 7A IWCM Strategy (2012), the decision to review the Stormwater Harvesting Scheme and the impact of the cumulative development contributions on the development costs in Precinct 7A have determined that water quality will be provided by individual developments until or unless other arrangements are adopted in response to the review.

Water Quality within Precinct 7A will need to be addressed on site using the principles outlined in the IWCM Strategy.

Wadalba South (WELOG)

The Stormwater Management Strategy by AWD Johnson was prepared to support the application for rezoning of the Wadalba South (WELOG) area to residential (AWD Johnson Pty Ltd for Wadalba-East Landowners Group (WELOG), *Stormwater Management Report, Rezoning for Proposed Residential Subdivision Wadalba East Landowners Group*, April 2018).

The study assessed the potential impacts on water quality, quantity, downstream SEPP 14 wetlands at Tacoma and assessment of flooding for local overland flows and accessibility during flood events.

The hydrology modelling suggested that approximately 44,200m³ of detention storage for stormwater during the 1:100 year ARI storm event would be required to mitigate the impact of new development. It also found that major storm flows are able to be contained within riparian zones/vegetated buffers associated with the classification of the existing streams.

The study further recommended that water quality treatment objectives should be achieved by a treatment train approach utilising gross pollutant traps and constructed wetlands/detention basins.

Based on these recommendations, the plan includes several basins with water quality treatment elements and GPTs, at various locations within the vegetation corridor.

West Warnervale and the WEZ – South and West / Education Site

All necessary drainage and water quality works within West Warnervale and the WEZ – South and West will be further scoped and costed and included, as necessary, in the plan in the future.

All drainage and water quality works within the Education Site will be provided by the developer of that site.

Works Schedule

Schedules showing an estimate of the cost of stormwater and water quality facilities to be delivered under this plan are shown in **Section A4** of this plan.

Contributions for water quality infrastructure will fund the centralised water quality treatment basins infrastructure (where decentralised treatment is not practical), as well as wetland restoration and other works.

The location of drainage land and work are illustrated in **Figures A.8 to A.11**. The location of water quality works is illustrated in **Figures A.12 and A.13**.

A2.3.2 How are infrastructure demands and costs apportioned?

Stormwater costs are levied on a single catchment basis whereby collectively, developments are apportioned a share of the drainage and water quality treatments they demand. This approach recognises that natural water catchments (Porters Creek and Woongarra Creek) all drain downstream towards Wyong River outside the southern end of the Warnervale District boundary.

All built development is considered as contributing to increased runoff and thus the apportionment of drainage and water quality costs between residential and non-residential development is based on the relative residential and non-residential NDAs in the Warnervale District.

Net Developable Area method for Non-Residential Development

The NDA rate for **drainage land & works , flood mitigation works and water quality land & works** and the monetary contribution payable for a development is determined as follows:

$$\text{Contrib}_{nda} (\$) = \frac{\text{Cost}_{catchX}}{\text{NDA}_{total-Catch X}}$$

$$\text{Contrib}_{total} (\$) = \text{Contrib}_{nda} \times \text{NDA}_{dev}$$

Where:

Contrib_{nda} is the total contribution payable for drainage land, drainage works, flood mitigation works, water quality land and water quality works for every hectare of NDA that is proposed to be developed

Cost_{catchX} is the cost of providing for drainage land, drainage works, flood mitigation works, water quality land and water quality works proposed to be provided to achieve the planned drainage and water quality outcomes

NDA_{total-catchX} – the total NDA in hectares for which contributions have been or will be levied in the future, in respect of drainage and water quality land and works or the future projected NDA in respect to flood mitigation works.

Contrib_{total} is the total contribution payable in respect to a development proposal for drainage land, drainage works, flood mitigation works, water quality land and water quality works.

NDA_{dev} is the NDA in hectares proposed in the development.

The contribution rates for drainage and water quality for each catchment using the formula above are provided in the tables overleaf.

NDA method for Residential Development

Contributions for the provision of **drainage and water quality facilities** will be collected from all development on a net developable area (NDA) basis.

The monetary contribution payable for a development is determined as follows:

$$\text{Contrib}_{\text{nda}} (\$) = \frac{\text{Cost}_{\text{catchX}}}{\text{NDA}_{\text{total-Catch X}}}$$

$$\text{Contrib}_{\text{total}} (\$) = \text{Contrib}_{\text{nda}} \times \text{NDA}_{\text{dev}}$$

Where:

Contrib_{nda} is the total contribution payable for drainage land, drainage works, flood mitigation works, water quality land and water quality works per hectare of net developable area (NDA).

Cost_{catchX} is the cost of providing for drainage land, drainage works, flood mitigation works, water quality land and water quality works proposed to be provided to achieve the planned drainage and water quality outcomes.

NDA_{total-catchX} – the total NDA in hectares for development where contributions under this plan have been or will be levied in the future in respect of drainage, flood mitigation and water quality land and works.

Contrib_{total} is the total contribution payable in respect to a development proposal for drainage land, drainage works, flood mitigation works, water quality land and water quality works.

NDA_{dev} is the NDA in hectares proposed in the development.

Stormwater quality contribution exemptions

There are areas that are exempt from stormwater quality contributions because development is not expected to contribute to the demand for the facilities included in the Plan. These areas are identified in **Figure 3** in the **Main Document**.

Among the areas which are exempt, development in WTC is not yet complete. Therefore, developments in sub-catchments WTC 1b, WTC 3, WTC 4, WTC 6 and WTC 7 will need to receive this exemption when contributions are levied under the Plan.

A.2.4 Environmental Conservation

The strategy for conserving areas of native vegetation comprises the preservation of:

- a. riparian vegetation as part of drainage corridors and floodplains;
- b. the Wadalba and Wadalba South Environmental Corridors;
- c. the Additional Wadalba Environmental Corridor.

The first initiatives are dealt with indirectly in association with the drainage and water quality land and works in the Plan, while the last two initiatives are detailed below.

A2.4.1 Floodplain restoration

The planning for drainage and water quality are fundamentally directed towards addressing the physical impacts on the environment. As part of the planning for drainage and water quality there are also opportunities to improve and/or restore the ecological values of drainage channels and floodplains.

A precondition for the development of Precinct 7A (which was shown in **Figure 3** in the **Main Document**) is the provision of bio-diversity offsets for the development of land. The only area within the locality for such offsets is the adjoining floodplain.

The estimated cost of environmental works required to be undertaken as part of riparian vegetation, drainage corridors and floodplains is outlined in **Table A.13**.

Table A.13 Estimated Cost for Floodplain Restoration Works – Precinct 7A (\$Dec20)

Cost items	Cost Rate	Unit of Cost	Dimensions	Area Units	Total Cost
Restoration and rehabilitation of floodplain	\$5,448	Per hectare	92	Ha	\$503,735
Noxious weed removal	\$50	Labour hours	284	Hr	\$14,303
Feral animal control	\$50	Labour hours	220	Hr	\$11,062
Signage, walking trails, community education	Various				\$111,742
Fencing perimeter, removal of internal fences	\$10	Per metre	9,610	m	\$96,646
Drainage and water quality upgrades	Various		92	ha	\$156,439
TOTAL					\$893,928

The contribution rate for development in Precinct 7A towards the restoration of the Woongarrah Creek Flood Plain is \$6,459 per ha of NDA.

A2.4.2 Wadalba and Wadalba South Environmental Corridor (WEC/WSEC)

The Wadalba Environmental Corridor nominally refers to the vegetated corridors within the Wadalba locality bounded by the Pacific Highway, Johns Road and Louisiana Road that runs generally east west with additional spurs to the south and north. It is shown in **Figure A.15** in **Section A4**. This vegetation comprises:

- the areas of riparian vegetation in the western part of Wadalba, and
- the vegetated ridge in the eastern part of Wadalba.

The majority of the Wadalba Corridor, including the riparian vegetation, was capable of development for urban purposes subject to development assessment. Changes in environmental legislation prompted a review of the Wadalba urban zones.

A report by Lesryk Environmental Consultants (1998) recommended the incorporation of an environmental corridor within the urban release area due to the presence of threatened species and the value of providing a fauna corridor through the site. This Report concluded:

1. The "back zoning" of the eastern part of the Wadalba Corridor (the ridgeline vegetation) from the residential to conservation zone.
2. The 1999 amendment of the former contributions plan to include acquisition and restoration costs for this part of the Corridor.

The term "*Wadalba Environmental Corridor*" refers to the eastern part of the corridor (approximately 17 ha), which has been, and will continue to be, funded from development in the vicinity that obtains the recreational

and amenity benefits associated with its conservation. The western riparian area of the corridor is protected by its identification as part of a drainage channel.

With the development plans for Wadalba South progressing, Council has also identified further corridor land in Wadalba South (approximately 14 ha) that needs to be acquired in the latest amendment to the plan.

Works Schedule

The cost of acquiring the Wadalba Environmental Corridor (WEC) and Wadalba South Environmental Corridor land and undertaking restoration works (for the WEC only) is provided in **Section A4** of this document.

A2.4.3 Calculation of Contribution Rate for WEC/WSEC

The NDA rates for both the **Wadalba and Wadalba South Environmental Corridor** and the monetary contribution payable for a development is determined as follows:

$$\text{Contrib}_{nda} (\$) = \frac{\text{Cost}_{total}}{\text{NDA}_{total}}$$

$$\text{Contrib}_{total} (\$) = \text{Contrib}_{nda} \times \text{Area}_{dev}$$

Where:

Contrib_{nda} is the total contribution payable towards the purchase and embellishment of the Wadalba or Wadalba South Corridor for every hectare of NDA that is proposed to be developed.

Cost_{total} is the cost of the purchase and embellishment of the Wadalba or Wadalba South Environmental Corridor.

NDA_{total} – the total NDA in hectares that exists in the Wadalba or Wadalba South area that is in proximity to the Wadalba or Wadalba South Environmental Corridor and will provide future residents with an enhanced local amenity.

Contrib_{total} is the total contribution payable for the purchase and embellishment of the Wadalba or Wadalba South Environmental Corridor for a particular development.

Area_{dev} is the NDA in hectares proposed for development.

Contribution Catchment

Contribution catchments for the Wadalba and Wadalba South Environmental Corridors were shown in **Figure 3** in the **Main Document**.

The Wadalba Environmental Corridor contributions will be collected from a subset of WWAHT development only, as shown in **Figure A.14** in **Section A4**.

The Wadalba South Environmental Corridor Land contributions will be collected from Wadalba South development as shown in **Figure A.16**.

Table A.14 provides the relevant NDA for the contribution catchments, costs and contribution rates applicable to the Wadalba and Wadalba South Environmental Corridors calculated in accordance with the formula above.

Table A.14 Wadalba and Wadalba South Environmental Corridor Contribution Rates (\$Dec20)

	Total Cost	Catchment NDA (ha)	Contribution per ha of NDA
Wadalba Environmental Corridor Land costs	\$2,319,377		
Wadalba Environmental Corridor Works costs	\$1,461,302		
TOTAL WADALBA ENVIRONMENTAL CORRIDOR	\$3,780,679	78.71	\$48,033
WADALBA SOUTH ENVIRONMENTAL CORRIDOR (land only)	\$1,360,000	157.5	\$8,701

A2.4.4 Addition to Wadalba Environmental Corridor

During 2003 and 2004 a number of major development applications were lodged for residential subdivision in the Wadalba Area that were assessed as likely to have a significant impact on threatened species. The former Department of Environment & Conservation (DEC) indicated that it was prepared to grant a deemed concurrence for all development in Wadalba where a strategic approach was taken to development and conservation.

Investigations were subsequently undertaken that define the areas of significant vegetation that should be preserved and the areas that could be cleared for development. Some of the areas of significant vegetation were already 'earmarked' for acquisition, and thus preservation. The investigations identified a further area of 2.39 hectares of significant vegetation on a northern spur in Central Wadalba that was zoned 2(b) Residential. This area is referred to as the "*Addition to the Wadalba Environmental Corridor*" and comprises 4 adjoining areas in different ownerships. The later areas identified for clearing has an area of 32.12 hectares and consists of small areas located throughout Wadalba.

Deemed concurrence was received from DEC in December 2004 for the clearing of the identified vegetated areas. A condition of this concurrence was that an agreement must be in place with the landowners to ensure that the identified stand of significant vegetation is conserved (the addition to the Wadalba Environmental Corridor).

A separate multi-party legal agreement was concluded in accordance with the DEC requirement in August 2005 that covers the landowners of 28.3 hectares of the vegetation identified for clearing. The owners of the remaining 3.8 ha of land identified for clearing are not party to this agreement. A plan of management was prepared in September 2006 for the management of the corridor.

Without a suitable agreement being in place covering the retention of the identified stand of significant vegetation, DEC would not allow for the additional vegetation to be cleared. Therefore, the nexus between the clearing of the vegetation and the retention of the area covered by the scheme has been established. The costs for retaining the significant vegetation in public ownership is apportioned over the land that can be cleared under the concurrence provision, the owners of which will directly benefit from the corridor.

The Addition to Wadalba Environmental Corridor contribution is directly modelled on the scheme envisaged in the multi-party agreement, but also includes the land owned by those that were not a party to this agreement.

Works Schedule

Table A.15 provides the cost of preserving identified high conservation value land that comprises the Addition to the Wadalba Environmental Corridor.

Table A.15 Cost of Addition to Wadalba Environmental Corridor

Map Ref.	Original Property Description	Property Address in Deed	Area (ha)	Land Valuation rate (per ha)	Total Cost (unindexed)	%
A	Lot 1 DP 376236	531 Pacific Highway	1.13	\$1,470,000	\$1,664,628	78%
B	Lot 2602 DP 1043825	Van Stappen Road	0.91	\$297,669	\$270,879	12%
C	Lot 1 DP306056	205 Johns Road	0.20	\$297,669	\$59,534	3%
D	Lot 102 DP101919	501 Pacific Highway	0.10	\$1,470,000	\$147,000	7%
		TOTAL	2.34		\$2,142,041	100%

Apportionment

The locations of the areas permitted to be cleared subject to the payment of contributions are identified in **Figure A.17** provided in **Section A4**.

A2.4.5 Calculation of Contribution Rate for Additional Corridor Land

The per hectare rate for clearing identified vegetated land to fund the acquisition of the *Addition to the Wadalba Environmental Corridor* and the monetary contribution payable for a development is determined as follows:

$$\text{Contrib}_{\text{ha}} (\$) = \frac{\text{Cost}_{\text{total}}}{\text{Cleared}_{\text{total}} (\text{ha})}$$

$$\text{Contrib}_{\text{total}} (\$) = \text{Contrib}_{\text{ha}} \times \text{Area}_{\text{dev}}$$

Where:

Contrib_{ha} is the total contribution payable towards the purchase of the Addition to Wadalba Environmental Corridor for every hectare of vegetated land cleared (of the land identified for clearing)

Cost_{total} is the cost of purchasing the *Addition to Wadalba Environmental Corridor*.

Cleared_{total} – the total area of vegetated land identified for clearing.

Contrib_{ha} is the total contribution payable per ha of cleared land

Area_{dev} is the total area of the identified land to be cleared as result of the proposed development.

Table A.16 applies the formula above to calculate the contribution rate for every hectare of land that has been identified for clearing.

Table A.16 Contribution Rate for Clearing Identified Lands

	Total
Total Cost of Land	\$2,142,041
Total Catchment Area for Clearing (ha)	32.12
CONTRIBUTION PER HA OF CLEARED LAND	\$66,689

Note: This contribution rate is not indexed.

Staging

Staging for the provision of the *Wadalba Environmental Corridor* and the *Addition to the Wadalba Environmental Corridor* is totally dependent on the development of the land adjacent to the corridors. A condition of consent will be imposed requiring the dedication of these lands when land is developed.

A2.5 Studies & Administration

A2.5.1 Studies

The planning process to identify future development areas requires significant investigations, as does the preparation of studies and management strategies to determine the scope of development that is suitable, and the necessary infrastructure and services required to mitigate adverse impacts and meet the future demands of development.

Council has traditionally taken a lead role in funding such investigations, studies and plans, although it is now more common to require developers to fund such costs. It is common for additional studies to be required after areas have developed to update existing strategies and plans to account for new information and changes in industry standards.

Council has expended significant monies on investigations, studies and plans to permit the areas within Warnervale District to be identified for development and to determine strategies to address infrastructure needs of the development. The cost of the various studies undertaken for the Warnervale District covered by the plan is outlined in the **Table A.17** below.

Table A.17 Expenditure on Studies (\$Dec20)

Study type	Total Costs
Flood & Drainage Studies	\$963,116
Environmental Studies	\$989,744
Aboriginal Studies	\$23,381
Traffic Studies	\$246,532
Valuations	\$790,504
Others	\$135,985
TOTAL	\$3,149,262

A2.5.2 Administration

Preparation and administration of contributions plans by councils incur significant on-going costs.

Council staff are deployed to:

- prepare and review contributions plans;
- account for contributions receipts and expenditure; and
- coordinate the implementation of contributions plans and works, including involvement in negotiation of works in kind, material public benefit agreements and voluntary planning agreements.

Council estimates that the reasonable apportioned staffing costs associated with the ongoing administration and management of the contributions plan are around \$7.2 million. These costs will be levied on all development in the Warnervale District.

A2.5.3 Calculation of Contribution Rate for Studies and Administration

The costs are first distributed between non-residential and residential development based on the relative NDA shares of each, and then costs are apportioned according to the number of residents for residential development and the hectares of NDA for non-residential development.

Per person method for Residential Development

The monetary contribution payable for **Studies** and **Administration** by a residential development is determined as follows:

$$\text{Contrib}_{PA} (\$) = \frac{\text{Cost}_{total}}{P_{total}}$$

$$\text{Contrib}_{total} (\$) = \text{Contrib}_{PA} \times P_{dev}$$

Where:

Contrib_{PA} is the total contribution payable for Studies and Administration per person proposed to be developed for residential purposes.

Cost_{total} is the residential development share of the total cost of Studies and the total cost of Administration required to plan, account and implement this plan.

P_{total} – the total forecast new population in this plan for the Warnervale District.

Contrib_{total} is the total contribution payable in respect of Studies and Administration for a particular development.

P_{dev} is the number of persons expected to reside in the proposed development based on **Table 7** in **Section 2.1** of the **Main Document**.

Net Developable Area method for Non-Residential Development

The NDA rate for **Studies** and **Administration** for non-residential development under this plan and the monetary contribution payable for a development is determined as follows:

$$\text{Contrib}_{NDA} (\$) = \frac{\text{Cost}_{total}}{\text{NDA}_{total}}$$

$$\text{Contrib}_{total} (\$) = \text{Contrib}_{NDA} \times \text{NDA}_{dev}$$

Where:

Contrib_{NDA} is the total contribution payable for Studies and Administration per NDA proposed to be developed for non-residential purposes.

Cost_{total} is the non-residential share of the total cost of Studies and the total cost of Administration required to plan, account and implement this plan.

NDA_{total} – the total equivalent NDA for non-residential development

Contrib_{total} is the total contribution payable in respect of Studies and Administration for a particular development.

NDA_{dev} is the hectares of NDA proposed in a development.

A3 How have infrastructure costs been derived?

A3.1 Works Costs

The estimated cost of uncompleted transport works in this plan is largely based on updated cost estimates by Mitchell Brandman in 2019 (including new road and intersection works items, upgrade works, and certain cycleways and road open space frontage),

Other QS estimates incorporated in the plan cost estimates are as follows:

- Cost estimates for Wadalba South basins (March 2019)
- Turner and Townsend provided the indicative cost estimates for the Indoor Recreation Centre in mid-2018,
- CCHD provided Wadalba South intersection costings, and
- 2010 drainage infrastructure cost estimates by Cardno were adopted for two Warnervale Road culverts.

In general, other items such as drainage infrastructure, flood restoration works and open space embellishment are based on the unit rates which Council has incurred in undertaking similar works and having regard to previous works cost reviews undertaken by Council.

Council will also amend the contribution rates to reflect the effects of inflation, as discussed in **Sections 4.6** and **4.7** of the **Main Document**.

All works costs used in this plan are exclusive of Goods and Services Tax (GST). Should the Federal Government policy remove the GST exemption that currently applies to infrastructure provision and contribution payments, this provision authorises the addition of the GST to the cost of works and contribution rates.

While the cost estimates in the plan for such works are the best available at the time the Plan was prepared, they may not reflect the final costs. The plan is not directed at providing the guarantee for the full reimbursement to developers of the value of the works that are necessary for their developments to proceed. The recognition of costs for such works will be restricted to the cost estimate contained in the plan as indexed.

A3.2 Land Costs

Land values were originally based on September 1997 valuations, with valuations for the drainage corridor and multi-purpose environmental corridor within Wadalba release area based on August 1998 valuations. A further valuation was obtained in July 1999 for that land adjoining the Kanwal Reservoirs that was zoned 7(a) Conservation under Wyong Local Environmental Plan 1991. Subsequent reviews of land costs were as follows:

- a revised valuation for non-flood affected land within Woongarra and Hamlyn Terrace was obtained in November 1999;
- a revised valuation for non-flood affected land within Wadalba North-West was obtained in March 2000;

Section A3 Infrastructure Costs

- a revision of land values for all categories was undertaken in August 2001. For flood affected land within the release area, individual land valuations were prepared. An average cost/ha was then calculated;
- a review of all valuations was undertaken in June 2003 and 2004;
- a review of land values was then undertaken again in 2006 and again in 2011; and
- revised land valuations were undertaken to inform the update of this plan in 2019 by MJ Davis.

The only land based contribution that will not to be indexed relates to the Wadalba Environmental Corridor and the Additions to the Wadalba Environment Corridor on the basis that there is a need for continuity between the former plan and this Plan.

A4 Works Schedules and Location Maps

A4.1 Open Space and Community Facilities

A4.1.1 Open Space – Land

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
WWAHT SMALL PARKS										
S1	Small park - 44 Birch Dr, Hamlyn Terrace	Lot 157 DP 1045368	Acquisition price in \$Dec14	\$187,661	0.50	\$103,546	100%	\$103,546	\$3	Land acquired
S2	Small park within additional Wadalba environmental corridor	Part lot 152 DP 1097858	Acquisition price in \$Dec14	\$628,235	0.50	\$348,447	100%	\$348,447	\$10	Land acquired
S3a	Small park - 241 Johns Rd, Wadalba (corner Pacific Hwy)	Lot 126 DP 1046712	Acquisition price in \$Dec14	\$195,276	0.38	\$81,704	100%	\$81,704	\$2	Land acquired
S3b-1	Small park - "Owl Park" 2W Pinto Way, Wadalba	Lot 1111 DP 1109861	Acquisition price in \$Dec14	\$3,118,356	0.10	\$352,117	100%	\$352,117	\$10	Land acquired
S3b-2	Small park - "Owl Park" 19W Quarterhorse Pde, Wadalba	Lot 1112 DP 1080360	Acquisition price in \$Dec14	\$635,715	0.34	\$240,636	100%	\$240,636	\$7	Land acquired

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
S4-1	Small park - 30 Voyager St, Wadalba	Lot 45 DP 1207188	Acquisition price in \$Dec14	\$416,275	0.17	\$76,808	100%	\$76,808	\$2	Land acquired
S4-2	Small park - 32 Voyager St, Wadalba	Lot 229 DP 1213339	Acquisition price in \$Dec14	\$1,252,323	0.33	\$461,033	100%	\$461,033	\$13	Land acquired
S4a	Small park - Kuttambul Rd, Wadalba South	Lot 233 DP 1105837	Acquisition price in \$Dec14	\$554,804	0.52	\$317,465	100%	\$317,465	\$9	Land acquired
S5	Small park - 87 Mataram Rd, Woongarra	Lot 2 DP 1100817	Acquisition price in \$Dec14	\$618,056	0.40	\$272,602	100%	\$272,602	\$8	Land acquired
S6-1	Small park - 26W Mataram Rd, Woongarra	Part Lot 2 DP 1009396	Acquisition price in \$Dec14	\$353,680	0.52	\$201,442	100%	\$201,442	\$6	Land acquired
S6-2	Small park - 11 Plane Tree Circuit, Woongarra	Lot 143 DP 857809	Acquisition price in \$Dec14	\$193,890	0.21	\$44,109	100%	\$44,109	\$1	Land acquired
S7-1	Small park - 33 Peppercorn Ave, Woongarra	Lot 260 DP 1036768	Acquisition price in \$Dec14	\$755,858	0.50	\$417,562	100%	\$417,562	\$12	Land acquired
S7-2	Small park - 33 Peppercorn Ave, Woongarra	Lot 262 DP 1036768	Acquisition price in \$Dec14	\$240,304	0.15	\$40,994	100%	\$40,994	\$1	Land acquired
S8	Small park - 11 Oregon Pl, Hamlyn Terrace	Lot 271 DP 875227	Acquisition price in \$Dec14	\$190,655	0.50	\$105,514	100%	\$105,514	\$3	Land acquired

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
S9	Small park - 5W Paperbark St, Hamlyn Terrace	Part Lot 367 DP 881531	Acquisition price in \$Dec14	\$188,470	0.50	\$104,117	100%	\$104,117	\$3	Land acquired
S10	Small park - 17 Highland Cr, Hamlyn Terrace	Lot 282 DP 877952	Acquisition price in \$Dec14	\$190,110	0.50	\$105,044	100%	\$105,044	\$3	Land acquired
S11-1	Small park - 2 Peony Place, Hamlyn Terrace	Lot 197 DP 1089251	Acquisition price in \$Dec14	\$86,128	0.90	\$86,054	100%	\$86,054	\$2	Land acquired
S11-2	Small park - 275-281 Warnervale Rd, Hamlyn Terrace	Part Lot 55 DP 658429	MJD Valuers October 2019.	\$200,000	0.20	\$40,307	100%	\$40,307	\$1	Land to be acquired with adjoining development
S12	Small park - 315W Warnervale Road, Hamlyn Terrace	Lot 240 DP 1152170	Acquisition price in \$Dec14	\$568,690	0.83	\$520,821	100%	\$520,821	\$14	Land acquired
S13	West Louisiana - part of Louisiana Road infill precinct	Lot 4 DP 208596	Acquisition price in \$Dec14	\$755,700	0.52	\$434,174	100%	\$434,174	\$12	Land acquired
S14-1	Small park - 81W Skyhawk Ave, Hamlyn Terrace	Lot 2043 DP 1033080	Acquisition price in \$Dec14	\$409,536	0.30	\$136,469	100%	\$136,469	\$4	Land acquired
S14-2	Small park - 83W Skyhawk Ave, Hamlyn Terrace	Part Lot 99 DP 1097696	Acquisition price in \$Dec14	\$623,210	0.20	\$137,713	100%	\$137,713	\$4	Land acquired

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
S15	West Louisiana - part of Louisiana Road infill precinct	Lot 1 DP 168292, Lot 1 DP 43827	Acquisition price in \$Dec14	\$753,630	0.30	\$249,799	100%	\$249,799	\$7	Land acquired
SUBTOTAL WWAHT SMALL PARKS					9.37	\$4,878,478		\$4,878,478	\$135	
WWAHT LARGE PARKS										
L1-1	Large park - 38-46 Mountain View Dr, Woongarra	Lot 97 DP 1033345	Acquisition price \$Dec14	\$337,550	2.03	\$755,593	100%	\$755,593	\$21	Land acquired
L1-2	Large park - 38-46 Mountain View Dr, Woongarra	Lot 335 DP 867549	Acquisition price \$Dec14	\$190,714	1.78	\$374,650	100%	\$374,650	\$10	Land acquired
L1-3	Large park - 38-46 Mountain View Dr, Woongarra	Lot 25 DP 1043482	Acquisition price \$Dec14	\$575,815	2.12	\$1,350,016	100%	\$1,350,016	\$37	Land acquired
L1-4	Large park - 38-46 Mountain View Dr, Woongarra	Lot 498 DP 874312	Acquisition price \$Dec14	\$190,995	0.12	\$25,450	100%	\$25,450	\$1	Land acquired
L2-1	Large park - 10W Woodcutters Rd, Woongarra	Lot 32 DP 1044070	Acquisition price \$Dec14	\$396,040	0.07	\$31,492	100%	\$31,492	\$1	Land acquired
SUBTOTAL WWAHT LARGE PARKS					6.12	\$2,537,201		\$2,537,201	\$70	
PRECINCT 7A PARKS										

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
P7-OS 1 & 2	Park - 107-171 Virginia Road, Warnervale	Part Lot 1 DP 1101086	MJD Valuers \$Oct19	\$770,738	3.20	\$2,485,318	100%	\$2,485,318	\$69	Land to be acquired with adjoining development
P7-OS 3	Park - 15-19 Virginia Road, Warnervale	Part Lot 136 DP 24673	MJD Valuers \$Oct19	\$902,527	0.61	\$554,227	100%	\$554,227	\$15	Land to be acquired with adjoining development
P7-OS 4	Park - 21-25 Virginia Road, Warnervale	Part Lot 137 DP 24673	MJD Valuers \$Oct19	\$923,645	0.08	\$75,576	100%	\$75,576	\$2	Land to be acquired with adjoining development
P7-OS 5	Park - 27-31 Virginia Road, Warnervale	Part Lot 138 DP 24673	MJD Valuers \$Oct19	\$912,035	0.59	\$539,112	100%	\$539,112	\$15	Land to be acquired with adjoining development
P7-OS 6	Park - 131 Warnervale Road, Warnervale	Part Lot 271 DP 707329	MJD Valuers \$Oct19	\$280,000	0.50	\$141,076	100%	\$141,076	\$4	Land to be acquired with adjoining development
P7-OS 7	Park - 23-35 Albert Warner Drive, Warnervale	Part Lot 1 DP124109	MJD Valuers \$Oct19	\$1,150,000	0.50	\$579,419	100%	\$579,419	\$16	Land to be acquired with adjoining development
SUBTOTAL PRECINCT 7A PARKS					5.48	\$4,374,729		\$4,374,729	\$121	
WARNERVALE TOWN CENTRE PARKS										

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
WTC OS-1	WTC Ridge Park East, 188-198, 200-210, 212-222 Hakone Road, Woongarra	Part Lots 57, 58, 59 & 60 DP 7738	MJD Valuers \$Oct19	\$1,000,000	3.67	\$3,698,207	100%	\$3,698,207	\$102	Land to be acquired with adjoining development
WTC OS-2	WTC Ridge Park West - 117 Sparks Road, Wallarah	Part Lot 1 DP 357408	MJD Valuers \$Oct19	\$901,361	1.47	\$1,335,184	100%	\$1,335,184	\$37	Land to be acquired with adjoining development
SUBTOTAL WARNERVALE TOWN CENTRE PARKS					5.14	\$5,033,390		\$5,033,390	\$139	
WADALBA SOUTH (WELOG) PARKS										
SW-3	Small Park1,North East Park,130 Jensen Road, Wadalba	Part Lot 15 DP 12304	MJD Valuers \$Jan20	\$800,000	0.50	\$402,044	100%	\$402,044	\$11	Land to be acquired with adjoining development
SW-2	Small Park 2, South Park - 50-60 Jensen Road Wadalba)	Lot 10 DP12304 & Lot A DP33532	MJD Valuers \$Jan20	\$800,000	0.50	\$402,044	100%	\$402,044	\$11	Land to be acquired with adjoining development
SW-1	Large Park, Southern Park - 17-37 Jensen Road, Tacoma	Part Lot 3 DP 1171444	MJD Valuers \$Jan20	\$150,000	2.65	\$399,532	100%	\$399,532	\$11	
SUBTOTAL WADALBA SOUTH (WELOG) PARKS					3.65	\$1,203,620		\$1,203,620	\$33	
PLAYING FIELDS AND COURTS										

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
F1	Woongarah Sportsfields - 57 Hakone Rd, Woongarah (north side)	Lot 85a DP 22837 & Lot 85a DP 22837	Acquisition price \$Dec14	\$619,419	5.04	\$3,449,259	100%	\$3,449,259	\$95	Land acquired
F2	Hamlyn Terrace Playing Fields - 80 Minnesota Rd, Hamlyn Terrace	Lot 71 DP 1154758	Acquisition price \$Dec14	\$455,673	4.79	\$2,411,566	100%	\$2,411,566	\$67	Land acquired
F3-1	Wadalba Sporting Complex - 591 Pacific Highway, Wadalba	Lot 1 DP 369486	Acquisition price \$Dec14	\$875,578	2.56	\$2,476,542	100%	\$2,476,542	\$68	Land acquired
F3-2	Wadalba Sporting Complex - 592 Pacific Highway, Wadalba	Lot 2 DP 369486	Acquisition price \$Dec14	\$846,311	2.28	\$2,131,944	100%	\$2,131,944	\$59	Land acquired
F3-3	Wadalba Sporting Complex - 593 Pacific Highway, Wadalba	Lot 1 DP 412885	Acquisition price \$Dec14	\$372,141	0.94	\$386,498	100%	\$386,498	\$11	Land acquired
F3-4	Wadalba Sporting Complex - 594 Pacific Highway, Wadalba	Lot 3 DP 1093787	Acquisition price \$Dec14	\$202,733	3.77	\$844,454	100%	\$844,454	\$23	Land acquired

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
D1	77-85 Jensen Road Wadalba (including surrounding park area)	Lot 1 DP567256 & Lot 24 DP802160	MJD Valuers \$Oct19	\$967,473	11.34	\$11,055,468	100%	\$11,055,468	\$305	Land acquired
SUBTOTAL PLAYING FIELDS AND COURTS					30.72	\$22,755,731		\$22,755,731	\$628	
SEMI NATURAL AREAS										
SN 6-1	25 Mataram Rd, Woongarra	part Lot 11 DP 1145788	2011 R & R Valuations in \$Dec14	\$789,581	0.56	\$485,307	100%	\$485,307	\$13	Land to be dedicated with adjoining development
SN 6-3	Cascade Rd Woongarra	Lot 732 DP 1157871	Acquisition price \$De,632	\$1,047,211	0.29	\$334,752	100%	\$334,752	\$9	Land acquired
SN 6-4	25 Mataram Rd, Woongarra	Lot 10 DP 1145788	Acquisition price \$Dec14	\$177,782	0.05	\$9,425	100%	\$9,425	\$0	Land acquired
SUBTOTAL SEMI NATURAL AREAS					0.89	\$829,484		\$829,484	\$23	
TOTAL OPEN SPACE LAND COSTS					61.37	\$41,612,632		\$41,612,632	\$1,149	

Note: Land costs for open space do not include any area for the Hill Top Park (Council-owned land) and only the partial area requirements for park S6-2 (which is also on drainage land).

A4.1.2 Open Space – Embellishment

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
WWAHT SMALL PARKS										
S1	Small park - 44 Birch Dr, Hamlyn Terrace	Lot 157 DP 1045368	Works cost \$Dec14	\$373,280	0.50	\$205,965	100%	\$205,965	\$6	Works completed
S2	Small park within additional Wadalba environmental corridor	Part lot 152 DP 1097858	Works cost \$Dec14	\$550,213	0.50	\$305,173	100%	\$305,173	\$8	Works completed
S3a	Small park - 241 Johns Rd, Wadalba (cnr Pacific Hwy)	Lot 126 DP 1046712	Works cost \$Dec14	\$215,765	0.38	\$90,277	100%	\$90,277	\$2	Works completed
S3b-1 & S3b-2	Small park - "Owl Park" 2W Pinto Way, Wadalba & 19W Quarterhorse Pde, Wadalba	Lot 1111 DP 1109861 & Lot 1112 DP 1080360	Works cost \$Dec14	\$326,713	0.44	\$160,562	100%	\$160,562	\$4	Works completed
S4-1 & S4-2	Small park - 228 & 229 Johns Road, Wadalba (Southern Side)	Lot 11 DP 1107413 & Lot 432 DP 1080786	Works cost \$Dec14	\$604,528	0.50	\$333,962	100%	\$333,962	\$9	Works completed
S5	Small park - 87 Mataram Rd, Woongarra	Lot 2 DP 1100817	Works cost \$Dec14	\$2,706,763	0.40	\$1,196,247	100%	\$1,196,247	\$33	Works completed

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
S6-1	Small park - 26W Mataram Rd, Woongarra	Part Lot 2 DP 1009396	Works cost \$Dec14	\$184,917	0.52	\$106,241	100%	\$106,241	\$3	Works completed
S6-2	Small park - 11 Plane Tree Circuit, Woongarra	Lot 143 DP 857809	Works cost \$Dec14	\$25,179	0.52	\$14,407	100%	\$14,407	\$0	Works completed
S7	Small park - 33 Peppercorn Ave, Woongarra	Lot 260 DP 1036768	Works cost \$Dec14	\$352,644	0.50	\$194,813	100%	\$194,813	\$5	Works completed
S8	Small park - 11 Oregon Pl, Hamlyn Terrace	Lot 271 DP 875227	Works cost \$Dec14	\$208,443	0.50	\$115,358	100%	\$115,358	\$3	Works completed
S9	Small park - 5W Paperbark St, Hamlyn Terrace	Part Lot 367 DP 881531	Works cost \$Dec14	\$168,998	0.50	\$93,360	100%	\$93,360	\$3	Works completed
S10	Small park - 17 Highland Cr, Hamlyn Terrace	Lot 282 DP 877952	Works cost \$Dec14	\$170,928	0.50	\$94,445	100%	\$94,445	\$3	Works completed
S11-1 & S11-2	Small park - 2 Peony Place, Hamlyn Terrace	Lot 197 DP 1089251	Works cost estimate \$Dec19	\$520,000	1.10	\$576,396	100%	\$576,396	\$16	Works to be completed in conjunction with adjoining development
S13	West Louisiana - part of Louisiana Road infill precinct	Lot 4 DP 208596	Works cost estimate \$Dec19	\$520,000	0.52	\$270,974	100%	\$270,974	\$7	Works completed

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
S14-1	Small park - 81W Skyhawk Ave, Hamlyn Terrace	Lot 2043 DP 1033080 (formerly Lot 2 DP 347653)	Works cost \$Dec14	\$456,137	0.30	\$151,191	100%	\$151,191	\$4	Works completed
S15	West Louisiana - part of Louisiana Road infill precinct	Lot 1 DP 168292, Lot 1 DP 43827	Works cost \$Dec14	\$889,770	0.30	\$294,931	100%	\$294,931	\$8	Works completed
SUBTOTAL WWAHT SMALL PARKS					7.98	\$4,204,295		\$4,204,295	\$116	
WWAHT LARGE PARKS										
L1-1 & L1-2	Large park - 38-46 Mountain View Dr, Woongarra	Lot 97 DP 1033345 & Lot 335 DP 867549	Works cost \$Dec14	\$47,129	3.80	\$198,079	100%	\$198,079	\$5	Works completed
L1-3 & L1-4	Large park - 38-46 Mountain View Dr, Woongarra	Lot 25 DP 1043482 & Lot 498 DP 874312	Works cost \$Dec14	\$94,549	2.24	\$234,272	100%	\$234,272	\$6	Works completed
SUBTOTAL WWAHT LARGE PARKS					6.05	\$432,351		\$432,351	\$12	
PRECINCT 7A PARKS										
P7-OS 1 & P7-OS 2	To be determined with reference to future road network	Part Lots 1 & 2 DP 1101086	Works cost estimate \$Dec19	\$520,000	0.50	\$261,998	100%	\$261,998	\$7	Works to be completed in conjunction with adjoining development

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
P7-OS 3	15-19 Virginia Rd, Warnervale	Part Lot 136 DP 24673	Works cost estimate \$Dec19	\$520,000	0.61	\$319,324	100%	\$319,324	\$9	Works to be completed in conjunction with adjoining development
P7-OS 4	27-31 Virginia Rd, Warnervale	Part Lot 137 DP 24673	Works cost estimate \$Dec19	\$520,000	0.08	\$42,549	100%	\$42,549	\$1	Works to be completed in conjunction with adjoining development
P7-OS 5	21-25 Virginia Rd, Warnervale	Part Lot 138 DP 24673	Works cost estimate \$Dec19	\$520,000	0.59	\$307,376	100%	\$307,376	\$8	Works to be completed in conjunction with adjoining development
P7-OS 6	To be determined with reference to future road network	Part Lot 271 DP 707329	Works cost estimate \$Dec19	\$520,000	0.50	\$261,998	100%	\$261,998	\$7	Works to be completed in conjunction with adjoining development
P7-OS 7	To be determined with reference to future road network	Part Lot 1 DP124109	Works cost estimate \$Dec19	\$520,000	0.50	\$261,998	100%	\$261,998	\$7	Works to be completed in conjunction with adjoining development
SUBTOTAL PRECINCT 7A PARKS					2.78	\$1,455,243		\$1,455,243	\$40	
WARNERVALE TOWN CENTRE PARKS										

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
WTC OS-1	WTC Ridge Park East	Part Lots 57, 58, 59 & 60 DP 7738	Works cost estimate \$Dec19	\$700,000	3.40	\$2,420,461	100%	\$2,420,461	\$67	Works to be completed in conjunction with adjoining development
WTC OS-2	WTC Ridge Park West	Part Lot 1 DP 357408	Works cost estimate \$Dec19	\$700,000	1.47	\$1,055,561	100%	\$1,055,561	\$29	Works to be completed in conjunction with adjoining development
SUBTOTAL WARNERVALE TOWN CENTRE PARKS					4.87	\$3,476,023		\$3,476,023	\$96	
WADALBA SOUTH (WELOG) PARKS										
SW-1	Large Park, Southern Park, 17-37 Jensen Road Wadalba		Works cost estimate \$Dec19	\$1,483,019	2.65	\$3,960,205	100%	\$3,960,205	\$109	Works to be completed in conjunction with adjoining development
SW-2	Small Park 2 South Park, 50-60 Jensen Road Wadalba		Works cost estimate \$Dec19	\$520,000	0.50	\$261,998	100%	\$261,998	\$7	Works to be completed in conjunction with adjoining development
SW-3	SEW Small Park 1 North East Park – 130 Jensen Road Wadalba		Works cost estimate \$Dec19	\$520,000	0.50	\$261,998	100%	\$261,998	\$7	Works to be completed in conjunction with adjoining development
D1	Park area around district playing		Works cost	\$700,000	6.14	\$4,518,000	100%	\$4,518,000	\$125	Works to be completed in

Section A4 Works Schedules and Location Maps

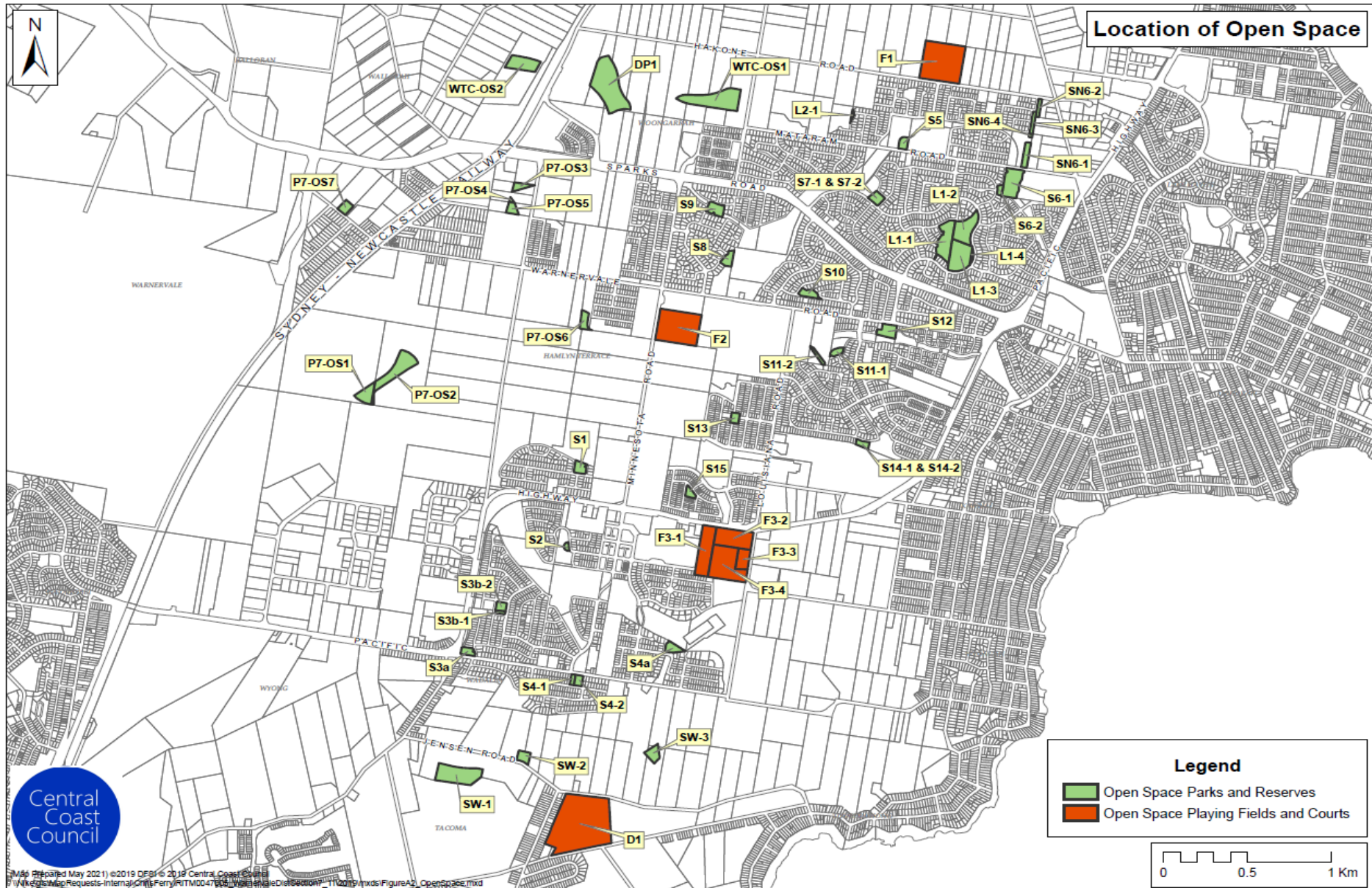
Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
	fields - 77-85 Jensen Road Wadalba		estimate \$Dec20							conjunction with adjoining development
SUBTOTAL WADALBA SOUTH (WELOG) PARKS					9.79	\$9,002,202		\$9,002,202	\$249	
DISTRICT PARK										
DP-1	Hill Top Park		Works cost estimate \$Mar20	\$1,239,394	4.59	\$5,722,499	100%	\$5,722,499	\$158	Works to be completed in conjunction with adjoining development
SUBTOTAL DISTRICT PARK					4.59	\$5,722,499		\$5,722,499	\$158	
PLAYING FIELDS AND COURTS										
F1	57 Hakone Rd, Woongarah (north side)	Lot 85a DP 22837) & Lot 85a DP 22837	Works cost \$Dec14	\$1,425,969	5.04	\$7,940,564	100%	\$7,940,564	\$219	Works completed
F2	80 Minnesota Road, Hamlyn Terrace	Lot 71 DP 1154758	Works cost \$Dec14	\$1,059,744	4.79	\$5,608,506	100%	\$5,608,506	\$155	Works completed
F3-1, F3-2, F3-3 & F3-4	Wadalba Sporting Complex - 591 to 594 Pacific Highway, Wadalba	Lot 1 DP369486, Lot 2 DP 369486, Lot 1 DP 412885, Lot 3 DP 1093787	Works cost \$Dec14	\$901,143	9.55	\$9,508,413	100%	\$9,508,413	\$263	Works completed
D1	District playing fields - 77-85		Works cost	\$830,000	5.20	\$4,316,000	100%	\$4,316,000	- \$119	Works to be completed in conjunction

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item or location	Description (lot)	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
	Jensen Road Wadalba		estimate \$Dec20							with adjoining development
SUBTOTAL PLAYING FIELDS AND COURTS					24.58	\$27,373,483		\$27,373,483	\$756	
SEMI NATURAL AREAS										
SN 6-1	Semi natural areas - 25 Mataram Rd, Woongarra	part Lot 11 DP 1145788	Works cost estimate \$Dec19	\$141,580	0.56	\$78,761	100%	\$78,761	\$2	Works to be completed in conjunction with adjoining development
SN 6-3	Semi natural areas - Cascade Rd Woongarra	Lot 732 DP 1157871	Works cost \$Dec14	\$91,224	0.29	\$29,161	100%	\$29,161	\$1	Works completed
SUBTOTAL SEMI NATURAL AREAS					0.85	\$107,922		\$107,922	\$3	
OTHER										
	Pedestrian Bridge - Woongarra Waters adjacent to Waterside Drive	-	Works cost \$Dec14	-	item	\$313,497	100%	\$313,497	\$9	Works completed
SUBTOTAL OTHER						\$313,497		\$313,497	\$9	
TOTAL OPEN SPACE EMBELLISHMENT COSTS					61.48	\$52,087,514		\$52,087,514	\$1,438	
TOTAL OPEN SPACE COSTS						\$93,700,146		\$93,700,146	\$2,587	

Note: Not all open space land will be embellished, which is why the land areas for embellishment are lower than for land acquisition.

Figure A.2 Open Space Land and Works Locations



Map prepared May 2021 | ©2019 DFS | © 2019 Central Coast Council
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A4.1.3 Community Facilities – Land

Map Ref	Local infrastructure item	Description (lot)	Cost source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
COMMUNITY FACILITY LAND										
CF3	Hamlyn Terrace Community Centre	Lot 71 DP 1154758 Adjoining Hamlyn Terrace Playing Fields - 80 Minnesota Rd, Hamlyn Terrace	Acquisition price \$Dec14	\$46	2,500	\$125,864	100%	\$125,864	\$3	Land acquired
CF5 & CF6	Warnervale Community Hub - Community Space and Library	CF5 and CF6 are to be co-located within Woongarra/Hamlyn Terrace/ Wadalba	MJD Valuers \$Oct19	\$90	10,000	\$906,917	100%	\$906,917	\$25	Council owned as commercial site
CF7	Indoor Recreation Centre	7,747m ² building area includes aquatic hall & pools, health & fitness areas, amenities and external areas	MJD Valuers \$Oct19	\$90	20,000	\$1,813,834	27%	\$488,604	\$13	Land to be acquired with adjoining development
TOTAL COMMUNITY FACILITY LAND COSTS					32,500	\$2,846,616		\$1,521,386	\$42	

A4.1.4 Community Facilities – Works

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item	Description	Cost source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
COMMUNITY FACILITY CAPITAL WORKS										
CF1	Wadalba Community Centre	400m ² GFA facility co-located with Wadalba Primary School in 2001-02.	Works cost \$Dec14	\$2,815	400	\$1,244,174	100%	\$1,244,174	\$34	Works completed
CF3	Hamlyn Terrace Community Centre	Lot 71 DP 1154758 Adjoining Hamlyn Terrace Playing Fields - 80 Minnesota Rd, Hamlyn Terrace	Works cost \$Dec14	\$3,529	408	\$1,591,010	100%	\$1,591,010	\$44	Works completed
CF5 & CF6	Warnervale Community Hub - Community Space	Hub comprises multipurpose community centre, youth space, arts/cultural space, customer service space, technology space and library. Relocated from WTC to Education Site	Works cost estimate \$Feb20	\$6,149	2,000	\$12,361,565	100%	\$12,361,565	\$341	Works to be completed with adjoining development
CF5 & CF6	Warnervale Community Hub - Library	Hub comprises multipurpose community centre, youth space, arts/cultural space, customer service space, technology space and library. Relocated from	Works cost estimate \$Feb20	\$6,500	2,000	\$13,066,440	100%	\$13,066,440	\$361	Works to be completed with adjoining development

Section A4 Works Schedules and Location Maps

Ref	Local infrastructure item	Description	Cost source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Contribution rate (\$/person)	Indicative scheduling of works
		WTC to Education Site								
CF7	Indoor Recreation Centre	7,747m ² building area includes aquatic hall & pools, health & fitness areas, amenities and external areas	Turner and Townsend \$Jul18	\$5,379	7,747	\$43,135,540	27%	\$11,619,698	\$321	Works to be completed with adjoining development
CF8	Additional Local Community Centre - South & East Wadalba	Jensen Road Wadalba - Co-located with proposed Playing Fields	Works cost estimate \$Feb20	\$5,341	400	\$2,147,319	100%	\$2,147,319	\$59	Works to be completed with adjoining development
TOTAL COMMUNITY FACILITY WORKS COSTS					12,955	\$73,546,037		\$42,030,196	\$1160	
TOTAL COMMUNITY FACILITY COSTS						\$76,392,653		\$43,551,582	\$1,202	

A4.2.1 Roadworks – Land

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
ROADS LAND											
R6a & 6b	Hakone Rd	MJD Valuers \$Oct19	Varies	1424	\$137,421	East Warnervale	\$135,112	\$2,309	\$8	\$117	Land acquired
R08a	Link Road - Alternate Access Road from New Access Road (R08a) to Mountain Road	MJD Valuers \$Oct19	Varies	1330	\$171,149	West Warnervale	\$56,473	\$114,675	\$25	\$559	In conjunction with the adjoining development
R08b	New Industrial Road - Connecting Sparks Road and Link Road to Mountain Road	MJD Valuers \$Oct19	Varies	1445	\$207,550	West Warnervale	\$68,485	\$139,065	\$31	\$678	In conjunction with the adjoining development
R19	Nikko Road (south section) Widening	Acquisition price \$Dec14	\$320	1,917	\$677,771	East Warnervale	\$666,383	\$11,388	\$38	\$575	Land acquired
R49-1	Hakone Road	Acquisition price \$Dec14	Varies	980	\$59,521	WWAHT	\$58,573	\$949	\$4	\$339	Small amount of land still be acquired in

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
											conjunction with the adjoining development
R49-2	Mataram Road	Acquisition price \$Dec14	\$44	3,810	\$183,627	WWAHT	\$180,701	\$2,926	\$11	\$1,045	Land acquired
R49-3	Waterside Drive	Acquisition price \$Dec14	\$44	4,160	\$200,496	WWAHT	\$197,301	\$3,195	\$12	\$1,141	Land acquired
R49-4	Mountain View Dr - between Mataram - Sparks	Acquisition price \$Dec14	\$44	8,960	\$431,837	WWAHT	\$424,955	\$6,882	\$26	\$2,458	Land acquired
R49-6	Minnesota Rd (between Sparks & Warnervale Road)	Acquisition price \$Dec14	\$44	1,406	\$67,764	WWAHT / East Warnervale	\$66,647	\$1,117	\$2	\$49	Land acquired
R49-7	Minnesota Rd (between Warnervale Rd & Pacific Hwy)	Acquisition price \$Dec14	\$100	-1600	\$186,217	WWAHT / East Warnervale / WEZ South & West/ Education Precinct	\$172,904	\$13,313	\$5	\$102	In conjunction with the adjoining development

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
R49-8	Warnervale Rd	Acquisition price \$Dec14	Varies	2,740	\$172,554	WWAHT	\$169,804	\$2,750	\$10	\$982	Small amount of land still be acquired in conjunction with the adjoining development
R49-9	Louisiana Rd (Nth Pacific Hwy to Warnervale Rd)	Acquisition price \$Dec14	\$44	2,370	\$114,225	WWAHT	\$112,404	\$1,820	\$7	\$650	Land acquired
R49-10	Figtree Boulevard	Acquisition price \$Dec14	\$44	5,915	\$285,080	WWAHT	\$280,537	\$4,543	\$17	\$1,623	Land acquired
R49-11	Van Strappen Road – Wahroongah Ext	Acquisition price \$Dec14	\$44	4,858	\$236,168	WWAHT	\$232,404	\$3,764	\$14	\$1,344	Small amount of land still be acquired in conjunction with the adjoining development and Voluntary Planning Agreement

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
R49-12	Johns Rd	Council cost estimate \$Dec14	Varies	3,120	\$178,344	WWAHT	\$175,501	\$2,842	\$11	\$1,015	Small amount of land still be acquired in conjunction with the adjoining development
R49-13	Louisiana Rd (Sth Pacific Hwy)	Acquisition price \$Dec14	\$44	700	\$33,737	East Warnervale	\$33,170	\$567	\$2	\$29	Land acquired
R49-14	Georgia Drive / Primrose Drive	Acquisition price \$Dec14	Varies	9,265	\$365,175	WWAHT	\$359,355	\$5,819	\$22	\$2,078	Land acquired
R49-15	Peppercorn Avenue (North - Sparks Road)	Acquisition price \$Dec14	\$44	3,000	\$144,588	WWAHT	\$142,284	\$2,304	\$9	\$823	Land acquired
R49-16	Clydesdale Street	Acquisition price \$Dec14	\$44	3,200	\$154,228	WWAHT	\$151,770	\$2,458	\$9	\$878	Land acquired
R49-17	New Rear Residential Access - DPs 22195	Acquisition price \$Dec14	\$44	2,200	\$106,031	NWIE	\$0	\$106,031	\$0	\$4,346	Land acquired
R49-18	Devon Lane - Nth Wyong Industrial - Residential Rear Access	Acquisition price \$Dec14	\$44	2,200	\$388,715	NWIE	\$0	\$388,715	\$0	\$15,931	Land acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
R49-19	Orchid Way	Acquisition price \$Dec14	by deed	na	\$179,092	WWAHT	\$176,238	\$2,854	\$11	\$1,019	Land acquired
R49-20	Fairmont Boulevard	Acquisition price \$Dec14	by deed	na	\$178,808	WWAHT	\$175,958	\$2,849	\$11	\$1,018	Land acquired
R7A-01	Precinct 7A Entry Road (Road 1)	Acquisition price \$Dec14	\$44	5,776	\$278,381	East Warnervale / WEZ South & West/ Education Precinct	\$250,119	\$28,262	\$14	\$221	Land acquired
R7A-03	Warnervale Road (Western End)	Acquisition price \$Dec14	varies	7,560	\$566,644	East Warnervale / WEZ South & West/ Education Precinct	\$509,116	\$57,527	\$29	\$439	In conjunction with the adjoining development
RSW-1	Jensen Road Widening Difference between a Local Street and Collector Road	MJD Valuers \$Oct19	\$100	12,957	\$1,295,700	East Warnervale	\$1,407,525	\$24,053	\$81	\$1,215	In conjunction with the adjoining development
RSW-2	Orchid Way Extension Difference between a Local Street and Collector Road	MJD Valuers \$Oct19	\$100	6,111	\$675,185	East Warnervale	\$663,841	\$11,344	\$38	\$573	In conjunction with the adjoining development

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m ²)	Required area (m ²)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
SW-1 to SW-3	Three roundabout intersections in Wadalba	MJD Valuers \$Oct19	\$100	191	\$21,156	East Warnervale	\$20,801	\$355	\$1	\$18	Small amount of land still be acquired in conjunction with the adjoining development
SUBTOTAL ROADS LAND					\$7,833,040		\$6,888,362	\$944,678	\$446	\$41,273	

A4.2.2 Roadworks – Capital Works

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
ROADWORKS											
R3	District Entry Road from Sparks Rd	Works cost \$Dec14	\$109	558	\$67,045	East Warnervale	\$65,919	\$1,126	\$4	\$57	Works completed
R4a	Hiawatha Road (Half collector upgrade)	MB QS Estimate \$Feb20	\$3,038	455	\$1,389,282	East Warnervale	\$1,365,939	\$23,343	\$78	\$1,179	In conjunction with the adjoining development
R4b	Hiawatha Road (Kerb, gutter and footpath)	MB QS Estimate \$Feb20	\$1,604	355	\$572,162	East Warnervale	\$562,549	\$9,613	\$32	\$486	In conjunction with the adjoining development
R6a	Hakone Road (Half collector type 7 adjacent open space) ex. other funding sources	MB QS Estimate \$Feb20	\$4,309	244	\$1,056,749	East Warnervale	\$1,038,993	\$17,755	\$60	\$897	In conjunction with the adjoining development
R6b	Hakone Road (Difference between collector and access road)	MB QS Estimate \$Feb20	\$556	606	\$338,485	East Warnervale	\$332,798	\$5,687	\$19	\$287	In conjunction with the adjoining

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
											development
R8a	Link Road - Alternate Access Road from New Access Road (R08a) to Mountain Road	MB QS Estimate \$Feb20	\$9,667	578	\$5,615,874	West Warnervale	\$1,853,053	\$3,762,821	\$833	\$18,340	In conjunction with the adjoining development
R8b	New Industrial Road - Connecting Sparks Road and Link Road to Mountain Road	MB QS Estimate \$Feb20	\$5,936	515	\$3,072,443	West Warnervale	\$1,013,805	\$2,058,638	\$456	\$10,034	In conjunction with the adjoining development
R19	Nikko Road (south section) Widening	MB QS Estimate \$Feb20	\$2,488	291	\$727,688	East Warnervale	\$715,462	\$12,227	\$41	\$618	In conjunction with the adjoining development
R29	Hill Top Park Frontage	MB QS Estimate \$Feb20	\$9,546	120	\$1,151,427	East Warnervale	\$1,132,080	\$19,364	\$65	\$977	In conjunction with the adjoining development
R41	WTC Riparian Crossing - Pedestrian Bridge (3m wide)	MB QS Estimate \$Feb20	\$10,500	80	\$844,293	East Warnervale	\$830,107	\$14,186	\$48	\$716	In conjunction with the adjoining

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
											development
R57	WTC Cycleways (3,100m offroad) & Bus Shelters (8)	MB QS Estimate \$Feb20		3,100	\$2,867,708	East Warnervale	\$2,819,525	\$48,183	\$162	\$2,433	In conjunction with the adjoining development
R49-1	Hakone Road (Additional 4m width pavement, 2m road reserve, Eastern End)	MB QS Estimate \$Feb20	\$2,057	270	\$558,191	WWAHT	\$549,296	\$8,895	\$33	\$3,177	Mostly complete
R49-2	Mataram Road (Additional 4m width pavement, 2m road reserve, Eastern End)	MB QS Estimate \$Feb20	\$1,767	190	\$337,479	WWAHT	\$332,101	\$5,378	\$20	\$1,921	Works completed
R49-3	Waterside Drive	Works cost \$Dec14	\$703	1,300	\$1,009,616	WWAHT	\$993,527	\$16,089	\$60	\$5,746	Works completed
R49-4	Mountain View Dr (between Mataram & Sparks Road)	Works cost \$Dec14	\$1,259	1,280	\$1,779,906	WWAHT	\$1,751,542	\$28,365	\$106	\$10,130	Works completed
R49-6	Minnesota Rd (between Sparks & Warnervale Road)	Works cost \$Dec14	\$507	703	\$394,101	WWAHT / East Warnervale	\$387,606	\$6,495	\$11	\$287	Works completed
R49-7	Minnesota Rd (between Warnervale Rd & Pacific Hwy)	Works cost \$Dec14	\$5,095	1,389	\$7,819,426	WWAHT / East Warnervale / WEZ	\$7,260,405	\$559,022	\$214	\$4,269	Works completed

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
						South & West/ Education Precinct					
R49-8	Warnervale Rd (between Mataram & Sparks Road)	Works cost \$Dec14 and MB QS Estimate \$Feb20	\$2,872	1,635	\$2,972,390	WWAHT	\$2,925,022	\$47,368	\$177	\$16,917	Mostly complete (except some sections of Warnervale Rd -east & south)
R49-9	Louisiana Rd (Nth Pacific Hwy to Warnervale Rd)	Works cost \$Dec14 & MB QS Estimate \$Feb20	\$1,494	1,405	\$1,013,999	WWAHT	\$1,084,850	\$17,568	\$66	\$6,274	Mostly complete (except some sections of Louisiana Rd)
R49 10	Figtree Boulevard	Works cost \$Dec14	\$2,332	1,105	\$2,846,505	WWAHT	\$2,801,143	\$45,362	\$169	\$16,201	Works completed
R49 11	Van Stappen Road Extension	-	-	-	-	-	-	-	-	-	The road upgrade has been excluded from the roads contributions and included in the intersection

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
R49 12	Johns Rd (widening works)	Council cost estimate \$Dec14 and \$Dec20	\$1,521	1,632	\$1,256,894	WWAHT	\$1,236,861	\$20,030	\$75	\$7,154	Mostly complete (except some sections of Johns Rd)
R49 13	Louisiana Rd (Sth Pacific Hwy)	Works cost \$Dec14	\$971	350	\$375,546	East Warnervale	\$369,236	\$6,310	\$21	\$319	Works completed
R49 14	Georgia Drive / Primrose Drive	Works cost \$Dec14	\$1,295	1,680	\$2,403,106	WWAHT	\$2,364,811	\$38,296	\$143	\$13,677	Works completed
R49 15	Peppercorn Avenue (North - Sparks Road)	Works cost \$Dec14	\$506	1,000	\$558,711	WWAHT	\$549,808	\$8,904	\$33	\$3,180	Works completed
R49 16	Clydesdale Street	Works cost \$Dec14	\$39	1,400	\$59,894	WWAHT	\$58,939	\$954	\$4	\$341	Works completed
R49 17	New Rear Residential Access - DPs 22195	MB QS Estimate \$Feb20	\$2,493	179	\$448,581	NWIE	\$0	\$448,581	\$0	\$18,384	With development of industrial area.
R49 18	Devon Lane - Nth Wyong Industrial - Residential Rear Access	Works cost \$Dec14	\$1,429	160	\$252,545	NWIE	\$0	\$252,545	\$0	\$10,350	Works completed
R49 19	Orchid Way	Works cost \$Dec14	\$1,246	510	\$701,830	WWAHT	\$690,646	\$11,184	\$42	\$3,994	Works completed

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
R49 20	Louisiana Rd- Minnesota Rd Link - Fairmont Boulevard	Works cost \$Dec14	\$925	845	\$863,836	WWAHT	\$850,070	\$13,766	\$51	\$4,916	Works completed
R49 30	Cycleways, Bus Stops, bus lay-bys & pedestrian refuges	Works cost \$Dec14			\$1,085,722	WWAHT	\$1,068,420	\$17,302	\$65	\$6,179	Works completed
R7A-01	Precinct 7A Entry Road (Road 1 - difference between cost of collector and local roads)	MB QS Estimate \$Feb20	\$1,163	811	\$948,013	East Warnervale / WEZ South & West/ Education Precinct	\$851,768	\$96,245	\$49	\$751	In conjunction with the adjoining development
R7A-02a	Virginia Road (Half collector adjoining oval)	MB QS Estimate \$Feb20	\$2,390	328	\$787,901	East Warnervale	\$774,663	\$13,328	\$44	\$669	In conjunction with the adjoining development
R7A-02b	Virginia Road (Full collector adjoining oval inc retaining wall & culvert)	MB QS Estimate \$Feb20	\$6,359	383	\$2,447,903	East Warnervale	\$2,406,773	\$41,130	\$138	\$2,077	In conjunction with the adjoining development
R7A-03	Warnervale Road (Western End - difference between cost of collector and local road)	MB QS Estimate \$Feb20	\$1,461	1,466	\$2,152,083	East Warnervale / WEZ South & West/ Education Precinct	\$1,933,597	\$218,486	\$111	\$1,705	In conjunction with the adjoining

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
											development
R7A-04	Albert Warner Drive (half local road)	MB QS Estimate \$Feb20	\$2,587	66	\$171,639	East Warnervale / WEZ South & West/ Education Precinct	\$154,213	\$17,425	\$9	\$136	In conjunction with the adjoining development
RP7-05	Cycleways	MB QS Estimate \$Feb20	\$716	3,800	\$2,734,705	East Warnervale	\$2,688,757	\$45,948	\$154	\$2,321	In conjunction with the adjoining development
RSW-1	Jensen Road Widening Difference between a Local Street and Collector Road inc shared pathway difference	MB QS Estimate \$Feb20	\$747	1,851	\$1,390,234	East Warnervale	\$1,366,876	\$23,359	\$78	\$1,180	In conjunction with the adjoining development
RSW-2	Orchid Way Extension Difference between a Local Street and Collector Road inc shared pathway difference	MB QS Estimate \$Feb20	\$747	873	\$655,686	East Warnervale	\$644,669	\$11,017	\$37	\$556	In conjunction with the adjoining development
RSW-3	SW Riparian Crossing - Pedestrian Bridge (3m wide)	MB QS Estimate \$Feb20	\$10,500	40	\$422,147	East Warnervale	\$415,054	\$7,093	\$24	\$358	In conjunction with the adjoining

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contribution rate (\$/ha NDA)	Indicative scheduling of works
											development
RSW-4	SW Riparian Crossing - Pedestrian Bridge (3m wide)	MB QS Estimate \$Feb20	\$10,500	40	\$422,147	East Warnervale	\$415,054	\$7,093	\$24	\$358	In conjunction with the adjoining development
SUBTOTAL ROADWORKS					\$57,406,588		\$49,388,354	\$8,018,234	\$3,798	\$183,789	
TOTAL ROADS - LAND & WORKS					\$65,239,628		\$56,276,716	\$8,962,912	\$4,244	\$225,062	

A4.2.3 Intersections – Capital Works only

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
11	Mataram Rd/Hiawatha Roads (Raised Intersection Upgrade, with speed cushions in Hiawatha)	MB QS Estimate \$Mar20	\$315,395	East Warnervale	\$310,095	\$5,299	\$18	\$268	In conjunction with the adjoining development
13	WTC 4-Way Internal Intersection Upgrade on Entry Rd (Signals)	MB QS Estimate \$Mar20	\$929,310	East Warnervale	\$913,696	\$15,614	\$52	\$789	Stage 1 (construction of intersection) in conjunction with the adjoining development. Stage 2 retrofit Signals when average delay for intersection exceeds 42 secs or there are safety issues.
14	WTC 4-Way northern internal intersection upgrade Road Type 3B/Road Type 3B (Signals)	MB QS Estimate \$Mar20	\$1,499,218	East Warnervale	\$1,474,028	\$25,190	\$84	\$1,272	In conjunction with the adjoining development
15	WTC 4-way middle Internal Intersection - Road Type	MB QS Estimate \$Mar20	\$1,335,055	East Warnervale	\$1,312,624	\$22,432	\$75	\$1,133	In conjunction with the adjoining development or

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
	8A/Road Type 10 (Signals)								when average delay for intersection exceeds 42 secs or there are safety issues.
17	Chelmsford/Arizona Roads (Roundabout Upgrade (10m wide))	MB QS Estimate \$Mar20	\$2,620,744	WWAHT / East Warnervale	\$2,577,554	\$43,190	\$76	\$1,911	In conjunction with the adjoining development or when average delay for intersection exceeds 42 secs or there are safety issues.
18	Arizona/Hakone Roads (Roundabout Upgrade (16m wide))	MB QS Estimate \$Mar20	\$2,939,760	WWAHT / East Warnervale	\$2,891,312	\$48,448	\$85	\$2,144	In conjunction with the adjoining development or when average delay for intersection exceeds 42 secs or there are safety issues.
19	Hakone Rd/Waterside Dr/Sports Field (4 Way Intersection Upgrade - Signals)	MB QS Estimate \$Mar20	\$960,177	WWAHT / East Warnervale	\$944,353	\$15,824	\$28	\$700	Stage 1 (construction of intersection) in conjunction with the adjoining development. Stage 2 retrofit Signals when

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
									average delay for intersection exceeds 42 secs or there are safety issues.
I10	Hakone/Hiawatha Roads (4-Way Intersection Upgrade - Signals)	MB QS Estimate \$Mar20	\$1,641,264	East Warnervale	\$1,613,688	\$27,576	\$93	\$1,393	Stage 1 (construction of intersection) in conjunction with the adjoining development. Stage 2 retrofit Signals when average delay for intersection exceeds 42 secs or there are safety issues.
I11	Entry Road/Main Street/ Nikko Rd extension (3-way Intersection Upgrade - Signals)	MB QS Estimate \$Mar20	\$880,800	East Warnervale	\$866,000	\$14,799	\$50	\$747	Stage 1 (construction of intersection) in conjunction with the adjoining development. Stage 2 retrofit Signals when average delay for intersection exceeds 42 secs or there are safety issues.

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
I21	Sub-arterial/Railway Station/ Nikko Rd (3-Way Intersection - Signals or Roundabout)	MB QS Estimate \$Mar20	\$1,645,886	East Warnervale	\$1,618,232	\$27,654	\$93	\$1,397	Stage 1 (construction of intersection) in conjunction with the adjoining development. Stage 2 retrofit Signals when average delay for intersection exceeds 42 secs or there are safety issues.
I23b	Sparks Rd/Link Rd (Intersection Upgrade - North leg off Sparks Road Only - Signals)	MB QS Estimate \$Mar20	\$2,134,978	West Warnervale/ WEZ South & West/ Education Precinct	\$488,645	\$1,646,332	\$220	\$5,251	Stage 1 (construction of intersection) in conjunction with the adjoining development. Stage 2 retrofit Signals when average delay for intersection exceeds 42 secs or there are safety issues.
I27	Sparks Rd/Hue Hue Rd (3-Way Intersection Upgrade)	MB QS Estimate \$Mar20	\$2,255,758	West Warnervale	\$744,326	\$1,511,432	\$335	\$7,367	In conjunction with the adjoining development

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
I31	WTC Entry Rd/ Nikko Rd /Road (Upgrade Intersection)	MB QS Estimate \$Mar20	\$689,824	East Warnervale	\$678,831	\$10,993	\$39	\$555	In conjunction with the adjoining development
I32	WTC Internal Intersection - Mataram Rd Extension/Minnesota Rd Extension (Raised Intersection Upgrade)	MB QS Estimate \$Mar20	\$962,359	East Warnervale	\$946,190	\$16,170	\$54	\$817	In conjunction with the adjoining development
I32a	Mataram Road Extension (Pedestrian Signals)	MB QS Estimate \$Mar20	\$284,307	East Warnervale	\$279,530	\$4,777	\$16	\$241	Stage 2 retrofit Signals when average delay for intersection exceeds 42 secs or there are safety issues.
I49 1	Sparks/Warnervale Roads (Signals)	Council cost estimate \$Dec14	\$1,078,792	WWAHT	\$1,061,600	\$17,192	\$64	\$6,140	Stage 1 Complete.
I49 2	Sparks/Minnesota Roads (Signals)	Council cost estimate \$Dec14	\$4,238,327	WWAHT / East Warnervale	\$4,168,479	\$69,848	\$123	\$3,091	Stage 1 Complete.
I49 3	Sparks/Pacific Hwy/Wallarah Roads (Signals)	Council cost estimate \$Dec14	\$1,300,124	WWAHT	\$1,279,405	\$20,719	\$77	\$7,400	Stage 1 Complete.

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
I 49 4	Sparks/Peppercorn (Left in / left out only)	Works cost \$Dec14	\$1,012,680	WWAHT	\$996,542	\$16,138	\$60	\$5,764	Completed works
I 49 5	Pacific Hwy/Pearce Rd/Craigie Ave (incl ped facility) (Signals)	Works cost \$Dec14	\$2,316,676	WWAHT	\$2,279,758	\$36,918	\$138	\$13,185	Completed works
I 49 6	Pacific Hwy / Minnesota Rd- Figtree Boulevard (Signals)	Works cost \$Dec14	\$2,536,068	WWAHT / East Warnervale	\$2,494,273	\$41,795	\$73	\$1,849	Completed works
I 49 7	Minnesota Rd/ Warnervale Rd (Signals with left turn slip lane)	Works cost \$Dec14	\$2,944,622	WWAHT / East Warnervale	\$2,896,094	\$48,528	\$85	\$2,147	Completed works
I 49 8	Pacific Highway/Warnervale Road (Closure)	Works cost \$Dec14	\$148,615	WWAHT	\$146,246	\$2,368	\$9	\$846	Completed works
I 49 10	Sparks/Dundonald Road - turning lane added to Sparks Rd	Works cost \$Dec14	\$146,492	WWAHT	\$144,158	\$2,334	\$9	\$834	Completed works
I 49 12	Mataram Rd / Mountain View Dr (Raised Intersection Upgrade)	MB QS Estimate \$Mar20	\$344,798	WWAHT	\$339,304	\$5,495	\$21	\$1,962	When average delay for intersection exceeds 42 secs or there are safety issues.

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
I 49 14	Warnervale Rd/Louisiana Rd (Raised Intersection Upgrade)	MB QS Estimate \$Mar20	\$340,178	WWAHT	\$334,757	\$5,421	\$20	\$1,936	When average delay for intersection exceeds 42 secs or there are safety issues.
I 49 15	Pacific Highway/Johns Road/Pollock Ave Roundabout	Works cost \$Dec14	\$2,561,512	WWAHT	\$2,520,691	\$40,820	\$152	\$14,579	Completed Works
I 49 17	Pacific Highway London Dive Extension	Works cost \$Dec14	\$2,422,888	NWIE	\$0	\$2,422,888	\$0	\$99,299	Completed Works
I-49-18	Louisiana Rd/Van Stappen Rd - 3-Way Intersection Upgrade - Roundabout (inc. Van Stappen Road - land/works)	MB QS Estimate \$Mar20	\$6,078,875	WWAHT	\$5,982,002	\$96,873	\$361	\$34,597	In conjunction with the adjoining development
IP7-1	Southern leg of WTC Entry Rd/Sparks Rd (4 Way Intersection Upgrade)	MB QS Estimate \$Mar20	\$2,801,902	East Warnervale	\$2,754,825	\$47,077	\$158	\$2,378	In conjunction with the adjoining development
IP7-2	Warnervale Rd /Entry Rd Intersection (Upgrade 4 leg - Traffic Signals)	MB QS Estimate \$Mar 20	\$2,237,061	East Warnervale	\$2,199,474	\$37,587	\$126	\$1,898	In conjunction with the adjoining development

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item	Source	Total cost indexed to \$Dec20	Contribution catchment	Residential costs	Non-residential costs	Residential contribution rate (\$/person)	Non-residential contributions rate (\$/ha NDA)	Indicative scheduling of works
IP7-3	Warnervale Road and Minnesota Rd - Slip lane	MB QS Estimate \$Mar20	\$1,986,265	East Warnervale	\$1,952,892	\$33,373	\$112	\$1,686	In conjunction with the adjoining development
I-SW1	Roundabout at the Intersection of Johns Road and Orchid Way, Wadalba	CCHD QS Estimate \$Jun20	\$1,140,801	East Warnervale	\$1,121,633	\$19,168	\$64	\$968	In conjunction with the adjoining development
I-SW2	Roundabout at the Intersection of Jensen Road and Orchid Way, Wadalba	CCHD QS Estimate \$Jun20	\$1,256,388	East Warnervale	\$1,235,279	\$21,110	\$71	\$1,066	In conjunction with the adjoining development
I-SW3	Roundabout at the Intersection of Jensen Road and Pollock Road, Wadalba	CCHD QS Estimate \$Jun20	\$1,115,673	East Warnervale	\$1,096,927	\$18,745	\$63	\$947	In conjunction with the adjoining development
TOTAL INTERSECTION COSTS			\$59,103,570		\$52,663,443	\$6,440,127	\$3,104	\$228,555	
TOTAL TRANSPORT COSTS - ROADS & INTERSECTIONS			\$124,343,198		\$108,940,159	\$15,403,039	\$7,348	\$453,617	

Figure A.5 Road Widening Works Locations

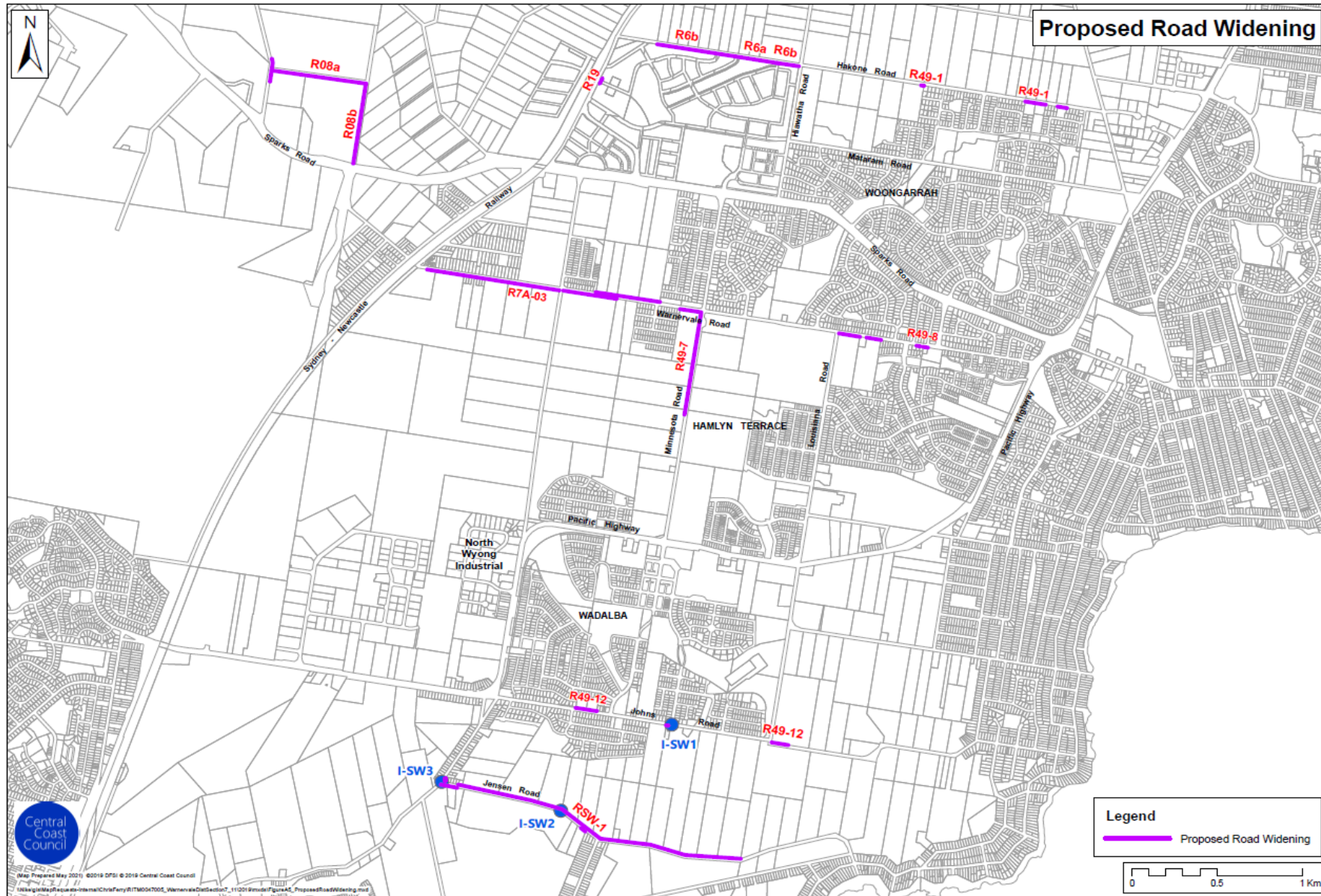


Figure A.6 Location of shared pathways

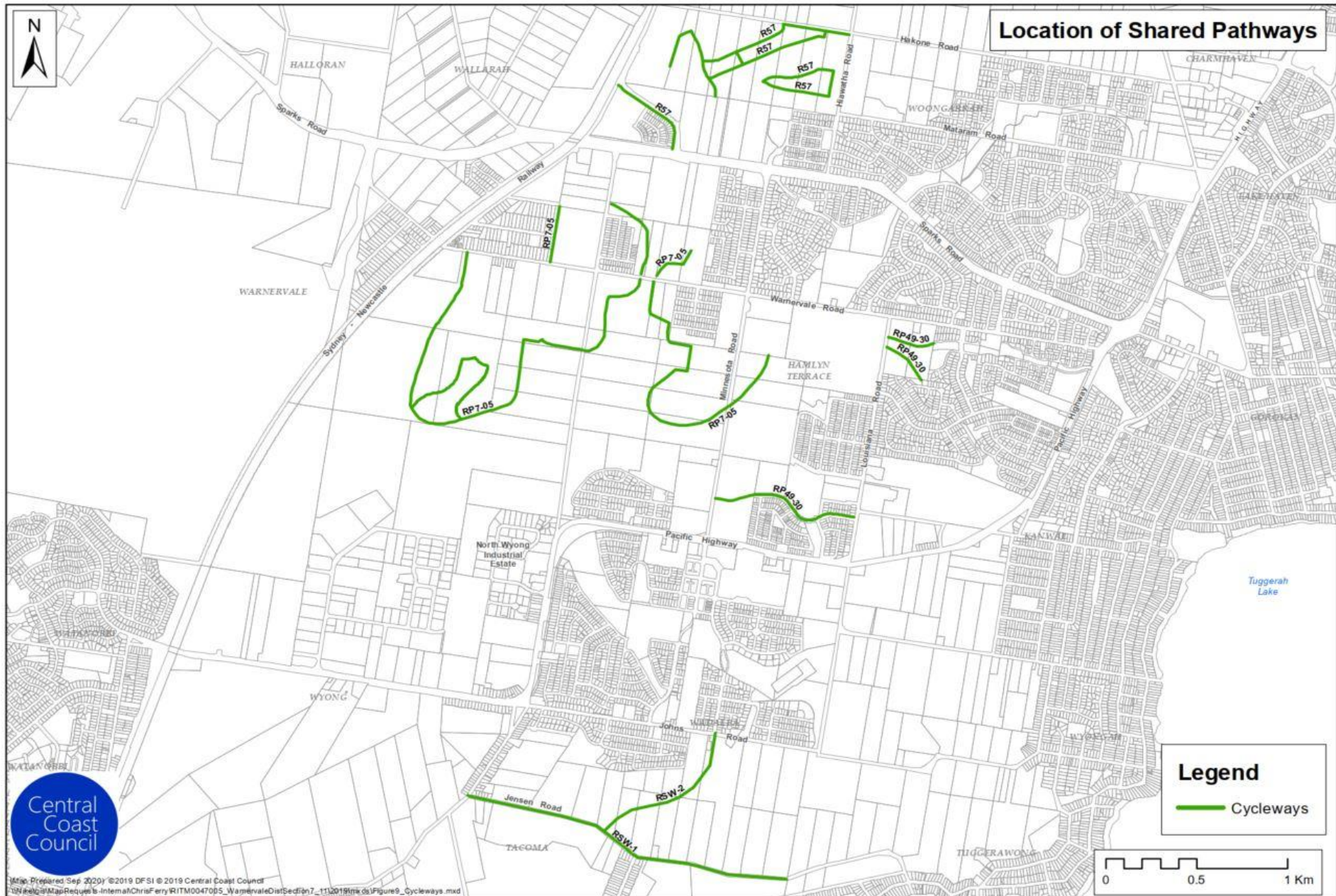
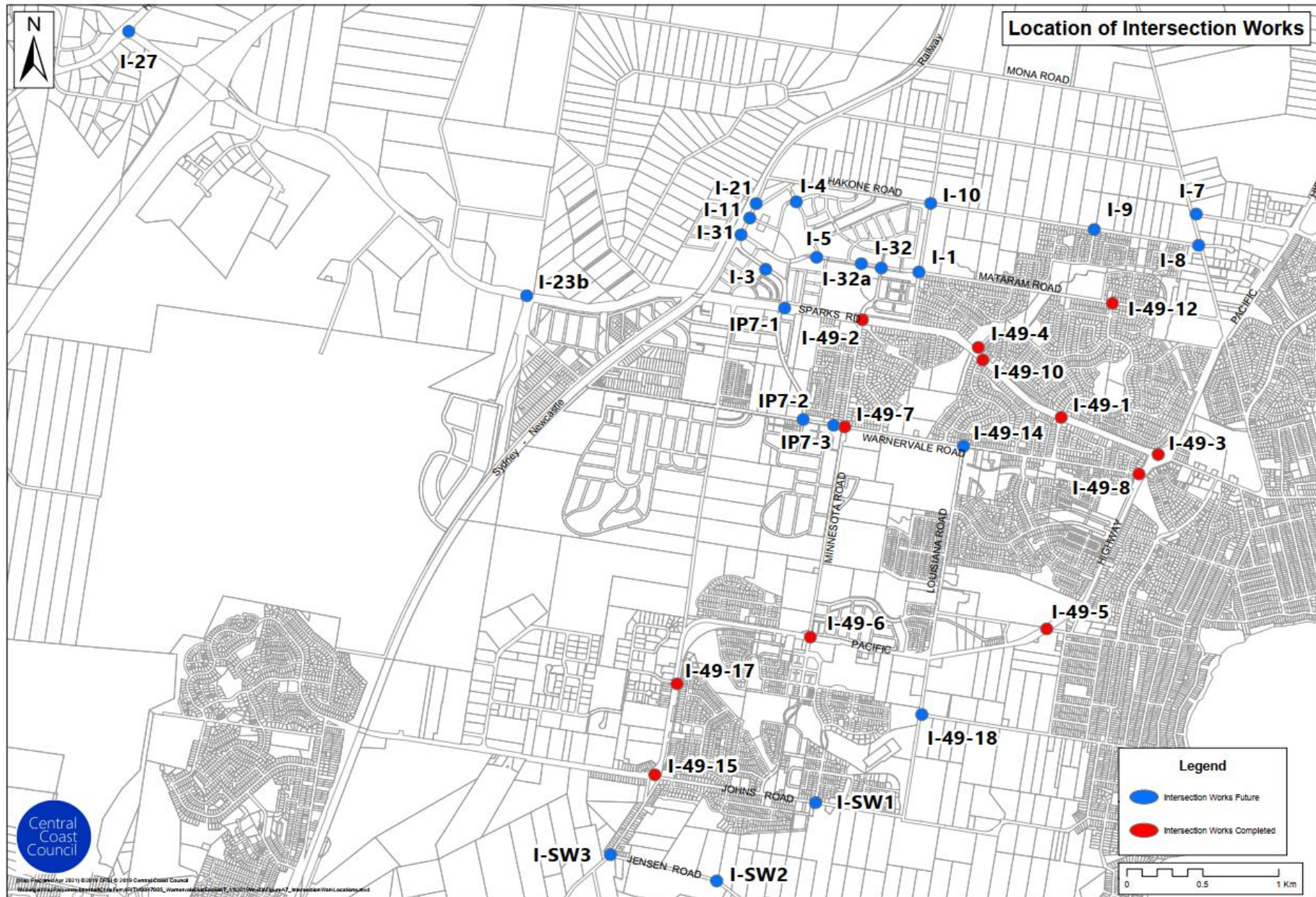


Figure A.7 Intersection Work Locations



A4.3 Drainage and Water Quality

A4.3.1 Drainage and Stormwater Quality Land

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
DRAINAGE AND STORMWATER QUALITY LAND										
dA1	Lot 366 DP 881531	Acquisition price \$Dec14	\$109,941	0.48	\$57,978	100%	\$57,978	735	\$79	Land acquired
dA2	Part Lot 367 DP 881531	Acquisition price \$Dec14	\$109,941	0.43	\$52,232	100%	\$52,232	735	\$71	Land acquired
dB1	Lot 407 DP 1101427	Acquisition price \$Dec14	\$484,370	0.23	\$123,356	100%	\$123,356	735	\$168	Land acquired
dB2	Lot 215 DP 1056244	Acquisition price \$Dec14	\$194,813	0.46	\$100,023	100%	\$100,023	735	\$136	Land acquired
dB3	Lot 9041 DP 1062547	Acquisition price \$Dec14	\$87,659	0.84	\$81,007	100%	\$81,007	735	\$110	Land acquired
dB4	Lot 9040 DP 1062547	Dedicated at no cost to Council	\$0	0.13	\$0	100%	\$0	735	\$0	Land dedicated free of cost

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dB5	Lot 2 DP 1009396	Acquisition price \$Dec14	\$48,480	0.76	\$40,655	100%	\$40,655	735	\$55	Land acquired
dB6	Lot 2 DP 1130477	Acquisition price \$Dec14	\$330,808	1.38	\$502,561	100%	\$502,561	735	\$683	Land acquired
dB7	Lot 733 DP 1157871	Acquisition price \$Dec14	\$494,902	0.01	\$7,961	100%	\$7,961	735	\$11	Land acquired
dB8	Part Lot 90C DP 22837	Acquisition price \$Dec14	\$49,516	0.14	\$7,632	100%	\$7,632	735	\$10	Land acquired
dB9	Lot 4 DP 1130477	Acquisition price \$Dec14	\$344,887	0.11	\$42,869	100%	\$42,869	735	\$58	Land acquired
dB10	Part Lot 90 DP 232837	Acquisition price \$Dec14	\$332,312	0.20	\$74,938	100%	\$74,938	735	\$102	Land acquired
dB11	Lot 1 DP 1184429	Acquisition price \$Dec14	\$54,472	0.21	\$12,639	100%	\$12,639	735	\$17	Land acquired
dB12	Part Lot 722 DP 1041623	Acquisition price \$Dec14	\$324,707	0.21	\$75,734	100%	\$75,734	735	\$103	Land acquired
dB13	Lot 430 DP 1145240	Acquisition price \$Dec14	\$222,639	0.20	\$50,206	100%	\$50,206	735	\$68	Land acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dB14	Lot 100 DP 1149052	Acquisition price \$Dec14	\$299,792	0.21	\$71,182	100%	\$71,182	735	\$97	Land acquired
dB15	Lot 2 DP 1104475	Acquisition price \$Dec14	\$543,723	1.50	\$898,110	100%	\$898,110	735	\$1,221	Land acquired
dB16	Lot 1 DP 1113258	Acquisition price \$Dec14	\$543,723	2.07	\$1,241,135	100%	\$1,241,135	735	\$1,688	Land acquired
dB17	Lot 134 DP 1076050	Acquisition price \$Dec14	\$543,723	0.27	\$159,359	100%	\$159,359	735	\$217	Land acquired
dB23	Lot 261 DP 1036768	Acquisition price \$Dec14	\$100,878	3.60	\$401,259	100%	\$401,259	735	\$546	Land acquired
dB24	Lot 342 DP 1020020	Acquisition price \$Dec14	\$40,589	0.14	\$6,189	100%	\$6,189	735	\$8	Land acquired
dB25	Lot 341 DP 1020020	Acquisition price \$Dec14	\$40,589	0.27	\$11,933	100%	\$11,933	735	\$16	Land acquired
dB26	Lot 241 DP 1020023	Acquisition price \$Dec14	\$40,589	0.10	\$4,565	100%	\$4,565	735	\$6	Land acquired
dC1	Lot 415 DP 869015	Acquisition price \$Dec14	\$110,920	0.46	\$56,055	100%	\$56,055	735	\$76	Land acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dC2 & dC3	Lot 1 DP 873951	Acquisition price \$Dec14	\$112,407	0.58	\$71,669	100%	\$71,669	735	\$97	Land acquired
dC4	Lot 8 DP 1244627	MJD Valuers \$Oct19	\$96,670	0.47	\$45,346	100%	\$45,346	735	\$62	Land acquired
dC5	Lot 239 DP 1152170	Acquisition price \$Dec14	\$490,982	0.44	\$239,881	100%	\$239,881	735	\$326	Land acquired
dC6	Part Lot 198 DP 1089251 (west part)	Acquisition price \$Dec14	\$190,498	0.41	\$87,053	100%	\$87,053	735	\$118	Land acquired
dC7	Part Lot 198 DP 1089251 (east part)	Acquisition price \$Dec14	\$190,498	0.60	\$127,043	100%	\$127,043	735	\$173	Land acquired
dC8	Part Lot 55 DP 658429	MJD Valuers \$Oct19	\$96,448	0.88	\$85,653	100%	\$85,653	735	\$116	Land to be acquired with adjoining development
dC9	Part Lot 54 DP 7091	MJD Valuers \$Oct19	\$91,176	1.70	\$156,191	100%	\$156,191	735	\$212	Land to be acquired with adjoining development
dC12	Lot 164 DP 1013390	Acquisition price \$Dec14	\$43,491	0.10	\$5,005	100%	\$5,005	735	\$7	Land acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dC13	Lot 196 DP 1089251	Dedicated at no cost to Council	\$0	0.02	\$0	100%	\$0	735	\$0	Land dedicated free of cost
dC14	Lot 325 DP 1037413	Dedicated at no cost to Council	\$0	0.28	\$0	100%	\$0	735	\$0	Land dedicated free of cost
dC15	Part Lot 1 DP 347696	Acquisition price \$Dec14	\$86,129	0.04	\$4,235	100%	\$4,235	735	\$6	Land acquired
dC16	Part Lot 99 DP 1097696 & Lot 106 DP 1119439	Acquisition price \$Dec14	\$254,948	1.65	\$463,483	100%	\$463,483	735	\$630	Land acquired
dD1	Remaining 1% flood area south of Pacific Highway	MJD Valuers \$Oct19	\$150,000	4.80	\$725,534	100%	\$725,534	735	\$987	Land to be acquired with adjoining development
dD2	Between Bingarrah Rd & Pacific Highway	MJD Valuers \$Oct19	\$85,809	3.03	\$261,998	100%	\$261,998	735	\$356	Land to be acquired with adjoining development
dD5	Lot A DP 381268	Acquisition price \$Dec14	\$65,686	3.32	\$240,803	100%	\$240,803	735	\$327	Land acquired
dD6	Lot 3 DP 208596	Acquisition price \$Dec14	\$65,686	4.93	\$357,575	100%	\$357,575	735	\$486	Land acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dD7	Lot 2 DP 208596	Acquisition price \$Dec14	\$65,686	1.30	\$94,449	100%	\$94,449	735	\$128	Land acquired
dD8	Lots 1 & 2 DP 514442	Acquisition price \$Dec14	\$65,686	0.85	\$61,688	100%	\$61,688	735	\$84	Land acquired
dE2	Lot 198 DP 1006789	Acquisition price \$Dec14	\$144,798	0.24	\$38,252	100%	\$38,252	735	\$52	Land acquired
dE3	Lot 197 DP 1006789	Acquisition price \$Dec14	\$144,798	0.16	\$26,365	100%	\$26,365	735	\$36	Land acquired
dE4	Lot 1531 DP 1159478	MJD Valuers \$Oct19	\$120,192	0.21	\$25,192	100%	\$25,192	735	\$34	Land to be acquired with adjoining development
dF2 a	Part Lot 2602 DP 1043826	Acquisition price \$Dec14	\$107,661	0.86	\$102,834	100%	\$102,834	735	\$140	Land acquired
dF2 b	Part Lot 2602 DP 1043827	Acquisition price \$Dec14	\$107,661	1.11	\$132,393	100%	\$132,393	735	\$180	Land acquired
dF3	Part Lot 2602 DP 1043825	Acquisition price \$Dec14	\$107,661	2.77	\$329,972	100%	\$329,972	735	\$449	Land acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dF4	Lot 92 DP 1109788	Acquisition price \$Dec14	\$118,272	1.63	\$212,609	100%	\$212,609	735	\$289	Land acquired
dF5	Lot 21 DP 1109786	Acquisition price \$Dec14	\$118,272	3.44	\$449,132	100%	\$449,132	735	\$611	Land acquired
dF6	Lot 1302 DP 1135355	Acquisition price \$Dec14	\$101,136	3.76	\$420,487	100%	\$420,487	735	\$572	Land acquired
dF7	Lot 1 DP 130423	Acquisition price \$Dec14	\$71,819	0.17	\$13,244	100%	\$13,244	735	\$18	Land acquired
dG6 & dG7	Lot 32 DP 1093732	MJD Valuers \$Oct19	\$250,000	0.24	\$60,461	100%	\$60,461	735	\$82	Land acquired
dG8	Lot 8 DP 1100416	Dedicated at no cost to Council	\$0	5.24	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dG9	Lot 19 DP 250522	Dedicated at no cost to Council	\$0	0.34	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH5-1	Lot 15 DP 7091	Dedicated at no cost to Council	\$0	2.98	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH5-2	Lot 16 DP7091	Dedicated at no cost to Council	\$0	0.39	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dH6-1	Part Lot 3 DP 748588	Dedicated at no cost to Council	\$0	0.38	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH6-2	Lot 111 DP 705880	Dedicated at no cost to Council	\$0	0.47	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH6-3	Lot 1E DP 24673	Dedicated at no cost to Council	\$0	0.86	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH6-4	Lot 3 DP 559441	Dedicated at no cost to Council	\$0	0.06	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH6-5	Lot 14 DP 371162	Dedicated at no cost to Council	\$0	1.05	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH6-6	Lot 210 DP 1187449	Dedicated at no cost to Council	\$0	1.58	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH7-1	Lot 1 DP 349727	Dedicated at no cost to Council	\$0	0.25	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH7-2	LOT 136 DP 24673	Dedicated at no cost to Council	\$0	0.22	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH7-3	Lot 137 DP 24673	Dedicated at no cost to Council	\$0	0.09	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dH7-4	Lot 136 DP 24673	Dedicated at no cost to Council	\$0	0.23	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH7-5	Lot 137 DP 24673	Dedicated at no cost to Council	\$0	0.76	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH7-6	Lot 138 DP 24673	Dedicated at no cost to Council	\$0	0.39	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH8-1	Lot 71 DP 7091	Dedicated at no cost to Council	\$0	0.10	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH8-2	Lot 72 DP 7091	Dedicated at no cost to Council	\$0	0.54	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dH8-3	Lot 101 DP 829060	Dedicated at no cost to Council	\$0	0.18	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dI2-1	Part Lot 2 DP214886	Dedicated at no cost to Council	\$0	0.11	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dI2-2	Lot 1 DP 214886	Dedicated at no cost to Council	\$0	0.47	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dI2-3	Lot 4 DP 21495	Dedicated at no cost to Council	\$0	0.09	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost

Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
dl2-4	Lot 11 DP 21495	Dedicated at no cost to Council	\$0	0.79	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
dl2-5	Lot 1 DP 940496	Dedicated at no cost to Council	\$0	0.05	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
WTC6-1	Lot 521 DP 294725, Hakone Rd, Woongarra	Dedicated at no cost to Council	\$0	0.35	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
WTC7-1	Lot 1 DP 357408, Bruce Cr. Wallarah	Dedicated at no cost to Council	\$0	0.20	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
WTC5-1	Part Lot 54 DP 7527	Dedicated at no cost to Council	\$0	0.32	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
WTC5-2	Part Lot 55 DP 7527	Dedicated at no cost to Council	\$0	1.16	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
WTC5-3	Part Lot 56 DP 663082	Dedicated at no cost to Council	\$0	1.10	\$0	100%	\$0	735	\$0-	Land to be dedicated free of cost
WTC5-4	Part Lot 57 DP 7738	Dedicated at no cost to Council	\$0	1.20	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
WTC5-5	Part Lot 58 DP 7738	Dedicated at no cost to Council	\$0	1.30	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost

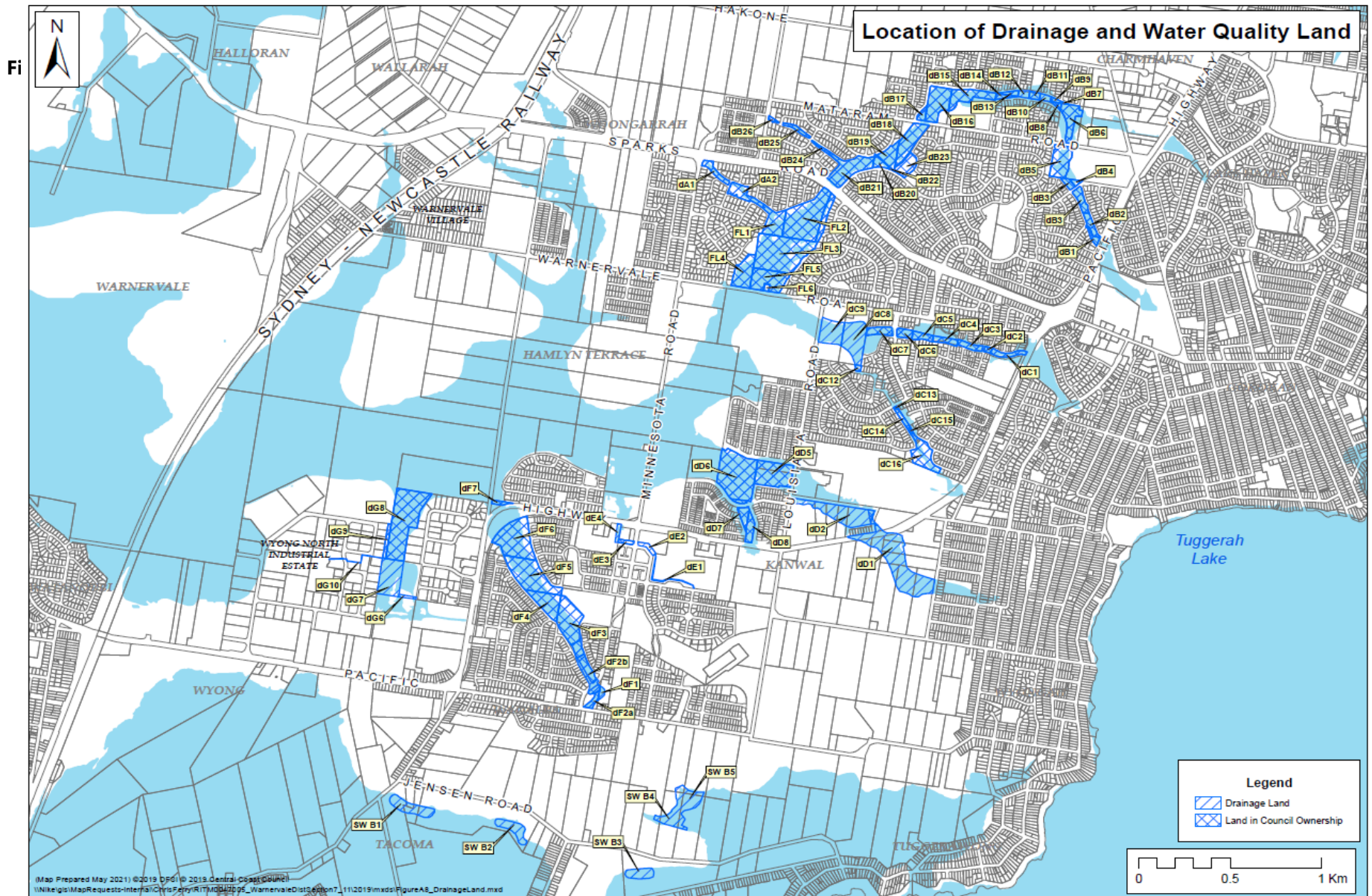
Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
WTC5-6	Part Lot 59 DP 7738	Dedicated at no cost to Council	\$0	0.52	\$0	100%	\$0	735	\$0	Land to be dedicated free of cost
SE2	Lot 10 DP 7738	Acquisition price \$Dec14	\$560,924	0.45	\$280,746	100%	\$280,746	735	\$382	Land acquired
SW1	Lot 200 DP 1249883 Cadogan Crescent Woongarra (WTC)	Acquisition price \$Dec14	\$414,885	1.01	\$464,811	100%	\$464,811	735	\$632	Land acquired
SW B1	Basin 1 inc. water quality basin, GPT & 3m cycleway	MJD Valuers \$Oct19	\$100,000	1.04	\$104,799	100%	\$104,799	735	\$143	Land to be acquired with adjoining development
SW B2	Basin 2 inc. water quality basin, GPT & 3m cycleway	MJD Valuers \$Oct19	\$100,000	0.77	\$77,592	100%	\$77,592	735	\$106	Land to be acquired with adjoining development
SW B3	Basin 3 inc. water quality basin, GPT & 3m cycleway	MJD Valuers \$Oct19	\$100,000	0.19	\$19,146	100%	\$19,146	735	\$26	Land to be acquired with adjoining development
SW B4	Basin 4 inc. water quality basin, GPT & 3m cycleway	MJD Valuers \$Oct19	\$100,000	0.79	\$79,607	100%	\$79,607	735	\$108	Land to be acquired with adjoining development

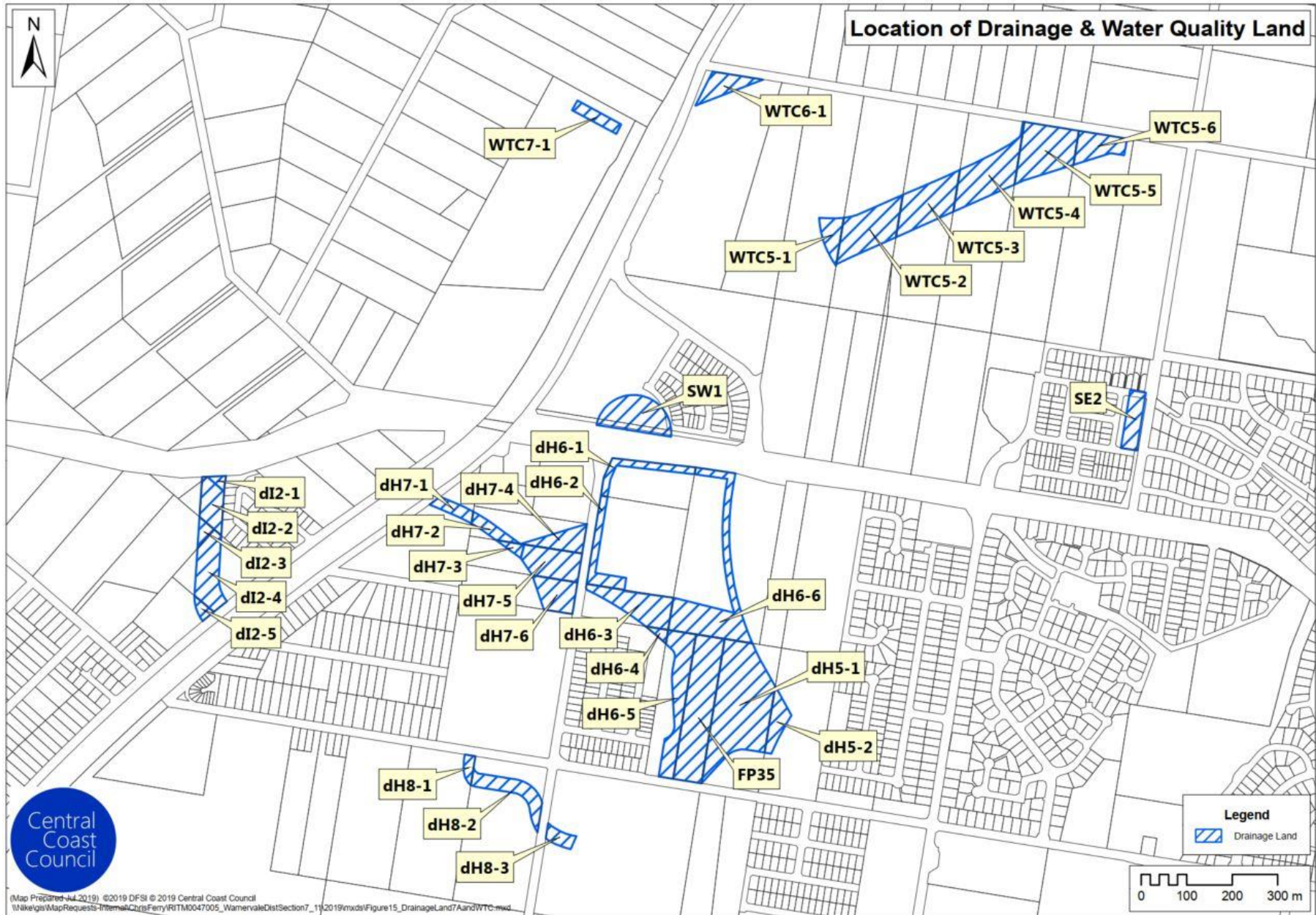
Section A4 Works Schedules and Location Maps

Map Ref	Local infrastructure item or land lot	Cost source	Source cost rate (\$/ha)	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
SW B5	Basin 5 inc. water quality basin, GPT & 3m cycleway	MJD Valuers \$Oct19	\$100,000	0.97	\$97,746	100%	\$97,746	735	\$133	Land to be acquired with adjoining development
TOTAL DRAINAGE & WATER QUALITY LAND				83.39	\$10,042,568		\$10,042,568		\$13,658	
FLOODWAYS LAND										
A-C1 Floodway	Total A-C1 Floodway Includes FL1, FL2, FL3, FL4, FL5 & FL6	Acquisition price \$Dec14	\$41,545	16.04	\$736,269	100%	\$736,269	735	\$1,001	Land acquired
B3-B4 Floodway	Total B3-B4 Floodway dB17, dB18, dB20, dB21 & dB22	Acquisition price \$Dec14	\$26,968	8.77	\$261,307	100%	\$261,307	735	\$355	Land acquired
TOTAL FLOODWAYS LAND				24.81	\$997,576		\$997,576		\$1,357	

Figure A.8 Drainage and Water Quality Land Locations – Warnervale District



Section A4 Works Schedules and Location Maps



A4.3.2 Major Floodplain Land

Map Ref	Local Infrastructure item or land lot	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
MAJOR FLOODPLAIN LAND										
FP1	Lot 43 DP 7091	2011 R& R valuation - site 19,20 & 23	\$32,298	2.29	\$81,719	100%	\$81,719	735	\$111	Acquired by deed
FP2	Lot 16 DP 1191950	MJD Valuers \$Oct19	\$39,130	1.15	\$45,346	100%	\$45,346	735	\$62	To be acquired
FP3	Lot 38 DP 7091	MJD Valuers \$Oct19	\$34,985	3.43	\$120,922	100%	\$120,922	735	\$164	To be acquired
FP4	Lot 42 DP 7091	MJD Valuers \$Oct19	\$34,965	4.29	\$151,153	100%	\$151,153	735	\$206	To be acquired
FP5	Lot 45 DP 7091	MJD Valuers \$Oct19	\$89,286	0.56	\$50,384	100%	\$50,384	735	\$69	To be acquired
FP6	Lot 465 DP 623589	MJD Valuers \$Oct19	\$35,253	8.51	\$302,306	100%	\$302,306	735	\$411	To be acquired
FP7	Part Lot 1 DP 168292	2011 R& R valuation - site 19,20 & 23 - D02943802	\$32,298	2.89	\$103,131	100%	\$103,131	735	\$140	Acquired by deed
FP8	Part Lot 1 DP 181839	MJD Valuers \$Oct19	\$34,979	4.86	\$171,307	100%	\$171,307	735	\$233	To be acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local Infrastructure item or land lot	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
FP9	Lot 22 DP 803506	MJD Valuers \$Oct19	\$100,000	4.35	\$438,343	100%	\$438,343	735	\$596	To be acquired
FP10	Lot 23 DP 843478	Acquisition price \$Dec14	\$150,196	0.12	\$20,312	100%	\$20,312	735	\$28	Land acquired
FP11	Lot 24 DP 843478	Acquisition price \$Dec14	\$34,454	1.83	\$69,587	100%	\$69,587	735	\$95	Land acquired
FP12	Lot 158 DP 1045368	Acquisition price \$Dec14	\$16,374	5.40	\$97,689	100%	\$97,689	735	\$133	Land acquired
FP13	Lot 250 DP 1052355	Acquisition price \$Dec14	\$19,446	3.85	\$82,719	100%	\$82,719	735	\$112	Land acquired
FP14	Lot 436 DP 1060927	Acquisition price \$Dec14	\$18,693	6.62	\$136,785	100%	\$136,785	735	\$186	Land acquired
FP15	Lot 101 DP 829060 +adjoining properties	MJD Valuers \$Oct19	\$38,217	7.85	\$302,306	100%	\$302,306	735	\$411	To be acquired
FP16	Lots 26,40 & 44 DP 7091	MJD Valuers \$Oct19	\$35,133	13.52	\$478,651	100%	\$478,651	735	\$651	To be acquired
FP17	Lot 1 DP 385244	MJD Valuers \$Oct19	\$40,027	7.37	\$297,267	100%	\$297,267	735	\$404	To be acquired
FP18	Lot 49 DP 7091	Deed price \$Dec14	\$3,771	5.73	\$21,608	100%	\$21,608	735	\$29	To be Acquired by deed, not Indexed
FP19	Lot 48 DP 7091	Deed price \$Dec14	\$3,771	6.42	\$24,210	100%	\$24,210	735	\$33	To be Acquired by deed, not Indexed

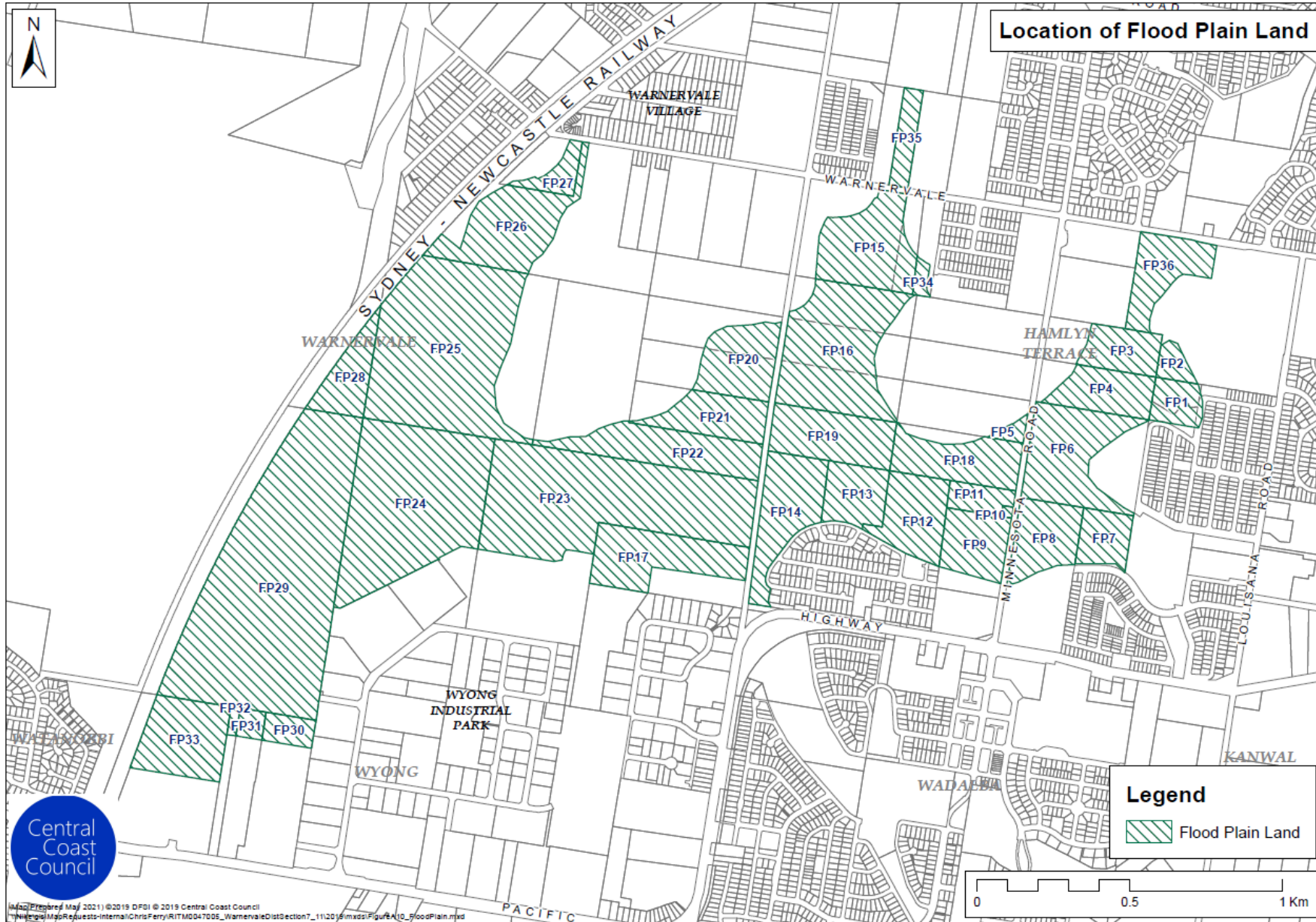
Section A4 Works Schedules and Location Maps

Map Ref	Local Infrastructure item or land lot	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
FP20	Part Lots 74 &75	Deed price \$Dec14	\$3,772	5.55	\$20,935	100%	\$20,935	735	\$28	To be Acquired by deed, not Indexed
FP21	Part Lot 76 DP 7091	Deed price \$Dec14	\$3,771	4.55	\$17,158	100%	\$17,158	735	\$23	To be Acquired by deed, not Indexed
FP22	Lot 2 DP 1101086	Deed price \$Dec14	\$3,771	7.24	\$27,302	100%	\$27,302	735	\$37	To be Acquired by deed, not Indexed
FP23	Lot 3 DP 1101086	Deed price \$Dec14	\$3,771	24.22	\$91,334	100%	\$91,334	735	\$124	To be Acquired by deed, not Indexed
FP24	Lot 102 DP 588421	Deed price \$Dec14	\$3,771	21.29	\$80,285	100%	\$80,285	735	\$109	To be Acquired by deed, not Indexed
FP25	Lot 1 DP 1101086	Deed price \$Dec14	\$3,771	22.89	\$86,318	100%	\$86,318	735	\$117	To be Acquired by deed, not Indexed
FP26	Part Lot 1 DP 385242	Deed price \$Dec14	\$3,771	7.26	\$27,377	100%	\$27,377	735	\$37	To be Acquired by deed, not Indexed
FP27	Lot 1 DP 958084	Deed price \$Dec14	\$3,771	2.15	\$8,108	100%	\$8,108	735	\$11	To be Acquired by deed, not Indexed
FP28	Lot 1 DP 1018444	Deed price \$Dec14	\$3,771	3.36	\$12,671	100%	\$12,671	735	\$17	To be Acquired by deed, not Indexed
FP29	Lot 2 DP 1018444	Deed price \$Dec14	\$3,771	37.03	\$139,640	100%	\$139,640	735	\$190	To be Acquired by deed, not Indexed
FP30	Lot 1 DP 1090455	MJD Valuers \$Oct19	\$13,699	3.65	\$50,384	100%	\$50,384	735	\$69	To be acquired

Section A4 Works Schedules and Location Maps

Map Ref	Local Infrastructure item or land lot	Cost source	Source cost rate (\$/ha)*	Required area (ha)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
FP31	Lot 3 DP 607756	MJD Valuers \$Oct19	\$36,199	2.21	\$80,615	100%	\$80,615	735	\$110	To be acquired
FP32	Lot 1 DP 411020	MJD Valuers \$Oct19	\$37,500	0.80	\$30,231	100%	\$30,231	735	\$41	To be acquired
FP33	Lot 4000 DP 1114793	MJD Valuers \$Oct19	\$34,713	7.49	\$261,998	100%	\$261,998	735	\$356	To be acquired
FP35	Lot 14A DP 371162	MJD Valuers \$Oct19	\$41,667	2.04	\$85,653	100%	\$85,653	735	\$116	To be acquired
FP36	Lot 16 DP 1191950	MJD Valuers \$Oct19	\$37,862	4.49	\$171,307	100%	\$171,307	735	\$233	To be acquired
TOTAL MAJOR FLOODPLAIN LAND				247.26	\$4,187,061		\$4,187,061		\$5,694	
TOTAL DRAINAGE, FLOODPLAIN AND WATER QUALITY LAND				355.46	\$15,227,205		\$15,227,205		\$20,709	

Figure A.10 Flood Plain



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A4.3.3 Drainage Works

Map Ref	Local Infrastructure item	Cost source	Source cost rate (\$/m)	Required length (m)	Total cost indexed to \$Dec20	Apportionment factor (%)	Apportioned cost	Assumed NDA (ha) – Drainage and Water Quality Land	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
Channel A	Lot 366 & 367 DP 881531 & Part Lot 140 DP 1007968 (dA1 & dA2)	Works cost \$Dec14	\$1,595	437	\$769,908	100%	\$769,908	735	\$1,047	Completed
Channel A	Lot 366 & 367 DP 881531 & Part Lot 140 DP 1007968 (dA1 & dA2)	Works cost \$Dec14	\$522	120	\$69,175	100%	\$69,175	735	\$94	Completed
dcA1	Paperbark St Culvert	Works cost \$Dec14			\$80,882	100%	\$80,882	735	\$110	Completed
dcA2	Sparks Rd Culvert	Works cost \$Dec14			\$118,135	100%	\$118,135	735	\$161	Completed
dcA3	Minnesota Road Culvert	Works cost \$Dec14			\$1,947	100%	\$1,947	735	\$3	Completed
Channel B	Pacific Highway to northern boundary of Lot	Works cost \$Dec14	\$950	50	\$52,487	100%	\$52,487	735	\$71	Completed

Section A4 Works Schedules and Location Maps

	407 DP 1101427 (dB1)									
Channel B	Southern to northern boundary of Lot 9041 DP 1062547 (dB2)	Works cost \$Dec14	\$391	144	\$62,202	100%	\$62,202	735	\$85	Completed
Channel B	Along north eastern boundary of Lot 9040 DP 1062547 (dB3 & dB4)	Works cost \$Dec14	\$1,077	226	\$269,043	100%	\$269,043	735	\$366	Completed
Channel B	Southern to northern boundary of Lot 2 DP 1009396 (dB5)	Works cost \$Dec14	\$649	192	\$137,704	100%	\$137,704	735	\$187	Completed
dcB1	Mataram Road - Eastern Culvert	Works cost \$Dec14			\$185,102	100%	\$185,102	735	\$252	Completed
Channel B	Mataram Road to just west of western boundary of Lot 90 DP 22837 (dB6 to dB10)	Works cost \$Dec14	\$4,753	303	\$1,591,246	100%	\$1,591,246	735	\$2,164	Completed
Channel B	Just west of western boundary of Lot 90 DP 22837 to Waterside Dr Pedestrian Bridge (dB11 to dB14)	Works cost \$Dec14	\$2,931	487	\$1,577,110	100%	\$1,577,110	735	\$2,145	Completed

Section A4 Works Schedules and Location Maps

dcB2	Mataram Rd Western culvert	Works cost \$Dec14			\$1,519,279	100%	\$1,519,279	735	\$2,066	Completed
dcB3	Hakone Road Culvert - located adjacent to the western boundary of Lot 1 DP 336676	Works cost estimate \$Dec14			\$184,221	100%	\$184,221	735	\$251	Works to be completed in conjunction with adjoining development
Channel C	Pacific Hwy to western boundary of Lot 415 DP 869015 (dC1)	Works cost \$Dec14	\$1,064	202	\$237,468	100%	\$237,468	735	\$323	Completed
Channel C	Eastern to Western boundary of Lot 2 DP 873951 (dC2 -dC3)	Works cost \$Dec14	\$1,897	193	\$404,530	100%	\$404,530	735	\$550	Completed
Channel C	East-west across Lot 8 DP 17867 (dC4)	Works cost \$Dec14	\$3,019	137	\$456,935	100%	\$456,935	735	\$621	Completed
Channel C	East-west across Lot 239 DP 1152170 (dC5)	Works cost \$Dec14	\$287	115	\$36,430	100%	\$36,430	735	\$50	Completed
Channel C	East-west across Lot 198 DP 1089251 (dC6 & dC7)	Works cost \$Dec14	\$2,841	255	\$800,549	100%	\$800,549	735	\$1,089	Completed
Channel C	East-west across Lot 55 DP 658429 (dC8)	Works cost estimate \$Dec14	\$3,577	130	\$513,709	100%	\$513,709	735	\$699	Works to be completed in conjunction

Section A4 Works Schedules and Location Maps

										with adjoining development
Channel C	East-west across Lot 54 DP 7091 to Louisiana Road (dC9)	Works cost estimate \$Dec14	\$5,706	126	\$794,415	100%	\$794,415	735	\$1080	Works to be completed in conjunction with adjoining development
Channel C2	Northern to southern boundary of Lot 164 DP 1013390 (dC14)	Works cost estimate \$Dec14	\$3,019	34	\$113,400	100%	\$113,400	735	\$154	Works to be completed in conjunction with adjoining development
dcC1	Louisiana Rd Culvert	Works cost estimate \$Dec14			\$1,155,514	100%	\$1,155,514	735	\$1,571	Works to be completed in conjunction with adjoining development
dcC2	Sky Hawke Avenue Basin - Lot 99 DP 1097696	Works cost \$Dec14			\$158,880	100%	\$158,880	735	\$216	Completed
Channel D2	Western boundary to southern boundary of Lot 3 DP 208596 (dD6)	Works cost \$Dec14	\$1,572	241	\$418,568	100%	\$418,568	735	\$569	Completed
Channel D2	Across NW corner of Lot 2 DP 208596 (dD7)	Works cost \$Dec14	\$1,572	144	\$250,099	100%	\$250,099	735	\$340	Completed
Channel D2	Inside of western boundary of Lot	Works cost \$Dec14	\$1,572	110	\$191,048	100%	\$191,048	735	\$260	Completed

Section A4 Works Schedules and Location Maps

	2 DP 208596 to Pacific Hwy (dD8)									
dcD1	Pearce Road Culvert	Works cost estimate \$Dec14			\$528,358	100%	\$528,358	735	\$719	Works to be completed in conjunction with adjoining development
dcD2	Pacific Hwy Culvert - Bingarra Rd	Works cost estimate \$Dec14			\$821,890	100%	\$821,890	735	\$1,118	Works to be completed in conjunction with adjoining development
dcD3	Louisiana Rd Culvert	Works cost \$Dec14			\$705,287	100%	\$705,287	735	\$959	Completed
dcD4	Pacific Hwy Culvert - West Tributary	Works cost estimate \$Dec14			\$528,358	100%	\$528,358	735	\$719	Works to be completed with adjoining development
Channel/ Piping E	Within Road Reserves from Pascord Ave west along Van Strappen Rd north along Orchid Way to Lot 198 DP 1006789	Works cost \$Dec14	\$1,008	387	\$431,044	100%	\$431,044	735	\$586	Completed
Channel E	Within Lot 198 DP 1006789 (dE2)	Works cost \$Dec14	\$3,734	120	\$495,026	100%	\$495,026	735	\$673	Completed

Section A4 Works Schedules and Location Maps

Channel E	Channel Landscaping	Works cost \$Dec14			\$5,581	100%	\$5,581	735	\$8	Complete
Channel F	Channel Landscaping - adjacent to culverts between dcF3 & dcF4	Works cost \$Dec14			\$196,439	100%	\$196,439	735	\$267	Complete
Channel G	Channel Landscaping	Works cost \$Dec14			\$45,116	100%	\$45,116	735	\$61	Complete
dE4	Inside the Eastern Boundary of Lot 1531 DP 1159478	Works cost estimate \$Dec14	\$895	95	\$93,930	100%	\$93,930	735	\$128	Works to be completed in conjunction with Lot 1531 DP1159477
dcE1	Culvert under the Pacific Highway & Figtree Boulevard (east culvert)	Works cost estimate \$Dec14			\$401,971	100%	\$401,971	735	\$547	Completed
dcE2	Pacific Highway Culvert South of Myrtle Terrace Myrtle Terrace	Works cost estimate \$Dec14			\$294,264	100%	\$294,264	735	\$391	Works to be completed in conjunction with Lot 1531 DP1159478
Channel F	Traversing Lot Lots 133 & 136 DP 1194748 (dF2 &dF3)	Works cost estimate \$Dec14	\$287	627	\$227,539	100%	\$227,539	735	\$309	Completed

Section A4 Works Schedules and Location Maps

dcF1	Pacific Hwy Culvert - Van Stappen Corner	Works cost \$Dec14			\$1,056,716	100%	\$1,056,716	735	\$1,437	Completed
dcF2	Culvert 1 - Extension to Clydesdale Street				\$234,826	100%	\$234,826	735	\$319	Completed
dcF3	Culvert 3 - Southern part of Lot 2603 DP 1119536 - Figtree Boulevard Culvert	Works cost \$Dec14			\$176,119	100%	\$176,119	735	\$240	Completed
dcF4	Johns Road Culvert	Works cost \$Dec14			\$427,190	100%	\$427,190	735	\$581	Completed
G1 Piped (dcG1)	Pedestrian pathway on the southern side of Lot 701 DP 1079560	Works cost \$Dec14	\$1,501	69	\$114,459	100%	\$114,459	735	\$156	Completed
G1 Piped (dcG2)	Culvert under the Pacific Highway	Works cost \$Dec14	\$7,469	46	\$379,620	100%	\$379,620	735	\$516	Completed
G1 Piped (dcG3)	East-west across Lot 1212 DP 818944	Works cost estimate \$Dec14	\$993	297	\$325,989	100%	\$325,989	735	\$443	Works to be completed in conjunction with adjoining development
G1 Piped (dcG4)	Under future Road - southern	Works cost	\$995	85	\$93,422	100%	\$93,422	735	\$127	Works to be completed in conjunction

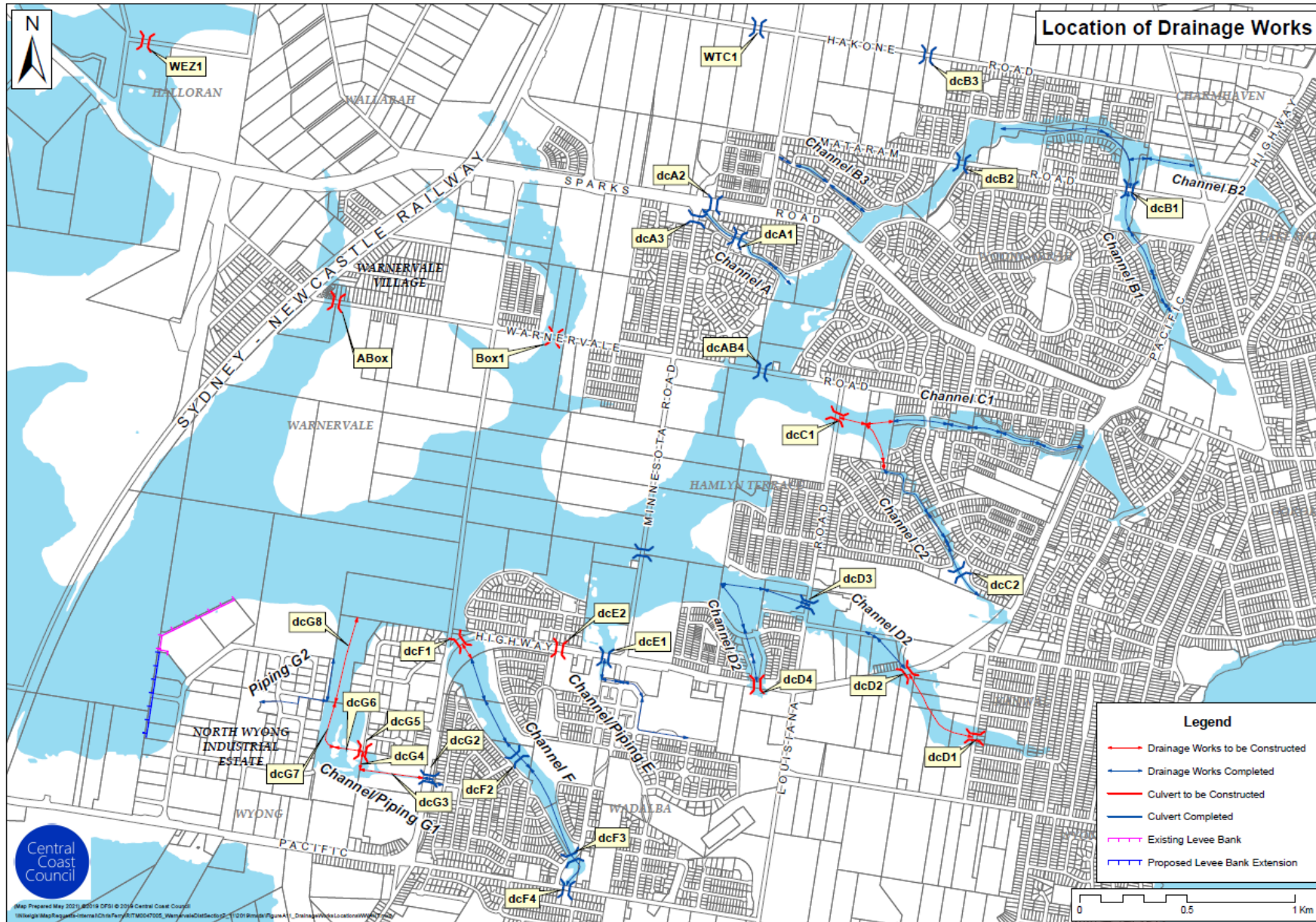
Section A4 Works Schedules and Location Maps

	extension of Brussels Rd	estimate \$Dec14								with adjoining development
G1 Piped Culvert (dcG5)	Industrial Road Culvert	Works cost estimate \$Dec14	\$12,318	20	\$272,194	100%	\$272,194	735	\$370	Works to be completed in conjunction with adjoining development
G1 Channel G (dcG6)	Open channel - Lot 24 DP1255358	Works cost estimate \$Dec14	\$993	122	\$133,908	100%	\$133,908	735	\$182	Works to be completed in conjunction with adjoining development
G1 Channel G (dcG7)	Open channel - Lot 24 DP1255359	Works cost estimate \$Dec14	\$1015	237	\$265,691	100%	\$265,691	735	\$361	Works to be completed in conjunction with adjoining development
G1 Channel G (dcG8)	Open channel - Lot 19 DP 250522	Works cost estimate \$Dec14	\$1018	409	\$460,228	100%	\$460,228	735	\$626	Works to be completed in conjunction with adjoining development
G2 Piped (dcG10)	Easements over SP78719 -11 Willow Tree Road	Works cost estimate \$Dec14	\$1,454	342	\$549,258	100%	\$549,258	735	\$747	Completed
	Porters Cr Diversion Scheme	Works cost estimate \$Dec14			\$16,761,360	100%	\$16,761,360	735	\$22,795	Works to be completed in conjunction with adjoining development
Box 1	Warnervale Rd culvert crossing - first of two -	Cardno \$Dec10			\$490,065	100%	\$490,065	735	\$666	Works to be completed in conjunction

Section A4 Works Schedules and Location Maps

	new collector road									with adjoining development
Abox	Warnervale Rd culvert crossing - second of two - new collector road	Cardno \$Dec10			\$658,680	100%	\$658,680	735	\$896	Works to be completed in conjunction with adjoining development
dcAB4	Warnervale Rd Culvert	Works cost \$Dec14			\$3,634,889	100%	\$3,634,889	735	\$4,943	Completed
WTC1	Hakone Rd Culvert	Works cost estimate \$Dec20			\$283,000	100%	\$283,000	735	\$385	Works to be completed in conjunction with adjoining development
TOTAL DRAINAGE WORKS					\$43,242,402		\$43,242,402		\$58,800	
TOTAL DRAINAGE COSTS – LAND & WORKS					\$58,469,608		\$58,469,608		\$79,508	

Figure A.11 Drainage Works Locations – WWAHT



A4.3.4 Water Quality Works

Map Ref	Local Infrastructure item	Description (e.g. lot numbers if required)	Source	Total cost	Total cost indexed to \$Dec20	Apportionment factor	Apportioned cost	Contribution catchment (ha of NDA)	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
wqB1 - Peppercorn Works	Catchment B3	Lot 261 DP 1036768 (dB23)	Works cost \$Dec14	\$655,351	\$724,076	100%	\$724,076	580	\$1,247	Completed 2005-06
wqB2 - Waterside Dr Works	Catchment B2	Lot 134 DP 1076050, Lot 1 DP 1113258 & Lot 2 DP 1104475 (dB15-dB17)	Works cost \$Dec14	\$971,764	\$1,073,672	100%	\$1,073,672	580	\$1,850	Completed in two stages 2005 & 2007-08.
W10	Catchment E	Lot 24 DP 843478 (FP11)	Council cost estimate \$Dec14	\$1,930,853	\$2,133,339	100%	\$2,133,339	580	- \$3,675	To be completed in conjunction with adjoining development
SE2	Catchment WTC 1	Lot 10 DP 7738	Works cost - \$Sept16	\$288,187	\$308,026	100%	\$308,026	580	\$531	Completed
SW1	Catchment WTC 3	Lot 200 DP 1249883	Council cost estimate \$Dec14	\$1,746,584	- \$1,929,746	100%	- \$1,929,746	580	\$3,325	Stormwater Detention Basin
N1A	Catchment WTC 5	Lot 58 DP 7738	Council cost estimate \$Dec20	\$1,004,396	\$1,004,396	100%	\$1,004,396	580	\$1,730	Stormwater Detention Basin

Section A4 Works Schedules and Location Maps

Map Ref	Local Infrastructure item	Description (e.g. lot numbers if required)	Source	Total cost	Total cost indexed to \$Dec20	Apportionment factor	Apportioned cost	Contribution catchment (ha of NDA)	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
N1B	Catchment WTC 5	Lot 59 DP 7738	Council cost estimate \$Dec14	\$294,712	\$325,618	100%	\$325,618	580	\$561	Stormwater Detention Basin
CS - Central WQ Treatment	Flood plain	Lot 2 & 3 DP 1101086	Council cost estimate \$Dec14	\$5,270,764	\$5,823,504	100%	\$5,823,504	580	\$10,033	Revised cost for Centralised water quality treatment to replace previous sub-catchment treatment
W40	Catch C3		Works cost \$Dec14	\$882,961	\$975,556	100%	\$975,556	580	\$1,681	Completed
W9	Catch D3		Works cost \$Dec14	\$592,342	\$654,461	100%	\$654,461	580	\$1,128	Completed
W18	Precinct 7A - Catch H2		Works cost estimate \$Dec14	\$1,221,401	\$1,251,088	100%	\$1,251,088	580	\$2,155	To be completed in conjunction with adjoining development
W19	Precinct 7A - Catch H8		Council cost estimate \$Dec14	\$680,471	\$751,831	100%	\$751,831	580	\$1,295	To be completed in conjunction with

Section A4 Works Schedules and Location Maps

Map Ref	Local Infrastructure item	Description (e.g. lot numbers if required)	Source	Total cost	Total cost indexed to \$Dec20	Apportionment factor	Apportioned cost	Contribution catchment (ha of NDA)	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
										adjoining development
W20	Precinct 7A - Catch H5		Council cost estimate \$Dec14	\$259,549	\$286,768	100%	\$286,768	580	\$494	To be completed in conjunction with adjoining development
W21	Precinct 7A - Catch H7		Council cost estimate \$Dec14	\$1,426,258	\$1,575,828	100%	\$1,575,828	580	\$2,715	To be completed in conjunction with adjoining development
Add2	Precinct 7A - Catch H6		Council cost estimate \$Dec14	\$662,290	\$731,744	100%	\$731,744	580	\$1,261	To be completed in conjunction with adjoining development
SW B1	Basin 1 - water quality basin, GPT & 3m cycleway		ADW Johnson \$Mar19	\$1,242,508	\$1,273,814	100%	\$1,273,814	735	\$1,704	To be completed in conjunction with adjoining development
SW B2	Basin 2 - water quality basin, GPT & 3m cycleway		ADW Johnson \$Mar19	\$1,038,806	\$1,064,979	100%	\$1,064,979	735	\$1,425	To be completed in conjunction with

Section A4 Works Schedules and Location Maps

Map Ref	Local Infrastructure item	Description (e.g. lot numbers if required)	Source	Total cost	Total cost indexed to \$Dec20	Apportionment factor	Apportioned cost	Contribution catchment (ha of NDA)	Contribution rate (\$/ha of NDA)	Indicative scheduling of works
										adjoining development
SW B3	Basin 3 - water quality basin, GPT & 3m cycleway		ADW Johnson \$Mar19	\$845,180	\$866,475	100%	\$866,475	735	\$1,159	To be completed in conjunction with adjoining development
SW B4	Basin 4 - water quality basin, GPT & 3m cycleway		ADW Johnson \$Mar19	\$964,910	\$989,221	100%	\$989,221	735	\$1,323	To be completed in conjunction with adjoining development
SW B5	Basin 5 - water quality basin, GPT & 3m cycleway		ADW Johnson \$Mar19	\$1,359,718	\$1,393,977	100%	\$1,393,977	735	\$1,704	To be completed in conjunction with adjoining development
TOTAL WATER QUALITY WORKS					\$24,399,784		\$24,399,784		\$39,724	

Figure A.12 Water Quality Works Locations

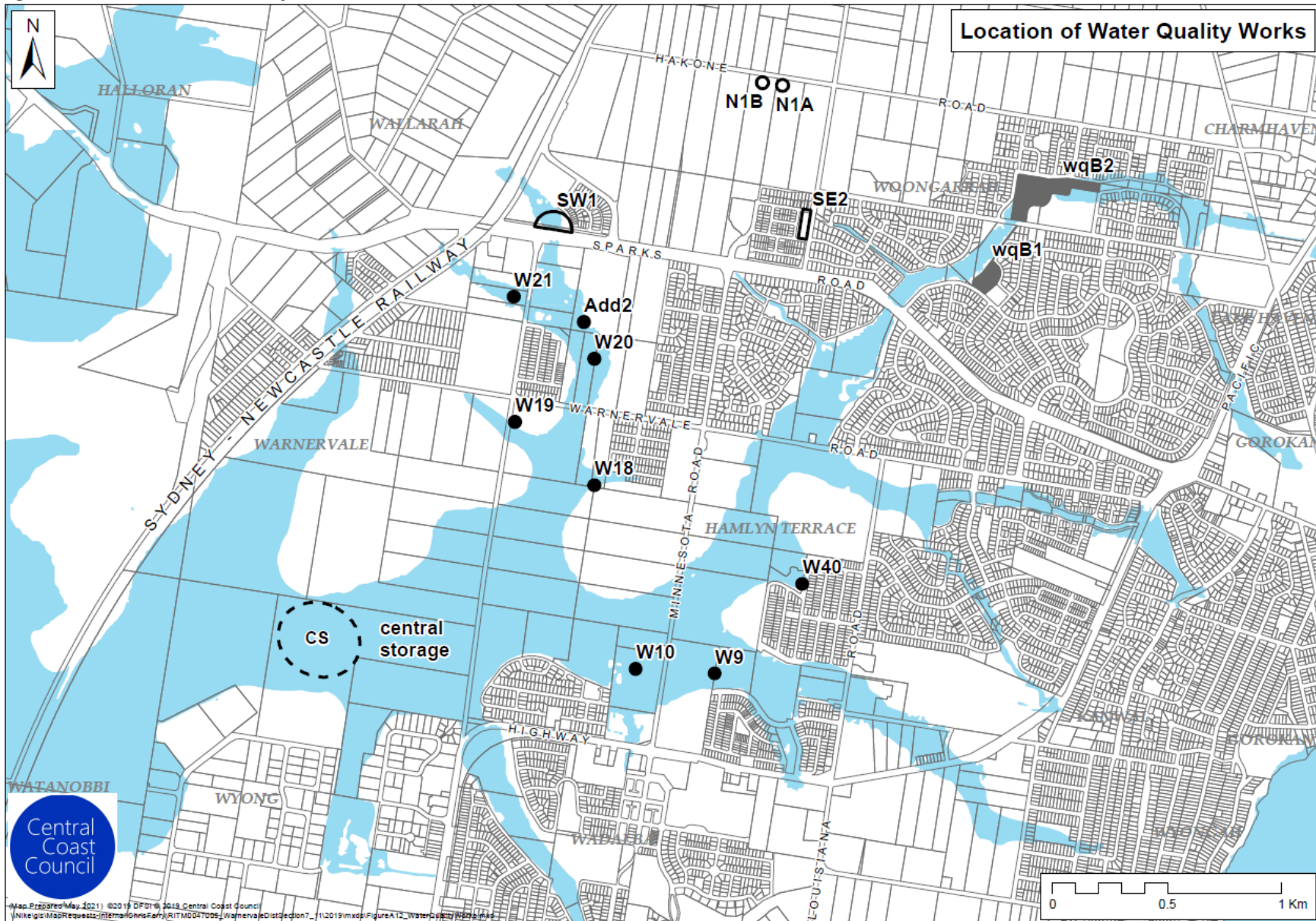
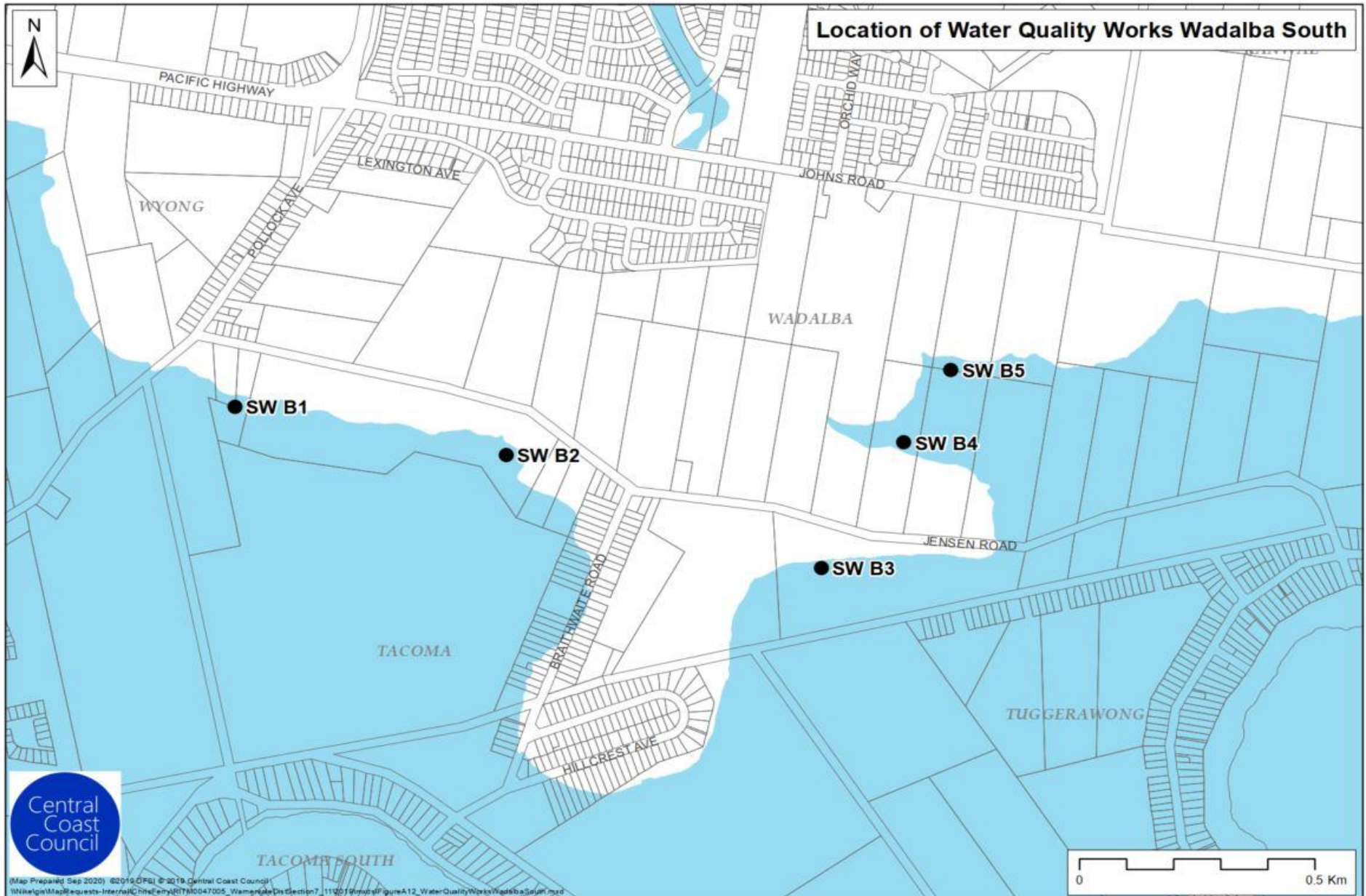


Figure A.13 Water Quality Works Locations – Wadalba South (WELOG)



A4.4 Environmental Benefit Works

A.4.4.1 Wadalba Environmental Corridor Land & Works

Map Ref	Local Infrastructure item/ description	Cost rate source	Cost rate (\$/ha)	Acquired Land	Acquisition Cost	Proposed Area to Acquire	Estimated Acquisition Cost	Total area	Total cost (unindexed)	Indicative scheduling of works
WARNERVALE/WADALBA ENVIRONMENTAL CORRIDOR (WEC) LAND										
En1	Lot 138 DP 1194748, formerly Lot 2602 DP 1043825	Acquisition price \$Dec14	\$130,832	3.03	\$396,421		\$0	3.03	\$396,421	Land acquired
En2	Lot 127 DP 1243758 formerly Lot 1 DP 306056	Acquisition price \$Dec14	\$130,832	0.66	\$85,970		\$0	0.66	\$85,970	Land acquired
En3	Lot 228 DP 1105837	Acquisition price \$Dec14	\$130,832	8.25	\$1,016,565		\$0	8.25	\$1,016,565	Land acquired
En4	Lot 1 DP 1154872, formerly part Lot 311 DP 808521 (E2)	Acquisition price \$Dec14	\$130,832	3.63	\$474,658		\$0	3.63	\$474,658	Land acquired
En5	Lot 4 DP 1207133 was Part Lot 229 DP 1105837, formerly Lot 312 DP 808521 (E2)	Acquisition price \$Dec14	\$130,832	1.69	\$221,106		\$0	1.69	\$221,106	Land acquired
En6	Lot 51 DP 1195704 was part Lot 2 DP1154872 formerly part Lot 311 DP 808521 (E2)	Acquisition price \$Dec14	\$130,832	0.95	\$124,657	0.9575	\$0	0.9528	\$124,657	Partially Acquired remainder to be acquired through a Planning Agreement

Section A4 Works Schedules and Location Maps

Map Ref	Local Infrastructure item/ description	Cost rate source	Cost rate (\$/ha)	Acquired Land	Acquisition Cost	Proposed Area to Acquire	Estimated Acquisition Cost	Total area	Total cost (unindexed)	Indicative scheduling of works
En7	Lot 4 DP 1207133 was Part Lot 229 DP 1105837, formerly Lot 312 DP 808521	Acquisition price \$Dec14	\$130,832	3.66	\$0		\$0	0	\$0	Land acquired
TOTAL WEC CORRIDOR LAND				20.92	\$2,319,377	0.9575	\$0	21.87	\$2,319,377	

Map Ref	Local Infrastructure item/ description	Cost source rate	Completed works (Dec-14)	Uncompleted works (\$Dec14)	Total cost (\$Dec14)	Total cost (\$Dec20)	Indicative scheduling of works
WARNERVALE/WADALBA ENVIRONMENTAL CORRIDOR (WEC) WORKS							
n/a	Preparation of Management Plan	Council cost estimate \$Dec14	\$13,673	-	\$13,673	\$15,107	Works completed
n/a	Cost of Planned Embellishment Works	Council cost estimate \$Dec14	-	\$1,308,929	\$1,308,929	\$1,446,195	Ongoing works approx. \$50,000 per annum
TOTAL WEC CORRIDOR WORKS						\$1,461,302	
TOTAL WEC CORRIDOR LAND & WORKS						\$3,780,679	

Figure A.14 Wadalba Environmental Corridor Contribution Catchment

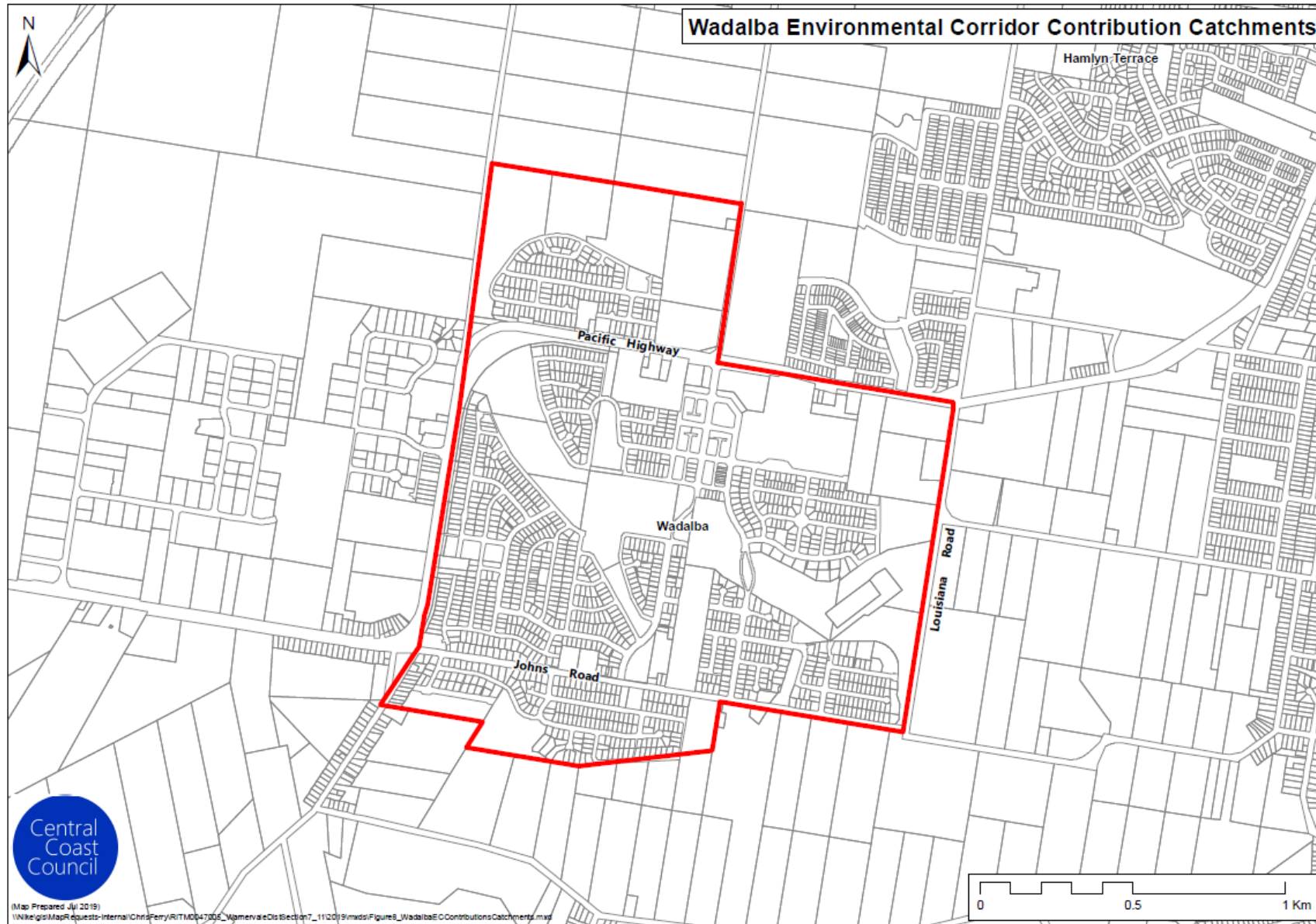
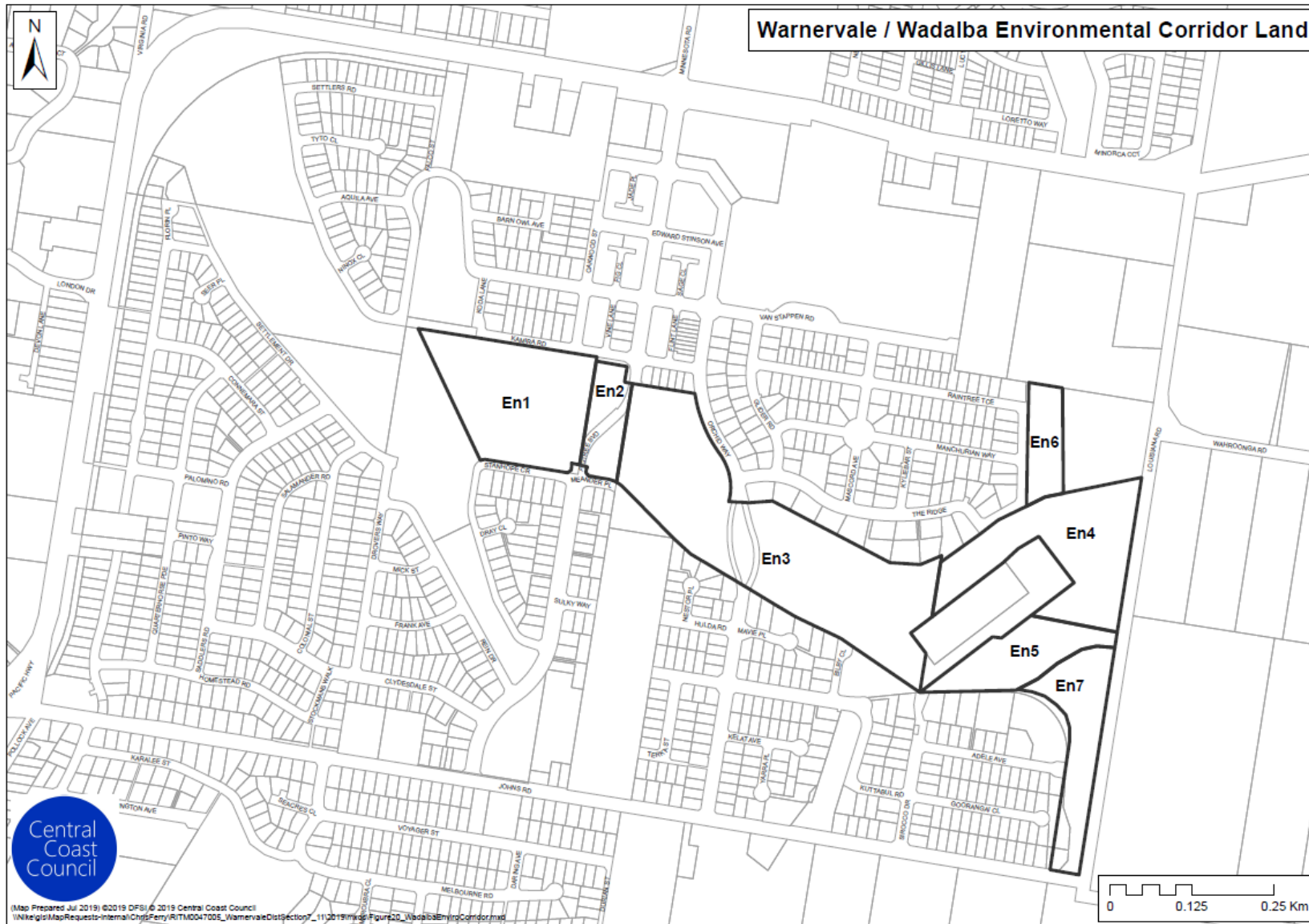


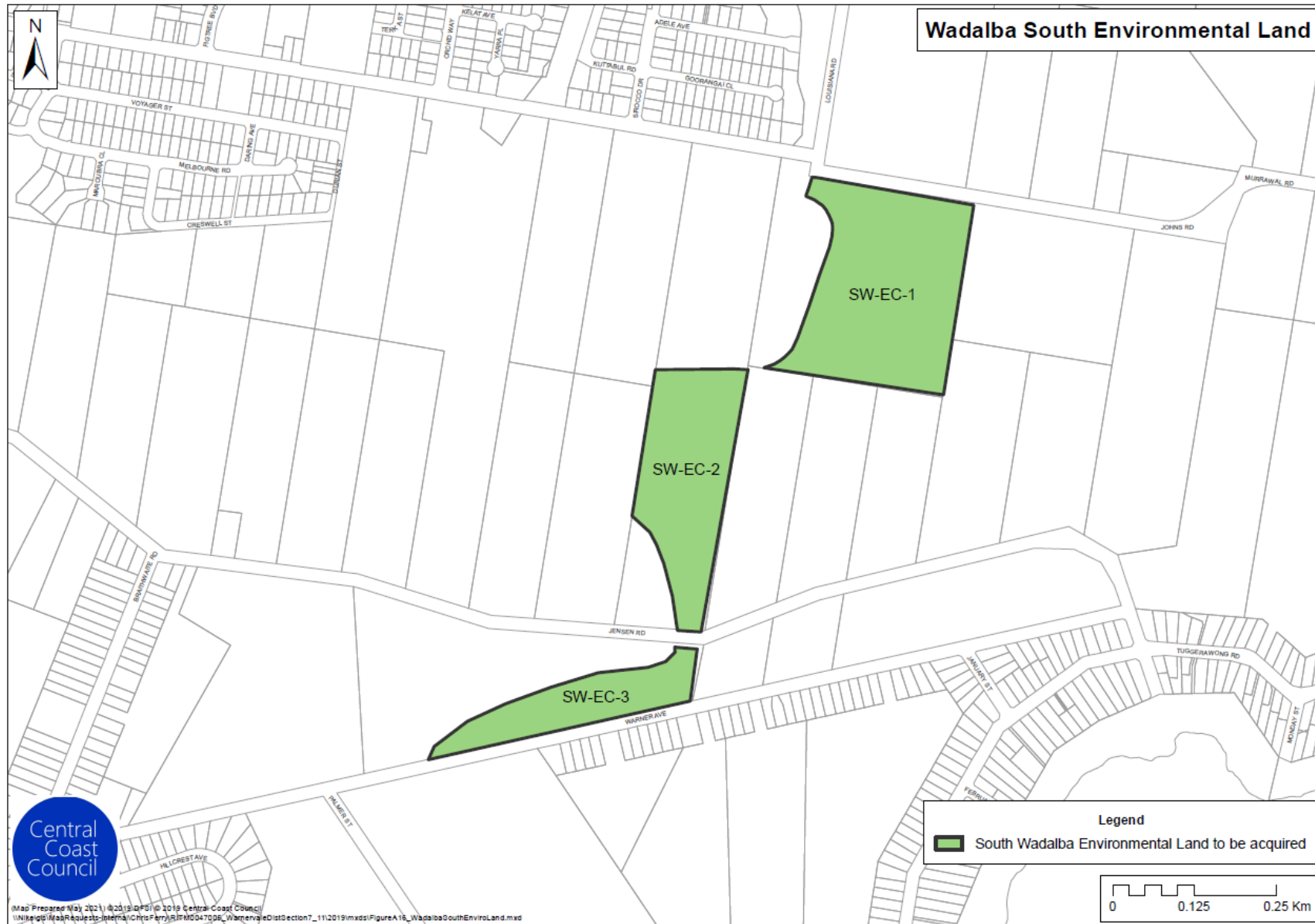
Figure A.15 Wadalba Environmental Corridor Land Locations



A4.4.2 Wadalba South Environmental Corridor Lands

Ref	Local Infrastructure item/ description	Source	Rate	Per (unit)	Land to be acquired	Total Cost Indexed to \$Dec20
WADALBA SOUTH ENVIRONMENTAL CORRIDOR LANDS						
SW-EC-1	Lot 184 DP16012 (110 Johns Rd, Wadalba)	MJD Valuers \$Oct19	\$100,000	Ha	6.7	\$675,149
SW-EC-2	Lots 17 & 18 DP12304 (130 Johns Rd, Wadalba & 150 Jensen Rd, Wadalba)	MJD Valuers \$Oct19	\$100,000	Ha	4.4	\$443,382
SW-EC-3	Lot 2 DP567256 (135 Jensen Rd, Wadalba)	MJD Valuers \$Oct19	\$100,000	Ha	2.5	\$251,921
TOTAL WADALBA SOUTH ENVIRONMENTAL CORRIDOR LANDS					13.60	\$1,370,453

Figure A.16 Wadalba South Environmental Corridor Land Locations



A4.4.3 Additions to Environmental Corridor Lands

Ref	Local Infrastructure item/ description	Cost rate source	Rate (\$/ha)	Additional land area (ha)	Total Cost (\$Dec14)
ADDITIONS TO ENVIRONMENTAL CORRIDOR LANDS					
A	Lot 1 DP 376236	Acquisition price \$Dec14	\$1,470,000	1.13	\$1,664,628
B	Lot 2602 DP 1043825	Acquisition price \$Dec14	\$297,669	0.91	\$270,879
C	Lot 1 DP 306056	Acquisition price \$Dec14	\$297,669	0.20	\$59,534
D	Lot 102 DP 101919	Acquisition price \$Dec14	\$1,470,000	0.10	\$147,000
TOTAL ADDITIONS TO ENVIRONMENTAL CORRIDOR LANDS				2.34	\$2,142,041

A4.4.4 Contributions toward Addition to Environmental Corridor Lands

Land subject to Deed of Agreement					
Ref	Local Infrastructure item/ description	Cost rate source	Rate (\$/ha)	Land area to be cleared (ha)	Total Cost (\$Dec14)
1	Lot 1 DP 376236 (531 Pacific Highway)		\$68,867	0.80	\$55,093.60
2	Part Lot 1 DP 180012 (483 Pacific Highway)		\$68,867	1.56	\$107,432.52

Section A4 Works Schedules and Location Maps

3	Lot 261 DP 1038214 (Johns Road)		\$68,867	0.40	\$27,546.80
4	Lot A DP 386170 (469 Pacific Highway)		\$68,867	0.85	\$58,536.95
5	Lot B DP 386170 (465 Pacific Highway)		\$68,867	1.07	\$73,687.69
6	Lot 2 DP1064784 (542 Pacific Highway)		\$68,867	0.18	\$12,396.06
7	Lot 333 DP 1051976 (Clydesdale Street)		\$68,867	2.06	\$141,866.02
8	Lot 312 DP 808521 (155 Johns Road)		\$68,867	2.93	\$201,780.31
9	Part Lot 28 DP 755245 (165-171 Johns Road)		\$68,867	1.90	\$130,847.30
10	Lot 311 DP 808521 (Louisiana Road)		\$68,867	2.42	\$166,658.14
11	Lot 102 DP 1019019 (501 Pacific Highway)		\$68,867	5.36	\$369,127.12
12	Lot 2602 DP 1043825 (Van Stappen Road)		\$68,867	8.77	\$603,963.59
Area Sub Total				28.30	
Land not subject to Deed of Agreement					
13	Lot 11 DP 1085184		\$68,867	1.25	\$86,083.75
14	Lot B 1064184		\$68,867	1.25	\$86,083.75

Section A4 Works Schedules and Location Maps

15	Lot 1 DP 306056		\$68,867	0.7	\$48,206.90
16	Lot 3 DP 536569		\$68,867	0.6	\$41,320.20
Shortfall in Monies to be collected under Deed			\$68,867		\$1,381.89
Area Sub Total				3.8	
Total				32.10	\$2,212,012.59

A4.4.4 Floodplain Restoration Works – Precinct 7A

Map Ref	Local Infrastructure item/ description	Source	Cost source rate	Dimensions (Ha/Hrs/m)	Total Cost (\$Dec14)	Total Cost (\$Dec20)
FLOODPLAIN RESTORATION WOKRS - PRECINCT 7A						
n/a	Restoration and rehabilitation of floodplain	Council cost estimate \$Dec14	\$5,475	Ha	\$455,923	\$503,735
n/a	Noxious weed removal	Council cost estimate \$Dec14	\$50	man hours	\$12,945	\$14,303
n/a	Feral animal control	Council cost estimate \$Dec14	\$50	man hours	\$10,012	\$11,062
n/a	Signage, walking trails, community education	Council cost estimate \$Dec14			\$101,136	\$111,742
n/a	Fencing perimeter, removal of internal fences	Council cost estimate \$Dec14	\$10	m	\$87,473	\$96,646
n/a	Drainage and water quality upgrades	Council cost estimate \$Dec14			\$141,591	\$156,439
TOTAL FLOODPLAIN RESTORATION WORKS – PRECINCT 7A					\$809,081	\$893,928

A4.5 Studies and Plan Administration

Local Infrastructure item	Cost source	Total cost of works in plan (\$Dec14)	Total cost (\$Dec20)	Apportionment factor (%)	Apportioned cost (\$)	Contribution catchment	Contribution rate per person
PLAN STUDY COSTS							
Flood & drainage studies	Council cost estimate \$Dec14	\$871,702	\$963,116	100%	\$963,116	36,218	\$27
Environmental studies	Council cost estimate \$Dec14	\$895,802	\$989,744	100%	\$989,744	36,218	\$27
Aboriginal studies	Council cost estimate \$Dec14	\$21,162	\$23,381	100%	\$23,381	36,218	\$1
Traffic studies	Council cost estimate \$Dec14	\$223,132	\$246,532	100%	\$246,532	36,218	\$7
Valuations	Council cost estimate \$Dec14	\$715,473	\$790,504	100%	\$790,504	36,218	\$22
Others	Council cost estimate \$Dec14	\$123,078	\$135,985	100%	\$135,985	36,218	\$4
TOTAL PLAN STUDIES					\$3,149,262		\$87
COUNCIL PLAN ADMINISTRATION COSTS							
Staffing costs	Council cost estimate \$Dec14	\$6,477,076	\$7,156,320	100%	\$7,156,320	36,218	\$198
TOTAL PLAN ADMINISTRATION COSTS					\$7,156,320		\$198
TOTAL PLAN STUDIES & ADMINISTRATION COSTS					\$10,305,582		\$285

Note: The full works schedule shows anticipated works for Warnervale District, however if a more cost effective or safer solution is determined, that solution will be applied.

A5 Plan Amendments

The following is a list of the main amendments in this plan compared with the previous adopted version:

1. The NDA estimates for various areas in the Warnervale District have been adjusted based on Council's latest development data.
2. The dwelling and population yield forecasts have been adjusted based on the latest available information from forecast.id and Council's development experience to date.
3. The occupancy rate assumption for 4+ bedroom dwellings have been increased to better align with representative average household sizes in the Warnervale District.
4. The number of catchments for infrastructure categories have been consolidated where possible for greater simplicity in the plan while still ensuring there is nexus between the new development and infrastructure being charged for:
 - The number of open space and community facility catchments have been consolidated into a single catchment.
 - The number of transport catchments have been consolidated to five.
 - The number of drainage catchments have been consolidated into a single catchment.
5. Contribution rates are now expressed as per person, per dwelling or per hectare of NDA rather than per Development Unit.
6. Contributions for transport infrastructure for non-residential development are now based upon the hectares of NDA for the development rather than the number of DVTs expected to be generated by the development. The number of DVTs, including a discount of DVTs for non-residential development in predominantly residential precincts, has still determined the apportionment of transport costs in each catchment between the estimated non-residential and residential development aggregates.
7. The list of transport infrastructure requirements have been adjusted post-review including the removal of works which have become the responsibility of the NSW Roads and Maritime Services (RMS) (such as the Railway Link Road).
8. Infrastructure for Wadalba South (including road, intersection, open space, stormwater and environmental corridor requirements) has been included since the area has now been rezoned and development plans have progressed.
9. Other updates for works completed and land acquired for infrastructure (since the adoption of the former plan) have been included, which are reflected in the works schedule accordingly.
10. Many of the works and land acquisition cost estimates have been updated in the works schedule, with input advice from QS consultants and land valuers, to reflect the latest market estimates.
11. Where necessary, works cost estimates have been indexed by the relevant ABS CPI, cost estimates and contribution rates (after plan adoption) will continue to be indexed by the CPI.
12. An amended structure of the plan with two separate documents has been implemented with important information for stakeholders, such as contributions rates and administrative procedures, now contained in the **Main Document**, and supporting information about how the rates have been calculated and the detailed schedules and maps, now contained in the Technical Document.

The table below lists the historical plan amendments since the original plan was first introduced in 1994, prior to the latest amendments.

Section A5 Plan Amendments

Amendment Number	Adopted by Council	Effective	Purpose of Plan Amendment	Council File
Principal Plan		13 April 1994		T40/08700
1	11 February 1998	19 February 1998	To address zoning amendments to the Warnervale East/ Wadalba North West release area and revised land valuations	T40/08700
2	14 October 1998	22 October 1998	To review the Wadalba North-West development concept	T40/08700-02
3	24 November 1999	26 November 1999	To address zoning amendments at Wadalba, amendments to <i>Wyong Development Control Plan No. 49</i> and revised land values	T40/08700-03
4	13 September 2000	N/A	To adopt revised land values for Wadalba, changes to the provision requirements for community facilities and changes to intersection improvements and costs	T40/08700-06
5	27 September 2000	25 October 2000		
6	28 November 2001	5 December 2001	To adopt revised land values in all categories throughout the development area, revision of indexation and alterations to some intersection costs.	D01910056
7	13 March 2002	8 May 2002	To adopt a new development concept for land north of Mataram Road affected by <i>Wyong Development Control Plan No. 49</i>	D01910299
8	23 June 2004	29 June 2004	To incorporate proposed developments in the wider Warnervale District, to update land values (including projected future land values) and construction costs and make other consequential amendments identified since 2002	D00019961
9	14 September 2005	21 December 2005	To include projected land value for Woongarra Sporting Fields, the inclusion of the Additions to the Wadalba Corridor land not subject to the multiparty deed and update Warnervale District Map to include Koohindah Waters	D00375602 D02052407 D00371971
	12 December 2012	21 December 2012	Adoption of <i>Warnervale Town Centre Development Contributions Plan</i> and nominal deletion of this area from the District Plan	D03220486
10	13 November 2013	N/A	The adoption of <i>Wadalba, Woongarra & Hamlyn Terrace Development Control Plan 2013</i> to review projects, costs and apportionments. Rates applied to Development Applications notwithstanding that the plan did not come into effect.	D05261929
11	25 March 2015	1 April 2015	Reintegration of <i>Warnervale Town Centre Contributions Plan</i> into District Plan and	F2014/01538

Section A5 Plan Amendments

			adoption of the revised cost base under the <i>WWAHT Plan 2013</i>	
12	27 April 2020	22 May 2020	Amended development rate for secondary dwellings and minor administrative changes	F2014/01538
13	TBA	TBA	Adoption of revised Plan to include South Wadalba (WELOG) Planning Proposal infrastructure, amendments to catchment boundaries, updating costs and land values	F2014/01538

A6 References

Author	Document Title	Council Reference Number
GENERAL		
.id the population experts	Population and dwelling forecasts for Warnervale-Wadalba District (2019)	CCC Website
Wyong Shire Council	Warnervale East – Wadalba North Release Area: Trunk Drainage, Prepared for Contributions Plan No 7A (13 April 1994)	D01739302
Wyong Shire Council	Section 94 Contributions Plan No. 7A – Drainage, Water Quality, Open Space, Community Facilities and Roads – Warnervale East and Wadalba North West (September 1995)	T40/08700-01
Young Consulting Engineers	Wadalba Development – Cost Estimates (June 1998)	T40/25850-07
Wyong Shire Council	Section 94 Contributions Plan No. 7A – Drainage, Water Quality, Open Space, Community Facilities and Roads – Warnervale East and Wadalba North West (August 1998)	T40/08700-08
Wyong Shire Council	Section 94 Contributions Plan No. 7A – Drainage, Water Quality, Open Space, Community Facilities and Roads – Warnervale East and Wadalba North West (September 2001)	D01910056 TCS2006047 T40/25850-15
Wyong Shire Council	Section 94 Contributions Plan No. 7A – Drainage, Water Quality, Open Space, Community Facilities and Roads – Warnervale East and Wadalba North West – (May 2002)	D01910299
Leyshon Consulting	Warnervale East Local Centre (February 2004)	T40/25850-16
Wyong Shire Council	Review of Contributions Plan No. 7A – The Wider Warnervale District Technical Report (2004) D00468001	D02993254 D00322714 D00015534
Wyong Shire Council	Section 94 Contributions Plan No. 7A – Drainage, Water Quality, Open Space, Community Facilities and Roads – Warnervale East and Wadalba North West (June 2004)	D00019961
Wyong Shire Council	Review of Contributions Plan No. 7A – The Wider Warnervale District Technical Report (March 2005)	D00393573
Wyong Shire Council	Section 94 Contributions Plan No. 7A – Drainage, Water Quality, Open Space, Community Facilities and Roads – Warnervale East and Wadalba North West (September 2005)	D00371971
NSW Department of Planning	Central Coast Regional Strategy 2006-31 ((2008)	D001194752
NSW Department of Planning and Environment	Central Coast Regional Strategy 20136	
Don Fox Planning	Wyong Shire Retail Strategy 2013	D05916703

Author	Document Title	Council Reference Number
Wyong Shire Council	Precinct 7A Economic Viability Assessment – August 2012	D03191266 (vol 3)
Wyong Shire Council	Precinct 7A Economic Benefit Report – September 2012	D03191266 (vol 3)
Newplan on behalf of Wyong Shire Council	Draft Woongarah, Hamlyn Terrace & Wadalba Development Contributions Plan 2009 submitted to Department of Planning (September 2009)	D02013936 D02016574
Architectus	Precinct 7A Master Plan – August 2011	D03191266 (vol 1)
OPEN SPACE & RECREATION		
Wyong Shire Council	Warnervale/Wadalba Open Space Plan (September 1991)	D02500744 D03108383
Wyong Shire Council	Review of Contributions Plan No. 7A – The Wider Warnervale District Technical Report (2004)	D02993254
Wyong Shire Council	Wyong Open Space Principles Plan (June 2005)	D02453188
Wyong Shire Council	Local Parks Strategy (August 2005)	D00427905
Wyong Shire Council	Wyong Recreation Facilities Strategy (October 2009)	D02070427
Cardno (NSW)	Warnervale and Hamlyn Terrace preliminary Investigation – Version A (May 2006)	D00550750
Cardno (NSW)	Warnervale and Hamlyn Terrace preliminary Investigation Version B (May 2006)	D00557823
Wyong Shire Council	Precinct 7A – Open Space and Recreation Strategy	D03191266 (vol 2)
COMMUNITY FACILITIES		
Wyong Shire Council	Concept Brief for Wadalba Community Centre (July 1998)	T40/25850-07
Department of Public Works	Development Application Report – Wadalba Community School (October 1998)	T40/25850-09
Wyong Shire Council	Community Support & Human Services Plan for Warnervale/Wadalba (March 2001)	D01912922
Wyong Shire Council	Guidelines for the Planning and Provision of Community Facilities in Wyong Shire – Final Report (July 2002)	D02226844
Wyong Shire Council	Community Support & Human Services Strategy for Warnervale/Wadalba (September 2002)	D01912921 D03150262
Paul van Reyk Consultancy Services	Warnervale/Wadalba Community Support & Human Services Strategy: Feasibility Studies for a Business Case for Integrated Service Provision (September 2002)	D01912930
Wyong Shire Council	Warnervale Town Centre Community Facilities Study (October 2003)	D00697415

Author	Document Title	Council Reference Number
Wyong Shire Council	Precinct 7A – Social Analysis & Human Services Study – March 2012	D03191266 (vol 2)
AQUATIC & LEISURE CENTRE		
HM Leisure Planning Pty Ltd, Prior & Cheney Architects and Recreation Planning Associates	Warnervale Aquatic & Recreation Centre Feasibility (May 2004)	D00598175
Otium Planning Group	Extract from Strategic Analysis for New Leisure and Aquatic Provision in the Northern Region of the Central Coast, NSW Final Report (July 2018)	D14199525
ROADS		
	Reports prepared for Landcom for the Wadalba North West Urban Release Area (1998)	
CCHD	Wadalba South Intersections Plans for Cost Estimate	D14520248
CCHD	Wadalba South Intersections Cost Estimate	D14199574
	Wadalba South Road Safety Audits Three Intersections	D14199537
Pak-Poy & Kneebone	Wyong Shire Road Hierarchy and Transportation Study (April 1989)	
CPG Management	Warnervale Indoor Aquatic & Recreation Centre (July 2005)	D02471933
Mitchell Brandtman	Central Cost Council Local Infrastructure Cost Estimates (March 2020)	D14199589
SPD	Tranplan Strategic Traffic Modelling for Warnervale/Wadalba (Sept 1991)	
SPD	Warnervale Development Future Traffic Flows on Sparks Rd and Pacific Hwy (Sept 1992)	
SPD	Warnervale Future Development, analysis of key intersections (January 1993)	
Wyong Shire Council	The Railway Bypass - When to Construct? (January 1993)	D03300379
Wyong Shire Council	Technical Report No 773 Pacific Hwy/Lucca Rd Intersection (May 1993)	D02001845
GHD	Concept Design and Estimates Railway Rd Bypass (June 1993)	
Wyong Shire Council	Technical Report No 1004 Warnervale Urban Release Area: Sparks Road/Minnesota Rd Intersection Warnervale (June 1993)	D03300395
Wyong Shire Council	Technical Report No 1145 Warnervale Urban Release Area: Pacific Hwy/Wallah Rd/Sparks Rd Intersection (June 1993)	D03300400
Wyong Shire Council	Technical Report No 774 Warnervale Urban Release Area: Pacific Hwy/Minnesota Rd Intersection North Wyong (July 1993)	D03300402
Wyong Shire Council	Technical Report No 776 Pacific Hwy/Donaldson Rd Intersection (Oct 1993)	D02489158

Author	Document Title	Council Reference Number
Bradley Parkes	Traffic Report Stage 1 Supplier Park Warnervale (November 2004)	Box000380
ARUP	Wyong Employment Zone Traffic Study (2006)	CPA/92389
ARUP	Greater Warnervale Area & Town Centre Traffic Study (2006)	CPA/92389
Wyong Shire Council	Warnervale Town Centre Traffic Impact Assessment (January 2007)	D02565471
Wyong Shire Council	Link Road Tender documentation (2008)	CPA/160794
Wyong Shire Council	Technical Report No 7 – Pacific Highway/Johns Rd/Pollock Ave, Wadalba	T40/08700-01
Wyong Shire Council	RTA estimates, Technical Report No 1824 Sparks Rd/Warnervale Rd intersection	
Wyong Shire Council	Technical Report No 1823 Pacific Hwy/Craigie Ave intersection	
Wyong Shire Council	Technical Report No 774 Pacific Hwy/Minnesota Rd intersection	
Wyong Shire Council	Technical Report No 1975 Minnesota Rd/Warnervale Rd intersection	
Wyong Shire Council	Technical Report 1974 Pacific Hwy/Collector Rd intersection	
Wyong Shire Council	Technical Report No 775 Pacific Hwy/Lucca Rd Intersection, North Wyong	
Wyong Shire Council	Technical Report No 1005, Warnervale Urban Release Area Pacific Hwy/Pearce Rd intersection	
Hyder Consulting Pty Ltd	Precinct 7A Traffic & Transport Study 2012	D08256524
DRAINAGE		
Sinclair, Knight & Partners	Lower Wyong River Flood Study (January 1984)	D00366614
DISBOS P/L	Flood Drainage and Traffic Study, North Wyong (April 1989)	
Kinhill Engineers	Warnervale Floodplain Environmental Management Strategy – Investigations to Identify Water Quality Control Facilities for the Warnervale Catchment (February 1998 and 1999)	D00592031
R A Young and Associates	Investigations undertaken related to the Wadalba North West Urban Release Area (1998-1999)	
Willing and Partners	Trunk Drainage Investigation, Warnervale East 7B Stage 1, Flood Study (May 1990)	D00538088 D00592019
Willing and Partners	Trunk Drainage Investigation, Warnervale East 7B, Stage 2, Floodplain Management Plan (June 1990)	D00538099 D00592025 D00366802
Willing and Partners	Wadalba West Release Area, Trunk Drainage Investigation (September 1991)	D00592027 D00366869

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Willing and Partners	North Wyong Industrial Estate Planned Extension – Drainage Easement South of Pavitt Crescent - Final Report (February 1992)	D00952343
Willing and Partners	Warnervale East 7B Fill Analysis (October 1994)	D00952206
	Warnervale East – Wadalba North Release Area: Trunk Drainage, Prepared for Contributions Plan No 7A, Technical Report, May 1996	
Kinhill Engineers	Warnervale Wetlands Concept Design Report (February 2000)	D00592035
Wyong Shire Council	Upstream of Louisiana Rd near Wyong Hospital, Preliminary Assessment (2001)	
Paterson Britton and Partners Pty Ltd	Warnervale Road Concepts and Floodway Concept Report (2001)	
Azzurra Consulting	Review of Woongarra Channel (2003)	TCS0607004
Azzurra Consulting	Draft Floodplain Assessment, Review of Woongarra Creek – Final Issue (March 2003)	D00538071
Azzurra Consulting	Draft Floodplain Assessment, Review of Kanwal and Wyongah Channels (2003)	D00624310
Wyong Shire Council	Review of Contributions Plan No. 7A - The Wider Warnervale District Technical Report (2004)	
Cardno (NSW/ACT)	Porters Creek Floodplain Risk Management Plan - Final Report (April 2010)	D03071679
Cardno	Precinct 7A Flood Study – August 2012	D03191266 (vol 3)
Cardno	Precinct 7A Flood Study – May 2013	D09456898
Ecologique	Porters Creek Wetland Floodplain Restoration Conservation Management Plan – August 2016	D14199626
WATER QUALITY		
Kinhill	Warnervale Floodplain Environmental Management Strategy, Prepared for Wyong Shire Council (February 1998)	D00592031
Kinhill Engineers	Warnervale Wetlands Concept Design Report (February 2000)	D00592035
Ecological Engineering	Integrated Water Cycle Management & Water Sensitive Urban Design Strategy - Stage 1 of Warnervale Supplier Park (2004)	
Ecological Engineering	Integrated Water Cycle Management Strategy for the Wyong Employment Zone (May 2005)	D00592036 D00592040 D00592041
Ecological Engineering	Porter's Creek Wetland Stormwater Harvesting & Reuse Project (Australian Water Fund Application) Overview Report (June 2005)	D00592013

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Ecological Engineering	Integrated Water Cycle Management Strategy for the Warnervale Town Centre (June 2006)	D00592047 CPA/104592
Ecological Engineering	Discussion Paper Modelling Rationale for the Porters Creek Stormwater Harvesting Strategy (June 2006)	D00591974
GHD	Report on Porters Creek Catchment - Integrated Water Cycle Management Strategy Section 94 Contributions Assessment (July 2006)	D00743208
Ecological Engineering	Water Sensitive Urban Design Solutions for Catchments above Wetlands – Final Report (May 2007)	D00841157
EDAW/AECOM/Storm Consulting	Warnervale-Wadalba Integrated Water Cycle Management Section 94 Report (April 2008)	D01150431
Cardno	Precinct7A IWCM Final Draft Report for Council Comment (2012)	D02948723
Wyong Shire Council	Porters Creek Stormwater Harvesting Scheme: Revised Concept Design (March 2011)	D02520205
Cardno	Precinct 7A – Integrated Water Cycle Management Strategy – March 2012	D03191266 (vol 2)
Cardno	Precinct 7A – Integrated Water Cycle Management Strategy – Addendum April 2013	D06760970
ENVIRONMENTAL		
Lesrvk Environmental Consultants	Preliminary Flora & Fauna Survey of Proposed Residential Development Release Area, Wadalba, NSW (March 1998)	T40/25850-05
Francis Lemckert, Forest Research & Development Division. State Forests of NSW	Habitat Assessment – Wadalba Development Site (November 1998)	T40/25850-09
Gunninah Environmental Consultants (Branwhite, Boris)	Wyong Development Area Orchid Survey (Stage 1) (November 1998)	C60/05100-01 TSC0249740
Pak-Poy & Kneebone Pty Ltd	Warnervale/Wadalba Local Environmental Study (July 1989)	T40/25850-01
Gunninah Environmental Consultants	Orchid Survey within Wyong's Development Areas – Stage 2 (September 1989)	C60/05100-06 TCS0321441
Eastcoast Flora Surveys	Angophora Inopina in Wyong Shire & Lake Macquarie (June 1999)	C60/05000-09 TCS0281776

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Austeco	Sub-Regional Squirrel Glider Study (February 2000)	C60/05100-06 TCS0353053 TCS0322512
R Payne Ecological Surveys & Managem	Ecological Investigations – Proposed Sporting & Community Facilities Wadalba & Woongarah (June 2000)	T40/25854-01 TCS0377171
Gorecki, P & Dallas, M	Aboriginal Archaeological Assessment, Johns Rd, Wadalba, NSW (June 2000)	T40/25850-14 C60/05100-15
Forest Fauna Surveys	Flora, Fauna & Habitat Assessment for Warnervale Land Use Strategy Study (September 2001)	T40/25886-10
Bell, Stephen	Distribution, Conservation & Management of the vulnerable Angophora inopina – Final Report (December 2001)	D00949932 D00475654
Eastcoast Flora Surveys (Bell,S)	Acacia Bynoeona Seasonal Data Collection Survey (April 2002)	C60/05100-17 TCS0515242
Smith A P, Watson G & Murray M (Austeco)	Fauna habitat Modelling & Evaluation of Wildlife Linkages in Wyong Shire (May 2002)	D00475599 C60/05100-12 TCS0530069
Eastcoast Flora Surveys (Bell,S)	Wyong Shire Vegetation Mapping Project (November 2002)	C60/05100-19 TCS0568002
Sinclair Knight Merz P/L Newcastle	Wyong Precinct 11 & 13 Flora & Fauna Report (December 2002)	TCS0571278 U20/WA100-09
LR Environ GIS	Bushfire Prone Land Mapping (July 2003)	T40/02000-03 TCS0627315
Austeco (Smith, A)	Wadalba Squirrel Glider Study (May 2002)	D/01799-04 TCS0523893
Professor Hugh Possingham	Peer Review of Draft Wyong Conservation Strategy (October 2002)	C60/05100-19
Eastcoast Flora Survey Bell,S)	Vegetation Community Profiles – Final Report (December 2002)	D00475578
Eastcoast Flora Surveys (Bell,S)	Vegetation & Orchid Survey - Warnervale Industrial Land (May 2003)	D00005898
Eastcoast Flora Survey Bell,S)	The Natural Vegetation of the Wyong Local Government Area, Central Coast, NSW (June 2003)	D00475585
Wyong Shire Council	Draft Conservation Strategy (August 2003)	D00946693

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Forest Fauna Surveys Pty Ltd, Eastcoast Flora Survey	Ecological Investigations – Wyong Regional Sporting Facility (November 2003)	D00042857
Forest Fauna Surveys (Murray, M)	Extension of Wyong Corridor Study to Resolve Detailed Design Issues with Stakeholders (February 2004)	C60/05100-21 TSC0674756
Eastcoast Flora Survey	Flora & Fauna Investigations – Proposed Warnervale Town Centre, Wyong Shire (March 2004)	D00476074
Eastcoast Flora Survey	Population count & assessment of <i>Rutidosia heterogama</i> (Asteraceae) Lower Hunter & Central Coast (April 2004)	D00006206
Conacher Travers	Wadalba Wildlife Corridor Management Plan (September 2006)	D00641790
Environmental Research & Information Consortium	Preliminary Results of Wetness Mapping Using Satellite Imagery – Warnervale (Dec 2006)	D00753304
Forest Fauna Surveys Pty Ltd, Eastcoast Flora Survey	Ecological Investigations – Wyong Employment Zone (May 2006)	D00553650 D00553660
Forest Fauna Surveys Pty Ltd, Eastcoast Flora Survey	Ecological Investigations – Wyong Employment Zone – Version 2 (May 2007)	D00889373
Forest Fauna Surveys Pty Ltd, Eastcoast Flora Survey	Lot 3 DP 1007500, Warnervale Business Park, Warnervale & Baileys Farm Conservation Offset – Habitat Restoration & Monitoring Plan (June 2008)	D02084325
Eastcoast Flora Survey	Lower Hunter Spotted Gum Ironbark Forest EEC in the Warnervale Area (2010)	D02616269 CPA/168633
Umwelt (Australia) Pty Ltd	Ecological Assessment – Precinct 7A, Warnervale NSW – August 2013	D04098237
Umwelt (Australia) Pty Ltd	Conservation Management Plan – Precinct 7A, Warnervale & Hamlyn Terrace NSW – February 2014	D05825201
Archaeological		
Mary Dallas Consulting Archaeologists	Aboriginal Heritage Assessment – Wadalba – June 2000	T40/25850-13
Archaeological Surveys & Reports Pty Ltd	Archaeological Investigation: Warnervale District Town Centre, Warnervale – March 2004	D00003131

Author	Document Title	Council Reference Number
Archaeological Surveys & Reports Pty Ltd	Archaeological Investigation: Industrial Land, Sparks Road, Warnervale, Central Coast – March 2004	D00006715
Archaeological Surveys & Reports Pty Ltd	Archaeological Investigation: Wyong Employment Zone, Precincts 11,13 & 14 Halloran/Warnervale, Central Coast – April 2005	D00327108
Archaeological Surveys & Reports Pty Ltd	The Archaeological Investigation for site of Indigenous cultural significance in Precinct 7A, Warnervale, Central Coast, NSW	D03191266 (vol 1)