Camden Growth Areas Contributions Plan

Amendment 3

Technical Document

Table of Contents

Tables

Figures

A. Leppington North Precinct

Part A is structured as follows:

Part A.1 documents the expected development in the Precinct and the likely demand for infrastructure arising from that development.

Part A.2 discusses the infrastructure that is required to meet the demands of the expected development.

Parts A.3 and A.4 contain schedules of infrastructure addressed by the plan and maps showing the locations of infrastructure items.

Part A.5 includes a list of documents used to determine the infrastructure needs and costs.

A.1 Infrastructure demand

A.1.1 Existing development

There was mainly rural and rural residential land uses existing in the Leppington North Precinct when the land was rezoned to permit urban purposes in 2013.

Figure A1 and **Tables A1** and **A2** show the development that existed at the time the land was rezoned. This information provides the basis for calculating demand credits for social infrastructure contributions and the net increase in demand for social infrastructure, as discussed in section 2.5 of the Main Document.

Source: Camden Council

Figure A1 Existing development at the time the land was zoned for urban purposes

Table A1 Lots with special use residential demand credit

Lot	DP	Dwellings	Description
36D	389451	102	Four Lanterns Estate over 50s Housing

Table A2 Lots with single dwelling demand credit

Parcel No.	Property address	Property description
101237	197 Bringelly Road LEPPINGTON NSW 2179	Lot 2 DP 553495
101252	307 Bringelly Road LEPPINGTON NSW 2179	Lot B DP 377845
101253	313 Bringelly Road LEPPINGTON NSW 2179	Lot A DP 377845
101589	118 Byron Road LEPPINGTON NSW 2179	Lot 86A DP 8979
101591	130 Byron Road LEPPINGTON NSW 2179	Lot 1 DP 368234
101601	182 Byron Road LEPPINGTON NSW 2179	Lot 58A DP 8979
101871	1495 Camden Valley Way LEPPINGTON NSW 2179	Lot 56B DP 8979
103034	17 Cowpasture Road LEPPINGTON NSW 2179	Lot 57 DP 8979
103035	23 Cowpasture Road LEPPINGTON NSW 2179	Lot A DP 360565
103036	27 Cowpasture Road LEPPINGTON NSW 2179	Lot B DP 360565
103038	45 Cowpasture Road LEPPINGTON NSW 2179	Lot D DP 388553
103039	53 Cowpasture Road LEPPINGTON NSW 2179	Lot 102 DP 584350
103043	99 Cowpasture Road LEPPINGTON NSW 2179	Lot 2 DP 565228
103045	155 Cowpasture Road LEPPINGTON NSW 2179	Lot A DP 435367
105989	28 Ingleburn Road LEPPINGTON NSW 2179	Lot 84 DP 8979
105991	36 Ingleburn Road LEPPINGTON NSW 2179	Lot 85 DP 8979
106004	120 Ingleburn Road LEPPINGTON NSW 2179	Lot 1 DP 529937
106019	100 Dickson Road LEPPINGTON NSW 2179	Lot 34C DP 8979
109569	215 Rickard Road LEPPINGTON NSW 2179	Lot 12 DP 523156
113816	116 Dickson Road LEPPINGTON NSW 2179	Lot 35A DP 8979
113981	1431 Camden Valley Way LEPPINGTON NSW 2179	Lot 1 DP 856193
1125456	293 Bringelly Road LEPPINGTON NSW 2179	Lot 101 DP 1051963
1154906	165 Bringelly Road LEPPINGTON NSW 2179	Lot 17 DP 1127208
1154907	171 Bringelly Road LEPPINGTON NSW 2179	Lot 18 DP 1127208
1154908	173 Bringelly Road LEPPINGTON NSW 2179	Lot 19 DP 1127208

Parcel No.	Property address	Property description
1154910	179 Bringelly Road LEPPINGTON NSW 2179	Lot 21 DP 1127208
1154912	185 Bringelly Road LEPPINGTON NSW 2179	Lot 23 DP 1127208
1154913	187 Bringelly Road LEPPINGTON NSW 2179	Lot 24 DP 1127208
1154914	189 Bringelly Road LEPPINGTON NSW 2179	Lot 25 DP 1127208
1161727	126 Dickson Road LEPPINGTON NSW 2179	Lot 510 DP 1172207
1162113	1461 Camden Valley Way LEPPINGTON NSW 2179	Lot 42 DP 1177254
1162117	1449 Camden Valley Way LEPPINGTON NSW 2179	Lot 40 DP 1177254
101905	1453 Camden Valley Way LEPPINGTON NSW 2179	Lot 22 DP 596177

Table A3 Lots with a dual occupancy demand credit

Parcel No.	Property address	Property description
101250	217 Rickard Road LEPPINGTON NSW 2179	Lot 11 DP 523156
101587	100 Byron Road LEPPINGTON NSW 2179	Lot 86 DP 8979
101593	142 Byron Road LEPPINGTON NSW 2179	Lot Y DP 399114
101600	174 Byron Road LEPPINGTON NSW 2179	Lot 57C DP 8979
101603	192 Byron Road LEPPINGTON NSW 2179	Lot 58B DP 8979
103037	35 Cowpasture Road LEPPINGTON NSW 2179	Lot C DP 388553
103042	85 Cowpasture Road LEPPINGTON NSW 2179	Lot 1 DP 410573
103044	111 Cowpasture Road LEPPINGTON NSW 2179	Lot 1 DP 565228
103622	122 Dickson Road LEPPINGTON NSW 2179	Lot 36D DP 389451
106011	146 Ingleburn Road LEPPINGTON NSW 2179	Lot 34A DP 8979
1154909	177 Bringelly Road LEPPINGTON NSW 2179	Lot 20 DP 1127208
1154911	183 Bringelly Road LEPPINGTON NSW 2179	Lot 22 DP 1127208

A.1.2 Net Developable Area

The definition of Net Developable Area is included in section 5.9 of the Main Document of this plan.

The portion of the Leppington North Precinct that is within the Camden LGA has an estimated NDA of approximately 225.6 hectares, as shown in **Table A4** and **Figure A2**.

Table A4 Expected Net Developable Area – Leppington North Precinct (Camden)

Land use zone	Net Developable Area (ha)*
R3 Medium Density Residential	67.06
B4 Mixed Use	17.41
B3 Commercial Core	21.89
B7 Business Park	69.39
B5 Business Development	0.89
IN2 Light Industrial	48.95
Total	**225.59**

* component totals are rounded
Source: Camden Council

Source: Camden Council

Figure A2 Net Developable Area

A.1.3 Expected development

The Camden LGA portion of the Leppington North Precinct is part of a broader Precinct Plan that was prepared for the Austral and Leppington North Precincts. These Precincts straddle the Camden and Liverpool LGA boundaries.

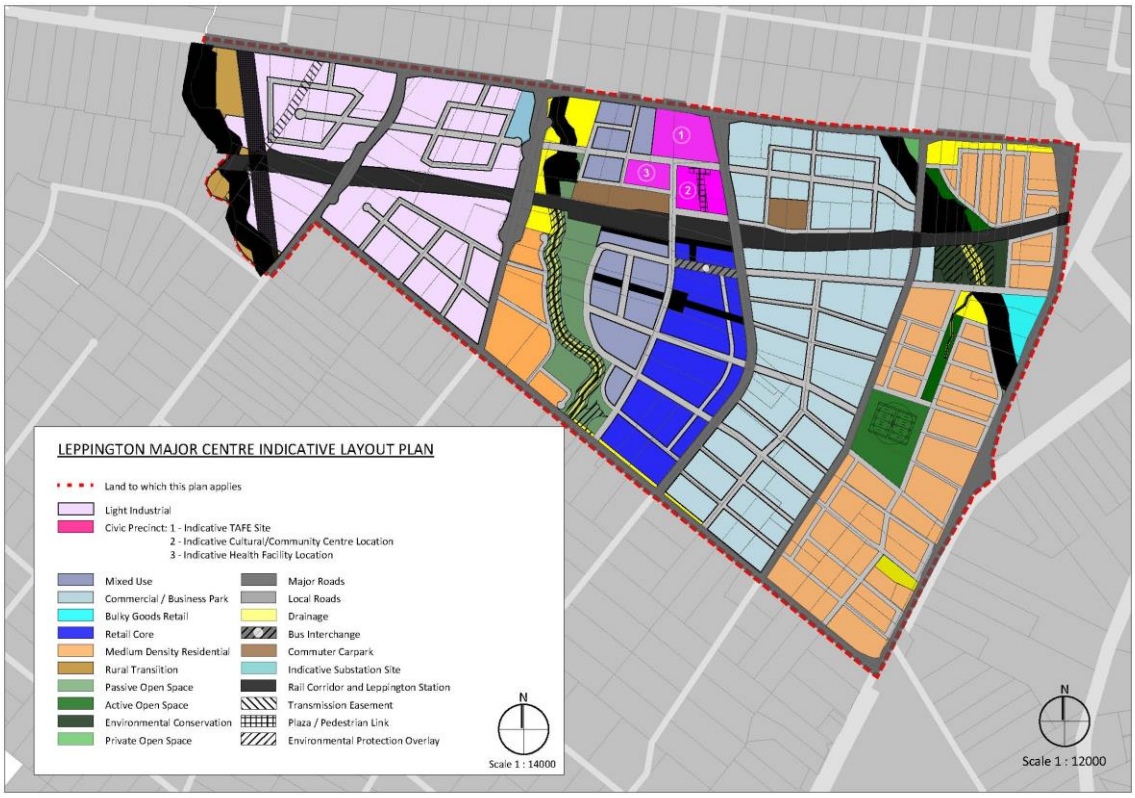
The combined Austral and Leppington North Precincts is to contain the following urban uses:

- Leppington Major Centre and nearby employment land, with capacity for up to 13,000 jobs in retailing, light industrial, business park, human services and entertainment sectors.
- Approximately 17,350 dwellings and a population of approximately 54,000.
- A Town Centre in Austral with retail floor space of around 30,000 square metres.
- Three Neighbourhood Centres each with retail floor space in the order of 10,000 square metres.
- 6-7 primary schools and 1-2 high schools.
- 99.4 hectares of light industrial land for local jobs and local services.
- A new TAFE college and Regional Integrated Primary Health Care Centre located in Leppington Major Centre.
- Regional level community and cultural facilities in Leppington Major Centre.

Expected development in the part of the Leppington North Precinct situated in the Camden LGA will be characterised by the following:

- Civic, cultural, health, education and other public uses in a civic precinct to the north of the railway station.
- Retail shopping centre forming the commercial core of the Leppington Major Centre to the south of the railway station.
- Mixed use retail / commercial and residential development on the western flanks of the civic precinct and retail core.
- Commercial / business park immediately to the east of the civic precinct and retail core.
- Open space and drainage facilities along the Scalabrini Creek and Bonds Creek corridors.
- Medium density residential interfacing with the Scalabrini Creek corridor, and to the east of the business park.
- A light industrial area to the west of Dickson Road.
- Approximately 2,112 dwellings (including existing dwellings) and a total population of approximately 5,142 persons.

The proposed arrangement of these component land uses is shown in **Figure A3**.



Source: Camden Council

Figure A3 Expected land use in Leppington North Precinct (Camden LGA)

A.1.4 Expected population

The likely demographic characteristics of a development area is important for understanding and planning for the future social infrastructure needs of that area.

The demographic characteristics of the existing rural population do not provide a robust indicator of the future demography of the area.

The report titled *Austral and Leppington North Precincts - Demographic and Social Infrastructure Assessment* (**LNP Social Infrastructure Assessment**) prepared by Elton Consulting analyses the demographics and housing market conditions in the Camden LGA generally and compares these to the adjoining Liverpool and Campbelltown LGAs.

The LNP Social Infrastructure Assessment makes the following conclusions about the anticipated demography of the Precinct:

- There will initially be a comparable proportion of young couples and families with children to other release areas in the region, but a greater range of family types, reflecting the wider range of housing types and price markets to be provided.
- Proportions of empty nesters and older people will be initially similar to that usually experienced in new release areas, but, given the differing housing stock, will rapidly increase to approximate those in the wider district once services and public transport become well established.

- Over time, the population will become more diverse. Increasing proportions of young adults and older people will be attracted to the area once Leppington Major Centre is established. The proportion of the population who are young children and young adults will decline as the population ages and the proportion of older children with older parents grows. The proportion of the population aged 55+ years will also increase considerably as the area matures.
- Owner-occupiers are likely to provide a stable group that will age in place through the life cycle stages, while tenant households will experience greater turnover, thereby maintaining a similar age profile as in the initial stages.
- Over time the population profile is likely to come to more closely approximate that of an established area with a variety of age and household characteristics, rather than a traditional new release area with particular age concentrations.

Changing demographic, cultural and lifestyle patterns that will occur through the life of the development, and the relative uncertainty about the future composition of the population and its precise needs, gives rise to a need to plan for flexibility in social infrastructure facilities to enable them to respond and adapt as the particular requirements and lifestyle preferences of the population emerge.[1]

The anticipated population in the Leppington North Precinct has been determined on the basis of the Net Developable Area for various types of residential development, the minimum density of dwellings in those areas, and the assumed average occupancy rates for those dwellings.

The anticipated population calculation is shown in **Table A5**.

Table A5 Calculation of anticipated residential population – Leppington North Precinct (Camden LGA)

Dwelling type	Projected dwellings	Assumed dwelling occupancy rate	Population
R3 Medium Density Residential zone (semi-detached)	1,677	2.6	4,359
B4 Mixed Use Zone (apartments)	435	1.8	783
Less assumed existing population			-326
Expected net additional population			4,816

A.1.5 Anticipated non-residential floor space

Non-residential floor space in and around the Leppington Major Centre is anticipated to be developed in a variety of formats, including:

- retail shopping centre in the commercial core of the Leppington Major Centre
- ground and first floor retail and commercial space in a mixed use format with residential development
- business or office park developments
- bulky goods retail space with small office component

[1] LNP Social Infrastructure Assessment, p45-46

- light industry and warehousing space
- civic, cultural, health, education and other public uses

The scale of the anticipated non-residential floor space in the Precinct is shown in **Table A6**.

Table A6 Anticipated non-residential floor space – Leppington North Precinct (Camden LGA)

Land use category	Projected gross floor area (m^2)
B7 Business Park	600,000
B4 Mixed Use and B3 Commercial Core	120,000
B5 Business Development	4,005
IN2 Light Industrial	220,275
Total	944,280
Total less IN2 Light Industrial (for use in calculating open space contributions)	724,005

Source: Department of Planning and Infrastructure, Camden Council

A.1.6 Demand for infrastructure

Future development in the entire South West Priority Growth Area will result in an additional population of up to 300,000 people. Approximately half of this population will live in Camden LGA. Development of the Priority Growth Area precincts will thus have a profound effect on the Camden LGA and the demand for facilities offered in the LGA.

The existing public amenities and services in the Leppington North Precinct have been essentially designed to accommodate the existing rural living environment. A change in the development profile of the Precinct from rural to urban development is planned. More particularly, the Precinct is planned to be the focus of district and regional services and facilities in and surrounding the Leppington Major Centre.

The future development, and the populations that will occupy such development, can only be sustained by a significant investment in new and augmented public amenities and services.

Research on infrastructure needs undertaken at the precinct planning stage identified the following impacts on public services and public amenities:

- increased demand for facilities that will support safe and convenient travel between land uses both within the Precinct and to and from destinations outside of the Precincts, such as new roads and public transport facilities
- increased demand for stormwater drainage facilities as a result of the extra stormwater runoff generated by impervious surfaces associated with urban (as distinct from rural) development
- increased demand for active and passive recreation facilities, such as recreation centres, sports fields, sports courts, playgrounds, walking trails and bike paths
- increased demand for spaces that will foster community life and the development of social capital in the Precinct, such as cultural centres, multi-purpose community centres and libraries.

A range of public facilities and public amenities have been identified as being required to address the impacts of the expected development, including:

- traffic and transport management facilities
- water cycle management facilities
- open space and recreation facilities
- community and cultural facilities.

A.1.7 Infrastructure staging

The staging and priority of infrastructure in the Precinct will generally align with the priorities included in the *Austral and Leppington North Precincts Infrastructure Delivery Plan*[2] and the priorities set out in this contributions plan for the adjoining Leppington Precinct.

The initial development areas include:

- Land in and around the Leppington Major Centre
- Land located north and south of Fifteenth Avenue on the eastern edge of the Austral Precinct. The first of these areas is situated in the Leppington North Precinct.

Ideally, development will proceed outward from the railway station and retail core. The existing land ownership pattern and other influences (such as the demand for different land use types) however means that this order of development is unlikely to occur.

Indicative infrastructure staging and priorities are included in Part A3.

[2] GLN Planning (2012), *Austral and Leppington North Precincts Infrastructure Delivery Plan*, Final Report, September

A.2 Infrastructure strategies

A.2.1 General

A.2.1.1 How have the infrastructure costs been derived?

The costs for public amenities and public services in this plan compiled as follows:

- Costs and unit rates were prepared using the information contained in the studies informing the infrastructure planning of the area (refer Part A5). These costs have been reviewed by Council and, where necessary, amendments have been made. Unit cost rates for land, which are shown below in **Table A7**, were determined from advice from a registered valuer.
- A joint infrastructure cost working group involving officers of Camden Council and Liverpool City Council considered and determined the infrastructure costs that are included within the plan. Unit costs were based on the costs contained other greenfield area contributions plans, and the rates were adjusted where appropriate to suit local conditions.
- Unit rates were considered by DPE, who engaged WT Partnership to further review cost rates. The results of that review have been considered by Council in finalising the unit rates.

Table A7 Unit cost rates for land

Land category	Unit cost rate per square metre
Riparian Land	$80
Land below 100 Year ARI	$100
Residential Land	$390
Commercial Land	$350
Industrial Land	$250
Extra allowance for special value etc.	12%

Source: Civic MJD

A.2.1.2 Contribution catchments and apportionment

The section 7.11 monetary contribution rate for each of the Precinct facilities is determined by dividing the total cost of the facility by the contribution catchment (which is expressed in either persons or NDA).

The contribution catchments for each infrastructure type are as follows:

- In the case of open space and recreation facilities land and works, the expected additional resident population of the Leppington North Precinct (Camden LGA) area, plus the expected workers and visitors that will use of the projected non-residential GFA in the Leppington Major Centre.
- In the case of community and cultural facilities land and works, the number of people (or future residents) the respective facility has been designed for.
- In the case of water cycle management, traffic and transport land and works, the estimated Leppington North Precinct (Camden LGA) area NDA.

The proposed amenities and services have generally been sized to reflect the demand generated by the expected development under this plan. Some facilities, such as the proposed district and regional community facility, have been designed to serve a wider catchment and the contribution rate reflects that wider contribution catchment.

A.2.2 Traffic and transport facilities

A.2.2.1 What is the relationship between the expected types of development and the demand for additional public facilities?

Occupants of expected development in the Leppington North Precinct will utilise a transport network comprising:

- facilities for private vehicles, including roads and intersections
- facilities for public transport, including rail and bus facilities focused on the planned Leppington railway station
- facilities for walking and cycling.

The existing transport network has been planned to serve existing and approved developments (that is, predominantly rural developments) in the area, and not the future development envisaged for the Precinct.

The Indicative Layout Plan for the Austral and Leppington North Precincts and the *Austral and Leppington North (ALN) Precincts Transport Assessment* (the **Transport Assessment**) and *Post-Exhibition Traffic Report (Addendum)*, both prepared by AECOM, together identify a range of transport infrastructure works that will be required to mitigate the impacts and otherwise accommodate the expected development.

Details of:

- the assumptions of expected land use and development
- the methodology used to determine the need for transport facilities attributable to the expected development in the Precincts
- the scope and specification of those facilities

are contained in the Transport Assessment and Addendum.

The following is a summary of the approach followed in the Transport Assessment and Addendum for planning for the transport needs in the Leppington North Precinct.

A.2.2.2 Proposed road and intersection hierarchy

The proposed road network complements a broader hierarchy envisaged for the South West Priority Growth Area.

The proposed hierarchy comprises ‘principal arterial’, ‘transit boulevard’, ‘sub arterial’ and ‘collector’ roads. These will connect to a network of existing and new roads in adjoining Precincts.

There are a number of higher order roads planned for the Leppington North Precinct due to the focus of higher density land uses in the Leppington Major Centre and the focus of trips on the Leppington transport interchange.

Planned intersections have been designed so they will accommodate future year traffic volumes associated with the proposed full development of the Austral and Leppington North Precincts as well as wider regional development.

The proposed road hierarchy and intersection treatments for the future development of Leppington North Precinct are shown in **Figure A4.**

Source: AECOM

Figure A4 Proposed road hierarchy and intersection treatments – Leppington North Precinct

A.2.2.3 Proposed walking and cycling facilities

Providing viable alternatives to the private car for journeys with destinations both within and outside the Precinct is viewed as essential to encouraging sustainable development. A comprehensive bicycle network is proposed for both Austral and Leppington North Precincts which will link the centres, schools, transport nodes and various residential neighbourhoods with key strategic routes and onward destinations.

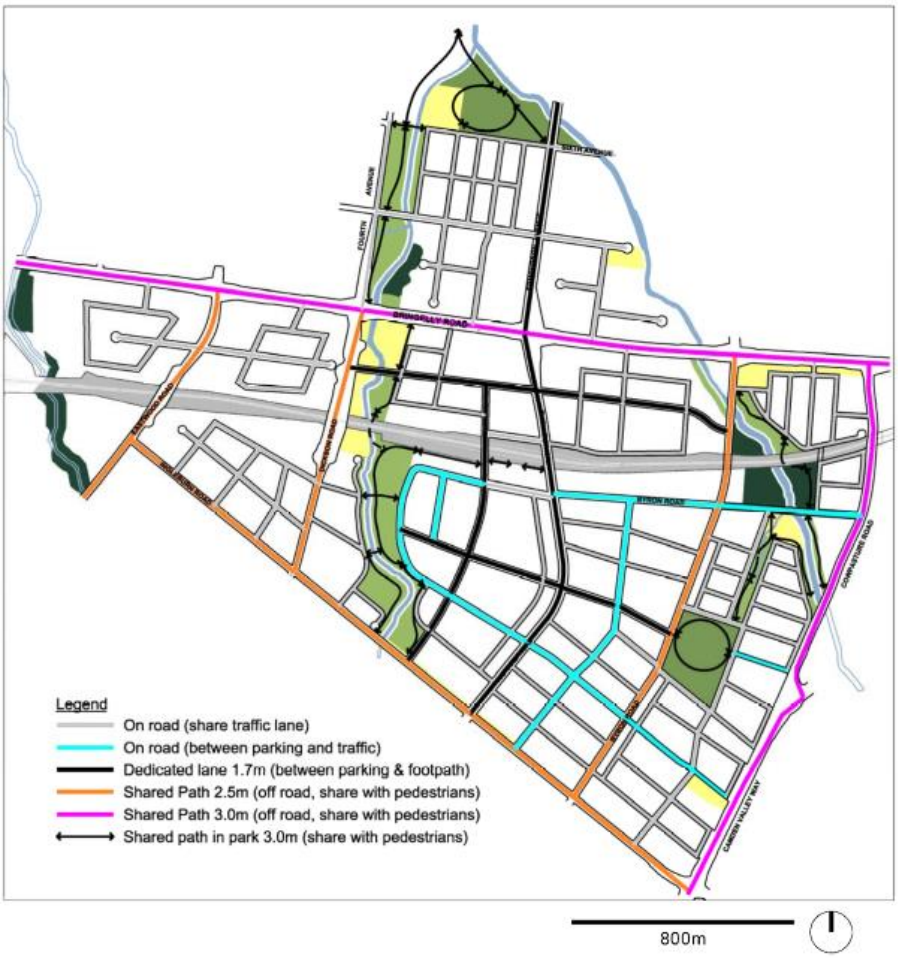
The proposed network will include a mixture of dedicated bicycle facilities that will take the form of:

- Off-Road (Shared Path)
- On-Road (Cycle Lane)
- Dedicated Lane (between parking and footpath)
- On-Road (Signed Route)[3]

All proposed roads throughout the Precinct will have dedicated pedestrian footpaths. Footpaths will be provided in conjunction with the adjacent road project. The land costs for off-road (shared paths) are included in the open space and drainage land acquisition costs, while their construction costs have been included as a line item in the open space and recreation facilities schedule.

[3] Refer to AECOM Australia Pty Ltd (2012), *Post-Exhibition Traffic Report (Addendum)*, page 22, for details of the planned network.

The proposed pedestrian and cycle network in the Leppington North Precinct is shown in **Figure A5.**



Source: AECOM

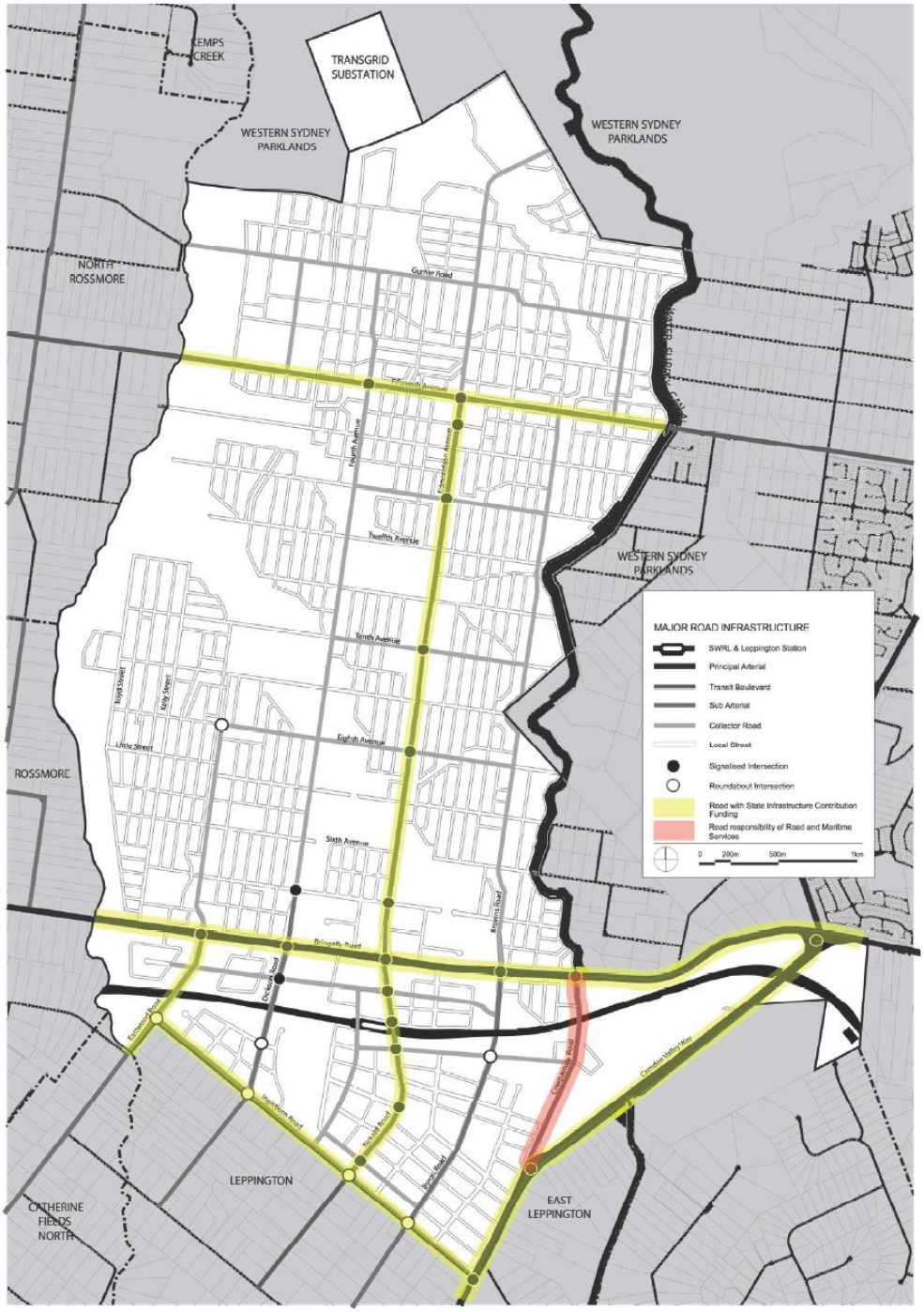
Figure A5 Proposed pedestrian and cycle network – Leppington North Precinct

A.2.2.4 Funding and delivery dependent on road hierarchy

Some of the required transport works are to meet a regional demand that extends beyond the Precinct boundary to the remainder of the Priority Growth Area.

The State Government has identified a number of works in the Precinct that are intended to be provided through the State budget or through SICs. The works include arterial road and public transport links as well as rail and bus passenger transport facilities.

Figure A6 shows the major road infrastructure planned to be provided across both the Austral and Leppington North Precincts, including delineation of those roads that, at the time this plan was prepared, were intended to be funded via SICs.



Source: GLN Planning (2012), *Austral and Leppington North Precincts Infrastructure Delivery Plan*

Figure A6 Planned major road infrastructure – Austral and Leppington North Precincts

Planned higher order roads for new development areas that are not covered by State Government funding may be provided by councils or by developers as part of their subdivision works.

Where provided by the Council, roads are usually provided through land or monetary section 7.11 contributions, or constructed as works in kind by the developer. Collector roads may be delivered by a mix of section 7.11 contributions and by developers. Where private development

lots front onto a collector road and that road is of a comparable standard to local roads, the road is usually provided by the developer as part of the subdivision works. Local roads are also usually provided by developers as they in most cases have private lots fronting onto them. Roads that do not have development fronting them such as bridges and crossings of open space are often funded through section 7.11 contributions, but can be constructed by the developer through a works-in-kind agreement at the time of subdivision and dedicated to the local council as public roads once constructed.

The selection of facilities for inclusion in this plan has also been based on the land ownership arrangement given that there may be difficulty in developers providing key transport links through parts of the Precinct where the ownership is fragmented. The integrated use of the different implementation mechanisms cited above will result in the equitable and timely provision of transport infrastructure that is required as a consequence of the expected development.

Leppington North Precinct road works that are addressed under this plan include the following:

- Dickson Road (south) works (works not being addressed as part of the South West Rail Link construction)
- Byron Road (north-south) upgrade and northward extension across South West Rail Link to join Bringelly Road
- Service relocation costs related to the above
- Culvert crossings and local roads around proposed Civic Precinct and in other critical locations
- Intersection treatments related to certain local roads.

A.2.2.5 Public transport facilities

The Precinct will benefit from good public transport accessibility through the South West Rail Line and a comprehensive proposed bus network and bus servicing strategy linking key centres, transport nodes, schools, employment opportunities and residential areas.

Specific public transport initiatives, apart from the roads and intersections that will cater for all vehicles and bus shelters, are not addressed by this plan. These initiatives will be delivered using funding and delivery mechanisms other than section 7.11 contributions.

A.2.3 Water cycle management facilities

A.2.3.1 What is the relationship between the expected types of development and the demand for additional public facilities?

Stormwater runoff in the Leppington North Precinct is proposed to be managed through a comprehensive Water Sensitive Urban Design (**WSUD**) approach.

The Cardno reports called *Austral and Leppington North Precincts Water Cycle Management WSUD Report* (the '**WSUD Strategy**') and *Austral & Leppington North Precincts Water Cycle Management Responses to Exhibition Submissions*, both prepared by Cardno Pty Ltd, and other studies[4] establish the framework for the management of stormwater quantity and quality related to the expected urban development in the Precinct.

The WSUD Strategy acknowledges that development of an area:

- generates demand for water supply
- requires management of wastewater as well as stormwater
- increases the area of impermeable surfaces and so exacerbates potential flooding issues, impacts on the quality and quantity of stormwater and potentially affects riparian corridors.

These water related issues are locality based and caused directly and solely by the development activity and so should be ameliorated by that same development activity.

To minimise the potential cost of the stormwater management scheme, the WSUD Strategy investigated the following:

- harvesting of rainwater for toilet laundry and garden use in residential lots
- treatment measures to improve stormwater quality, promote infiltration and attenuate run-off to emulate a more natural rainfall/ runoff regime.

Figure A7 over page is a schematic describing the approach taken with the WSUD Strategy. The schematic illustrates that 'rainwater' works will be required in conjunction with development consents for individual dwellings, while other ('stormwater') works relate to the broader catchment and so will be funded through section 7.11 contributions obtained under this plan.

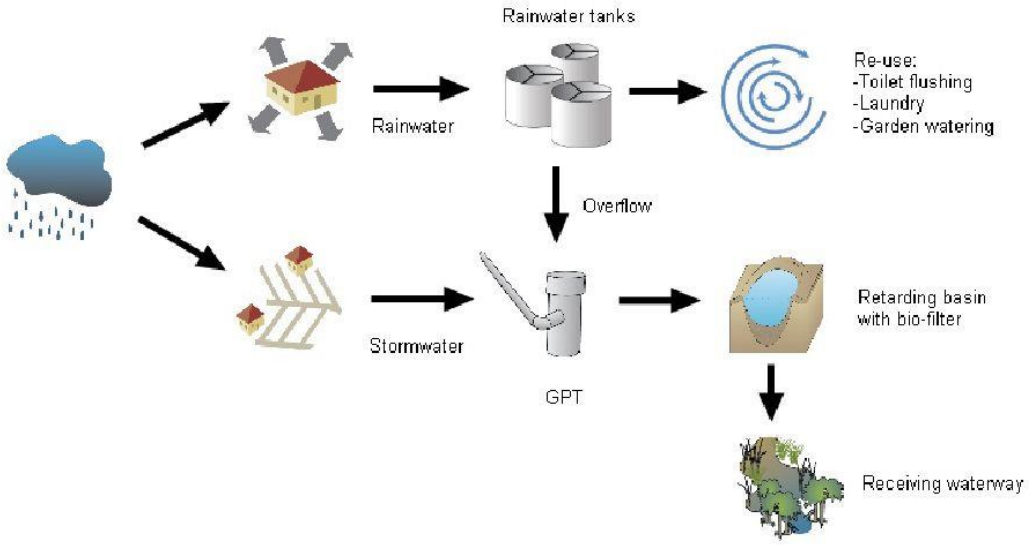
[4] Cardno (2011), *Biodiversity Conservation Assessment*, Draft Final Report, prepared for the Department of Planning, January.

Cardno (2011), *Riparian Corridor and Flooding Assessment*, Draft Final Report, prepared for the Department of Planning, February.

GeoEnviro Consulting (2010), *Geotechnical, Salinity and Acid Sulfate Soil Investigation*, prepared for the Department of Planning, December.

JBS Environmental (2010), *Preliminary Environmental Site Assessment*, Final report, prepared for the Department of Planning, December.

Growth Centres Commission (2006), *Growth Centres Development Code*, November.



Source: Cardno

Figure A7 Concept Stormwater Treatment Train

The objectives of the WSUD Strategy include:

- Collection of rainwater from roofs to reduce runoff volumes particularly for small rainfall events.
- To reduce as far as possible, the 2-year Annual Recurrence Interval (ARI) and 100 year ARI peak flows downstream of the proposed development areas to no greater than peak flows under existing conditions.
- Reduction of stormwater pollutants according to best management practices.[5]

Features of the WSUD Strategy to achieve the above objectives include the following:

- Rainwater tanks to capture initial / small volume run-off.
- Reservation and dedication of land in drainage corridors to enable construction of drainage facilities and effective ongoing management of those facilities.
- Implementation of a series of retarding basins to manage stormwater flows. The basins are generally positioned adjacent to, but off-line from, the second and third order streams that traverse the Precincts.
- Implementation of a combination of measures in conjunction with the retarding basins to manage the quality stormwater runoff, including gross pollutant traps, bio-filters, wetlands, and/or open water ponds.
- Integration of water management facilities with open space and recreation areas where appropriate.

The WSUD Strategy identified a series of stormwater basins and channels and water quality treatment facilities (bio-retention areas) that, with other measures, would be required to be implemented on land across the Precinct to achieve the above objectives.

[5] WSUD Strategy, page 2

A.2.3.2 Leppington Major Centre

A strategy for Leppington Major Centre was developed prior to the final ILP being adopted. Refer to *Austral & Leppington North Precincts Water Cycle Management Responses to Exhibition Submissions* for details on the drainage strategy for the centre. [6]

The Leppington Major Centre is proposed to be an urban space characterised by an increased intensity of commercial / retail / business land uses with a higher lot utilisation and higher building heights. Therefore the impact on the existing water cycle regime would be greater than in residential areas of the Precinct.

As a result, the WSUD strategy for the Leppington Major Centre has been refined. The management of stormwater in the Leppington Major Centre will be separated in the private domain, with lot-based on-site detention (OSD) and stormwater treatment, and from the public domain with single or multiple biofiltration measures (street trees and raingardens).

Additional objectives will apply to the planning and design of facilities and private development in the Leppington Major Centre, including the following:

- Integrate stormwater controls into the private domain to mimic the natural water cycle and improve the amenity of commercial, business, retail and industrial zones.
- The use of 'green roofs' so that air quality, ambient air temperature, aesthetics and the quality of roof runoff is improved.
- Include stormwater controls in passive open spaces and the riparian corridor to optimise water management and recreation uses.
- Apply a 'green engineering' approach to the structural elements of stormwater controls to increase visual amenity and to enhance the landscape.
- Consolidate stormwater quality and quantity controls into sub regional facilities in order to manage construction and maintenance costs and to rationalise the land take for water management measures.[7]

A.2.3.3 Trunk infrastructure layout

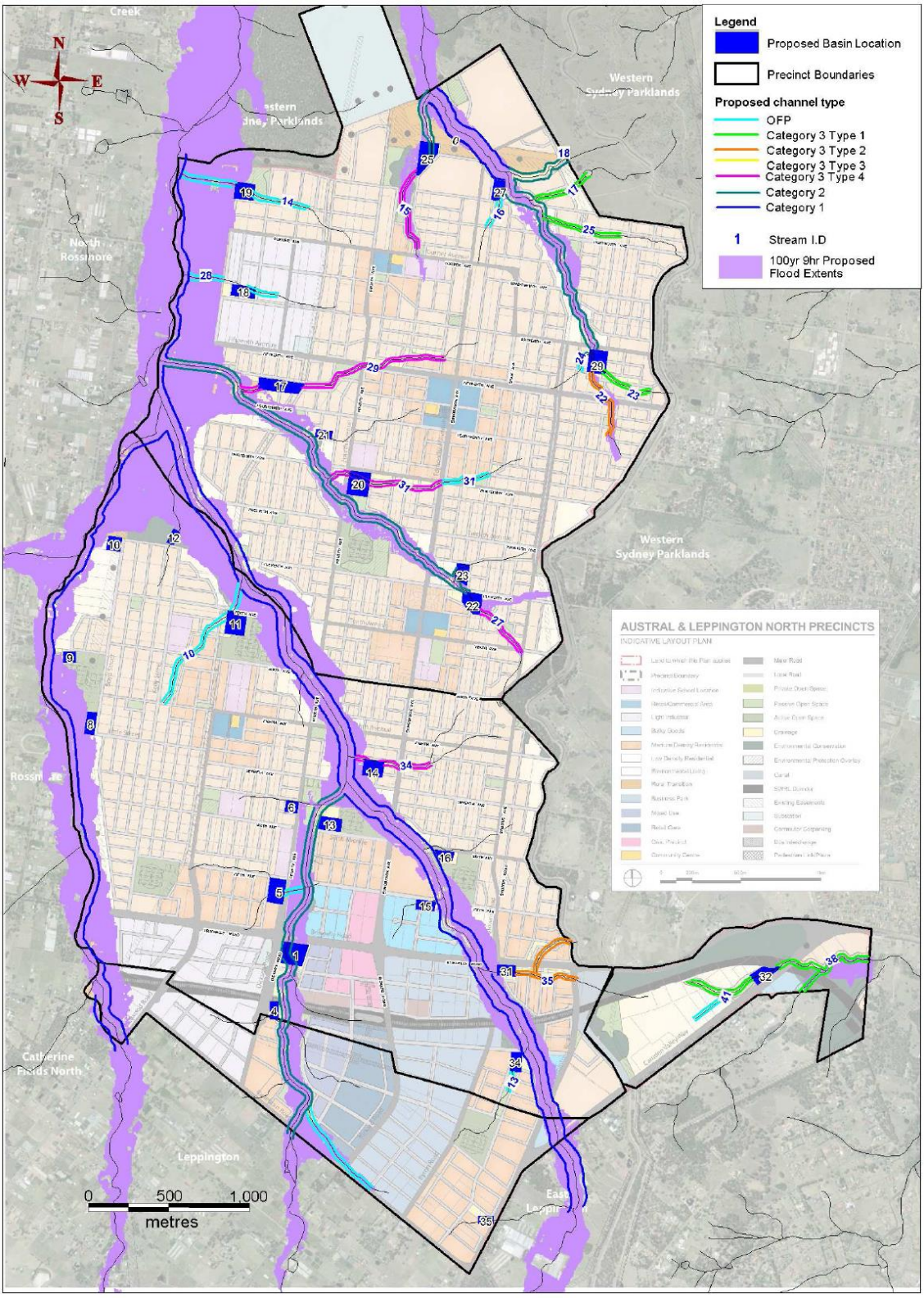
The drainage infrastructure described in the WSUD Strategy includes trunk infrastructure to support the development. Councils are responsible for ensuring trunk infrastructure that meets the needs of the entire development is in place, while land developers are required through conditions of consent to provide reticulation works within the development.

The locations of proposed trunk infrastructure that comprises stormwater channels and basins for both Precincts are shown in **Figure A8**.

More detail on the basins, channels and water quality facilities, the cost of which is to be met by contributions collected under this plan, are included in the maps and schedules included below. Council will however encourage the provision of water cycle management works identified in this plan as works-in-kind in conjunction with the civil works undertaken as part of land subdivision and/or development.

[6] *Austral & Leppington North Precincts Water Cycle Management Responses to Exhibition Submissions*, sections 5.1 to 5.3

[7] ibid., page 48



Source: Cardno

Figure A8 Proposed channels and basins – Austral and Leppington North Precincts

A range of ‘non-trunk’ reticulation works not addressed by this plan will also be required to be undertaken directly by the developer as conditions of consent under section 80A(1)(f) of the EP&A Act. The facilities may include lot-scale OSD basins, private domain biofiltration for commercial and industrial land use, rainwater tanks, construction of kerb, gutter and piping in local roads, installation of drainage pits and grates, and pipe connections to the trunk drainage network.

A.2.4 Open space and recreation facilities

A.2.4.1 What is the relationship between the expected types of development and the demand for additional public facilities?

The requirements for local, district and regional scale open space and recreation facilities resulting of the expected development of the Austral and Leppington North Precincts are documented in the report *Austral and Leppington North Precincts – Demographic and Social Infrastructure Assessment* (the **LNP Social Infrastructure Assessment**), prepared by Elton Consulting in July 2011 and *Austral and Leppington North Precincts – Addendum to the Demographic and Social Infrastructure Assessment* prepared by Elton Consulting in July 2012.

The information below comprises a summary of sections of those reports that describe the demand for new and upgraded public amenities and services.

A.2.4.2 Existing provision

There are limited open space and recreation facilities accessible to the current residents of the Leppington North Precinct. The limited provision is consistent with the area's small population and semi-rural character.

There are no areas of local public open space located within the Camden LGA part of the Leppington North Precinct. However, an area of active open space - Pat Kontista Reserve is located just south of the precinct on Byron Road. This facility serves the local open space demand for field sports and tennis courts.

In addition, there is a significant area of active open space situated in the Leppington North Precinct in Liverpool LGA, immediately adjacent to Camden LGA (WV Scott Memorial Park). This park also provides for field sports and also contains a children's playground.

The absence of passive open space reflects the rural residential lifestyle of residents. That is, the demand for this type of open space is significantly reduced in locations where residents live on their own substantial parcel of land.

District level facilities are located in the newer suburbs further east around Horningsea Park and further south in Camden LGA, and have been designed to meet the needs of incremental urban growth in those locations, rather than any growth envisaged in the Austral and Leppington North Precincts.

A.2.4.3 Trends in facility provision

Current and emerging trends and factors that have been considered in the planning and specification of Leppington North Precinct recreation infrastructure include the following:

- Significant and ongoing popularity of informal recreation activities (e.g. walking), and activities requiring fixed commitments are declining in favour of informal and more flexible activities.
- Facilities that are flexible in their service provision.
- Growing awareness and interest in health and fitness as part of a balanced life-style rather than an emphasis solely on leisure.
- Increasing demand for outdoor recreation.

- Growing awareness of the importance of incidental exercise within employment and residential areas, increasing the demand for walking and cycling paths.
- An increasing emphasis on quality as well as quantity.
- An increasing demand for access for young people and improved accessibility more generally.
- An increased demand for natural areas and adventure based activities.
- The increased duration of playing seasons requiring consideration of alternative playing surfaces.

A.2.4.4 Planning principles for open space and recreation

Principles for the provision of sustainable open space and recreation infrastructure that have guided the selection of infrastructure items included in this plan include the following:

- Open space should be largely publicly provided.
- Meet a diverse range of open space and recreation needs and opportunities.
- Avoid exerting pressure on open space and recreation facilities in surrounding areas.
- Quality of open space is more important than quantity.
- A physically and visually connected network; and represent a non-vehicular system that connects major activities and open spaces by walking and cycling.
- Comprise a local, district and regional hierarchy of spaces.
- Reflect and complement the natural, ecological, waterway and visual features of the area; and incorporate natural areas and riparian corridors into the open space system where possible.
- Integrate a network of open space with stormwater management and water-sensitive urban design[8].

A.2.4.5 Recreation demand assessment based on forecast demographics

The size and characteristics of the future population in the Leppington North Precinct is discussed in Part A.1.4 of this Technical Document.

Implications for recreation demand as a result of the expected mix of residents is discussed in detail in Table 9.1 of the LNP Social Infrastructure Assessment and in the Addendum.

In summary:

- Future developments will initially contain a predominance of families with children, adolescents and young people, and only over time will there be a balance of more middle aged and older people.
- The major target groups for recreation planning in new release areas are children aged 0-14 years, and adults aged 25-40 years.
- Local open space is important in encouraging informal interaction and creating opportunities for new and existing residents to come together, as well as for encouraging extended family activity, for walking and cycling as well as family gatherings.

[8] Social Infrastructure Assessment, section 3.1

- The level of local open space will in part be informed by prevailing council standards of provision.

In relation to the last point, demographic-related criteria that Camden Council has previously applied in its release area planning included the following:

- In (urban) residential areas, local and district public open space should be provided at the rate of 0.4 hectares and 3.24 hectares per 1,000 population respectively - although it is noted that the most recent release areas – i.e. the Oran Park and Turner Road Precincts - a non-riparian open space planning standard of 2.8 hectares per 1,000 population has been used.
- Minimum area of any local public open space should be 2,000 square metres and no further than 500 metres walking distance from any dwellings.
- Minimum area of district public open space should be a total of 5 hectares, located near public transport and no further than 2 kilometres from all dwellings.

The above considerations have informed the open space and recreation requirements for the Leppington North Precinct development.

A.2.4.6 Local and district open space requirements

The total area of local and district open space land required was calculated in the LNP Social Infrastructure Assessment on the basis of meeting the combined needs of the Austral and Leppington North Precincts developments.

The planning of open space areas was undertaken as part of the Precinct planning phase in an iterative manner. Earlier versions of the plan identified more extensive passive open space areas aligning with the numerous drainage lines traversing the Precincts. The size of the open space areas was reduced in acknowledgment of the very high cost of acquiring the substantial areas required for meeting open space demands.

The total additional local and district open space provision planned for both the Austral and Leppington North Precincts is approximately 2.49 hectares per 1,000 population. For a forecast combined Precincts population of 54,361 people, this benchmark equates to 135.4 hectares of district and local open space.

The final ILP also shows 19.4 hectares of open space in Leppington North Precinct (Camden LGA portion), which when compared to a projected net additional population of 4,659, reflects a rate of just over 4 hectares per 1,000 people, when only the population of the Leppington North Precinct in Camden LGA is considered.

Table A8 provides a breakdown of this open space.

Table A8 Proposed provision of district and local open space – Leppington North Precinct

Open space type	Area (ha)
Local parks	4.3577
District parks	6.0059
Channel parks	3.3794

Open space type	Area (ha)
Local sports facility (active recreation)	5.6541
Total open space	**19.3972**

The data in **Table A8** show a weighting toward the provision of passive rather than active open space. The high percentage of passive open space arises in part because of the extensive creek networks that traverse the precinct.

The above land also does not include:

- Regional active open space available in Western Sydney Parklands
- Open space under transmission lines
- Playing fields within school sites

This provision of open space (benchmarked against the typical rates for provision for residential development) is partly a result of the extensive planned development of the precinct for retail, commercial and other employment purposes associated with the Leppington Major Centre. It is reasonable to assume that the many workers and visitors to the Major Centre area will demand some of the open space and recreation facilities included in this plan, and it is reasonable for such development to contribute towards the provision of this infrastructure.

Matters regarding the apportionment of infrastructure costs between the various land uses are discussed in sections A.2.4.9 and A.2.4.10.

A.2.4.7 Recreation facilities requirements

The facilities described in **Table A9** have been determined in the LNP Social Infrastructure Assessment as being required to meet the needs of expected development in the Austral and Leppington North Precincts, and in some cases a wider catchment.

Most of the facilities are not located in the Camden LGA portion of the Leppington North Precinct and are therefore not included in the works schedules of this plan. However, because the infrastructure planning for both the Austral and Leppington North Precincts was undertaken as a whole, the list of combined precincts' requirements is shown for completeness.

Table A9 Recreational facilities

Facility	Size	Description	Provision across both Precincts	Provision in Leppington North (Camden LGA) Precinct
Regional Indoor Sports and Aquatic Centre	5ha site, including 3ha facility and outdoor elements and 2ha for parking	Major competition level facility Aquatic: • Indoor 50 metre x 10 lane Olympic pool • Training pool • 25 metre leisure pool	1 within the Leppington Major Centre	Nil – the facility is to be located in Liverpool LGA

Facility	Size	Description	Provision across both Precincts	Provision in Leppington North (Camden LGA) Precinct
		• Heated teaching pool • Children's play pool / wave pool / whirl pool/ water slides • Diving pool. <u>Indoor Sports:</u> • 4 indoor sports courts each large enough for netball • Fitness centre – weights, aerobics/Dance/Yoga/Pilates activity room with wooden floor, spin cycle room, • Wellness / health services – physiotherapy, nutrition etc. • Spa, sauna, steam room • Retractable seating for 1,500 this would increase to 3,500 in stage 2. <u>General amenity:</u> • Kiosk and cafe • Equipment sales • Amenities – change, lockers, toilets • Crèche facilities for users • Outdoor elements - may include water play park, BMX, skate, sports oval and netball, tennis, basketball courts. May be integrated with a youth recreation facility.		
Local passive parks	Min. 0.2ha up to 0.5ha	Local parks should have a range of play spaces and opportunities and cater to older children and young people as well as the traditional playground for young children. Grassed area for ball games, seats, shelter. May contain practice wall, fitness equipment, other elements.	Within 400-500m walking distance of 90% of dwellings	Several dispersed throughout the Precinct and also focused along the linear riparian corridors in the east and central parts of the Precinct
District (key suburb) parks	Min. 3ha	'Something for everyone', family parks. Includes a combination of amenities building, district playground, local playground, pedestrian bridges across creek, off-	7 parks	1 located on the eastern side of Scalabrini creek, south of rail corridor.

Facility	Size	Description	Provision across both Precincts	Provision in Leppington North (Camden LGA) Precinct
		street parking (minimum 50 spaces) skate park, BMX track, shared pathways, outdoor fitness equipment, informal performance space with event vehicle access and suitable turf reinforcement to enable performance stage setup, picnic / barbecue facilities, unleashed dog exercise area.		
Children's playgrounds (0-4years)	Min. 0.3ha for standalone playgrounds	Co-located with parks, sportsgrounds, courts, schools, community facilities, conservation areas. Regional, district, local hierarchy in terms of play equipment and range of experiences. Each play area should offer a different experience. Include road safety bike track at regional playground. Include children's bike paths in district and regional playgrounds. Can be co-located with play spaces for 5 to 12 year olds – within sight distance for carers but physically separated. Fencing if adjacent to water, road, steep slope. Seating, shade, water provided.	11 playgrounds	4 playgrounds or play spaces to be provided on local passive parks, plus a playground to be provided on the local sportsground
Play spaces (5 to 12 year olds)	Min. 0.3ha for standalone playgrounds. Where co-located the space may be reduced.	Allows for more independent play, skill development and cognitive development. However they still require adult supervision. More challenging equipment may include bouldering features, climbing areas, 'learn to' cycleways through to cycle obstacle course, skate facility, BMX/mountain bike jumps and tracks. These areas could be co-located with children's playgrounds, school or community facilities for supervision and convenience of use by carers.	13 play spaces	See above
Local sportsground	Min. 4ha (ideally 5ha)	1 double field per 5,000 people.	6 double playing fields or 12 single	1 local sportsground on a

Facility	Size	Description	Provision across both Precincts	Provision in Leppington North (Camden LGA) Precinct
		To accommodate demand for local sport and recreation training and competition. Rather than a series of single fields, facilities are grouped to provide economies of scale for infrastructure. To be located close to schools. Inclusions: • 2 multi-purpose rectangular fields or 1-2 full-sized cricket / AFL ovals (plus practice nets). Playing field lighting. Playing field irrigation system. • 2 tennis / netball courts – 2 half-court basketball courts, or 2 multi-purpose courts – Lights for training – Amenities with change rooms, canteen, meeting room – • Parking co-located with a local playground, school, community facility, play space. • Picnic/BBQ facilities. Outdoor fitness equipment. • Shared pathways, pedestrian link pathways, Off-street parking (minimum 100 spaces)	fields.	5.65ha site (inclusive of a playground) situated on the eastern side of Byron Road in the south east of the Precinct
District sportsground	Min. 6ha up to 10ha	The local sports park identified above may be expanded to incorporate one of the proposed district grounds dependent on location and access. Requirements: • To be located near public transport routes, no further than 2 km from all dwellings • To be co-located, where possible, with other commercial, community and recreation space in neighbourhood activity hub • Provide for district standard adult competitions and training or junior regional or state school championships.	2 complexes of four playing fields each (i.e. total of 8 fields)	Nil

Facility	Size	Description	Provision across both Precincts	Provision in Leppington North (Camden LGA) Precinct
		• Amenity buildings, parking, storage core inclusions • Located on land without flooding or transmission line constraints. Given the timeframe before the population threshold warrants a district standard facility. The final mix of courts and fields will require community consultation and council input based on most recent open space planning principles and research. Inclusions: • 4 multi-purpose rectangular fields, parking and landscaped buffer • No flooding or transmission line restrictions • Higher quality fields than local • Maybe combined with playground, netball training courts or multi-purpose tennis/basketball/netball courts. Add practice nets if cricket wickets.		
Shared cycle-ways/ walkways	0.7 ha for each km of length (average width 7m)	On flat to undulating land. In or adjacent to riparian corridors, water supply channel, drainage corridors. Minimum 3 metre width path for dual use. Include seats and bubblers along the cycleway and circular routes should be included where possible as well as bike storage for convenience of users. Access points to be provided from employment and residential land.	Sufficient to link open space, recreation facilities and services, schools, town neighbourhood and village centres.	3,710 linear metres on land identified for open space and drainage purposes, in addition to roadway footpaths and works delivered by others, which will also contribute to the network.

Sources: LNP Social Infrastructure Assessment, pages 79-84; *Austral and Leppington North Precincts – Addendum to the Demographic and Social Infrastructure Assessment* prepared by Elton Consulting in July 2012; *Leppington Major Centre Public Domain Strategy* prepared by AECOM, October 2012

A.2.4.8 Regional open space and recreation facilities requirements

The Leppington Major Centre will be located in the Precinct. This centre is being designed to serve a user catchment of around 300,000 residents.

Regional open space demands are expected to be met by the Western Sydney Parklands, which adjoin the Austral and Leppington North Precincts to the east. It is expected that the embellishment of the Parklands will be carried out in the manner of other regional parks in the Sydney region (e.g. Centennial Park in the City of Sydney LGA).

The Priority Growth Area catchment, equivalent in scale to Canberra, will also require recreation facilities to meet the regional demand. The planning in this respect includes a regional stadium and an indoor sports and aquatic centre. The Western Sydney Parklands Trust has prepared an options paper in relation to the stadium and envisages that it will be located in the Western Sydney Parklands[9].

This plan does not require contributions toward a stadium or any embellishments in the Parklands.

The indoor sports and aquatic centre is proposed to be located within the Leppington Major Centre. Current planning suggests that it would be located within the Liverpool LGA but would service all the area the subject of this plan.

A.2.4.9 Calculation of contribution rates for residential development

Contributions will be collected from both residential and certain non-residential development toward the proposed open space and recreation facilities in the Precinct.

Monetary contributions for residential development are calculated on a per person or per resident basis, then factored up to a per lot or per dwelling amount.

The monetary contribution per person in a development containing residential dwellings or lots (whether or not that development also comprises non-residential floor space) is calculated as follows:

$$\text{Contribution per resident (\$)} = \sum \left(\frac{\$INF \times RAF}{P} \right)$$

Where:

$INF is the estimated $ cost - or if the facility is existing, the indexed, completed cost - of providing each of the open space and recreation facilities (refer works schedule).

RAF cost is the residential development 'apportionment factor', i.e. the percentage of the total cost of each facility that is apportioned to residential development throughout the Leppington North (Camden LGA) Precinct. Refer to section A.2.4.11 below – i.e. 66%.

[9] The Western Sydney Parklands Trust Plan of Management identifies a proposal for a regional sporting hub in the southern end of the Western Sydney Parklands, in the vicinity of the Austral and Leppington North Precincts, subject to funding.

P is the estimated resident population (in persons) that will demand each facility - that is, the expected net additional population of the Leppington North (Camden) Precinct (refer **Table A5**).

The monetary contribution for different residential development types is determined by multiplying the contribution per person by the estimated increase in population as a result of the development.

A.2.4.10 Calculation of contribution rates for non-residential development

Monetary contributions toward open space and recreation facilities will be levied on non-residential development situated on land in the following zones:

- B3 Commercial Core
- B4 Mixed Use
- B5 Business Development
- B7 Business Park

Monetary contributions are calculated on a gross floor area (**GFA**) basis.

The monetary contribution per square metre of GFA in a development containing non-residential floor space (whether or not that development also comprises residential dwellings) is calculated as follows:

$$\text{Contribution per m}^2\text{ GFA (\$)} = \sum \left(\frac{\$INF \times NRAF}{GFA} \right)$$

Where:

$INF - is the total estimated $ cost - or if the facility is existing, the indexed, completed cost of providing each of the open space and recreation facilities (refer works schedule).

NRAF is the non-residential 'apportionment factor', i.e. the percentage of the total cost of each facility that is apportioned to non-residential development throughout the Leppington North (Camden LGA) Precinct. Refer to section A.2.4.11 below – i.e. 34%.

GFA is the expected employment development that will demand each facility - that is, the expected employment GFA in the B3, B4, B5 and B7 Zones in the Leppington North (Camden LGA) Precinct (in m^2) (refer **Table A6**) i.e. 724,005m^2.

The monetary contribution for different non-residential development types is determined by multiplying the contribution per square metre of GFA by the amount of square metres of GFA proposed for non-residential purposes in the development.

Where the development involves both residential and non-residential GFA, the total contribution toward open space and recreation facilities shall be the sum of the contributions for each of the residential and non-residential components.

A.2.4.11 Apportionment of cost to residential and other development

A total of 19.4 hectares of land is planned to be provided in the Leppington North (Camden LGA) Precinct for open space. Based on the total future population for the Leppington North (Camden LGA) Precinct of 5,142 persons, this reflects a rate of provision higher than the combined Precincts provision at 3.8 hectares per 1,000 population.

However, the proposed planned rate of open space provision across the entire Austral and Leppington North Precincts is 2.49 hectares. So whereas 19.4 hectares is proposed to be provided, only 12.8 hectares would have been required to satisfy the demand and comply with the 2.49 ha / 1,000 rate of provision.

In addition, the extensive planned development of the precinct for retail, commercial and other employment purposes associated with the Leppington Major Centre means that workers and visitors to the area will also create demand for the open space and recreation facilities included in this plan.

The Social Infrastructure Assessment establishes this basic nexus.[10] However, at the time this plan was prepared no evidence was available on the comparative demand for facilities between residential and non-residential users.

In the absence of such data, it is reasonable to assume that the share of open space and recreation facilities costs that will be met by non-residential development should be calculated by assuming that the residential demand is satisfied by complying with the required rate of 2.49 ha/1,000 population. This can be summarised as shown in **Table A10**.

Table A10 Calculation of apportionment of open space contributions

Total open space to be provided in Leppington North Precinct (**A**)	19.4 ha	Or a rate of 3.8 ha/1,000 residents
Total open space required based on planned rate of provision across the both the Austral and Leppington North Precincts (**B**)	12.8 ha	Or a rate of 2.49 ha/1,000 persons
Assumed provision in Leppington North Precinct that is surplus to residential demands (**C = A-B**)	5.6 ha	
Required provision as percentage of total (**B/A**)	66 percent	Attributed to residential uses
Surplus provision as percentage of total (**C/A**)	34 percent	Attributed to non-residential uses

[10] Social Infrastructure Assessment, section 7.9.4

A.2.5 Community and cultural facilities

A.2.5.1 What is the relationship between the expected types of development and the demand for additional public facilities?

The requirements for community and cultural facilities as a result of the expected development of the Precinct are documented in the LNP Social Infrastructure Assessment.

The following is summary of the information and approach used to arrive at the community and cultural facilities requirements of the Precinct.

A.2.5.2 Existing provision

There are limited open space, recreation, community and cultural facilities accessible to the current residents of the Precinct. The Leppington Progress Hall is located on Ingleburn Road on a site immediately adjacent to the Precinct. The hall provides meeting space local community groups and activities.

Other facilities are located further afield, including those in the Liverpool LGA. District level facilities are located in the newer suburbs further east around Horningsea Park and further south in Camden LGA, and have been designed to meet the needs of incremental urban growth in those locations, rather than any growth envisaged in the Austral and Leppington North Precincts.

The limited extent of provision is consistent with the area's small population and semi-rural character.[11]

A.2.5.3 Principles for sustainable community infrastructure

Principles for the provision of sustainable community facilities infrastructure described in the LNP Social Infrastructure Assessment and that have guided the selection of infrastructure items included in this plan include the following:

- Facilities should be provided in an efficient, timely and coordinated way to support the pattern of development; ensuring that services are available to residents as early as possible and they are not disadvantaged through delays in delivery.
- Efficient use of limited resources by designing facilities to be multipurpose, co-located with other facilities and able to accommodate shared and multiple use arrangements.
- Cluster related facilities and services to promote civic identity, safety and focal points for the community.
- Ensure that facilities, services and open space are accessible by public transport and located to maximise access for pedestrians and cyclists.
- Ensure flexibility in the design and use of facilities, so they can respond and adapt as needs change. Avoid arrangements for single uses or specific target groups that may quickly become outdated.
- Promote equitable access for all sections of the population, through the distribution, design and management (including cost) of facilities.
- Provide environmentally and economically sustainable buildings.

[11] Social Infrastructure Assessment, page 16

- Ensure viable levels of resourcing of facilities and services, both capital and recurrent funding.
- Promote innovation and creativity between agencies in services delivery and integration
- Develop sustainable ownership, governance, management and maintenance arrangements for facilities.[12]

A.2.5.4 Community facilities demand assessment based on forecast demographics

The anticipated size and characteristics of the resident population in the Leppington North Precinct is discussed in section A.1.4.

Various standards of provision for local and district community facilities have been adopted by DPE, Camden Council and Liverpool City Council. The standards have been used as a basis for determining facility needs in the Austral and Leppington North Precincts as a whole.

A summary of these standards is included in **Table A11.**

Table A11 Comparison of community facility provision standards

Facility type	DPE / Growth Centres Commission standard	Camden Council standard	Liverpool City Council standard
Libraries	Branch: 1 centre for each 33,000 persons District: 1 centre for each 40,000 persons	39 square metres per 1,000 persons + 20% circulation space	42 square metres per 1,000 persons
Multi-purpose community centre in smaller activity centre	1 centre for each 6,000 persons Each centre with a size of 2,000-2,500 square metres	42 square metres per 1,000 persons 2.5 x floor area for land component	Indicative 1 centre for each 10,000 people, with an average size of 600 square metres for each centre To be located in activity centres with shops, schools etc. Facilities are to provide flexible multipurpose spaces and spaces for outreach services. Smaller 600m^2 facilities contribute to the overall level of provision of 60-85m^2 per 1,000 people
Multipurpose community centres in larger activity centre	1 centre for each 20,000 persons 1 community service centre for each 60,000 persons	22 square metres per 1,000 persons 2.5 x floor area for land component	Indicative 1 centre for each 60,000 persons, with a built area of about 1,500 square metres To be located in larger activity centres and commercial and transport hubs to provide flexible multipurpose spaces and

[12] Social Infrastructure Assessment, section 3.2

Facility type	DPE / Growth Centres Commission standard	Camden Council standard	Liverpool City Council standard
			provide a base for organisations and the delivery of services Larger 1,500m^2 facilities contribute to the overall level of provision of 60-85m^2 per 1,000 people
Youth Centre	1 centre for each 20,000 persons	89 square metres per 1,000 persons + outdoor space	No longer provided by Council as a stand-alone purpose built facility. The size and layout of multipurpose community facilities now provide appropriate and designated spaces for delivering youth services, programs and activities. Outdoor spaces, like half-court basketball courts and skate parks, are now provided as standard for informal activities and programs for young people.

A.2.5.5 Community and cultural facility requirements

Given that this plan addresses an expected additional resident population of approximately 4,816 residents, the demand for new community facilities of any significant scale is minimal. However, the Precinct will be a focus of many services and facilities centred on the proposed Leppington Major Centre. This centre will need to provide a range of community facilities to cater for both the local area residents and the large regional catchment of Priority Growth Area residents.

The methodology that the LNP Social Infrastructure Assessment utilised in arriving at a set of district and regional level facilities required for the Leppington Major Centre may be summarised as follows:

- Prevailing Australian benchmarks for provision of larger scale community and cultural facilities vary widely, and most are based on smaller catchments than the area intended to be served by the Leppington Major Centre.
- Planning for single facilities to serve a Priority Growth Area population of 300,000 is unrealistic - multiple facilities and services will be required.
- It is proposed that there be 3 catchments for the Priority Growth Area community facilities planning; and that these facilities be focused on Oran Park Town Centre, Bringelly Town Centre (around 80,000 people each); and Leppington Major Centre (around 120,000 people).[13]

[13] Social Infrastructure Assessment, section 7.1

Infrastructure required in Leppington Major Centre that will need to serve a surrounding population of around 120,000, and include the following:

- A multi-purpose community centre of 2,500 square metres floor area, including spaces for large community events, gatherings, celebrations and civic functions; meeting spaces for community organisations and groups and for human services that have a district or regional focus; and spaces for adult education, workplace training and community learning programs.
- A central library of about 4,500 square metres floor area, co-located with the multi-purpose community centre.
- A performing arts cultural facility with floor area of about 5,000 square metres for staging major entertainment events or performing arts, spaces for visual arts, and spaces to display and celebrate the cultural heritage of the area.[14]

This plan includes provision for the land and works associated with these facilities, but acknowledges that the demands for the facilities are spread over a large catchment (120,000 residents). This plan therefore authorises contributions that are commensurate with the Leppington North (Camden) Precinct's level of demand for the district and regional facilities, i.e.:

4,816 persons / 120,000 persons = 4.01% (i.e. the apportionment factor of 4.01%).

A.2.5.6 Location and staging matters

Facilities should be clustered together or co-located in a 'Civic Precinct' in the Leppington Major Centre adjacent to open space. There are multiple ways to arrange the spaces and further planning should concentrate on combination and co-location options.

A site of approximately 2.58 hectares immediately north of the future Leppington Major Centre railway station has been identified for this purpose.

The design of facilities will depend upon a variety of factors, including the availability of funds, the aspirations of the responsible council, and evolving best practice. Detailed needs and feasibility assessments need to be undertaken as the population of the area grows.

The ultimate district / regional facility will not be warranted until the surrounding population reaches a threshold of about 50,000 people or more. Larger, more specialist components of the facility, in turn, will not be justified until the surrounding population has reached over 100,000 people. The facilities should therefore be built in stages with expansions occurring incrementally as the population grows.

Existing higher order facilities in the surrounding region (including those outside Camden LGA) offer some opportunity to meet interim needs either in their current form or through expansion (for example, the Narellan Library and Community Centre).

In accordance with this staged expansion process, an 'interim' multi-purpose community centre, capable of meeting the needs of the surrounding local population, is to be provided on the Civic Precinct site. This smaller interim facility can then be expanded into the major multipurpose community centre as the population within the catchment grows.

This plan therefore authorises a contribution towards 100% of the cost of the interim facility to be met by the expected resident population of the Leppington North (Camden) Precinct.

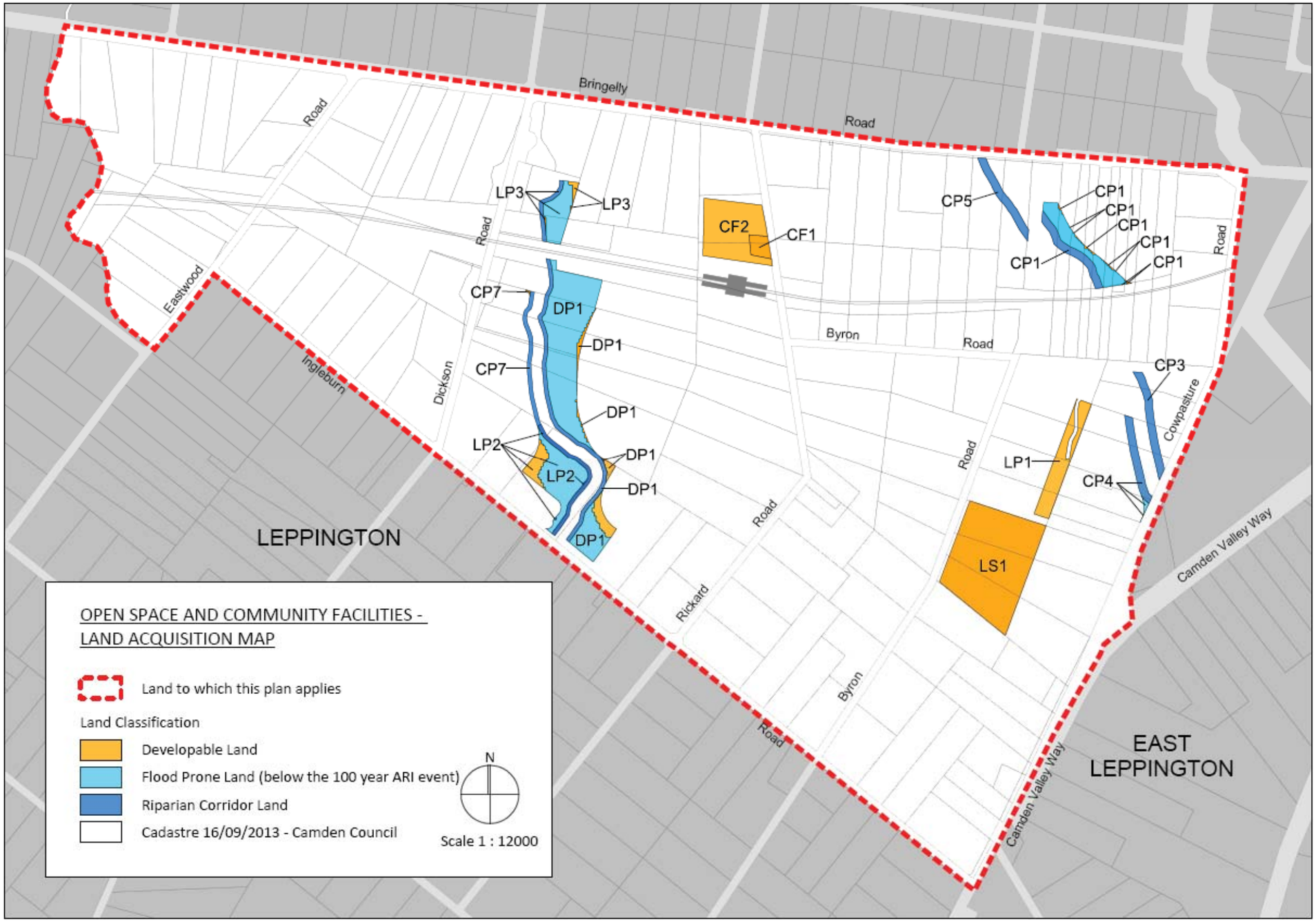
[14] Social Infrastructure Assessment, section 7.2

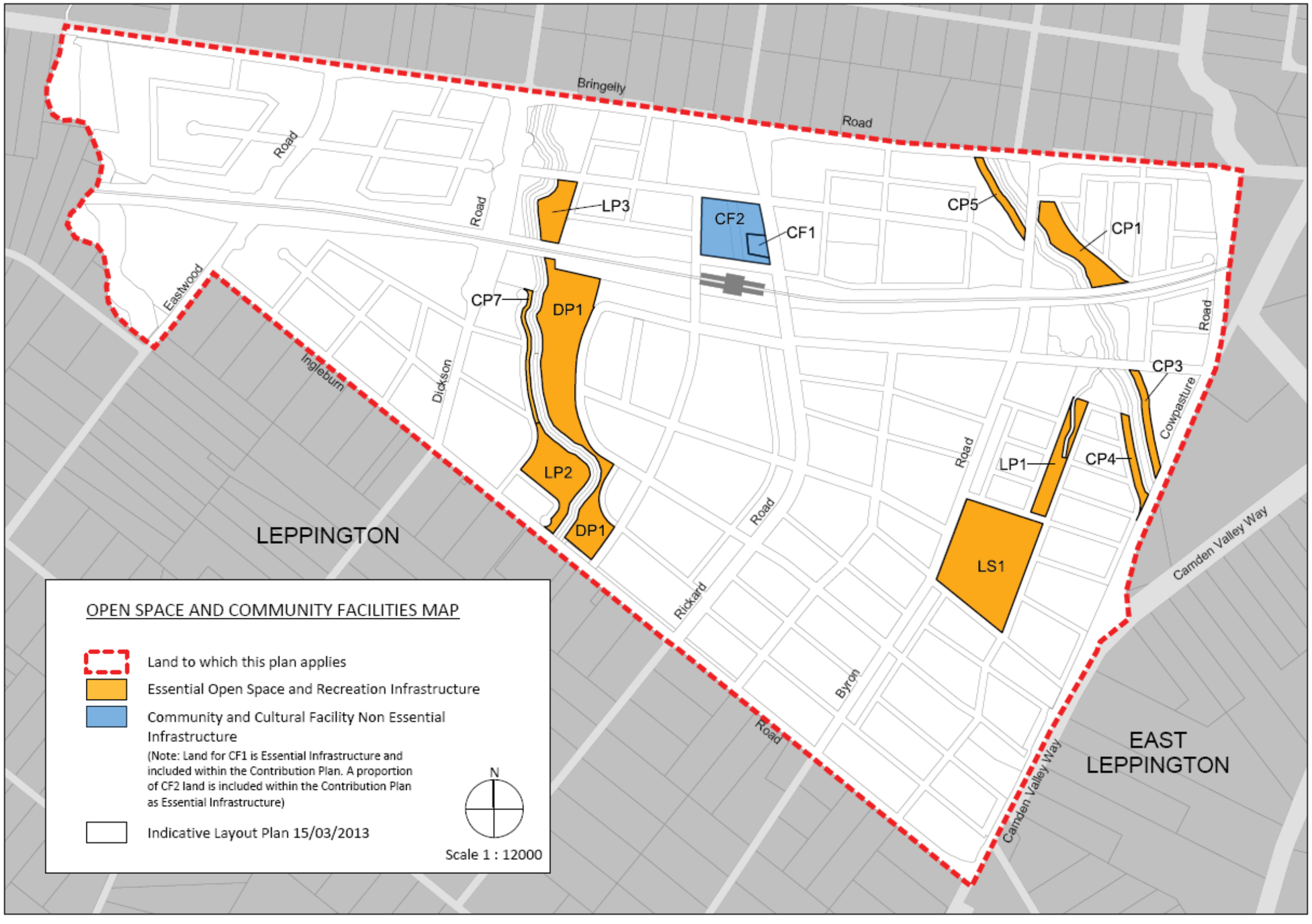
A.3 Works schedules

LEPPINGTON NORTH PRECINCT LAND AND WORKS SUMMARY SCHEDULE

Item No.	Description	Land area in ha (where applicable)	Land cost	Works cost	Total cost	Demand (Res)	Cont rate $ (Res)	Demand (Non Res)	Cont rate $ (Non Res)	Staging / priority
Open space and recreation						**Persons**		**GFA**		
Essential works										
LP1	Local Park	1.1597	$ 4,522,830	$ 1,165,859	$ 5,688,689	4816	$ 779.74	724005	$ 267.05	All open space and recreation facilities land to be dedicated / acquired as and when surrounding development occurs
LP2	Local Park	2.1377	$ 3,100,870	$ 1,965,681	$ 5,066,551	4816	$ 694.47	724005	$ 237.85	
LP3	Local Park	1.0603	$ 1,229,662	$ 834,866	$ 2,064,528	4816	$ 282.98	724005	$ 96.92	
DP1	District Park	6.0059	$ 7,032,695	$ 6,521,915	$ 13,554,610	4816	$ 1,857.92	724005	$ 636.32	
CP1	Channel Park	1.4845	$ 1,543,150	$ 1,405,829	$ 2,948,979	4816	$ 404.21	724005	$ 138.44	
CP3	Channel Park	0.5593	$ 447,415	$ 502,030	$ 949,446	4816	$ 130.14	724005	$ 44.57	
CP4	Channel Park	0.4931	$ 403,677	$ 422,847	$ 826,523	4816	$ 113.29	724005	$ 38.80	
CP5	Channel Park	0.4764	$ 381,081	$ 383,382	$ 764,463	4816	$ 104.78	724005	$ 35.89	
CP7	Channel Park	0.3662	$ 312,490	$ 315,703	$ 628,193	4816	$ 86.11	724005	$ 29.49	
LS1	Combined local sportsfield and open space area	5.6541	$ 22,051,127	$ 4,526,032	$ 26,577,159	4816	$ 3,642.91	724005	$ 1,247.65	
BP7	Basin 7 Pathway - 211m (area included in B7 Acquisition)		$ -	$ 65,878	$ 65,878	4816	$ 9.03	724005	$ 3.09	
BP9	Basin 9 Pathway - 172m (area included in B9 Acquisition)		$ -	$ 53,702	$ 53,702	4816	$ 7.36	724005	$ 2.52	
PM1	Preparation of Plan of Management for all reserves		$ -	$ -	$ -	4816	$ -	724005	$ -	
	Contingency		$ 4,923,000	$ 1,019,793	$ 5,942,793	4816	$ 814.57	724005	$ 278.98	
	Total		**$ 45,947,996**	**$ 19,183,516**	**$ 65,131,512**		**$ 8,927.53**		**$ 3,057.57**	
Non essential works										
LP1	Dog Off-Leash Area		$ -	$ 95,025	$ 95,025	4816	$ 13.03	724005	$ 4.46	
DP1	Skate Park		$ -	$ 950,254	$ 950,254	4816	$ 130.25	724005	$ 44.61	
DP1	BMX Track		$ -	$ 59,391	$ 59,391	4816	$ 8.14	724005	$ 2.79	
	Contingency		$ -	$ 72,268	$ 72,268	4816	$ 9.91	724005	$ 3.39	
	Total		**$ -**	**$ 1,176,939**	**$ 1,176,939**		**$ 161.32**		**$ 55.25**	
Community and cultural						**Persons**				
Essential works										
LALCF	Land - Local Community Facility	0.2500	$ 875,000	$ -	$ 875,000	4816	$ 181.69	NA	$ -	As land affected by acquisition is developed or as required to service development.
LARCF	Land - Regional Community Facility apportionment of total area and cost (4.0%) Total area - 2.3323ha Total cost - $5,597,520	0.0936	$ 327,607	$ -	$ 327,607	4816	$ 68.03	NA	$ -	
	Contingency		$ 144,313	$ -	$ 144,313	4816	$ 29.97	NA	$ -	
	Total		**$ 1,346,920**	**$ -**	**$ 1,346,920**		**$ 279.68**		**$ -**	
Non essential works										
CF1	Local Facility Construction		$ -	$ 3,191,168	$ 3,191,168	4816	$ 662.62	NA	$ -	As land affected by acquisition is developed or as required to service development.
CF2	Regional Community Facility apportionment of total cost (4.0%) Total cost - $60,593,027		$ -	$ 3,091,349	$ 3,091,349	4816	$ 641.90	NA	$ -	
PA1	Local Community Facility public art		$ -	$ 95,735	$ 95,735	4816	$ 19.88	NA	$ -	
PA2	Regional Facility public art		$ -	$ 91,314	$ 91,314	4816	$ 18.96	NA	$ -	
	Contingency		$ -	$ 359,633	$ 359,633	4816	$ 74.68	NA	$ -	
	Total		**$ -**	**$ 6,829,198**	**$ 6,829,198**		**$ 1,418.04**		**$ -**	
Traffic and transport management						**NDA (ha)**		**NDA (ha)**		
Essential works										
LR2	Residential Park/Basin Road	0.0527	$ 52,672	$ 327,870	$ 380,542	224.77	$ 1,693.03	224.77	$ 1,693.03	As and when surrounding development proceeds
CR1	Civic Precinct Road West	0.1420	$ 200,332	$ 314,874	$ 515,206	224.77	$ 2,292.15	224.77	$ 2,292.15	To be carried out as community facility, health facility
CR2	Civic Precinct Road East	0.8892	$ 3,014,473	$ 1,387,255	$ 4,401,728	224.77	$ 19,583.26	224.77	$ 19,583.26	or Tafe campus is delivered
CR3	Civic Road dog leg	0.8871	$ 3,104,976	$ 1,448,658	$ 4,553,634	224.77	$ 20,259.08	224.77	$ 20,259.08	"
CR4	Business Park Road	0.3911	$ 903,208	$ 668,744	$ 1,571,952	224.77	$ 6,993.60	224.77	$ 6,993.60	As and when surrounding development proceeds
CR5	Byron Road Extension East half width	0.0885	$ 180,430	$ 445,290	$ 625,720	224.77	$ 2,783.82	224.77	$ 2,783.82	"
CR6	Byron Road Extension East half width	0.2425	$ 603,250	$ 436,835	$ 1,040,085	224.77	$ 4,627.33	224.77	$ 4,627.33	"
D1	Collector Road Design NS Retail Road		$ -	$ 325,790	$ 325,790	224.77	$ 1,449.44	224.77	$ 1,449.44	"
D2	Collector Road Design EW Civic Commercial Road		$ -	$ 100,854	$ 100,854	224.77	$ 448.70	224.77	$ 448.70	"
D3	Upgrade Byron Road Design EW		$ -	$ 171,228	$ 171,228	224.77	$ 761.79	224.77	$ 761.79	"
D4	Southern EW Retail to Residential Road Design		$ -	$ 126,286	$ 126,286	224.77	$ 561.85	224.77	$ 561.85	"
SA1	Byron Road Extension North full width	0.4127	$ 942,566	$ 915,164	$ 1,857,730	224.77	$ 8,265.03	224.77	$ 8,265.03	"
SA2	Byron Road Extension South full width	0.6909	$ 1,601,900	$ 1,353,555	$ 2,955,455	224.77	$ 13,148.80	224.77	$ 13,148.80	"
SA3	Byron Road South upgrade existing road full width.	3.3449	$ 13,045,110	$ 6,722,537	$ 19,767,647	224.77	$ 87,946.11	224.77	$ 87,946.11	"
SA4	Dickson Road South upgrade existing road full width	1.1140	$ 2,785,000	$ 1,164,150	$ 3,949,150	224.77	$ 17,569.74	224.77	$ 17,569.74	"
CC2	North South Main Street Crossing		$ -	$ 365,378	$ 365,378	224.77	$ 1,625.56	224.77	$ 1,625.56	"
CC4	Scalabrini Creek Crossing	0.1404	$ 112,328	$ 1,702,479	$ 1,814,807	224.77	$ 8,074.06	224.77	$ 8,074.06	"
CC5	Bonds Creek (West Crossing)	0.4096	$ 327,680	$ 4,308,995	$ 4,636,675	224.77	$ 20,628.53	224.77	$ 20,628.53	"
PB1	Scalabrini Creek Pedestrian Crossing		$ -	$ 68,452	$ 68,452	224.77	$ 304.54	224.77	$ 304.54	"
PB2	Scalabrini Creek Pedestrian Crossing North		$ -	$ 68,452	$ 68,452	224.77	$ 304.54	224.77	$ 304.54	"
CC1	Crossing Type 1		$ -	$ 365,378	$ 365,378	224.77	$ 1,625.56	224.77	$ 1,625.56	"
CC3	Crossing Type 2	0.0802	$ 312,842	$ 466,749	$ 779,590	224.77	$ 3,468.39	224.77	$ 3,468.39	"
CC7	Bonds Creek (East Crossing)	0.2534	$ 202,687	$ 2,866,817	$ 3,069,504	224.77	$ 13,656.20	224.77	$ 13,656.20	"
IN1	Traffic Lights Byron Road Extension/Bringelly Road		$ -	$ 546,393	$ 546,393	224.77	$ 2,430.90	224.77	$ 2,430.90	"
IN2	Roundabout Byron Road Existing and Extension		$ -	$ 2,355,210	$ 2,355,210	224.77	$ 10,478.31	224.77	$ 10,478.31	"
IN3	Traffic Lights Residential/Business Park Road		$ -	$ 1,163,312	$ 1,163,312	224.77	$ 5,175.57	224.77	$ 5,175.57	"
IN4	Roundabout Dickson Road		$ -	$ 1,116,692	$ 1,116,692	224.77	$ 4,968.15	224.77	$ 4,968.15	"
IN5	Traffic Lights Dickson Road/Industrial Road/Civic Road		$ -	$ 1,163,312	$ 1,163,312	224.77	$ 5,175.57	224.77	$ 5,175.57	"
SH	Allowance for 8 bus shelters location TBD		$ -	$ 221,667	$ 221,667	224.77	$ 986.19	224.77	$ 986.19	"
ES1	Byron Road Existing		$ -	$ 699,643	$ 699,643	224.77	$ 3,112.70	224.77	$ 3,112.70	"
ES2	Dickson Road Existing		$ -	$ 565,311	$ 565,311	224.77	$ 2,515.06	224.77	$ 2,515.06	"
	Contingency		$ 3,286,734	$ 1,868,803	$ 5,155,537	224.77	$ 22,936.94	224.77	$ 22,936.94	
	Total		**$ 30,676,188**	**$ 35,822,130**	**$ 66,498,318**		**$295,850.51**		**$295,850.51**	
Water cycle management						**NDA**		**NDA**		
Essential works										
B4	Basin Type A	0.8896	$ 2,865,588	$ 1,153,595	$ 4,019,183	224.77	$ 17,881.32	224.77	$ 17,881.32	As and when surrounding development proceeds
B6	Basin Type B	0.9198	$ 2,734,330	$ 1,892,869	$ 4,627,199	224.77	$ 20,586.37	224.77	$ 20,586.37	"
B7	Basin Type B	1.1577	$ 3,240,244	$ 674,449	$ 3,914,693	224.77	$ 17,416.44	224.77	$ 17,416.44	"
B8	Basin Type A	0.7959	$ 3,104,010	$ 1,523,191	$ 4,627,201	224.77	$ 20,586.38	224.77	$ 20,586.38	"
B9	On-line Basin	2.7825	$ 3,407,470	$ 5,542,813	$ 8,950,283	224.77	$ 39,819.74	224.77	$ 39,819.74	"
BA1	Independent bioretention facility (land in Government owned E2 Land)		$ -	$ 441,868	$ 441,868	224.77	$ 1,965.87	224.77	$ 1,965.87	"
C1	Stablisation of existing watercourse	2.4251	$ 1,940,080	$ 1,951,793	$ 3,891,873	224.77	$ 17,314.91	224.77	$ 17,314.91	"
C2	Stablisation of existing watercourse	1.2575	$ 1,623,556	$ 1,012,082	$ 2,635,638	224.77	$ 11,725.94	224.77	$ 11,725.94	"
C4	Stablisation of existing watercourse	0.5640	$ 451,200	$ 453,924	$ 905,124	224.77	$ 4,026.89	224.77	$ 4,026.89	"
C5/C5A	Stablisation of existing watercourse	1.6004	$ 1,434,860	$ 666,158	$ 2,101,018	224.77	$ 9,347.41	224.77	$ 9,347.41	"
C6	Stablisation of existing watercourse	1.2174	$ 973,936	$ 979,816	$ 1,953,752	224.77	$ 8,692.23	224.77	$ 8,692.23	"
C10	Overland Flow Path	0.1370	$ 137,000	$ 114,205	$ 251,205	224.77	$ 1,117.61	224.77	$ 1,117.61	"
C12	Overland Flow Path	0.3798	$ 386,890	$ 294,228	$ 681,118	224.77	$ 3,030.29	224.77	$ 3,030.29	"
C13	Channel Type 2	0.8245	$ 3,215,550	$ 403,336	$ 3,618,886	224.77	$ 16,100.39	224.77	$ 16,100.39	"
C14	Overland Flow Path	0.1600	$ 624,000	$ 105,016	$ 729,016	224.77	$ 3,243.39	224.77	$ 3,243.39	"
	Contingency		$ 3,136,646	$ 969,056	$ 4,105,702	224.77	$ 18,266.24	224.77	$ 18,266.24	
	Fill contingency		$ -	$ -	$ -	224.77	$ -	224.77	$ -	
	Total		**$ 29,275,360**	**$ 18,178,398**	**$ 47,453,758**		**$211,121.41**		**$211,121.41**	
Plan Administration						**NDA**		**NDA**		
Essential works										
	Plan Administration for 'essential Infrastructure'		$ -	$ 1,097,761	$ 1,097,761	224.77	$ 4,883.93	224.77	$ 4,883.93	Progressively over the life of the Plan
Non Essential works										
	Plan Administration for 'non-essential infrastructure'		$ -	$ 120,092	$ 120,092	224.77	$ 534.29	224.77	$ 534.29	Progressively over the life of the Plan

A.4 Works location maps


Bringelly
Road
Eastwood
Road
Ingleburn
Road
Dickson
Road
Byron
Road
Road
Rickard
Road
Byron
Road
Camden Valley Way
Camden Valley Way
Cowpasture
Road
LEPPINGTON
EAST
LEPPINGTON
LP3
LP3
CF2
CF1
CP5
CP1
CP1
CP1
CP1
CP1
CP1
CP7
DP1
DP1
CP7
DP1
LP2
LP2
DP1
DP1
DP1
CP3
LP1
CP4
LS1
OPEN SPACE AND COMMUNITY FACILITIES -
LAND ACQUISITION MAP
Land to which this plan applies
Land Classification
Developable Land
Flood Prone Land (below the 100 year ARI event)
Riparian Corridor Land
Cadastre 16/09/2013 - Camden Council
N
Scale 1 : 12000


Bringelly
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Cowpasture
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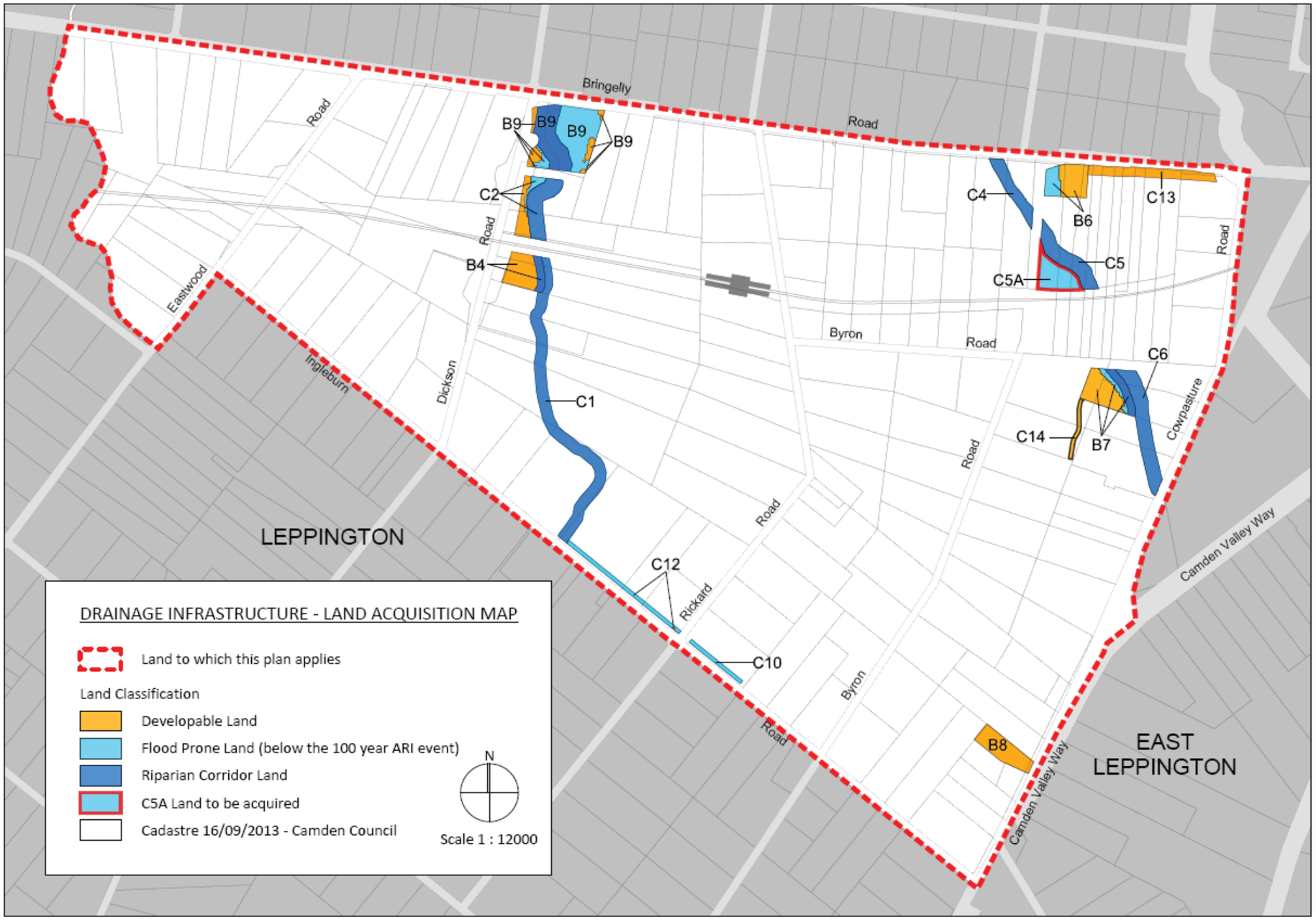
Camden Valley Way
Camden Valley Way
LP3
CF2
CF1
CP5
CP1
CP7
DP1
CP3
LP1
CP4
LP2
DP1
LS1
LEPPINGTON
EAST
LEPPINGTON
OPEN SPACE AND COMMUNITY FACILITIES MAP
Land to which this plan applies
Essential Open Space and Recreation Infrastructure
Community and Cultural Facility Non Essential Infrastructure
(Note: Land for CF1 is Essential Infrastructure and included within the Contribution Plan. A proportion of CF2 land is included within the Contribution Plan as Essential Infrastructure)
Indicative Layout Plan 15/03/2013
N
Scale 1 : 12000


Bringelly
Road
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B4
C1
Eastwood
Ingleburn
Dickson
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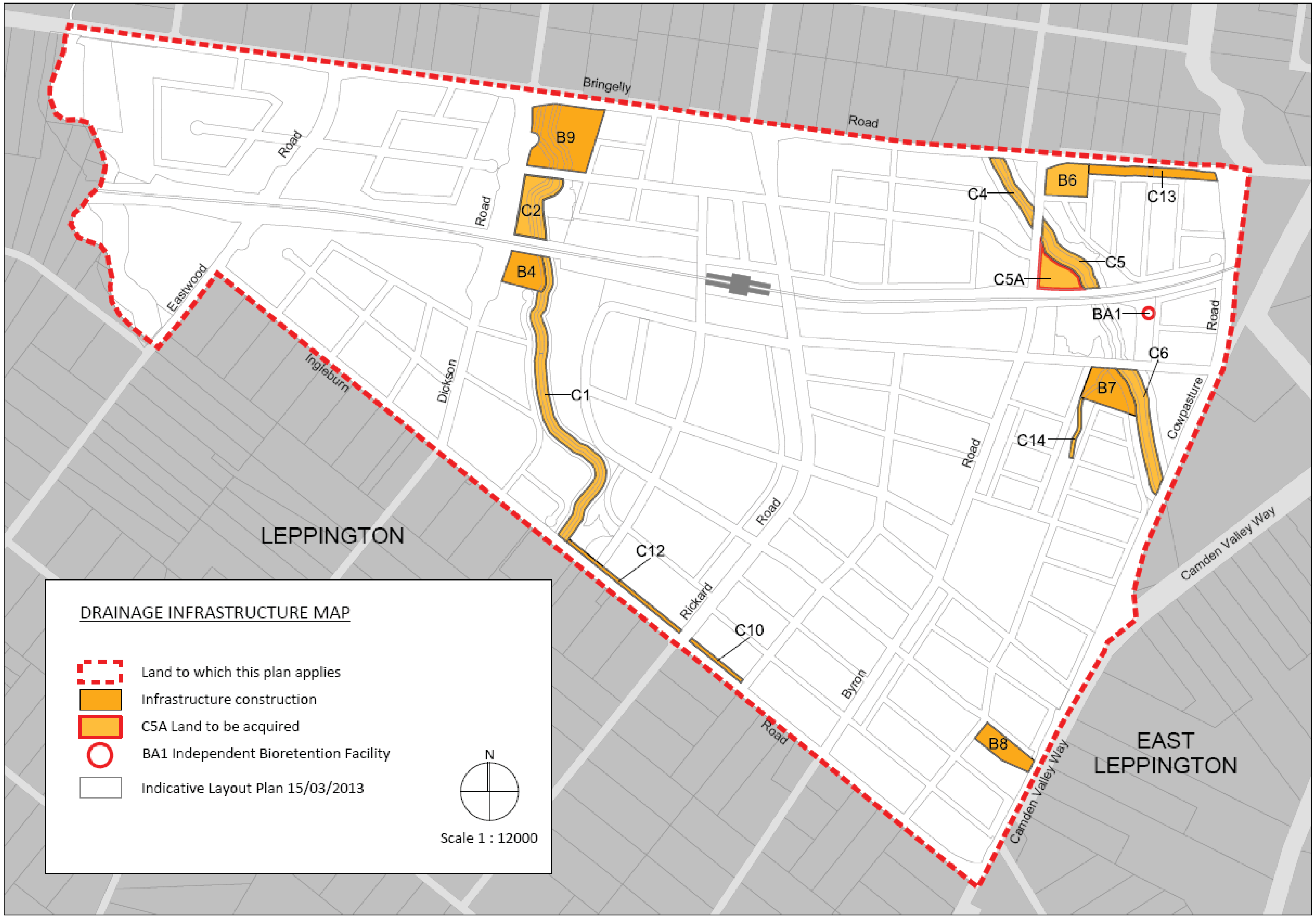
C4
B6
C13
C5
C5A
Road
Byron
Road
C6
C14
B7
Cowpasture
Road
Road
Camden Valley Way
C12
Rickard
C10
Byron
Road
B8
Camden Valley Way
LEPPINGTON
EAST
LEPPINGTON
DRAINAGE INFRASTRUCTURE - LAND ACQUISITION MAP
Land to which this plan applies
Land Classification
Developable Land
Flood Prone Land (below the 100 year ARI event)
Riparian Corridor Land
C5A Land to be acquired
Cadastre 16/09/2013 - Camden Council
N
Scale 1 : 12000


Bringelly
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Eastwood
Ingleburn
Dickson
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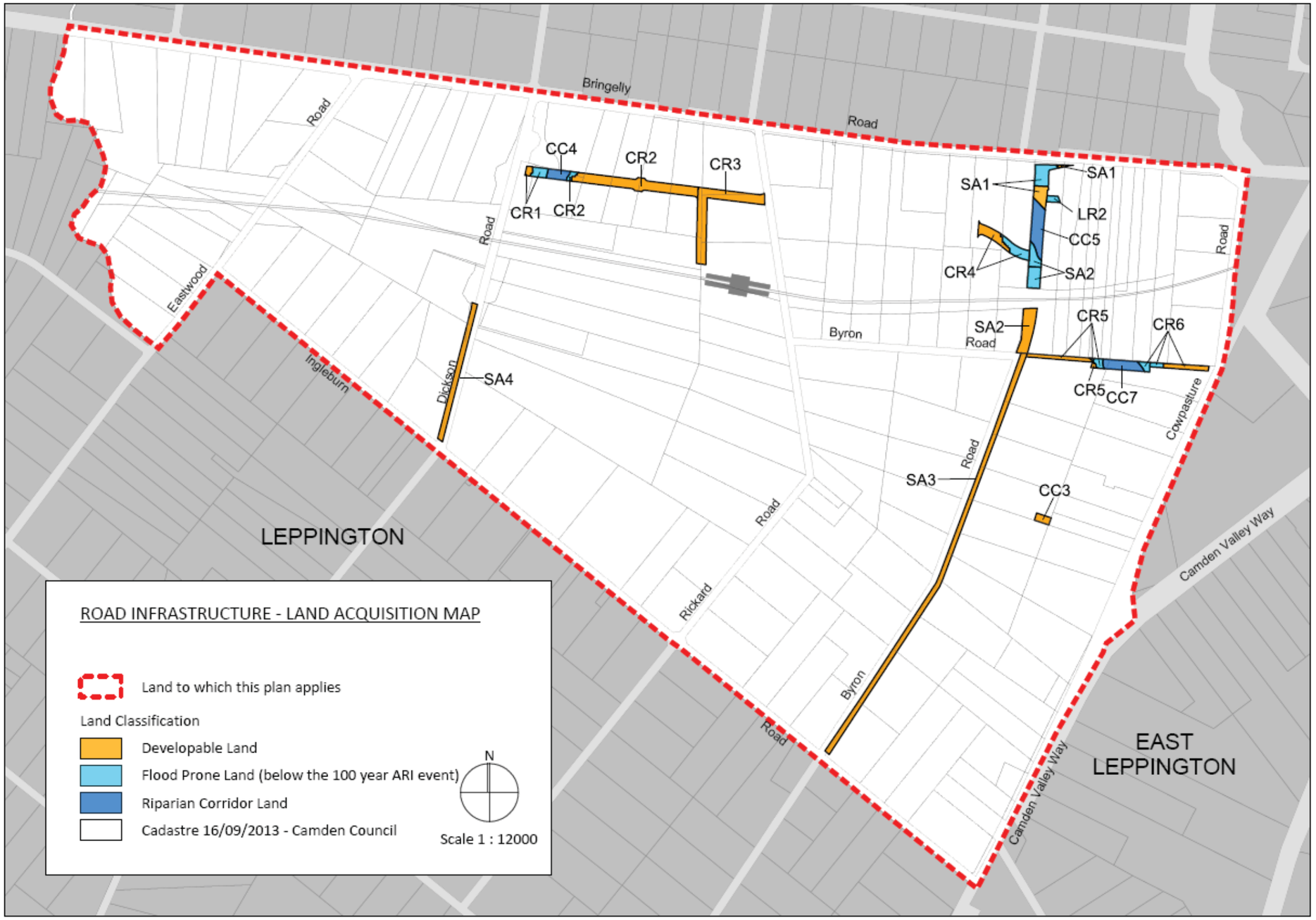
C2
B4
C1
C12
Rickard
C10
Road
Road
Byron
C4
B6
C13
C5
C5A
BA1
Road
C6
B7
C14
Cowpasture
Road
B8
Camden Valley Way
Camden Valley Way
LEPPINGTON
EAST
LEPPINGTON
DRAINAGE INFRASTRUCTURE MAP
Land to which this plan applies
Infrastructure construction
C5A Land to be acquired
BA1 Independent Bioretention Facility
Indicative Layout Plan 15/03/2013
N
Scale 1 : 12000


Bringelly
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Dickson
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Byron
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Rickard
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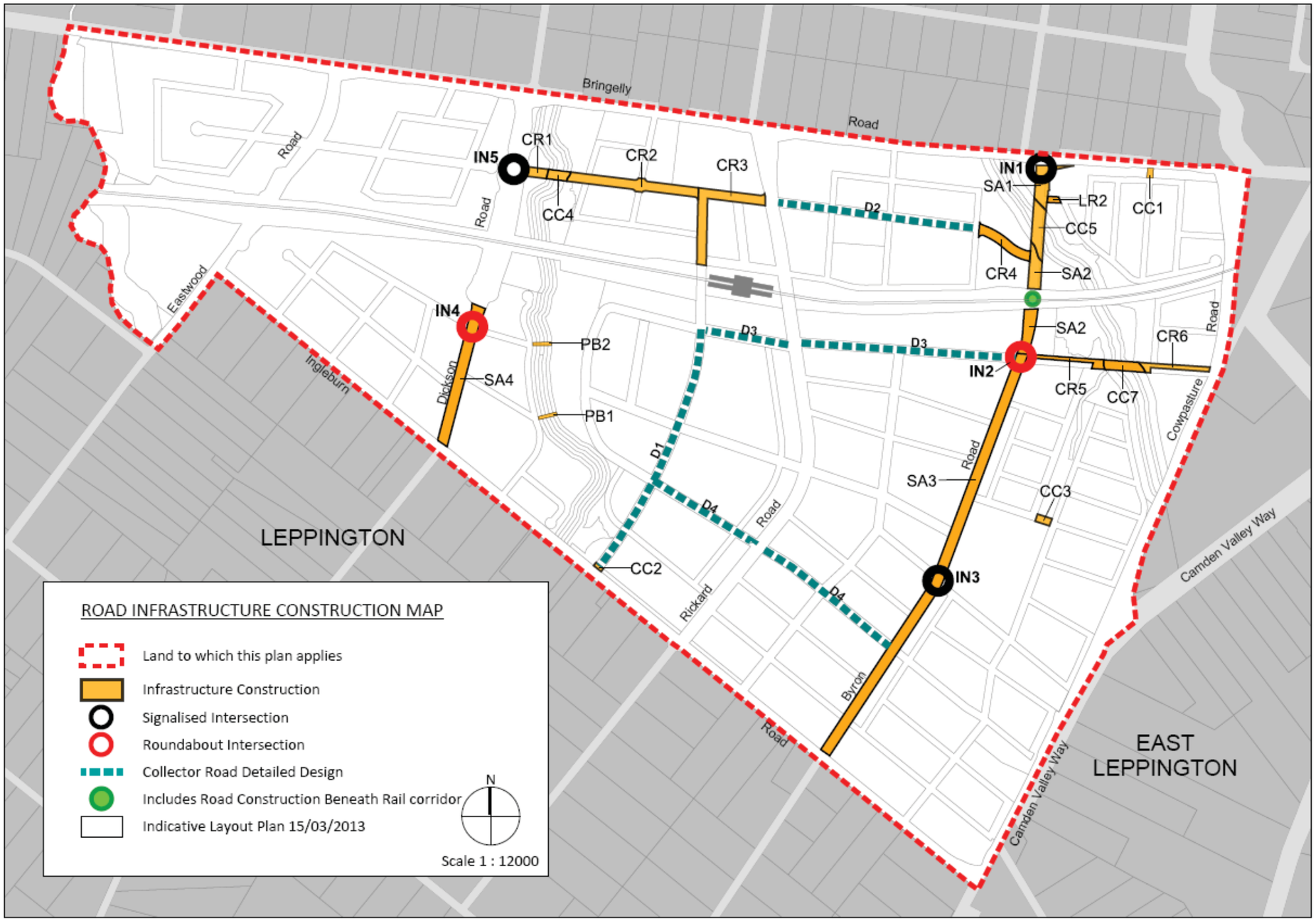
Road
Cowpasture
Road
Camden Valley Way
Camden Valley Way
CC4
CR2
CR3
CR1
CR2
SA4
SA1
SA1
LR2
CC5
CR4
SA2
SA2
CR5
CR6
CR5
CC7
SA3
CC3
LEPPINGTON
EAST
LEPPINGTON
ROAD INFRASTRUCTURE - LAND ACQUISITION MAP
Land to which this plan applies
Land Classification
Developable Land
Flood Prone Land (below the 100 year ARI event)
Riparian Corridor Land
Cadastre 16/09/2013 - Camden Council
N
Scale 1 : 12000


Bringelly
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Ingleburn
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Rickard
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Byron
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Road
Cowpasture
Road
Camden Valley Way
Camden
Camden Valley Way
LEPPINGTON
EAST
LEPPINGTON
IN1
IN2
IN3
IN4
IN5
CR1
CR2
CR3
CR4
CR5
CR6
CC1
CC2
CC3
CC4
CC5
CC7
LR2
SA1
SA2
SA3
SA4
PB1
PB2
D1
D2
D3
D4
ROAD INFRASTRUCTURE CONSTRUCTION MAP
Land to which this plan applies
Infrastructure Construction
Signalised Intersection
Roundabout Intersection
Collector Road Detailed Design
Includes Road Construction Beneath Rail corridor
Indicative Layout Plan 15/03/2013
N
Scale 1 : 12000

A.5 Background information

AECOM Australia Pty Ltd (2011), *Austral and Leppington North (ALN) Precincts Transport Assessment*, prepared for NSW Department of Planning and Infrastructure, July

AECOM Australia Pty Ltd (2012), *Leppington Major Centre Public Domain Strategy*

AECOM Australia Pty Ltd (2012), *Post-Exhibition Traffic Report (Addendum)*, July

Cardno (NSW/ACT) Pty Ltd (2011), *Austral & Leppington North Precincts Water Cycle Management WSUD Report*, prepared for NSW Department of Planning and Infrastructure, April

Cardno (NSW/ACT) Pty Ltd (2012), *Austral & Leppington North Precincts Water Cycle Management Responses to Exhibition Submissions*, December

Elton Consulting (2011), *Austral and Leppington North Precincts - Demographic and Social Infrastructure Assessment*, July

Elton Consulting (2012), *Austral and Leppington North Precincts - Addendum to the Demographic and Social Infrastructure Assessment*, July

Environmental Planning and Assessment (Special Infrastructure Contribution - Western Sydney Growth Areas) Determination 2011

GLN Planning (2012), *Austral and Leppington North Precincts Infrastructure Delivery Plan*, Final Report, September

Civic MJD Valuations Pty Ltd (01 September 2019), *Land Valuations for the Leppington and Leppington North Precinct* (A1898)

NSW Department of Planning (2010), *Local Development Contributions Practice Note for the assessment of contributions plans by IPART*, November

NSW Department of Urban Affairs and Planning (2005), *Development Contributions Practice Notes*

WT Partnership (2012), Austral *and Leppington North Precincts Review of Costs for Section 94 Contributions Plan*, Draft, 30 March 2012

B. Leppington Precinct

Part B is structured as follows:

Part B.1 documents the expected development in the Precinct and the likely demand for infrastructure arising from that development.

Part B.2 discusses the infrastructure that is required to meet the demands of the expected development.

Parts B.3 and B.4 contain schedules of infrastructure addressed by the plan and maps showing the locations of infrastructure items.

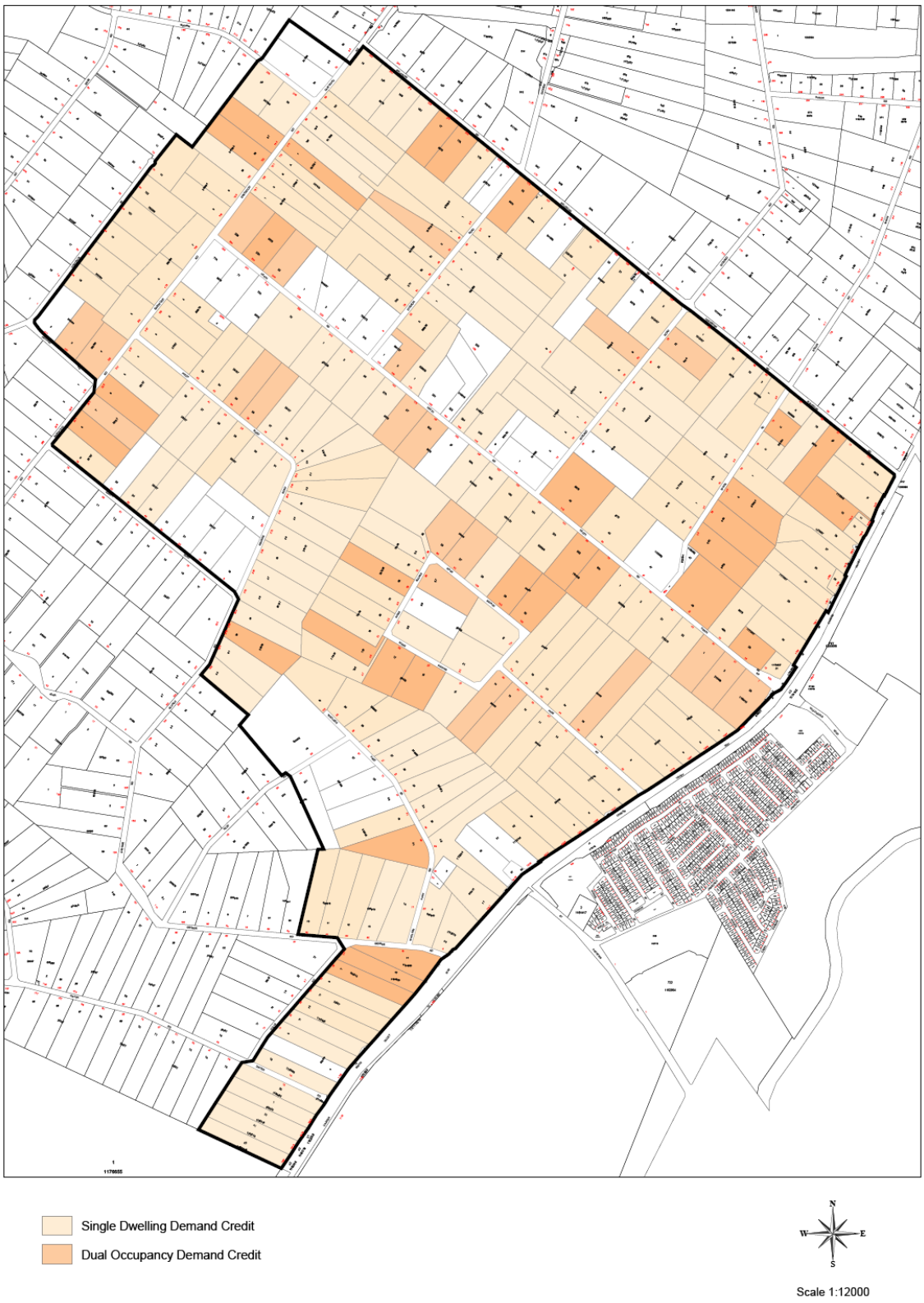
Part B.5 includes a list of documents used to determine the infrastructure needs and costs.

B.1 Infrastructure demand

B.1.1 Existing development

The development in the Leppington Precinct that existed at the time the land was rezoned for urban purposes was mainly rural and rural residential land uses.

Figure B1 and **Tables B1** and **B2** show the development that existed at the time the plan commenced. This information provides the basis for calculating demand credits for social infrastructure contributions and the net increase in demand for social infrastructure, as discussed in section 2.5 of the Main Document.



Source: Camden Council

Figure B1 Existing development at the time the land was zoned for urban purposes

Table B1 Lots with single dwelling demand credit

Parcel no.	Property address	Property description
102970	24 Cordeaux Street LEPPINGTON NSW 2179	Lot 15 DP 262084
102972	34 Cordeaux Street LEPPINGTON NSW 2179	Lot 14 DP 262084
102973	44 Cordeaux Street LEPPINGTON NSW 2179	Lot 13 DP 262084
102975	54 Cordeaux Street LEPPINGTON NSW 2179	Lot 121 DP 732083
102977	64 Cordeaux Street LEPPINGTON NSW 2179	Lot 122 DP 732083
102979	74 Cordeaux Street LEPPINGTON NSW 2179	Lot 10 DP 262084
104101	130 Eastwood Road LEPPINGTON NSW 2179	Lot 39 DP 247884
104103	138 Eastwood Road LEPPINGTON NSW 2179	Lot 9 DP 262084
104104	148 Eastwood Road LEPPINGTON NSW 2179	Lot 8 DP 262084
104105	158 Eastwood Road LEPPINGTON NSW 2179	Lot 7 DP 262084
104106	178 Eastwood Road LEPPINGTON NSW 2179	Lot 6 DP 262084
104111	202 Eastwood Road LEPPINGTON NSW 2179	Lot 5 DP 262084
107373	236 McCann Road ROSSMORE NSW 2557	Lot 35 DP 247884
107375	248 McCann Road ROSSMORE NSW 2557	Lot 36 DP 247884
103607	23 Dickson Road LEPPINGTON NSW 2179	Lot 210 DP 778570
103609	31 Dickson Road LEPPINGTON NSW 2179	Lot 211 DP 778570
103611	39 Dickson Road LEPPINGTON NSW 2179	Lot 32 DP 595465
103613	43 Dickson Road LEPPINGTON NSW 2179	Lot 31 DP 595465
103617	63 Dickson Road LEPPINGTON NSW 2179	Lot 1 DP 520280
103961	197 Ingleburn Road LEPPINGTON NSW 2179	Lot 17B DP 8979
104089	89 Eastwood Road LEPPINGTON NSW 2179	Lot 191 DP 611628
104090	93 Eastwood Road LEPPINGTON NSW 2179	Lot 192 DP 611628
104091	99 Eastwood Road LEPPINGTON NSW 2179	Lot 193 DP 611628
104092	105 Eastwood Road LEPPINGTON NSW 2179	Lot 194 DP 611628
104095	115 Eastwood Road LEPPINGTON NSW 2179	Lot A DP 357433
104097	121 Eastwood Road LEPPINGTON NSW 2179	Lot B DP 363901
104100	125 Eastwood Road LEPPINGTON NSW 2179	Lot 2 DP 564579
104102	131 Eastwood Road LEPPINGTON NSW 2179	Lot 1 DP 564579
106023	191 Ingleburn Road LEPPINGTON NSW 2179	Lot 1 DP 509218
106029	225 Ingleburn Road LEPPINGTON NSW 2179	Lot 18C DP 8979
106030	233 Ingleburn Road LEPPINGTON NSW 2179	Lot 18B DP 8979
106032	243 Ingleburn Road LEPPINGTON NSW 2179	Lot 18A DP 8979
106034	253 Ingleburn Road LEPPINGTON NSW 2179	Lot 18 DP 8979
103605	22 Dickson Road LEPPINGTON NSW 2179	Lot 1 DP 883825
103610	32 Dickson Road LEPPINGTON NSW 2179	Lot 1 DP 393385
103612	40 Dickson Road LEPPINGTON NSW 2179	Lot X DP 390898
103614	48 Dickson Road LEPPINGTON NSW 2179	Lot Y DP 390898
103616	56 Dickson Road LEPPINGTON NSW 2179	Lot B DP 400238

Parcel no.	Property address	Property description
103619	64 Dickson Road LEPPINGTON NSW 2179	Lot A DP 400238
105531	146 Heath Road LEPPINGTON NSW 2179	Lot 205 DP 616617
105533	154 Heath Road LEPPINGTON NSW 2179	Lot 204 DP 616617
105540	178 Heath Road LEPPINGTON NSW 2179	Lot 1 DP 529503
106008	129 Ingleburn Road LEPPINGTON NSW 2179	Lot 21 DP 832295
106010	143 Ingleburn Road LEPPINGTON NSW 2179	Lot 11 DP 629130
106012	149 Ingleburn Road LEPPINGTON NSW 2179	Lot 12 DP 629130
106016	167 Ingleburn Road LEPPINGTON NSW 2179	Lot 1 DP 831464
109534	25 Rickard Road LEPPINGTON NSW 2179	Lot 2 DP 214064
109536	31 Rickard Road LEPPINGTON NSW 2179	Lot 1 DP 214064
109538	37 Rickard Road LEPPINGTON NSW 2179	Lot B DP 331010
109539	43 Rickard Road LEPPINGTON NSW 2179	Lot A DP 331010
109541	55 Rickard Road LEPPINGTON NSW 2179	Lot A DP 379496
1120330	107 Ingleburn Road LEPPINGTON NSW 2179	Lot 2 DP 1012407
101573	25 Byron Road LEPPINGTON NSW 2179	Lot 44C DP 8979
101575	35 Byron Road LEPPINGTON NSW 2179	Lot 44B DP 8979
101577	45 Byron Road LEPPINGTON NSW 2179	Lot 43A DP 8979
101581	55 Byron Road LEPPINGTON NSW 2179	Lot 43B DP 8979
101585	85 Byron Road LEPPINGTON NSW 2179	Lot 1 DP 525996
105517	80 Heath Road LEPPINGTON NSW 2179	Lot 46 DP 8176
105993	63 Ingleburn Road LEPPINGTON NSW 2179	Lot 2 DP 525996
105995	69 Ingleburn Road LEPPINGTON NSW 2179	Lot 76 DP 8979
105997	75 Ingleburn Road LEPPINGTON NSW 2179	Lot 75 DP 8979
109537	36 Rickard Road LEPPINGTON NSW 2179	Lot 44A DP 8979
109540	46 Rickard Road LEPPINGTON NSW 2179	Lot 101 DP 602786
109542	56 Rickard Road LEPPINGTON NSW 2179	Lot 102 DP 602786
109544	66 Rickard Road LEPPINGTON NSW 2179	Lot 72 DP 8979
1120332	91 Ingleburn Road LEPPINGTON NSW 2179	Lot 1 DP 1012407
101582	56 Byron Road LEPPINGTON NSW 2179	Lot 1 DP 526424
101583	66 Byron Road LEPPINGTON NSW 2179	Lot D DP 375004
105508	30 Heath Road LEPPINGTON NSW 2179	Lot 49A DP 8979
105990	35 Ingleburn Road LEPPINGTON NSW 2179	Lot 79 DP 8979
105992	47 Ingleburn Road LEPPINGTON NSW 2179	Lot A DP 336688
1161145	12 Heath Road LEPPINGTON NSW 2179	Lot 21 DP 1173857
1161150	1369 Camden Valley Way LEPPINGTON NSW 2179	Lot 26 DP 1173857
1161314	1389 Camden Valley Way LEPPINGTON NSW 2179	Lot 10 DP 1175345
1161316	1393 Camden Valley Way LEPPINGTON NSW 2179	Lot 11 DP 1175345
1161320	1401 Camden Valley Way LEPPINGTON NSW 2179	Lot 13 DP 1175345
1161557	11 Ingleburn Road LEPPINGTON NSW 2179	Lot 75 DP 1180577

Parcel no.	Property address	Property description
1161146	1339 Camden Valley Way LEPPINGTON NSW 2179	Lot 22 DP 1173857
1161147	1351 Camden Valley Way LEPPINGTON NSW 2179	Lot 23 DP 1173857
1161148	1361 Camden Valley Way LEPPINGTON NSW 2179	Lot 24 DP 1173857
1161149	1365 Camden Valley Way LEPPINGTON NSW 2179	Lot 25 DP 1173857
1161151	1375 Camden Valley Way LEPPINGTON NSW 2179	Lot 27 DP 1173857
1161152	1383 Camden Valley Way LEPPINGTON NSW 2179	Lot 28 DP 1173857
104108	181 Eastwood Road LEPPINGTON NSW 2179	Lot 4 DP 200676
104109	189 Eastwood Road LEPPINGTON NSW 2179	Lot 2 DP 28107
104110	197 Eastwood Road LEPPINGTON NSW 2179	Lot 3 DP 28107
104904	222 George Road LEPPINGTON NSW 2179	Lot 52 DP 28380
104905	228 George Road LEPPINGTON NSW 2179	Lot 51 DP 28380
104908	244 George Road LEPPINGTON NSW 2179	Lot 49 DP 28380
104909	252 George Road LEPPINGTON NSW 2179	Lot 48 DP 28107
104910	260 George Road LEPPINGTON NSW 2179	Lot 47 DP 28107
104911	268 George Road LEPPINGTON NSW 2179	Lot 46 DP 28107
104913	278 George Road LEPPINGTON NSW 2179	Lot 45 DP 28107
104914	284 George Road LEPPINGTON NSW 2179	Lot 44 DP 28107
104915	290 George Road LEPPINGTON NSW 2179	Lot 43 DP 28107
104916	294 George Road LEPPINGTON NSW 2179	Lot 42 DP 28107
104917	298 George Road LEPPINGTON NSW 2179	Lot 41 DP 28107
105541	183 Heath Road LEPPINGTON NSW 2179	Lot 67A DP 8979
105543	193 Heath Road LEPPINGTON NSW 2179	Lot 68 DP 8979
105545	203 Heath Road LEPPINGTON NSW 2179	Lot 2 DP 576229
105546	213 Heath Road LEPPINGTON NSW 2179	Lot 1 DP 576229
105550	229 Heath Road LEPPINGTON NSW 2179	Lot 70 DP 8979
108934	4 Philip Road LEPPINGTON NSW 2179	Lot 40 DP 28107
108936	6 Philip Road LEPPINGTON NSW 2179	Lot 39 DP 28107
108937	12 Philip Road LEPPINGTON NSW 2179	Lot 38 DP 28107
108939	18 Philip Road LEPPINGTON NSW 2179	Lot 37 DP 28107
108945	42 Philip Road LEPPINGTON NSW 2179	Lot 34 DP 28107
108947	50 Philip Road LEPPINGTON NSW 2179	Lot 33 DP 28107
105519	101 Heath Road LEPPINGTON NSW 2179	Lot 201 DP 628656
105527	137 Heath Road LEPPINGTON NSW 2179	Lot 650 DP 814340
105530	143 Heath Road LEPPINGTON NSW 2179	Lot 65A DP 8979
109572	19 Ridge Square LEPPINGTON NSW 2179	Lot 15 DP 28459
109573	20 Ridge Square LEPPINGTON NSW 2179	Lot 41 DP 28459
109576	40 Ridge Square LEPPINGTON NSW 2179	Lot 39 DP 28459
109577	47 Ridge Square LEPPINGTON NSW 2179	Lot 180 DP 771997
109579	51 Ridge Square LEPPINGTON NSW 2179	Lot 19 DP 28459

Parcel no.	Property address	Property description
109580	55 Ridge Square LEPPINGTON NSW 2179	Lot 20 DP 28459
109581	63 Ridge Square LEPPINGTON NSW 2179	Lot 21 DP 28459
109586	75 Ridge Square LEPPINGTON NSW 2179	Lot 23 DP 28459
109587	81 Ridge Square LEPPINGTON NSW 2179	Lot 24 DP 28459
109588	83 Ridge Square LEPPINGTON NSW 2179	Lot 25 DP 28459
109592	103 Ridge Square LEPPINGTON NSW 2179	Lot 28 DP 28459
109595	114 Ridge Square LEPPINGTON NSW 2179	Lot 40 DP 28459
1121783	113 Heath Road LEPPINGTON NSW 2179	Lot 101 DP 1031121
1121784	125 Heath Road LEPPINGTON NSW 2179	Lot 100 DP 1031121
101868	1231 Camden Valley Way LEPPINGTON NSW 2179	Lot 9 DP 28459
101880	1239 Camden Valley Way LEPPINGTON NSW 2179	Lot 8 DP 28459
101882	1273 Camden Valley Way LEPPINGTON NSW 2179	Lot 4 DP 28459
101883	1281 Camden Valley Way LEPPINGTON NSW 2179	Lot 3 DP 28459
101884	1289 Camden Valley Way LEPPINGTON NSW 2179	Lot 2 DP 28459
101885	1297 Camden Valley Way LEPPINGTON NSW 2179	Lot 1 DP 28459
105510	43 Heath Road LEPPINGTON NSW 2179	Lot 22 DP 776219
105511	49 Heath Road LEPPINGTON NSW 2179	Lot 21 DP 776219
105513	59 Heath Road LEPPINGTON NSW 2179	Lot 2 DP 556930
105515	69 Heath Road LEPPINGTON NSW 2179	Lot 1 DP 556930
108738	22 Park Road LEPPINGTON NSW 2179	Lot 5 DP 28459
108739	26 Park Road LEPPINGTON NSW 2179	Lot 36 DP 28459
108742	33 Park Road LEPPINGTON NSW 2179	Lot 10 DP 28459
108744	44 Park Road LEPPINGTON NSW 2179	Lot 34 DP 28459
108745	47 Park Road LEPPINGTON NSW 2179	Lot 11 DP 28459
108746	52 Park Road LEPPINGTON NSW 2179	Lot 33 DP 28459
108747	53 Park Road LEPPINGTON NSW 2179	Lot 12 DP 28459
108748	60 Park Road LEPPINGTON NSW 2179	Lot 32 DP 28459
108750	68 Park Road LEPPINGTON NSW 2179	Lot 31 DP 28459
1160850	31 Park Road LEPPINGTON NSW 2179	Lot 55 DP 1172744
1161528	1247 Camden Valley Way LEPPINGTON NSW 2179	Lot 54 DP 1172744
104112	207 Eastwood Road LEPPINGTON NSW 2179	Lot 4 DP 28107
104113	217 Eastwood Road LEPPINGTON NSW 2179	Lot 5 DP 28107
104120	78 Joseph Road LEPPINGTON NSW 2179	Lot 9 DP 28107
106216	44 Joseph Road LEPPINGTON NSW 2179	Lot 23 DP 28107
106218	52 Joseph Road LEPPINGTON NSW 2179	Lot 24 DP 28107
108935	5 Philip Road LEPPINGTON NSW 2179	Lot 31 DP 28107
108938	15 Philip Road LEPPINGTON NSW 2179	Lot 30 DP 28107
108940	25 Philip Road LEPPINGTON NSW 2179	Lot 29 DP 28107
108942	33 Philip Road LEPPINGTON NSW 2179	Lot 28 DP 28107

Parcel no.	Property address	Property description
108944	41 Philip Road LEPPINGTON NSW 2179	Lot 27 DP 28107
108946	49 Philip Road LEPPINGTON NSW 2179	Lot 26 DP 28107
101878	1187 Camden Valley Way LEPPINGTON NSW 2179	Lot 11 DP 619041
104871	11 Woolgen Park Road LEPPINGTON NSW 2179	Lot 14 DP 200915
104872	32 George Road LEPPINGTON NSW 2179	Lot 13 DP 200915
104873	38 George Road LEPPINGTON NSW 2179	Lot 12 DP 200915
104874	44 George Road LEPPINGTON NSW 2179	Lot 11 DP 200915
104875	52 George Road LEPPINGTON NSW 2179	Lot 10 DP 200915
112292	20 Woolgen Park Road LEPPINGTON NSW 2179	Lot 4 DP 560646
112299	46 Woolgen Park Road LEPPINGTON NSW 2179	Lot 23 DP 205952
112300	51 Woolgen Park Road LEPPINGTON NSW 2179	Lot 40 DP 205952
112301	52 Woolgen Park Road LEPPINGTON NSW 2179	Lot 24 DP 205952
112302	60 Woolgen Park Road LEPPINGTON NSW 2179	Lot 25 DP 205952
112304	66 Woolgen Park Road LEPPINGTON NSW 2179	Lot 26 DP 205952
112306	74 Woolgen Park Road LEPPINGTON NSW 2179	Lot 27 DP 205952
112309	82 Woolgen Park Road LEPPINGTON NSW 2179	Lot 28 DP 205952
112310	88 Woolgen Park Road LEPPINGTON NSW 2179	Lot 29 DP 205952
112311	96 Woolgen Park Road LEPPINGTON NSW 2179	Lot 30 DP 205952
112312	102 Woolgen Park Road LEPPINGTON NSW 2179	Lot 31 DP 205952
1161523	36 Woolgen Park Road LEPPINGTON NSW 2179	Lot 49 DP 1172744
1161526	1217 Camden Valley Way LEPPINGTON NSW 2179	Lot 52 DP 1172744
1161527	1225 Camden Valley Way LEPPINGTON NSW 2179	Lot 53 DP 1172744
1161739	6 George Road LEPPINGTON NSW 2179	Lot 40 DP 1175279
105907	14 Hulls Road LEPPINGTON NSW 2179	Lot 5 DP 858010
105912	34 Hulls Road LEPPINGTON NSW 2179	Lot 11 DP 28057
105914	40 Hulls Road LEPPINGTON NSW 2179	Lot 6 DP 858010
113979	1085 Camden Valley Way LEPPINGTON NSW 2179	Lot 1 DP 858010
1159410	1075 Camden Valley Way LEPPINGTON NSW 2179	Lot 41 DP 1162018
1159930	1067 Camden Valley Way LEPPINGTON NSW 2179	Lot 40 DP 1162018
1161518	15 Dwyer Road LEPPINGTON NSW 2179	Lot 20 DP 1166485
1161785	14 Dwyer Road LEPPINGTON NSW 2179	Lot 10 DP 1172863
1161787	22 Hulls Road LEPPINGTON NSW 2179	Lot 11 DP 1172863
1161789	26 Hulls Road LEPPINGTON NSW 2179	Lot 12 DP 1172863
1161794	1079 Camden Valley Way LEPPINGTON NSW 2179	Lot 20 DP 1162019

Table B2 Lots with dual occupancy demand credit

Parcel no.	Property address	Property description
100207	221 Anthony Road LEPPINGTON NSW 2179	Lot 3 DP 262084
100208	220 Eastwood Road LEPPINGTON NSW 2179	Lot 4 DP 262084
104093	111 Eastwood Road LEPPINGTON NSW 2179	Lot 1 DP 550791
104094	114 Eastwood Road LEPPINGTON NSW 2179	Lot 37 DP 247884
104098	122 Eastwood Road LEPPINGTON NSW 2179	Lot 38 DP 247884
104114	225 Eastwood Road LEPPINGTON NSW 2179	Lot 6 DP 28107
104116	233 Eastwood Road LEPPINGTON NSW 2179	Lot 7 DP 28107
104118	241 Eastwood Road LEPPINGTON NSW 2179	Lot 8 DP 28107
105553	244 Heath Road LEPPINGTON NSW 2179	Lot 22 DP 8979
105556	254 Heath Road LEPPINGTON NSW 2179	Lot 22A DP 8979
105557	264 Heath Road LEPPINGTON NSW 2179	Lot 22B DP 8979
106025	205 Ingleburn Road LEPPINGTON NSW 2179	Lot 17A DP 8979
106027	215 Ingleburn Road LEPPINGTON NSW 2179	Lot 17 DP 8979
108941	26 Philip Road LEPPINGTON NSW 2179	Lot 36 DP 28107
108943	34 Philip Road LEPPINGTON NSW 2179	Lot 35 DP 28107
1122665	51 Dickson Road LEPPINGTON NSW 2179	Lot 2 DP 1033109
104907	236 George Road LEPPINGTON NSW 2179	Lot 50 DP 28380
105518	89 Heath Road LEPPINGTON NSW 2179	Lot 632 DP 791829
105524	116 Heath Road LEPPINGTON NSW 2179	Lot 45 DP 8979
105536	163 Heath Road LEPPINGTON NSW 2179	Lot 66A DP 8979
105539	173 Heath Road LEPPINGTON NSW 2179	Lot 67 DP 8979
105542	186 Heath Road LEPPINGTON NSW 2179	Lot 2 DP 554127
106018	175 Ingleburn Road LEPPINGTON NSW 2179	Lot 32 DP 8979
109543	63 Rickard Road LEPPINGTON NSW 2179	Lot B DP 379496
109545	76 Rickard Road LEPPINGTON NSW 2179	Lot 73 DP 8979
109574	25 Ridge Square LEPPINGTON NSW 2179	Lot 16 DP 28459
109575	39 Ridge Square LEPPINGTON NSW 2179	Lot 17 DP 28459
109578	49 Ridge Square LEPPINGTON NSW 2179	Lot 181 DP 771997
109585	69 Ridge Square LEPPINGTON NSW 2179	Lot 22 DP 28459
109589	85 Ridge Square LEPPINGTON NSW 2179	Lot 26 DP 28459
109590	93 Ridge Square LEPPINGTON NSW 2179	Lot 27 DP 28459
109591	96 Ridge Square LEPPINGTON NSW 2179	Lot 37 DP 28459
109593	113 Ridge Square LEPPINGTON NSW 2179	Lot 29 DP 28459
109596	125 Ridge Square LEPPINGTON NSW 2179	Lot 30 DP 28459
101574	26 Byron Road LEPPINGTON NSW 2179	Lot 50C DP 8979
101576	36 Byron Road LEPPINGTON NSW 2179	Lot 50B DP 8979
101579	46 Byron Road LEPPINGTON NSW 2179	Lot 2 DP 526424

Parcel no.	Property address	Property description
101584	76 Byron Road LEPPINGTON NSW 2179	Lot C DP 375004
105507	21 Heath Road LEPPINGTON NSW 2179	Lot 2 DP 210459
105509	31 Heath Road LEPPINGTON NSW 2179	Lot 1 DP 210459
105512	50 Heath Road LEPPINGTON NSW 2179	Lot 48 DP 8979
105516	79 Heath Road LEPPINGTON NSW 2179	Lot 631 DP 791829
105987	27 Ingleburn Road LEPPINGTON NSW 2179	Lot 80 DP 8979
108743	34 Park Road LEPPINGTON NSW 2179	Lot 35 DP 28459
108749	61 Park Road LEPPINGTON NSW 2179	Lot 13 DP 28459
108751	69 Park Road LEPPINGTON NSW 2179	Lot 14 DP 28459
1161318	1395 Camden Valley Way LEPPINGTON NSW 2179	Lot 12 DP 1175345
1161144	18 Heath Road LEPPINGTON NSW 2179	Lot 20 DP 1173857
1161559	7 Heath Road LEPPINGTON NSW 2179 / 1307 Camden Valley Way LEPPINGTON NSW 2179	Lot 20 DP 1180410
112297	39 Woolgen Park Road LEPPINGTON NSW 2179	Lot 41 DP 205952
113751	46 Hulls Road LEPPINGTON NSW 2179	Lot 7 DP 858010
1161516	52 Hulls Road LEPPINGTON NSW 2179	Lot 10 DP 1164955
1161517	15 George Road LEPPINGTON NSW 2179	Lot 11 DP 1164955

B.1.2 Net Developable Area

The definition of NDA is included in section 5.9 of the Main Document of this plan.

For the purposes of the definition of Net Developable Area (paragraph (a)) included in section 5.9, the following land is excluded from NDA in the Leppington Precinct:

- Land including and immediately surrounding Leppington Progress Association Hall, 123 Ingleburn Road Leppington, (Lot 1 DP 341680), and comprising approximately 915 m^2.
- Land including and immediately surrounding 66 Rickard Road Leppington, (Lot 72 DP 8979), and comprising approximately 5,938 m^2.
- Land including and immediately surrounding 43 Rickard Road Leppington, (Lot A DP 331010), and comprising approximately 1.71 ha.
- Land including and immediately surrounding 168 Heath Road Leppington, (Lot 201 DP 616618), and comprising approximately 7,362 m^2.
- Land including and immediately surrounding 125 Heath Road Leppington, (Lot 125 DP 1301121), and comprising approximately 5,360 m^2.

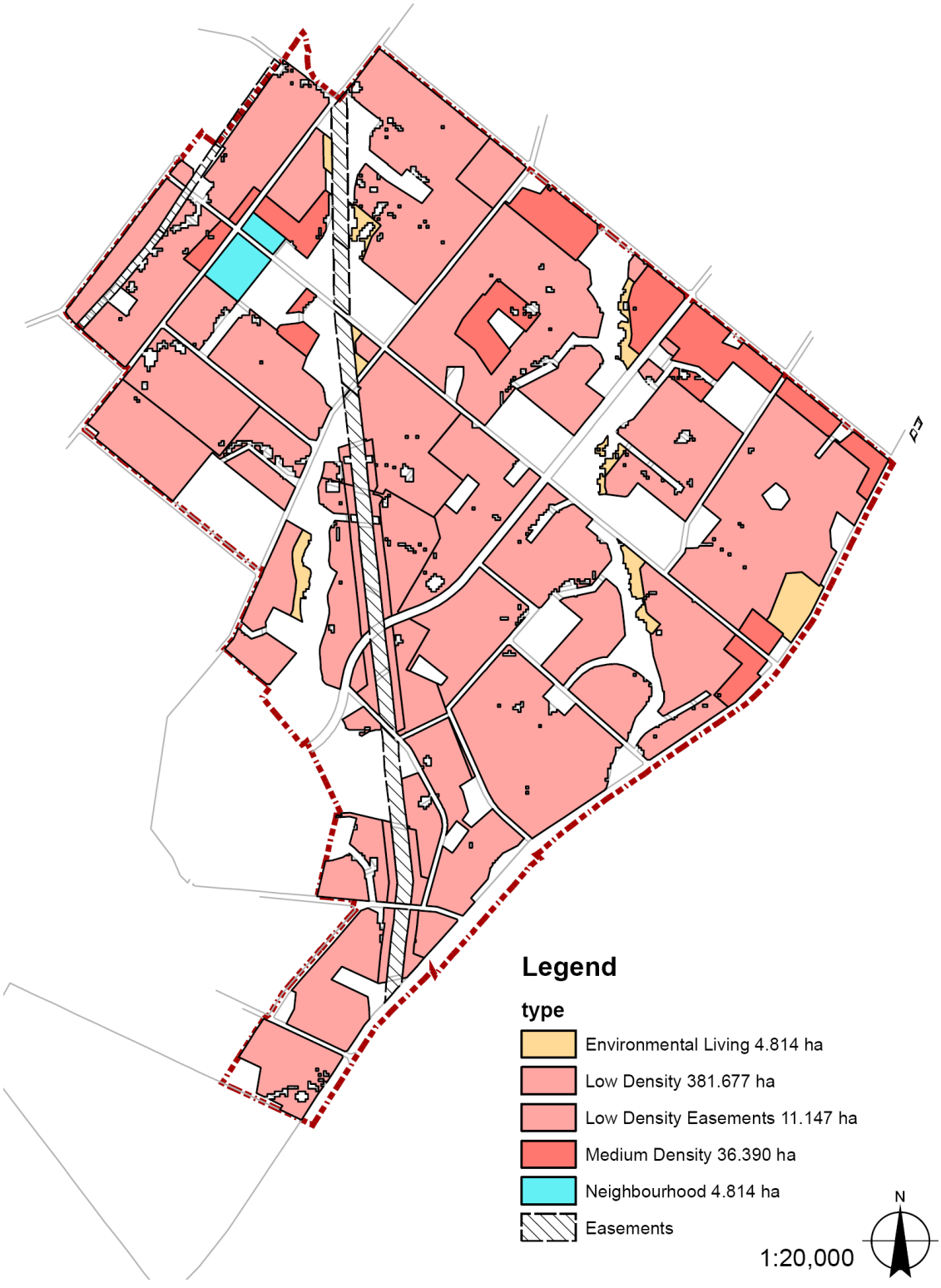
The Leppington Precinct has an estimated net developable area of approximately 437 hectares, as shown in **Table B3**.

Table B3 Expected Net Developable Area – Leppington Precinct

Land use zone	Net Developable Area (ha)
E4 Environmental Living	2.21*
R2 Low Density Residential	381.68
R2 Low Density Residential adjacent to electricity transmission easements	11.57
R3 Medium Density Residential	36.39
B2 Local Centre	4.81
Total	**436.7**

* the NDA for land zoned E4 Environmental Living has been adjusted to ensure that each detached dwelling in this zone is charged traffic and transport and water cycle management contributions at the same rate as each detached dwelling in the R2 Low Density Residential zone

Source: Department of Planning and Environment 1 June 2014



Source: Camden Council

Figure B2 Land use zoning of the subject site

B.1.3 Expected development

The expected development in Leppington Precinct is as follows:

- Approximately 8,208 dwellings and a population of approximately 26,892.[15]
- A local centre with local and neighborhood retail and commercial facilities.
- Four primary schools and one high school.
- Community facilities, including three local level community halls, one district level multi-purpose community centre and one youth centre.[16]
- Open space and drainage facilities along the Scalabrini Creek and Kemps Creek corridors.

The proposed arrangement of anticipated land uses is shown in the ILP in **Figure B3**.

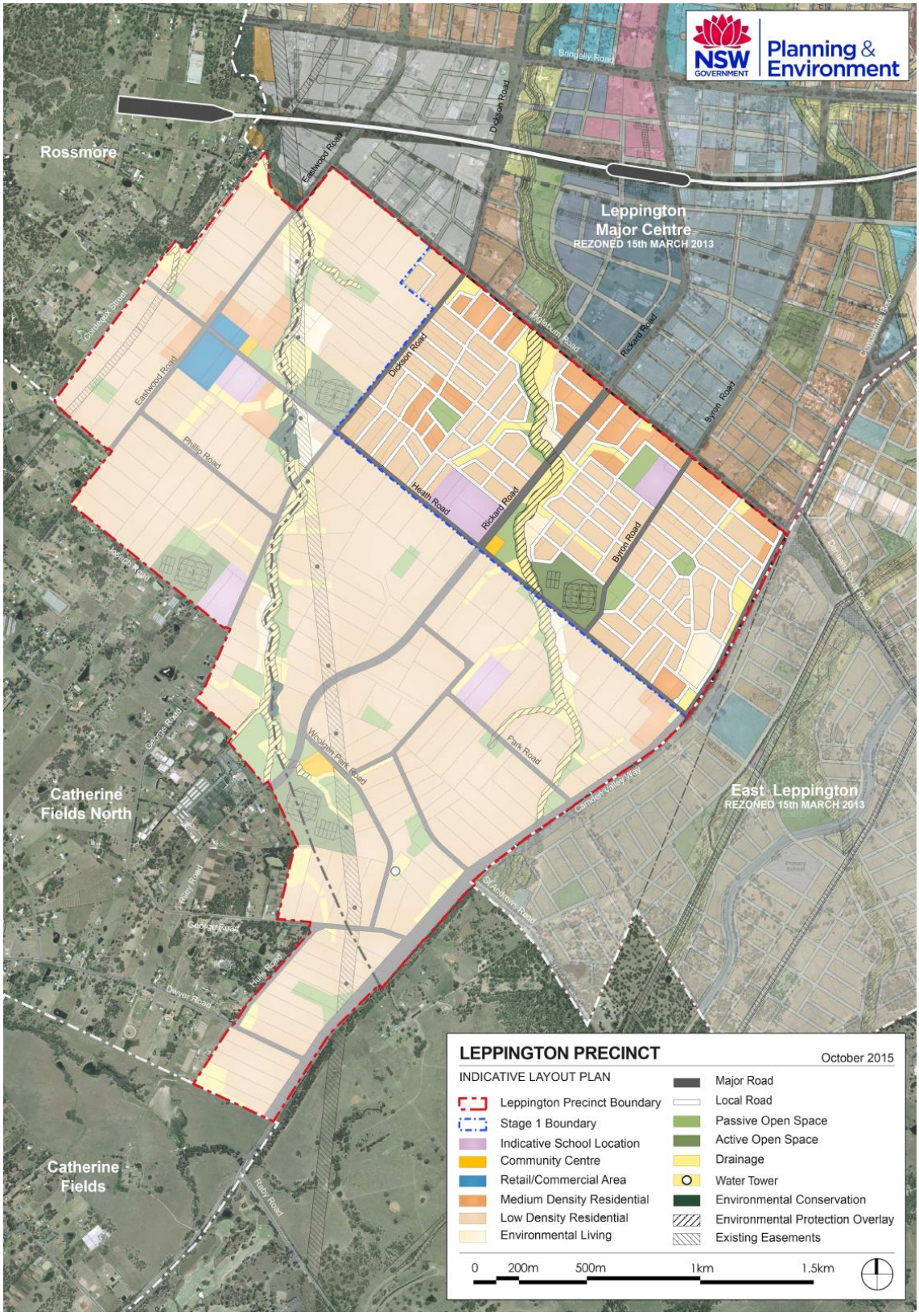
In **Figure B3** the land uses in the north eastern portion of the Precinct are clearly defined, which the land uses in the remainder of land in the Precinct are represented in faded colours. This is because while the planning for infrastructure was undertaken for the entire Precinct, the Minister for Planning initially only rezoned the north-eastern portion.

Council has prepared this contributions plan based on the Precinct-wide infrastructure assessments, and it therefore applies to land both zoned and yet to be zoned for urban purposes. This is reasonable because:

- it would be administratively inefficient to prepare contributions plans on an incremental basis
- land owners and developers of land throughout the whole Precinct are entitled to know the level of development contributions affecting the future development of their sites
- rezoning of the remaining Precinct land is likely to occur in the next few years.

[15] These figures include existing dwellings and population.

[16] It is the responsibility of the State Government to provide other community facilities



Source: Department of Planning and Environment, *Leppington Finalisation Report*, October 2015, Appendix A

Figure B3 Expected land use in Leppington Precinct

B.1.4 Expected population

The likely demographic characteristics of a development area is important for understanding and planning for the future social infrastructure needs of that area.

The demographic characteristics of the existing rural population do not provide a robust indicator of the future demography of the area.

The report *Leppington Precinct Study - Demographic and Social Infrastructure Assessment* prepared by SGS Economic and Planning makes the following conclusions about the anticipated demography of the future release area:

- The Leppington Precinct currently has 67 percent of the residents aged between 15 and 65, with a median age of 33.
- The Precinct is likely to accommodate an additional 23,130 people by 2046, although the total projected total Precinct population was updated after the public exhibition of the Precinct Plan to between 27,900 and 31,600 people.[17]
- The median age of the incoming population will be 12 percent younger than the median age for the Camden LGA.
- The median household size of the incoming population will be 13 percent larger than the median household size for Camden LGA.
- The expected incoming residents within the Leppington Precinct will likely be wealthier, younger families that have higher rent or mortgage costs than those typical of the Camden LGA.

The anticipated net additional population in the Leppington Precinct and adopted for the purposes of this plan has been determined on the basis of the NDA for various types of residential development (refer **Table B4**), the minimum density of dwellings in those areas, and the assumed average occupancy rates for those dwellings.

The anticipated population is shown in **Table B4**.

Table B4 Anticipated resident population – Leppington Precinct

Land use zone	Minimum density (dwellings / ha)	Projected dwellings	Assumed dwelling occupancy rate	Population
E4 Environmental Living	4	40	3.4	136
R2 Low Density Residential	18	6,870	3.4	23,359
R2 Low Density Residential adjacent to electricity transmission easements	10	208	3.4	708
R3 Medium Density Residential	25	910	2.6	2,365
B2 Local Centre	37.4[a]	180	1.8	324

[17] Department of Planning and Environment, *Leppington Finalisation Report*, October 2015, page 17

Land use zone	Minimum density (dwellings / ha)	Projected dwellings	Assumed dwelling occupancy rate	Population
Less assumed existing population				-972
Expected net additional population				25,919

a. This is not a minimum density but is a density derived from a preliminary assessment of the likely dwelling yield for the B2 Local Centre land

B.1.5 Demand for infrastructure

Existing public amenities and services in the Leppington Precinct have been essentially designed to accommodate the existing rural residential development. A change in the development profile of the Precinct from rural to urban development is expected.

The urban development in this area, and the populations that will occupy such development, can only be sustained by a significant investment in new and augmented public amenities and services.

Research on infrastructure needs for the impending urban development has identified the following impacts on public services and public amenities:

- increased demand for facilities that will support safe and convenient travel between land uses both within the Precinct and to and from destinations outside of the Precincts, such as new roads and transport facilities
- increased demand for stormwater drainage facilities as a result of the extra stormwater runoff generated by impervious surfaces associated with urban (as distinct from rural) development
- increased demand for active and passive recreation facilities, such as recreation centres, sports fields, sports courts, playgrounds, and shared paths
- increased demand for spaces that will foster community life and the development of social capital in the Precinct, such as cultural centres, multi-purpose community centres and meeting halls.

A range of public facilities and public amenities have been identified as being required to address the impacts of the expected development, including:

- traffic and transport management facilities
- water cycle management facilities
- open space and recreation facilities
- community and cultural facilities.

B.1.6 Development to be tied to infrastructure staging

The current pattern of land ownership in the Precinct is relatively fragmented (i.e. there are many relatively small land parcels owned by many different people). This means that the provision of essential urban services (i.e. water, sewer and electricity) by infrastructure agencies usually dictates the staging and spread of development. The fragmented nature of the Leppington Precinct makes it extremely difficult to determine the likely development fronts for the Precinct.

The over-arching strategy that is intended the staging and priority of infrastructure in the Precinct is the Infrastructure Delivery Plan.[18] The Infrastructure Delivery Plan proposes that the initial development area will be the land south of Ingleburn Road within the Scalabrini Creek catchment. This attempts to build on opportunities to connect to essential services that are existing on adjacent currently-developing precincts at Leppington North and Willowdale.

The initial urban zoning of land in the north of the Leppington Precinct Plan reflects this infrastructure delivery philosophy.

The initial urban rezoning enables up to 1,900 dwellings to be developed. The initial rezoned area will be the focus of development activity and associated provision of infrastructure in the early years of this plan. This approach is intended to alleviate concerns raised during previous consultations that rezoning of land without services available results in land value increases, and therefore land rates, that do not match development potential.[19]

[18] APP (2014), *Leppington Precinct Infrastructure Delivery Plan*, prepared for Department of Planning and Environment

[19] Department of Planning and Environment (2014), *Leppington Precinct Planning Report*, Executive Summary

B.2 Infrastructure strategies

B.2.1 General

B.2.1.1 How have the infrastructure costs been derived?

The costs have been derived from a number of sources. Costs for public services and amenities were informed by the information contained in the studies informing the infrastructure planning of the area (refer Part B.5).

Unit cost rates for land, which are shown below in **Table B**, were determined from advice from a registered valuer.

Unit cost rates for infrastructure in the Leppington North Precinct were used to determine infrastructure costs in the Leppington Precinct. The was deemed appropriate because the Leppington North Precinct is an adjacent area and the costs for that Precinct were independently reviewed by a third party cost estimator (WT Partnership).

Table B5 Unit cost rates for land

Land category	Unit cost rate per square metre
Non-developable land (Riparian corridors, constrained land) below the 1:100 year ARI event	$80
Riparian Corridors, constrained land above the 1:100 year ARI event	$150
Residential prime land above 1:100 ARI event	$300
Commercial Land (B2 zoning)	$300
Extra allowance for special value etc.	12%

Source: Civic MJD

B.2.1.2 Contribution catchments and apportionment

The section 7.11 monetary contribution rate for each of the Precinct facilities is determined by dividing the total cost of the facility by the contribution catchment (which is expressed in either persons or NDA).

The proposed amenities and services have generally been sized to reflect the demand generated by the expected development under this plan. Some facilities, such as the out-of-Precinct recreation and community facilities proposed at Rossmore and at Leppington Major Centre, have been designed to serve a wider catchment and the contribution rate reflects that wider contribution catchment.

The contribution catchments for each infrastructure type are as follows:

- In the case of open space and recreation facilities land and works, except for the District Active Open Space - Rossmore Precinct item, the expected additional resident population of the Leppington Precinct.
- In the case of the local community halls and the multi-purpose community centre and youth centre, the expected additional resident population of the Leppington Precinct.

- In the case of the community, cultural and recreational facilities proposed to be located outside of the Leppington Precinct in the Leppington Major Centre, the number of people (or future residents) the respective facility has been designed for.
- In the case of water cycle management land and works and traffic and transport land and works, the estimated total NDA for the Leppington Precinct.

B.2.2 Traffic and transport facilities

B.2.2.1 What is the relationship between the expected types of development and the demand for additional public facilities?

Occupants of expected development in the Leppington Precinct will utilise a transport network comprising:

- facilities for private vehicles, including roads and intersections;
- facilities for public transport, including rail and bus facilities focused on the planned Leppington railway station; and
- facilities for walking and cycling.

The existing transport network has been planned to serve existing and approved developments (that is, predominantly rural developments) in the area, and not the expected future urban development. As an example, there are only minimal existing public transport services and walking/cycling facilities in the area but this is set to be transformed with the completion of the South West Rail Link. The limited existing (or absent) provision for walking and cycling will also not be appropriate to future demands.

AECOM has prepared the *Leppington Precinct – Transport and Access Strategy* for the Leppington Precinct.[20] The Strategy identifies the range of transport infrastructure that will be required to mitigate the impacts and otherwise accommodate the expected development.

This plan will implement the parts of that infrastructure strategy that are not likely to be addressed by State Government funding, or by reasonable conditions in consents requiring land developers to directly provide traffic and transport works.

B.2.2.2 Proposed road hierarchy

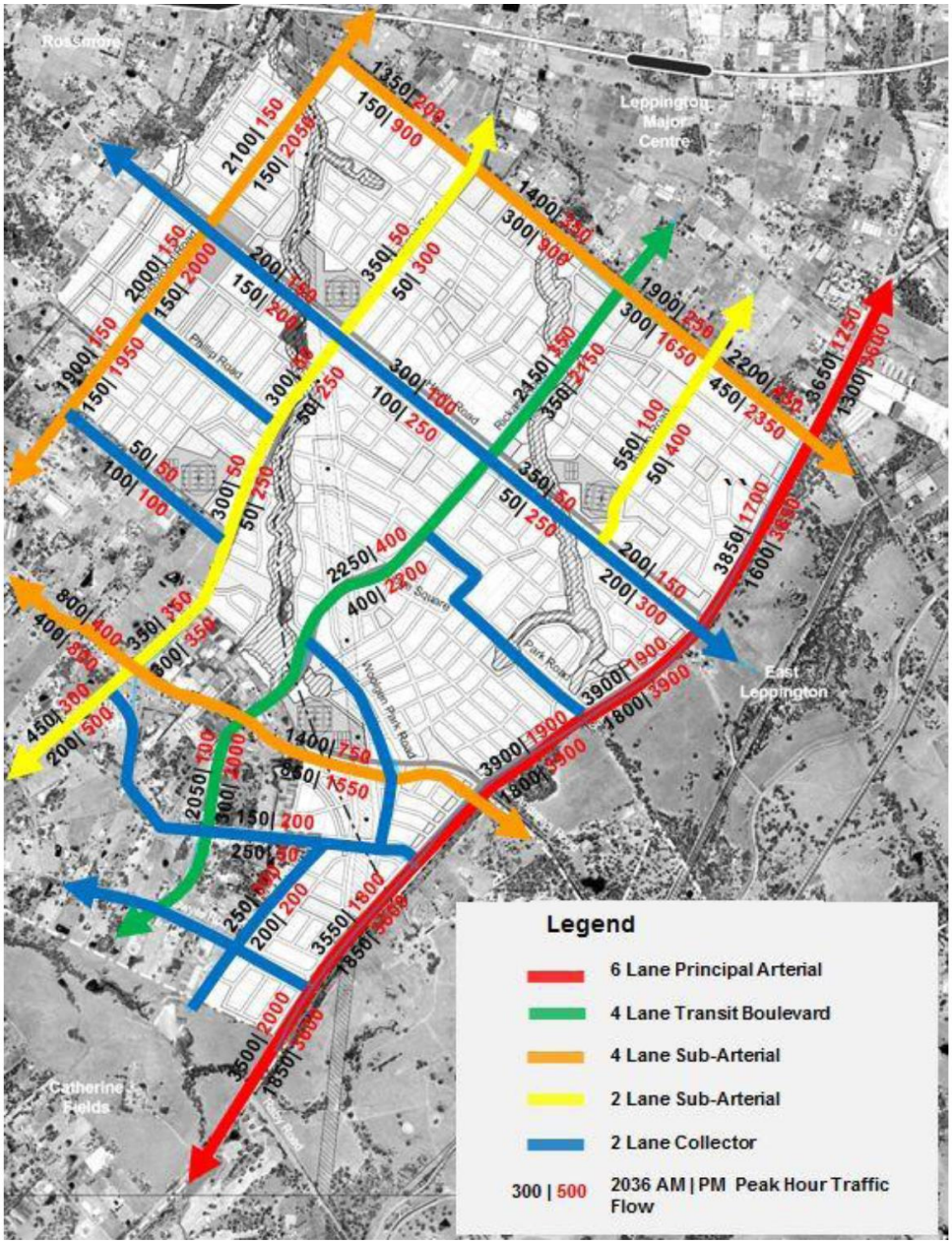
The proposed road network complements a broader hierarchy envisaged for the South West Priority Growth Area.

The Precinct's planned road hierarchy focuses vehicular access on the most appropriate routes onto arterial roads via higher order corridors. Vehicles are then distributed through the Precinct via the network of sub-arterial and collector roads then via local streets to individual land parcels.

The key strategic route serving the Precinct is Camden Valley Way, a principal arterial road providing services in a north-south direction. Rickard Road is a 'transit boulevard' that will link the area to Leppington Major Centre by providing a high frequency bus corridor with bus priority and dedicated travel lanes at intersections. Eastwood Road and Dickson Road will also have a strategic public transport function.

Figure B4 over page shows the planned road hierarchy for the Precinct.

[20] AECOM Australia Pty Ltd (2013), *Leppington Precinct Transport and Access Strategy*, prepared for NSW Department of Planning and Infrastructure



Source: AECOM, page 21

Figure B4 Proposed road hierarchy and expected mid-block traffic flows in 2036

The higher order roads and intersections and the public transport links will be delivered or funded through the State budget or through SICs.

Special Infrastructure Contributions will be imposed via conditions of consent on developments in the Precinct. More details on the applicability of SICs can be found by accessing the Department of Planning and Environment's website. [21]

[21] Also refer to *Environmental Planning and Assessment (Special Infrastructure Contribution - Western Sydney Growth Areas) Determination 2011*

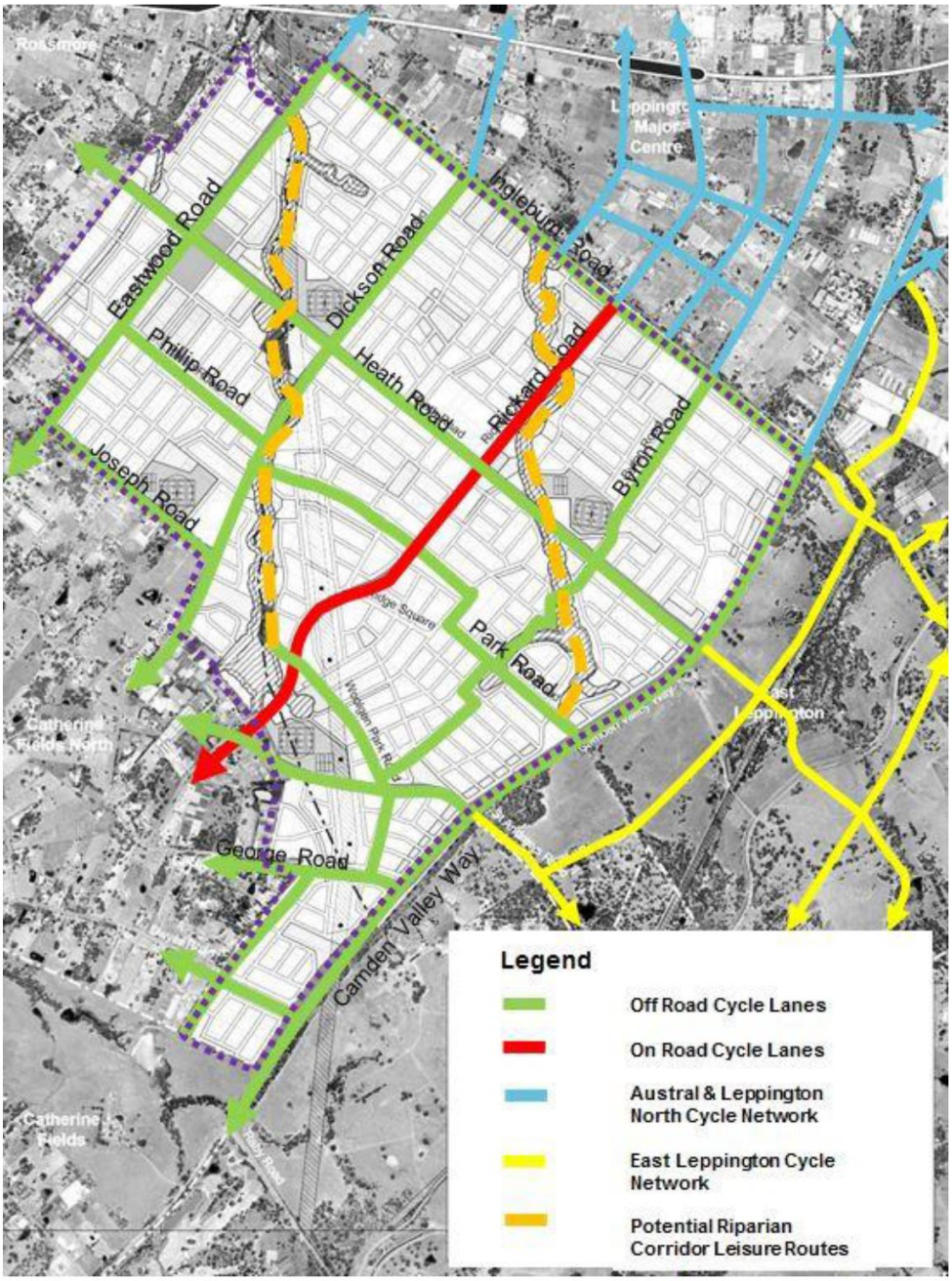
B.2.2.3 Facilities addressed by this plan

The traffic and transport facilities that are to be delivered using section 7.11 contributions and which are included in this plan include the following:

- Local road creek crossings
- Upgrades of existing rural standard roads to collector road standard
- New collector roads
- Collector road creek crossings
- Bus shelters
- Shared pathways
- Shared pathway creek crossings

Council has decided that these particular facilities should be the subject of section 7.11 contributions for the following reasons.

- The Precinct is bisected by Kemps Creek and Scalabrini Creek and their tributaries. The ILP includes many planned roads that cross these watercourses. These crossings fulfil a broader planning objective of making the new residential neighbourhoods more connected, rather than meeting a need for direct access to individual developers' lands. It is therefore not reasonable to require developers of land near the creeks to construct the creek crossings as part of their subdivision works. It is more reasonable to require all developers throughout the Precinct meet the cost of these creek crossings.
- New and upgraded public roads may be provided by councils or by developers as part of their subdivision works. Where provided by the council, they are usually funded either through land or monetary section 7.11 contributions, and are often constructed as works in kind by the developer. Collector roads may be delivered by a mix of section 7.11 contributions and by developers through conditions of consent. The Leppington Precinct is characterized by a high degree of land fragmentation. So as to facilitate the timely and orderly development of land Council has included most of the Precinct's planned collector roads.
- Intersections of the proposed collector roads will generally be controlled by roundabouts. This type of treatment is anticipated to meet the expected traffic volumes on these roads in 2036, at an assumed level of service 'D' or better. The roundabouts serve the whole area and will therefore be delivered using section 7.11 contributions.
- Bus shelters will be provided along the bus routes that will utilise the collector road network to facilitate the use of transport options apart from the private car.
- A comprehensive bicycle network is proposed in order to promote more sustainable forms of transport for residents. The network will link the centres, schools, transport nodes and various residential neighbourhoods with key strategic routes and onward destinations. Recreational shared paths will also be provided. These will be focused along Kemps Creek and Scalabrini Creek corridors. This will assist in improving linkages to parks and sporting fields across the Precinct. The proposed bicycle and shared path network is shown in **Figure B5**.



Source: AECOM page 48

Figure B5 Proposed bicycle and shared path network

B.2.3 Water cycle management facilities

B.2.3.1 What is the relationship between the expected types of development and the demand for additional public facilities?

Assessments of the development's relationship with riparian corridors and flooding, and the development's stormwater drainage needs, were undertaken by Parsons Brinckerhoff.[22]

The framework for the management of stormwater quantity and quality related to the expected urban development in the Leppington Precinct is included in *Leppington Precinct Water Cycle Management Strategy* prepared by Parsons Brinckerhoff in 2014 (the **WCM Strategy**).

B.2.3.2 Pre-development conditions

The pre-development context for stormwater runoff in the Precinct may be summarised as follows:

- The Precinct is traversed by two watercourses, Kemps and Scalabrini Creeks which eventually drain into South Creek, a tributary of the Hawkesbury River.
- Land uses in the catchment comprises small rural holdings, farming lands, market gardens and some residential areas. This land use profile means that most runoff is absorbed into the ground, or is collected in small farm dams.
- There is minimal piped stormwater drainage. Minor cross drainage pipes are likely to exist under roads at creek crossings and low points.
- Existing roads are generally sealed bitumen with no kerb and gutter edging. Road runoff is drained by kerbside swales mostly in an unformed and uncontrolled fashion to nearby gullies and rural residential lots.[23]

B.2.3.3 Water cycle objectives and benchmarks

The WCM Strategy to meet the demands of the expected development was determined by developing and testing three delivery options against the adopted objectives for water cycle management in the Precinct.

The project brief required that the WCM Strategy meet a number of objectives, including:

- A path to achieving the stormwater targets in the Growth Centres Development Code and Camden Council's relevant guidelines.
- Effective management of stormwater quality within the catchment.
- Local and regional flood risk management impacts being satisfactorily addressed.
- A scheme which minimises the land-take and construction costs with consideration for integration with urban design, salinity risk and riparian corridor protection measures.
- It must address Water Sensitive Urban Design (**WSUD**) principles.

[22] Parsons Brinckerhoff (2013), *Leppington Precinct – Flooding Assessment*, November 2013

Parsons Brinckerhoff (2014), *Leppington Precinct – Riparian Corridor Assessment*, July 2014

Parsons Brinckerhoff (2014), *Leppington Precinct Water Cycle Management Strategy*, July 2014

[23] WCM Strategy, pages 8-10

- It must recommend planning controls and land management strategies having regard to stormwater objectives prepared by OEH, and which is funded and affordable and does not impact on the viability of development within the Precinct.[24]

Further water cycle management objectives are listed in Table 4.1 of the WCM Strategy.

The WCM Strategy's preferred scheme also needed to meet minimum water quantity and quality standards and benchmarks. These requirements, drawn from the Council's Development Control Plan, are listed in Tables 2.1 and 2.2 of the WCM Strategy and include the following benchmarks:

Stormwater system capacity (i.e. minimum management targets for water quantity):

- Stormwater detention required where areas do not drain to trunk system.
- Stormwater detention from the 50% Annual Exceedance Probability (**AEP**) by development for discharge into Category 1 and 2 creeks.
- Stormwater detention is required to control peak flow up to the 1% AEP.
- Minor system is the 20% AEP event for residential, 10% AEP for commercial.
- Major system using dedicated overland flow paths such as open space, roads and riparian corridors above the 20% AEP and up to the 1% AEP.

Water quality targets in relation to:

- Gross pollutants
- Total suspended solids
- Total phosphorous
- Total nitrogen
- Stream erosion control ratio (i.e. environmental flows)

Riparian corridors are an integral component of the WSUD approach. Riparian corridor widths were based on agreed outcomes with Council, DPE and OEH.[25]

B.2.3.4 Options testing

The delivery options that were tested against these objectives and quantity / quality benchmarks are summarised below:

- Option 1 is a 'distributed' approach to water quality improvement. This approach involves water quality treatment measures distributed throughout the precinct to improve water quality closer to the source of the runoff. The basins are combined stormwater detention and water quality basins. An indicative layout showing Option 1 is included as Figure A.1 in the WCM Strategy.
- Option 2 is an 'end of catchment' approach for water quality control only. This involves water quality improvement measures located at the bottom of the catchment and aims to improve the water quality at one location prior to release to the receiving water. Onsite detention basins are located within individual lots in the precinct, and are at the cost of the property owner to install and maintain. An indicative layout showing Option 2 is included as Figure A.2 in the WCM Strategy.

[24] WCM Strategy, page 2

[25] Details are contained in Parsons Brinckerhoff (2014), *Leppington Precinct – Riparian Corridor Assessment*, July 2014

- Option 3 is a mix of Options 1 and Option 2 was developed as Option 3. This option combines some local catchment and larger regional sub-catchment controls, and adopts distributed online stormwater retarding for quantity control and separate 'bio-filter' footprint areas for water quality treatment. Bio filter areas could be in the form of a raingarden or tree pit or any vegetated area, and can be co-located with the stormwater retarding basins. Both on- and off-line stormwater basins are also a feature of this option.

The evaluation of the options is discussed in the WCM Strategy.[26]

The preferred option (Option 3) was chosen on the strength of its good performance against all of the evaluation criteria, particularly:

- its relatively lower ongoing operation and maintenance requirements
- its moderate land-take resulting from its use of on-line basins within the riparian corridor, which can also be used for passive recreation purposes.[27]

B.2.3.5 Facilities addressed by this plan

The WCM Strategy identified a series of stormwater basins and channels and water quality treatment facilities (bio-filters) that, with other measures, would be required to be implemented on land across the Precinct to achieve the water quantity and quality objectives.

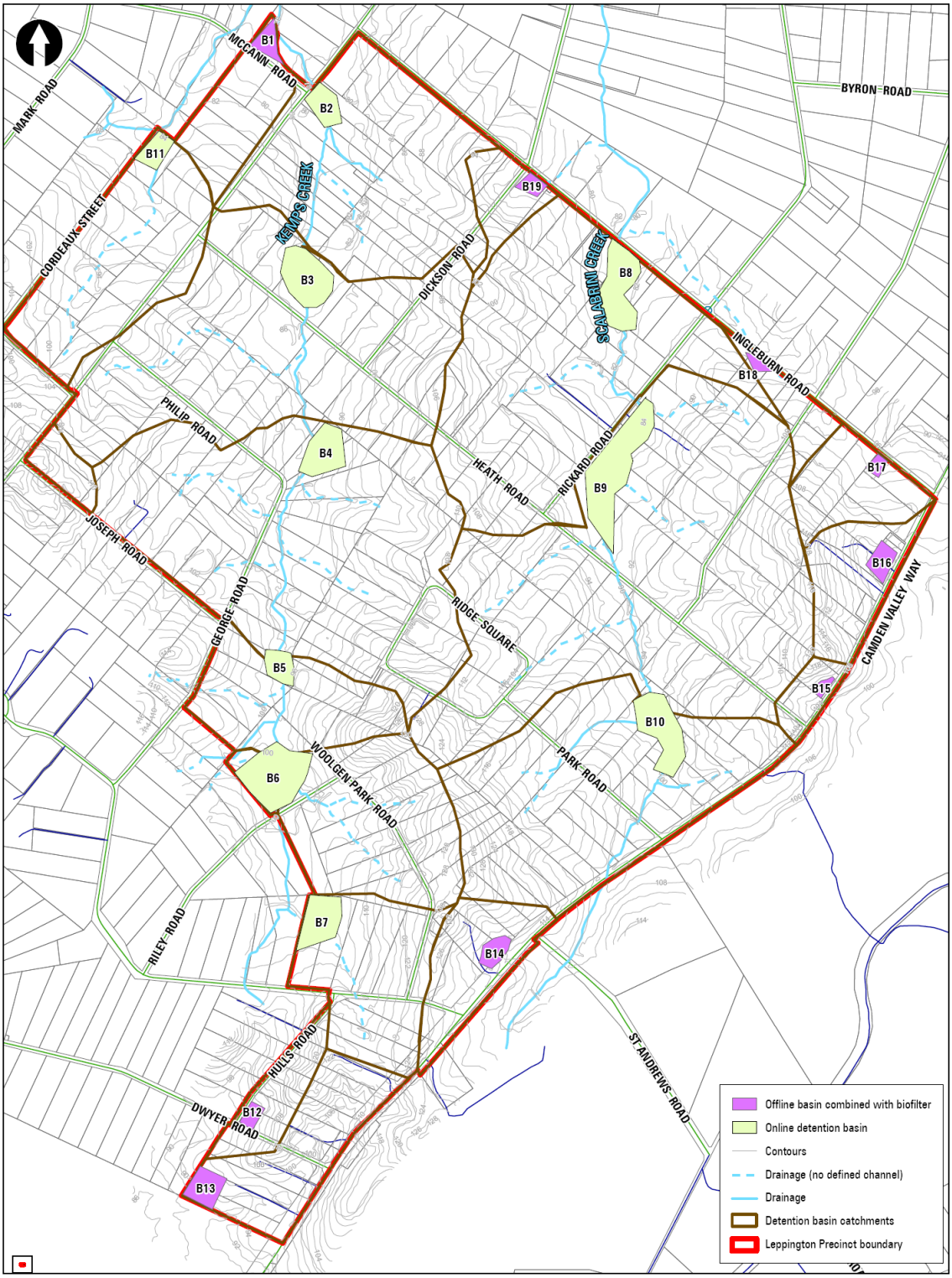
The drainage infrastructure described in the WCM Strategy includes trunk infrastructure to support the development. Councils are responsible for ensuring trunk infrastructure that meets the needs of the entire development is in place, while land developers are required through conditions of consent to provide reticulation works within and near to the development.

The proposed locations of trunk stormwater basins and bio-filters that are to be delivered using contributions collected under this plan are shown in **Figures B6** and **B7**. These facilities will be complemented by drainage channels leading to the basins. The locations of the channels were determined following further analysis that was undertaken following the completion of the WCM Strategy.

A range of 'non-trunk' reticulation works not addressed by this plan will also be required to be undertaken directly by the developer as conditions of consent under section 80A(1)(f) of the EP&A Act. The facilities may include lot-scale OSD basins, private domain bio filtration for commercial land use, rainwater tanks, construction of kerb, gutter and piping in local roads, installation of drainage pits and grates, and pipe connections to the trunk drainage network.

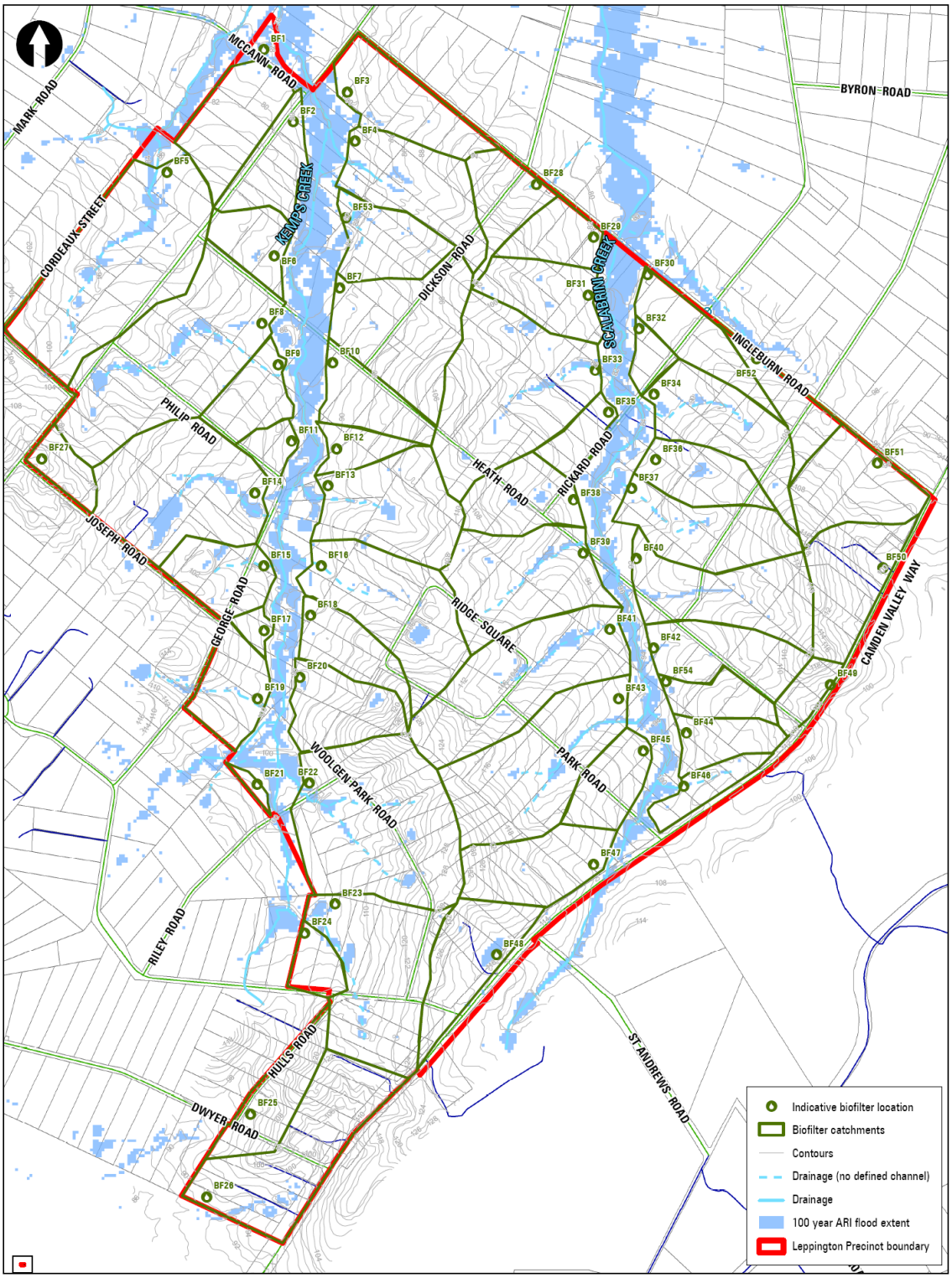
[26] Refer Chapter 5 of the WCM Strategy

[27] Refer Table 5.14 of the WCM Strategy



Source: Parsons Brinckerhoff (2014), Figure A.3

Figure B6 Proposed stormwater basin generic locations



Source: Parsons Brinckerhoff (2014), Figure A.4

Figure B7 Proposed bio-filter generic locations

B.2.4 Open space and recreational facilities

B.2.4.1 What is the relationship between the expected types of development and the demand for additional public facilities?

The requirements for local, and regional scale open space and recreation facilities as a result of the expected development of this Precinct are documented in the report titled *Leppington Precinct Study – Demographic, Housing, Social Infrastructure, Retail and Employment Assessment* (**LP Social Infrastructure Assessment**), prepared by SGS Economics and Planning in October 2012.

The information below summarises that report's conclusions about the likely demand for open space and recreation facilities arising from the expected development.

Requirements for district sportsground facilities was the subject of further discussion between DPE and Council. The DPE's Leppington Precinct Planning Report (page 67) notes the need for Leppington precinct development to contribute towards district level recreation facilities in adjoining precincts.

B.2.4.2 Existing provision

There are limited open space and recreation facilities currently available within the Precinct due to its semi-rural nature.

Existing facilities are limited to the local Pat Kontista Reserve located on Byron Road. This facility serves the current local open space demand for field sports (soccer and cricket), a tennis court, children's playground, toilets and club rooms.

WV Scott Memorial Park is a significant area of active open space situated further north in the Leppington North Precinct immediately adjacent to Camden LGA. This park also provides for field sports and also contains a children's playground.

The absence of passive open space reflects the rural residential lifestyle of the current residents. That is, the demand for this type of open space is significantly reduced in locations where residents live on their own substantial parcel of land.

B.2.4.3 Planning principles for open space and recreation

The open space and recreation principles that have informed the future planning of open space and recreation facilities in the Precinct are summarised as follows:

- Where feasible or appropriate, the public open space network should be integrated and interconnected.
- Both the quality and quantity of public open space are important.
- Public open space should be connected via footpaths, shared pathways and riparian corridors.
- The location and design of public open space should consider the natural environment and topography.
- Facilities of a formal nature (playing fields) should not be located in flood prone areas.
- The recreational and environmental function of open space should not be compromised by public utility undertakings, utility installations or siting of telecommunication facilities.

- Multiple use of open space is encouraged through multiple zonings and classifications which enable commercial spaces to be incorporated which are compatible and complimentary to the primary role of the site.
- Where possible, playgrounds and playspaces are not to be located under, adjacent to or in the vicinity of high voltage electricity-carrying infrastructure.
- Sites for the provision of public open space must be identified for new communities however facilities can be developed over a period of time, and in stages, to ensure community input and ownership of the facilities.[28]

The minimum amount of open space was determined using:

- the standards for open space provision as per the *Recreation and Open Space Guidelines for Local Government* – refer **Table B6** below
- the *Growth Centres Development Code* recommended open space provision rate of 2.83 hectares per 1,000 people
- an assumed 50/50 split in the open space land to be made available for active and passive open space and recreation facilities

Table B6 Open space planning guidelines (Department of Planning 2010)

	Hierarchy level	Size	Distance from most dwellings	Share of non-Industrial land
Parks	Local	0.5-2ha	400m	2.6%
	District	2-5ha	2km	0.6%
Linear and Linkage	Local	Up to 1km	NA	0.9%
	District	1-5km	NA	0.1%
Sub-total (Parks / Linear and Linkage)				*4.2%*
Outdoor sport	Local	5ha		2.0%
	District	5-10ha		2.6%
Sub-total (Outdoor sport)				*4.6%*
Total (Local / District)				**8.8% say 9%**
Parks	Regional	5+ ha	5-10km	2.3%
Linear and Linkage	Regional	5+ km	5-10km	0.7%
Outdoor sport	Regional	10+ ha	5-10km	2.9%
Total (Regional)				**5.9% say 6%**
Grand Total				14.7% say 15%

Source: Department of Planning and Environment (2010), *Recreation and Open Space Planning Guidelines for Local Government*, p.29

[28] LP Social Infrastructure Assessment, page 72

B.2.4.4 Recreation demand assessment based on forecast demographics

The LP Social Infrastructure Assessment provides details on the expected population mix within the Leppington Precinct. The total number and age profile of the future Leppington Precinct population will determine the future demand of social infrastructure and services. For example, the number of 0 to 4 year olds will affect demand for child care services and playgrounds, the number of five to 12 year olds will impact demand for primary schools and play spaces, while the number of residents aged 70+ will affect the demand for aged care facilities and services.

The following demographic groups can help determine the social infrastructure provision requirements for the following population groups:

- early years population
- primary school age
- secondary school age
- tertiary and early working age
- mature working age
- active retirement age

B.2.4.5 Facilities addressed by this plan

The various recreation facilities required to meet the needs of the expected development was identified in the LP Social Infrastructure Assessment. **Table B7** provides details of these facilities.

Table B7 Recreation facilities requirements

Facility	Size	Description	Provision in Precinct
Local parks	Min. 0.5ha up to 2ha	Local parks should have a range of play spaces and opportunities and cater to older children and young people as well as the traditional playground for young children. Grassed area for ball games, seats, shelter. May contain practice wall, fitness equipment, other elements.	7 parks, each within 400m walking distance of most dwellings
District parks (passive)	Min. 2ha up to 5ha	Activities for all ages. Includes a combination of outdoor courts (basketball, netball), skate park, bike paths, play equipment, fitness equipment, water features, picnic facilities, BBQ, area for unleashed dogs.	1 park
Children's playgrounds (0-4 years)	NA	Co-located with parks, sportsgrounds, courts, schools, community facilities, conservation areas. Regional, district, local hierarchy in terms of play equipment and range of	3 playgrounds

Facility	Size	Description	Provision in Precinct
		experiences. Can be co-located with playspaces for 5 to 12 year olds – within sight distance for carers but physically separated. Fencing if adjacent to water, road, steep slope. Seating, shade, water provided.	
Playspaces (5 to 12 year olds)	NA	Allows for more independent play, skill development and cognitive development. However, they still require adult supervision. More challenging equipment may include bouldering features, climbing areas, 'learn to' cycleways through to cycle obstacle course, skate facility, BMX/mountain bike jumps and tracks. These areas could be co-located with children's playgrounds, school or community facilities for supervision and convenience of use by carers.	5 playspaces
Local sportsground	5ha	To accommodate demand for local sport and recreation training and competition. Can include: • 2 multi-purpose rectangular fields or 1-2 full-sized cricket / AFL ovals (plus practice nets). Playing field lighting. Playing field irrigation system. • 2 tennis / netball courts – 2 half-court basketball courts, or 2 multi-purpose courts – Lights for training • Amenities with change rooms, canteen, meeting room, change rooms, showers • a minimum of 100 parking spaces	4 facilities
Shared cycle-ways / walkways	n/a	On flat to undulating land. In or adjacent to riparian corridors, water supply channel, drainage corridors. Minimum 3 metre width path for dual use. Include seats and bubblers along the cycleway and circular routes should be included where possible as well as bike storage for convenience of users. Access points to be provided from employment and residential land.	Sufficient to link open space, recreation facilities and services, schools, town neighbourhood and village centres.

The following is a summary of Leppington Precinct's proposed open space and recreation facilities that were determined by DPE in the Precinct Planning Report.[29] These facilities are incorporated into the ILP, or otherwise will be addressed by developers making contributions toward off-site facilities:

- Active open space provided as four double sporting fields, accommodating an expansion of the existing Leppington Oval, and three new sports fields and other courts (e.g. tennis, basketball or netball). The active open space area has been located adjacent to flood prone land to make the best use of relatively level lands that otherwise have limited development potential. Each playing field is suitable for a variety of sports including cricket and the various football codes.
- A contribution in the draft Section 7.11 Contributions Plan towards district active open space to be provided outside the Precinct (i.e. district level sporting facilities in Rossmore Precinct – see below).
- Open space 'credits' from passive district open space provided in Leppington North (this has since been removed – see section B.2.4.7).
- Neighbourhood parks distributed throughout the Precinct to ensure each resident is within walking distance of open space.
- A proportion of other land (i.e. more than 14 hectares) associated with riparian corridors and multi-use drainage land to be utilised as passive open space including embellishment for pedestrian and cyclist paths. These corridors are further discussed in section B.2.4.8.[30]

Details of the specification for each of the proposed facilities to be funded by section 7.11 contributions are included in Tables 62, 63, 64 and 65 of the LP Social Infrastructure Assessment.

The total area of local and district open space land required to accommodate the recreation facilities was calculated in the LP Social Infrastructure Assessment. **Table B8** over page provides a breakdown of this open space, and compares this breakdown against the breakdown that is represented in the items included in this plan.

The total open space areas in the LP Social Infrastructure Assessment and in this plan both represent a level of provision less than the benchmark 2.83 hectares per 1,000 persons in the *Growth Centres Development Code*.

The LP Social Infrastructure Assessment was based on a then projected additional population of 23,130, and so the rate of provision recommended under that report is 2.45 hectares per 1,000 persons.

This plan is based on a projected additional population of 25,919, and so the planned rate of provision under this plan is 2.41 hectares per 1,000 people.

However, both of these results do not account for the substantial areas of riparian corridor land with a passive recreation function. This plan also allows for the acquisition and embellishment of 27 hectares of land to be used for drainage channels that will for the most part be able to be used for passive recreation purposes.

Table B8 Open space area minimum requirements and planned provision

[29] Department of Planning and Environment (2014), *Leppington Precinct Planning Report*, June 2014

[30] Ibid., page 67

Open space type	Area shown in LP Social Infrastructure Assessment (ha)	Area included in this plan (ha)
Passive open space:		
Local parks	16.10	30.32
Play grounds	1.38	Included in local parks
Play spaces	2.30	Included in local parks
District park	5.75	4.00
Active open space:		
Local sports grounds	23.00	23.62
District sports grounds	0	4.31[a]
Total	**56.60**	**62.26**

Notes:

a. represents the proportion of demand for the Rossmore facility generated by the Leppington Precinct population

Source: LP Social Infrastructure Assessment, Table 67

B.2.4.6 District active open space in adjoining Rossmore Precinct

Further analysis has determined that Leppington North Precinct (Camden LGA) will not meet the district sports facilities needs of future residents of the Leppington Precinct. There is also unlikely to be any spare capacity in the existing or proposed facilities in other nearby and developing precincts in the Priority Growth Area.

Rossmore Precinct is an adjacent future urban development area located to the north-west of Leppington Precinct. Early planning has identified suitable land in the Rossmore Precinct for district sports facilities that can serve a population of 60,000 across multiple precincts.

The district sports facility is planned to comprise four playing fields (2 x double fields with ability to have cricket between each 2 field complex), and a minimum site area of 10 ha to accommodate the sporting facilities, car parking, amenities, floodlighting, seating.

A candidate site for the facility is land adjacent to the South West Rail Link train stabling facility in the Rossmore Precinct. The district sports facility is considered to be a compatible land use with the train stabling facility and will act to provide a buffer to noise-sensitive land uses. It is proposed to locate a district sports facility within the Rossmore Precinct that is designed to serve multiple Priority Growth Area Precincts.

This plan includes provision for the land and works associated with the proposed Rossmore facilities, but acknowledges that the demands for the facilities are spread over a catchment (60,000 residents). This plan therefore authorises contributions that are commensurate with the Leppington Precinct's level of demand for the particular district active recreation facilities, i.e.:

- 25,919 persons / 60,000 persons = 43.12% (i.e. the apportionment factor of 43.12%).

B.2.4.7 Apportionment of district passive open space facilities between precincts

The LP Social Infrastructure Assessment identifies that parks that are proposed to be provided in the Leppington North Precinct may be able to serve the populations in the Leppington Precinct. Similarly, a district park that has been planned for the southern part of the Leppington Precinct may serve future populations of the Catherine Field Precinct to the south. These findings suggest that apportionment of the cost of these items over the respective precincts.

Upon further review however, it is not considered that there need be any allowance for cross-Precinct apportionment of cost of these items. This is because:

- Leppington North Precinct development should be fully accountable for the district passive open space facilities in the Leppington North Precinct, as these facilities will be demanded by residents, workers and visitors in that Precinct. To levy part of the cost on Leppington Precinct development will mean that that item will be over-subscribed.
- The proposed district passive park in the Leppington Precinct is sized to reflect the population of the Precinct, and there will be no spare capacity that will be available for the future residents of adjoining precincts such as Catherine Field.

B.2.4.8 Riparian corridors / linear parks

The LP Social Infrastructure Assessment identified that linear and linkage open spaces may be provided in order to connect the more formal open spaces and play a role in conserving riparian corridors.[31]

The Leppington Precinct Planning Report established that the lands along Kemps and Scalabrini Creeks that traverse the Precinct will function as multi-use corridors and form linear open space areas:

> …the corridors are to be restored, revegetated and managed as a natural creek ecosystem, as well as providing a regional habitat function, passive recreation resource and scenic outlook within the Precinct. The majority of native remnant vegetation exists within the riparian corridors and will be retained and regenerated.
>
> The riparian corridors are proposed to be brought into public ownership as part of the open space network and drainage lands. These are linked by pedestrian and cycling routes that follow the major internal road network. The connections will form part of the overall open space network and will provide green links from the south of the Precinct to the north and will contribute to the total open space calculation for the Precinct.
>
> The existing remnant vegetation within riparian corridors will be retained, regenerated and managed for ecological values, but primarily these vegetated areas will contribute to the quality of the public spaces within the Precinct. The waterways will also serve water quality, flood management and ecological functions. By integrating these lands into the public domain, environmental and social objectives of Precinct Planning can be met and more consistent outcomes for the riparian corridors can be achieved. [32]

[31] LP Social Infrastructure Assessment, page 120

[32] ibid., pages 67-70

B.2.5 Community and cultural facilities

B.2.5.1 Existing provision

The Leppington Precinct is currently a semi-rural location, with a small number of dispersed dwellings, and consequently there is minimal existing social infrastructure within the precinct. The existing community facility in the Leppington Precinct is the Leppington Progress Association Hall, which provides meeting and activity space for the local community. [33]

Other facilities are located further afield are detailed in the LP Social Infrastructure Assessment, including the Scott Memorial Park Pavilion and Catherine Field Community Hall. These facilities have been designed to meet the needs of incremental growth in those locations, rather than any population growth envisaged in the Leppington Precinct.

B.2.5.2 Principles for sustainable community facilities

The approach for community facilities delivery will focus on providing expanded facilities and services that serve larger catchment areas, and provision of multifunctional community centres such as libraries within community hubs in preference to stand-alone facilities.

The focus for social infrastructure within the Leppington Precinct is on co-location and multi-use facilities.

This approach is able to take advantage of economies of scale, capitalise on new and varied sources of funding and be more resilient and flexible to changing community needs. This provision model is characterised by the following:

- Stand-alone facilities: the establishment of dedicated facilities serving a single or multiple community purpose.
- Co-located facilities: the joint location of service providers within a facility, usually without integration of services.
- Integrated service centres or nodes: the joint location of service providers within a facility.
- Hub: a collection of facilities clustered together on the same or adjoining sites.

Community facilities demand assessment based on forecast demographics

The anticipated size and characteristics of the resident population in the Leppington Precinct is discussed in section B.1.4 of this plan.

Various standards of provision for local and district community facilities have been adopted by the DPE, Camden Council, Liverpool City Council, Hills Shire Council, and Queensland and Victorian Government agencies.

These standards have been used to arrive at the recommended facility benchmarks for the Leppington Precinct development (refer **Table B9**).

[33] LP Social Infrastructure Assessment, page 74

Table B9 Community facility provision benchmarks adopted for Leppington Precinct

Facility type	Planning standard for Leppington Precinct
Branch library	1 facility for every 33,000 people
Local multi-purpose community centre	1 centre for every 6,000 people
District multi-purpose community centres	1 centre for every 20,000 people
Youth centre	1 centre for every 20,000 people
Regional community centre	1 centre for every 50,000 people

Sources: LP Social Infrastructure Assessment Table 48

B.2.5.3 Facilities addressed by this plan

Leppington Precinct

The LP Social Infrastructure Assessment recommended that the following public community facilities be provided in the Leppington Precinct to meet the needs of the expected development:

- Three primary schools
- One P-12 school
- One community health care centre combined with one maternal and child health care centre
- Two local community centres
- One district level multi-purpose community centre
- One youth centre.

Only the land for local community centres, the district level multi-purpose community centre and the youth centre will be provided using funds collected under this plan. The other facilities will be provided by other levels of government.

Details of the specification for each of the proposed facilities to be funded by section 7.11 contributions are included in Tables 54, 55 and 56 of the LP Social Infrastructure Assessment.

It is noted that the LP Social Infrastructure Assessment:

- Recommended 3 local community centres. Council has reviewed this finding and found that provision of 2 larger centres would better address the needs of the population of the Leppington Precinct development.
- Recommended provision of a branch library. Council does not support the provision of a branch library within the Leppington Precinct. As technology continues to increase in importance, the Australian Library and Information Association predicts by 2020, 50% of all interactions with clients will be on-line. As a result, the demand for smaller branch libraries is predicted to become less. Council intends to focus its library services on larger, better resourced facilities. It is more appropriate for residents of the Leppington Precinct to be serviced by a central library facility located in the Leppington Major Centre.

Leppington Major Centre

The Leppington North Precinct will be a focus of many services and facilities centred on the Leppington Major Centre. This centre will need to provide a range of community facilities to cater for both the local area residents and the large regional catchment of Priority Growth Area residents.

The LP Social Infrastructure Assessment concluded that it would be reasonable for Leppington Precinct development to contribute proposed district and regional level facilities in the Leppington Major Centre.

These facilities were identified in the planning for the adjoining Leppington North Precinct (refer section A.2.5.5 of this Technical Document), and include the provision of a multi-purpose community centre of 2,500 square metres floor area, a central library of about 4,500 square metres floor area, and a performing arts cultural facility with floor area of about 5,000 square metres.

At the time this plan was prepared, Council envisaged that these facilities will be provided in a consolidated manner on a site in the Leppington Major Centre. They will be of a size that will enable them to serve a population catchment of 120,000 in the north-eastern part of the South West Priority Growth Area.

This plan includes provision for the land and works associated with these facilities, but acknowledges that the demands for the facilities are spread over a catchment (120,000 residents). This plan therefore authorises contributions that are commensurate with the Leppington Precinct's level of demand for the particular district and regional facilities, i.e.:

25,919 persons / 120,000 persons = 21.6% (i.e. the apportionment factor of 21.6%).

B.2.5.4 Location and staging matters

The LP Social Infrastructure Assessment identified that the majority of community needs are required in the medium to long term, from 2021 onwards. Those facilities required at or before 2021 should be viewed as priority needs that should be provided in a timely manner community needs.

It is envisaged that the Leppington Precinct district level community centre and youth centre will be co- located, allowing for cross-utilisation of some facilities (meeting rooms, equipment), and shared costs in building, landscaping and parking.

Location and staging of the Leppington Major Centre facilities is discussed in section A.2.5.6 of the Technical Document.

B.3 Works schedules

LEPPINGTON PRECINCT LAND AND WORKS SUMMARY SCHEDULE

Item No.	Description	Land area in ha (where applicable)	Land cost	Works cost	Total cost	Demand	Cont rate $	Staging / priority
Open space and recreation						**Persons**		
Essential works								
LP1	Local Park	1.8637	$ 4,171,660	$ 1,570,127	$ 5,741,787	25919	$ 221.52	All open space and recreation facilities land to be dedicated / acquired as and when surrounding development occurs
LP2	Local Park	0.3484	$ 684,240	$ 316,084	$ 1,000,324	25919	$ 38.59	
LP3	Local Park	0.9926	$ 2,653,363	$ 964,791	$ 3,618,154	25919	$ 139.59	
LP4	Local Park	1.8713	$ 4,019,749	$ 1,691,994	$ 5,711,743	25919	$ 220.37	
LP5	Local Park	1.0538	$ 3,161,283	$ 1,015,423	$ 4,176,706	25919	$ 161.14	
LP6	Local Park	2.3989	$ 5,078,100	$ 2,128,643	$ 7,206,743	25919	$ 278.04	
LP7	Local Park	0.6989	$ 2,096,736	$ 606,163	$ 2,702,899	25919	$ 104.28	
LP8	Local Park	0.9889	$ 2,887,280	$ 846,154	$ 3,733,434	25919	$ 144.04	
LP9	Local Park	0.8644	$ 2,593,236	$ 858,720	$ 3,451,956	25919	$ 133.18	
LP10	Local Park	1.2702	$ 2,705,325	$ 1,194,550	$ 3,899,875	25919	$ 150.46	
LP11	Local Park	1.2148	$ 3,624,820	$ 1,033,106	$ 4,657,926	25919	$ 179.71	
LP15	Local Park	1.9103	$ 5,730,900	$ 1,724,284	$ 7,455,184	25919	$ 287.63	
LP16	Local Park	1.3279	$ 3,983,751	$ 1,126,720	$ 5,110,471	25919	$ 197.17	
LP17	Local Park	0.7639	$ 2,291,703	$ 659,947	$ 2,951,650	25919	$ 113.88	
LP18	Local Park	0.7271	$ 1,581,360	$ 629,491	$ 2,210,851	25919	$ 85.30	
LP19	Local Park	1.7171	$ 4,318,728	$ 1,448,774	$ 5,767,502	25919	$ 222.52	
LP20	Local Park	2.0452	$ 6,129,880	$ 1,720,334	$ 7,850,214	25919	$ 302.87	
LP21	Local Park	0.3888	$ 1,166,394	$ 349,517	$ 1,515,911	25919	$ 58.49	
CP1	Channel Park	0.1536	$ 437,700	$ 123,622	$ 561,322	25919	$ 21.66	
CP4	Channel Park	1.5591	$ 3,477,150	$ 1,254,810	$ 4,731,960	25919	$ 182.56	
CP5	Channel Park	0.2760	$ 571,930	$ 222,117	$ 794,047	25919	$ 30.64	
CP6	Channel Park	0.7544	$ 1,686,635	$ 607,184	$ 2,293,819	25919	$ 88.50	
CP7	Channel Park	1.9521	$ 3,179,230	$ 1,571,108	$ 4,750,338	25919	$ 183.27	
CP9	Channel Park	0.7045	$ 1,318,689	$ 567,029	$ 1,885,718	25919	$ 72.75	
CP10	Channel Park	0.5008	$ 503,592	$ 403,070	$ 906,662	25919	$ 34.98	
CP11	Channel Park	0.4609	$ 872,252	$ 370,909	$ 1,243,161	25919	$ 47.96	
CP12	Channel Park	0.9972	$ 2,193,921	$ 802,558	$ 2,996,479	25919	$ 115.61	
CP13	Channel Park	0.1989	$ 364,958	$ 160,118	$ 525,076	25919	$ 20.26	
CP14	Channel Park	0.4287	$ 708,392	$ 345,037	$ 1,053,429	25919	$ 40.64	
CP15	Channel Park	0.6385	$ 1,419,414	$ 513,891	$ 1,933,305	25919	$ 74.59	
LS1	Sportsfield	5.1430	$ 13,898,020	$ 4,450,083	$ 18,348,103	25919	$ 707.89	
LS2	Sportsfield	5.1344	$ 14,150,080	$ 4,442,752	$ 18,592,832	25919	$ 717.33	
LS3	Sportsfield	2.5670	$ 7,487,380	$ 5,197,697	$ 12,685,077	25919	$ 489.41	
LS4	Sportsfield	7.3287	$ 21,502,320	$ 6,313,321	$ 27,815,641	25919	$ 1,073.16	
DP1	District Park	4.0015	$ 9,166,660	$ 4,618,473	$ 13,785,133	25919	$ 531.85	
DS1	District Active Open Space - Rossmore Precinct	4.3199	$ 12,959,690	$ 2,996,638	$ 15,956,328	25919	$ 615.61	
PM1	Preparation of Plan of Management for all reserves			$ -	$ -	25919	$ -	
	Contingency		$ 18,573,182	$ 3,071,333	$ 21,644,516	25919	$ 835.07	
	Total		**$ 173,349,703**	**$ 57,916,573**	**$ 231,266,276**		**$ 8,922.52**	
Non essential works								
LP1	Proposed Dog Off Leash		$ -	$ 95,025	$ 95,025	25919	$ 3.67	
LP14	Proposed Dog Off Leash		$ -	$ 95,025	$ 95,025	25919	$ 3.67	
LP13	Skate Park		$ -	$ 536,537	$ 536,537	25919	$ 20.70	
	Construction contingency		$ -	$ 3,071,333	$ 3,071,333	25919	$ 118.50	
	Total		**$ -**	**$ 3,797,922**	**$ 3,797,922**		**$ 146.53**	
Community and cultural						**Persons**		
Essential works								
CF1	Local Community Facility	0.4351	$ 1,305,385	$ -	$ 1,305,385	25919	$ 50.36	
CF2	Local Community Facility	0.4223	$ 1,154,920	$ -	$ 1,154,920	25919	$ 44.56	
CF3	Local Community Facility	1.0173	$ 2,840,700	$ -	$ 2,840,700	25919	$ 109.60	
RCF1	Regional Community Facility apportionment of total area and cost (21.6%) Total Area - 2.3323ha Total Land Cost - $5,597,520	0.5038	$ 1,511,294	$ -	$ 1,511,294	25919	$ 58.31	
	Contingency		$ 817,476	$ -	$ 817,476	25919	$ 31.54	
	Total		**$ 7,629,775**	**$ -**	**$ 7,629,775**		**$ 294.37**	
Non essential works								
CF1	Local Community Hall Facility		$ -	$ 2,306,473	$ 2,306,473	25919	$ 88.99	As land affected by acquisition is developed or as required to service development.
CF2	Local Community Hall Facility		$ -	$ 2,486,821	$ 2,486,821	25919	$ 95.94	
CF3	Multi-purpose Community Centre and Youth Centre		$ -	$ 6,998,886	$ 6,998,886	25919	$ 270.03	
PA1	Local Community Facility public art		$ -	$ 353,765	$ 353,765	25919	$ 13.65	
RCF1	Regional Community Facility apportionment of total cost (21.6%) Total Construction Cost - $60,593,027		$ -	$ 16,599,210	$ 16,599,210	25919	$ 640.42	In stages as part of development in Leppington North Precinct
	Contingency		$ -	$ 1,609,729	$ 1,609,729	25919	$ 62.11	As required
	Total		**$ -**	**$ 30,354,884**	**$ 30,354,884**		**$ 1,171.13**	
Traffic and transport management						**NDA (ha)**		
Essential works								
LR1	Local Road	0.0265	$ 79,350	$ 73,387	$ 152,737	436.67	$ 349.78	At same time as LP1
LR2	Local Road	0.2016	$ 584,780	$ 421,976	$ 1,006,756	436.67	$ 2,305.54	At same time as LP1
LR3	Local Road	0.0388	$ 110,860	$ 119,254	$ 230,114	436.67	$ 526.98	As and when surrounding development proceeds
LR4	Local Road	0.0280	$ 84,000	$ 64,214	$ 148,214	436.67	$ 339.42	At same time as LP3
LR5	Local Road	0.0979	$ 293,700	$ 220,162	$ 513,862	436.67	$ 1,176.78	At same time as LP10
LR6	Local Road	0.0375	$ 112,500	$ 100,907	$ 213,407	436.67	$ 488.72	At same time as B19
LR7	Local Road	0.0775	$ 232,350	$ 183,468	$ 415,818	436.67	$ 952.25	At same time as LP5
LR8	Local Road	0.2574	$ 768,570	$ 614,618	$ 1,383,188	436.67	$ 3,167.59	At same time as School site is developed
LR9	Local Road	0.1188	$ 356,400	$ 262,296	$ 618,696	436.67	$ 1,416.86	At same time as LP17
LR10	Local Road	0.0658	$ 197,400	$ 213,116	$ 410,516	436.67	$ 940.11	At same time as LP16
LR11	Local Road	0.1132	$ 339,450	$ 302,722	$ 642,172	436.67	$ 1,470.62	At same time as LP15
LR12	Local Road	0.1680	$ 504,000	$ 385,283	$ 889,283	436.67	$ 2,036.52	At same time as School and LP6 is developed
LRC1	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC2	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC4	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC5	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC6	Local Road Crossing	0.0720	$ 57,600	$ 597,897	$ 655,497	436.67	$ 1,501.13	As and when surrounding development proceeds
LRC7	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC8	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC9	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC12	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC13	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC14	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC16	Local Road Crossing	0.0540	$ 43,200	$ 463,739	$ 506,939	436.67	$ 1,160.92	As and when surrounding development proceeds
LRC17	Local Road Crossing		$ -	$ 663,471	$ 663,471	436.67	$ 1,519.39	As and when surrounding development proceeds
LRC18	Local Road Crossing		$ -	$ 663,471	$ 663,471	436.67	$ 1,519.39	As and when surrounding development proceeds
CR1	CR1 Byron Road Upgrade (Ingleburn Road to Heath Road)		$ -	$ 4,769,125	$ 4,769,125	436.67	$ 10,921.62	As and when surrounding development proceeds

Item No.	Description	Land area in ha (where applicable)	Land cost	Works cost	Total cost	Demand	Cont rate $	Staging / priority
CR2	CR2 Heath Road Upgrade (CVW to Eastwood Road)		$ -	$ 14,333,458	$ 14,333,458	436.67	$ 32,824.59	As and when surrounding development proceeds
CR3	CR3 Philip Road Upgrade (George Road to Eastwood Road)		$ -	$ 3,329,788	$ 3,329,788	436.67	$ 7,625.44	As and when surrounding development proceeds
CR4	CR4 Joseph Road Upgrade (George Road to Eastwood Road)		$ -	$ 4,769,125	$ 4,769,125	436.67	$ 10,921.62	As and when surrounding development proceeds
CR5	CR5 Park Road Upgrade (CVW to Rickard Road)		$ -	$ 3,700,632	$ 3,700,632	436.67	$ 8,474.70	As and when surrounding development proceeds
CR6	CR6 Woolgen Park Road Upgrade (George Road to Rickard Road)		$ -	$ 5,212,158	$ 5,212,158	436.67	$ 11,936.20	As and when surrounding development proceeds
CR7	CR7 Hulls Road Upgrade (George Road to Dwyer Road)		$ -	$ 2,497,117	$ 2,497,117	436.67	$ 5,718.57	As and when surrounding development proceeds
CR8	CR8 George Road Upgrade (CVW to Precinct Boundary)		$ -	$ 1,774,565	$ 1,774,565	436.67	$ 4,063.87	As and when surrounding development proceeds
CR9	CR9 Dickson Road Upgrade (Ingleburn Road to Heath Road)		$ -	$ 4,813,906	$ 4,813,906	436.67	$ 11,024.17	As and when surrounding development proceeds
CR10	CR10 George Road Upgrade (Philip Road to Precinct Boundary)		$ -	$ 4,535,631	$ 4,535,631	436.67	$ 10,386.90	As and when surrounding development proceeds
CR11	CR11 Ridge Square Upgrade (CR16 to Rickard Road)		$ -	$ 2,918,809	$ 2,918,809	436.67	$ 6,684.27	As and when surrounding development proceeds
CR12	CR12 Dwyer Road Upgrade (CVW to Precinct Boundary)		$ -	$ 1,693,105	$ 1,693,105	436.67	$ 3,877.33	As and when surrounding development proceeds
CR13	CR13 New Road (CVW to CR16)	1.2134	$ 3,640,200	$ 2,417,731	$ 6,057,931	436.67	$ 13,873.07	As and when surrounding development proceeds
CR14	CR14 Heath Road Extension (Eastwood Road to Precinct Bou	0.6518	$ 1,648,500	$ 1,325,852	$ 2,974,352	436.67	$ 6,811.47	As and when surrounding development proceeds
CR15	CR15 Dickson Road Extension (Heath Road to Philip Road)	0.9606	$ 2,204,280	$ 1,852,294	$ 4,056,574	436.67	$ 9,289.83	As and when surrounding development proceeds
CR16	New Road (Woolgen Park Road to Park Road)	0.9052	$ 2,714,060	$ 1,540,329	$ 4,254,389	436.67	$ 9,742.84	As and when surrounding development proceeds
CRC1	Heath Road Kemps Creek Crossing		$ -	$ 466,749	$ 466,749	436.67	$ 1,068.89	As and when surrounding development proceeds
CRC2	Dickson Road Extension Kemps Creek Crossing		$ -	$ 466,749	$ 466,749	436.67	$ 1,068.89	As and when surrounding development proceeds
CRC3	Georges Road C8 Channel Crossing		$ -	$ 466,749	$ 466,749	436.67	$ 1,068.89	As and when surrounding development proceeds
CRC4	Woolgen Road C14 Channel Crossing		$ -	$ 466,749	$ 466,749	436.67	$ 1,068.89	As and when surrounding development proceeds
CRC5	Georges Road C16 Channel Crossing		$ -	$ 466,749	$ 466,749	436.67	$ 1,068.89	As and when surrounding development proceeds
CRC6	Heath Road C20 Channel Crossing		$ -	$ 365,378	$ 365,378	436.67	$ 836.74	As and when surrounding development proceeds
CRC7	Heath Road Bonds Creek Crossing		$ -	$ 365,378	$ 365,378	436.67	$ 836.74	As and when surrounding development proceeds
CRC8	Park Road C31 Channel Crossing		$ -	$ 365,378	$ 365,378	436.67	$ 836.74	As and when surrounding development proceeds
CRC9	Park Road Bonds Creek Crossing		$ -	$ 365,378	$ 365,378	436.67	$ 836.74	As and when surrounding development proceeds
CRC10	Heath Road C39 Channel Crossing		$ -	$ 365,378	$ 365,378	436.67	$ 836.74	As and when surrounding development proceeds
RB1	Roundabout - Cordeaux Street and Heath Road extension	0.0476	$ 142,800	$ 484,896	$ 627,696	436.67	$ 1,437.47	As part of delivery of CR14
RB2	Roundabout - Dickson Road and Heath Road	0.0476	$ 142,800	$ 484,896	$ 627,696	436.67	$ 1,437.47	As and when surrounding development proceeds
RB3	Roundabout - Byron Road and Heath Road	0.0476	$ 142,800	$ 484,896	$ 627,696	436.67	$ 1,437.47	As and when surrounding development proceeds
RB4	Roundabout - Philip Road and George Road	0.0476	$ 142,800	$ 484,896	$ 627,696	436.67	$ 1,437.47	As and when surrounding development proceeds
RB5	Roundabout - Joseph Road and George Road	0.0476	$ 142,800	$ 484,896	$ 627,696	436.67	$ 1,437.47	As and when surrounding development proceeds
RB6	Roundabout - Ridge Square north east	0.0583	$ 174,900	$ 484,896	$ 659,796	436.67	$ 1,510.98	As and when surrounding development proceeds
RB7	Roundabout - Ridge Square and Park Road	0.0583	$ 174,900	$ 484,896	$ 659,796	436.67	$ 1,510.98	As and when surrounding development proceeds
RB8	Roundabout - CR13 and CR16	0.0583	$ 174,900	$ 484,896	$ 659,796	436.67	$ 1,510.98	As and when surrounding development proceeds
RB9	Roundabout - Woolgen Road and CR16	0.0583	$ 174,900	$ 484,896	$ 659,796	436.67	$ 1,510.98	As and when surrounding development proceeds
RB10	Roundabout - George Road and Hulls Road	0.0583	$ 174,900	$ 484,896	$ 659,796	436.67	$ 1,510.98	As and when surrounding development proceeds
RB11	Roundabout - George Road and Woolgen Road	0.0583	$ 174,900	$ 484,896	$ 659,796	436.67	$ 1,510.98	As and when surrounding development proceeds
RB12	Roundabout - Hulls Road and Dwyer Road	0.0583	$ 174,900	$ 484,896	$ 659,796	436.67	$ 1,510.98	As and when surrounding development proceeds
BS	Bus Shelters (27 in total) location subject to detailed route determination)		$ -	$ 748,125	$ 748,125	436.67	$ 1,713.26	As and when surrounding development proceeds and
SPKC	Shared Pathways Kemps Creek		$ -	$ 812,028	$ 812,028	436.67	$ 1,859.60	As and when surrounding development proceeds
SPC01	Kemps Creek - Shared Pathway Crossing No 1		$ -	$ 479,232	$ 479,232	436.67	$ 1,097.47	As and when surrounding development proceeds
SPC02	Kemps Creek - Shared Pathway Crossing No 2		$ -	$ 479,232	$ 479,232	436.67	$ 1,097.47	As and when surrounding development proceeds
SPC03	Kemps Creek - Shared Pathway Crossing No 3		$ -	$ 589,805	$ 589,805	436.67	$ 1,350.69	As and when surrounding development proceeds
SPC04	Kemps Creek - Shared Pathway Crossing No 4		$ -	$ 866,237	$ 866,237	436.67	$ 1,983.74	As and when surrounding development proceeds
SPC05	Kemps Creek - Shared Pathway Crossing No 5		$ -	$ 589,805	$ 589,805	436.67	$ 1,350.69	As and when surrounding development proceeds
SPC06	Kemps Creek - Shared Pathway Crossing No 6		$ -	$ 589,805	$ 589,805	436.67	$ 1,350.69	As and when surrounding development proceeds
SPC07	Kemps Creek - Shared Pathway Crossing No 7		$ -	$ 810,950	$ 810,950	436.67	$ 1,857.13	As and when surrounding development proceeds
SPC12	Kemps Creek - Shared Pathway Crossing No 12		$ -	$ 479,232	$ 479,232	436.67	$ 1,097.47	As and when surrounding development proceeds
SPC13	Kemps Creek - Shared Pathway Crossing No 13		$ -	$ 479,232	$ 479,232	436.67	$ 1,097.47	As and when surrounding development proceeds
SPC14	Kemps Creek - Shared Pathway Crossing No 14		$ -	$ 645,091	$ 645,091	436.67	$ 1,477.30	As and when surrounding development proceeds
SPC15	Kemps Creek - Shared Pathway Crossing No 15		$ -	$ 921,523	$ 921,523	436.67	$ 2,110.35	As and when surrounding development proceeds
SPSC	Shared Pathways Scalabrini Creek		$ -	$ 734,098	$ 734,098	436.67	$ 1,681.13	As and when surrounding development proceeds
SPC08	Scalabrini Creek - Shared Pathway Crossing No 8		$ -	$ 976,810	$ 976,810	436.67	$ 2,236.96	As and when surrounding development proceeds
SPC09	Scalabrini Creek - Shared Pathway Crossing No 9		$ -	$ 866,237	$ 866,237	436.67	$ 1,983.74	As and when surrounding development proceeds
SPC10	Scalabrini Creek - Shared Pathway Crossing No 10		$ -	$ 589,805	$ 589,805	436.67	$ 1,350.69	As and when surrounding development proceeds
SPC11	Scalabrini Creek - Shared Pathway Crossing No 11		$ -	$ 976,810	$ 976,810	436.67	$ 2,236.96	As and when surrounding development proceeds
SPC16	Scalabrini Creek - Shared Pathway Crossing No 16		$ -	$ 866,237	$ 866,237	436.67	$ 1,983.74	As and when surrounding development proceeds
PC1	Pedestrian Crossing Heath Road - Kemps Creek		$ -	$ 35,839	$ 35,839	436.67	$ 82.07	As and when surrounding development proceeds
PC2	Pedestrian Crossing Heath Road - Scalabrini Creek		$ -	$ 35,839	$ 35,839	436.67	$ 82.07	As and when surrounding development proceeds
PC3	Pedestrian Crossing Park Road - Scalabrini Creek		$ -	$ 35,839	$ 35,839	436.67	$ 82.07	As and when surrounding development proceeds
	Contingency		$ 1,960,980	$ 5,332,407	$ 7,293,387	436.67	$ 16,702.35	
	Total		**$ 18,302,480**	**$ 100,390,593**	**$ 118,693,073**		**$ 271,815.19**	

Water cycle management						**NDA**		
Essential works								
B1	Detention basin including Biofilter (1)	1.1099	$ 1,990,880	$ 1,388,084	$ 3,378,964	436.67	$ 7,738.06	
B2	Detention basin	3.4110	$ 4,760,380	$ 2,208,922	$ 6,969,302	436.67	$ 15,960.17	Eastwood Road upgrade to form basin bund
B3	Detention basin	2.7796	$ 3,589,970	$ 2,718,315	$ 6,308,285	436.67	$ 14,446.40	As adjoining development occurs
B4	Detention basin	3.0670	$ 5,630,540	$ 2,446,421	$ 8,076,961	436.67	$ 18,496.79	Dickson Road upgrade to form basin bund
B5	Detention basin	2.0489	$ 3,655,310	$ 1,257,604	$ 4,912,914	436.67	$ 11,250.91	As adjoining development occurs
B6	Detention basin	1.8117	$ 3,537,210	$ 2,064,143	$ 5,601,353	436.67	$ 12,827.48	As adjoining development occurs
B7	Detention basin	1.8193	$ 4,464,820	$ 2,072,802	$ 6,537,622	436.67	$ 14,971.60	As adjoining development occurs
B8	Detention basin	3.5967	$ 4,601,290	$ 3,159,434	$ 7,760,724	436.67	$ 17,772.58	Ingleburn Road upgrade to form basin bund
B9	Detention basin	2.7141	$ 4,599,770	$ 3,198,775	$ 7,798,545	436.67	$ 17,859.20	Rickard Road upgrade to form basin bund
B10	Detention basin	1.9940	$ 2,861,390	$ 1,467,471	$ 4,328,861	436.67	$ 9,913.38	As adjoining development occurs
B11	Detention basin	1.5046	$ 2,654,320	$ 1,006,835	$ 3,661,155	436.67	$ 8,384.29	As adjoining development occurs
B12	Detention basin including biofilter (25)	0.5619	$ 1,685,700	$ 584,944	$ 2,270,644	436.67	$ 5,199.93	As adjoining development occurs
B13	Detention basin including biofilter (26)	1.4112	$ 4,233,600	$ 1,194,596	$ 5,428,196	436.67	$ 12,430.94	As adjoining development occurs
B14	Detention basin including biofilter (48)	0.8653	$ 1,687,520	$ 1,208,280	$ 2,895,800	436.67	$ 6,631.58	As adjoining development occurs
B15	Detention basin including biofilter (49)	0.4260	$ 1,278,000	$ 369,319	$ 1,647,319	436.67	$ 3,772.47	As adjoining development occurs
B16	Detention basin including biofilter (50)	0.9004	$ 2,701,200	$ 1,076,525	$ 3,777,725	436.67	$ 8,651.25	As adjoining development occurs
B17	Detention basin including biofilter (51)	0.4413	$ 1,323,900	$ 677,599	$ 2,001,499	436.67	$ 4,583.57	As adjoining development occurs
B18	Detention basin including biofilter (52)	0.2779	$ 833,700	$ 440,468	$ 1,274,168	436.67	$ 2,917.93	Ingleburn Road upgrade to form basin bund
B19	Detention basin including biofilter (28)	0.5560	$ 1,626,200	$ 690,915	$ 2,317,115	436.67	$ 5,306.35	As adjoining development occurs
BF2	Biofilter outside Basin 2 footprint		$ -	$ 142,620	$ 142,620	436.67	$ 326.61	As adjoining development occurs
BF3	Biofilter outside Basin 2 footprint		$ -	$ 175,320	$ 175,320	436.67	$ 401.50	As adjoining development occurs
BF4	Biofilter outside Basin 2 footprint		$ -	$ 194,822	$ 194,822	436.67	$ 446.16	As adjoining development occurs
BF5	Biofilter in road reserve fronting Basin 11		$ -	$ 339,749	$ 339,749	436.67	$ 778.05	As adjoining development occurs
BF6	Biofilter outside Basin 3 footprint		$ -	$ 130,169	$ 130,169	436.67	$ 298.10	As adjoining development occurs
BF7	Biofilter outside Basin 3 footprint		$ -	$ 233,808	$ 233,808	436.67	$ 535.44	As adjoining development occurs
BF8	Biofilter in CP4 land		$ -	$ 335,261	$ 335,261	436.67	$ 767.77	As adjoining development occurs
BF9	Biofilter in CP4 land		$ -	$ 135,208	$ 135,208	436.67	$ 309.63	As adjoining development occurs
BF10	Biofilter in road reserve		$ -	$ 142,864	$ 142,864	436.67	$ 327.17	As adjoining development occurs
BF11	Biofilter in CP4 land		$ -	$ 102,299	$ 102,299	436.67	$ 234.27	As adjoining development occurs
BF12	Biofilter outside Basin 4 footprint		$ -	$ 110,034	$ 110,034	436.67	$ 251.99	As adjoining development occurs
BF13	Biofilter outside Basin 4 footprint		$ -	$ 212,699	$ 212,699	436.67	$ 487.10	As adjoining development occurs
BF14	Biofilter in C8 land		$ -	$ 274,038	$ 274,038	436.67	$ 627.56	As adjoining development occurs
BF15	Biofilter in CP6 land		$ -	$ 146,866	$ 146,866	436.67	$ 336.33	As adjoining development occurs
BF16	Biofilter in CP7 land		$ -	$ 145,183	$ 145,183	436.67	$ 332.48	As adjoining development occurs
BF17	Biofilter in C10 land		$ -	$ 91,355	$ 91,355	436.67	$ 209.21	As adjoining development occurs
BF18	Biofilter in CP7 land		$ -	$ 142,944	$ 142,944	436.67	$ 327.35	As adjoining development occurs
BF19	Biofilter in C11 land		$ -	$ 146,578	$ 146,578	436.67	$ 335.67	As adjoining development occurs

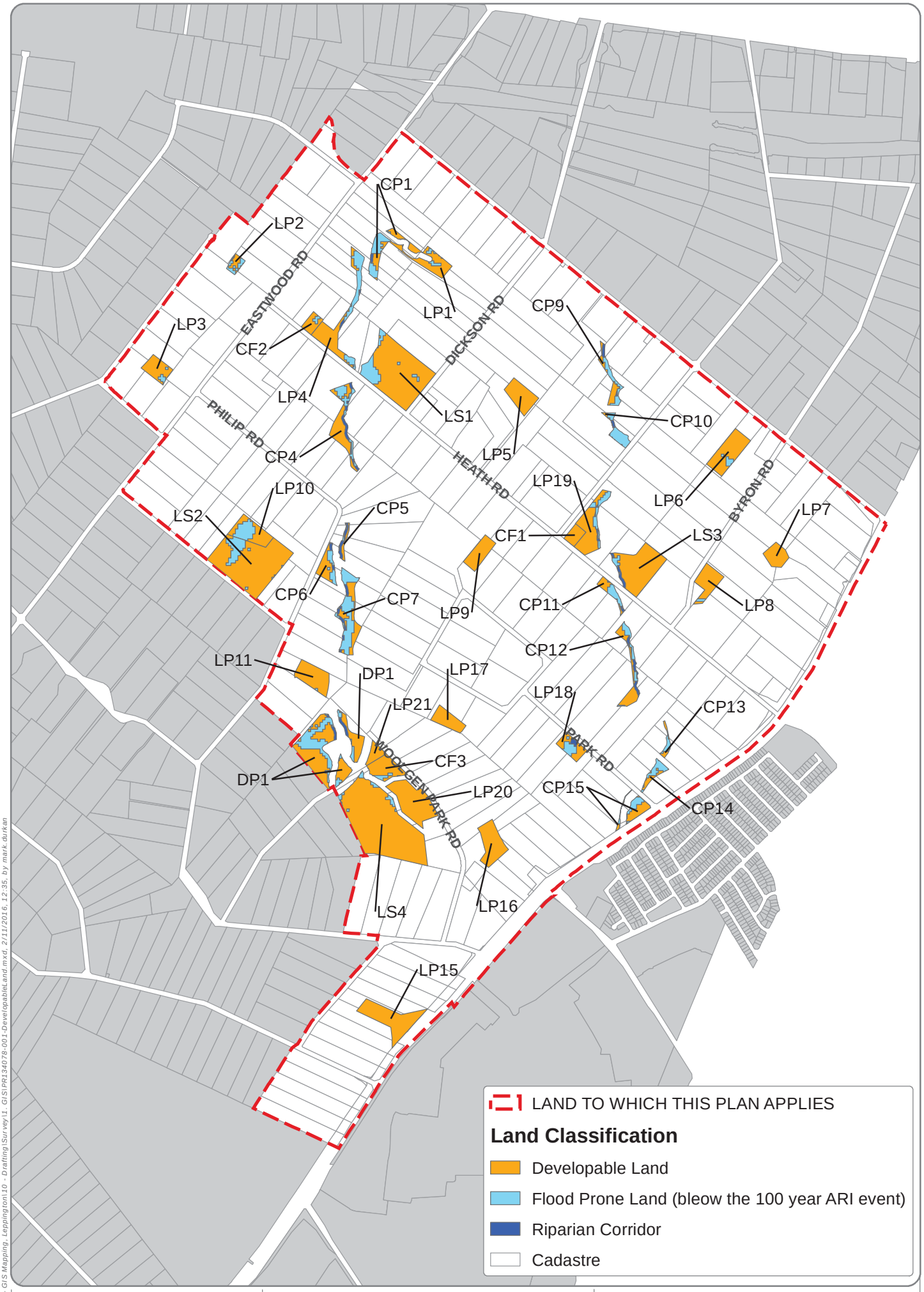
Item No.	Description	Land area in ha (where applicable)	Land cost	Works cost	Total cost	Demand	Cont rate $	Staging / priority
BF20	Biofilter inside road reserve fronting Basin 6		$ -	$ 159,634	$ 159,634	436.67	$ 365.57	As adjoining development occurs
BF21	Biofilter in DP1 land		$ -	$ 85,069	$ 85,069	436.67	$ 194.81	As adjoining development occurs
BF22	Biofilter in LP21 land		$ -	$ 334,723	$ 334,723	436.67	$ 766.54	As adjoining development occurs
BF23	Biofilter inside road reserve fronting Basin 7		$ -	$ 260,209	$ 260,209	436.67	$ 595.90	As adjoining development occurs
BF24	Biofilter inside road reserve fronting Basin 7		$ -	$ 110,115	$ 110,115	436.67	$ 252.17	As adjoining development occurs
BF27	Biofilter in C41 land		$ -	$ 145,165	$ 145,165	436.67	$ 332.44	As adjoining development occurs
BF29	Biofilter outside Basin 8 footprint		$ -	$ 168,777	$ 168,777	436.67	$ 386.51	As adjoining development occurs
BF30	Biofilter outside Basin 8 footprint		$ -	$ 196,295	$ 196,295	436.67	$ 449.53	As adjoining development occurs
BF31	Biofilter in CP9 land		$ -	$ 203,766	$ 203,766	436.67	$ 466.64	As adjoining development occurs
BF32	Biofilter in C20 land		$ -	$ 131,850	$ 131,850	436.67	$ 301.95	As adjoining development occurs
BF33	Biofilter in C20 land		$ -	$ 356,394	$ 356,394	436.67	$ 816.17	As adjoining development occurs
BF34	Biofilter outside Basin 9 footprint		$ -	$ 256,333	$ 256,333	436.67	$ 587.02	As adjoining development occurs
BF35	Biofilter in CP10 land		$ -	$ 148,223	$ 148,223	436.67	$ 339.44	As adjoining development occurs
BF36	Biofilter outside Basin 9 footprint		$ -	$ 192,052	$ 192,052	436.67	$ 439.81	As adjoining development occurs
BF37	Biofilter outside Basin 9 footprint		$ -	$ 244,183	$ 244,183	436.67	$ 559.20	As adjoining development occurs
BF38	Biofilter in LP19 land		$ -	$ 205,133	$ 205,133	436.67	$ 469.77	As adjoining development occurs
BF39	Biofilter in C25 land		$ -	$ 298,256	$ 298,256	436.67	$ 683.03	As adjoining development occurs
BF40	Biofilter in LS3 land		$ -	$ 274,903	$ 274,903	436.67	$ 629.55	As adjoining development occurs
BF41	Biofilter in C27 land		$ -	$ 355,110	$ 355,110	436.67	$ 813.23	As adjoining development occurs
BF42	Biofilter in C27 land		$ -	$ 220,454	$ 220,454	436.67	$ 504.86	As adjoining development occurs
BF43	Biofilter in CP12 land		$ -	$ 348,573	$ 348,573	436.67	$ 798.26	As adjoining development occurs
BF44	Biofilter outside Basin 10 footprint		$ -	$ 164,460	$ 164,460	436.67	$ 376.62	As adjoining development occurs
BF45	Biofilter outside Basin 10 footprint		$ -	$ 180,779	$ 180,779	436.67	$ 414.00	As adjoining development occurs
BF46	Biofilter in C30 land		$ -	$ 150,904	$ 150,904	436.67	$ 345.58	As adjoining development occurs
BF47	Biofilter in CP15 land		$ -	$ 230,514	$ 230,514	436.67	$ 527.89	As adjoining development occurs
BF53	Biofilter in CP1 land		$ -	$ 199,919	$ 199,919	436.67	$ 457.83	As adjoining development occurs
BF54	Biofilter in C27 land		$ -	$ 164,413	$ 164,413	436.67	$ 376.52	As adjoining development occurs
C1	Drainage Channel	0.1643	$ 173,450	$ 42,987	$ 216,437	436.67	$ 495.65	As adjoining development occurs
C2	Drainage Channel	0.5830	$ 725,380	$ 469,216	$ 1,194,596	436.67	$ 2,735.71	As adjoining development occurs
C3	Drainage Channel	0.8932	$ 730,450	$ 718,874	$ 1,449,324	436.67	$ 3,319.05	As adjoining development occurs
C4	Drainage Channel	1.9815	$ 2,462,500	$ 1,594,770	$ 4,057,270	436.67	$ 9,291.42	As adjoining development occurs
C5	Drainage Channel	1.1143	$ 3,308,360	$ 248,134	$ 3,556,494	436.67	$ 8,144.61	As adjoining development occurs
C6	Drainage Channel	1.0277	$ 2,280,100	$ 224,725	$ 2,504,825	436.67	$ 5,736.22	As adjoining development occurs
C7	Drainage Channel	0.2923	$ 757,880	$ 63,934	$ 821,814	436.67	$ 1,882.01	As adjoining development occurs
C8	Drainage Channel	0.7049	$ 1,781,400	$ 192,411	$ 1,973,811	436.67	$ 4,520.16	As adjoining development occurs
C9	Drainage Channel	0.3159	$ 947,700	$ 63,121	$ 1,010,821	436.67	$ 2,314.85	As adjoining development occurs
C10	Drainage Channel	2.1187	$ 2,164,690	$ 1,530,545	$ 3,695,235	436.67	$ 8,462.34	As adjoining development occurs
C11	Drainage Channel	0.8893	$ 2,251,880	$ 151,886	$ 2,403,766	436.67	$ 5,504.79	As adjoining development occurs
C12	Drainage Channel	0.9468	$ 1,949,090	$ 131,826	$ 2,080,916	436.67	$ 4,765.44	As adjoining development occurs
C13	Drainage Channel	0.5591	$ 607,610	$ 472,387	$ 1,079,997	436.67	$ 2,473.27	As adjoining development occurs
C14	Drainage Channel	1.9004	$ 1,036,280	$ 117,497	$ 1,153,777	436.67	$ 2,642.23	As adjoining development occurs
C15	Drainage Channel	0.3053	$ 624,894	$ 63,047	$ 687,941	436.67	$ 1,575.43	As adjoining development occurs
C16	Drainage Channel	0.3132	$ 773,437	$ 63,047	$ 836,484	436.67	$ 1,915.61	As adjoining development occurs
C17	Drainage Channel	0.1925	$ 559,460	$ 69,406	$ 628,866	436.67	$ 1,440.14	As adjoining development occurs
C18	Drainage Channel	0.2303	$ 691,032	$ 88,320	$ 779,352	436.67	$ 1,784.77	As adjoining development occurs
C19	Drainage Channel	0.1459	$ 437,613	$ 45,956	$ 483,569	436.67	$ 1,107.41	As adjoining development occurs
C20	Drainage Channel	1.8657	$ 2,606,470	$ 1,501,571	$ 4,108,041	436.67	$ 9,407.69	As adjoining development occurs
C21	Drainage Channel	0.5697	$ 1,682,260	$ 225,407	$ 1,907,667	436.67	$ 4,368.69	As adjoining development occurs
C22	Drainage Channel	0.7182	$ 2,026,560	$ 154,752	$ 2,181,312	436.67	$ 4,995.35	As adjoining development occurs
C23	Drainage Channel	0.2337	$ 701,100	$ 83,518	$ 784,618	436.67	$ 1,796.83	As adjoining development occurs
C24	Drainage Channel	0.3839	$ 1,062,600	$ 88,839	$ 1,151,439	436.67	$ 2,636.87	As adjoining development occurs
C25	Drainage Channel	0.1816	$ 320,180	$ 42,987	$ 363,167	436.67	$ 831.68	As adjoining development occurs
C26	Drainage Channel	0.3631	$ 889,320	$ 83,107	$ 972,427	436.67	$ 2,226.92	As adjoining development occurs
C27	Drainage Channel	1.5010	$ 1,868,890	$ 1,208,050	$ 3,076,940	436.67	$ 7,046.40	As adjoining development occurs
C28	Drainage Channel	0.5053	$ 1,250,800	$ 103,168	$ 1,353,968	436.67	$ 3,100.68	As adjoining development occurs
C29	Drainage Channel	0.6790	$ 1,679,940	$ 137,557	$ 1,817,497	436.67	$ 4,162.19	As adjoining development occurs
C30	Drainage Channel	0.9921	$ 1,148,917	$ 798,479	$ 1,947,396	436.67	$ 4,459.67	As adjoining development occurs
C31	Drainage Channel	0.7361	$ 979,826	$ 224,963	$ 1,204,789	436.67	$ 2,759.05	As adjoining development occurs
C32	Drainage Channel	0.2343	$ 683,102	$ 57,327	$ 740,428	436.67	$ 1,695.63	As adjoining development occurs
C33	Drainage Channel	0.1407	$ 422,100	$ 34,441	$ 456,541	436.67	$ 1,045.51	As adjoining development occurs
C34	Drainage Channel	0.4628	$ 427,354	$ 372,449	$ 799,803	436.67	$ 1,831.60	As adjoining development occurs
C37	Drainage Channel	0.1854	$ 556,241	$ 48,543	$ 604,783	436.67	$ 1,384.99	As adjoining development occurs
C38	Drainage Channel	0.2435	$ 730,385	$ 83,107	$ 813,493	436.67	$ 1,862.95	As adjoining development occurs
C39	Drainage Channel	0.1341	$ 402,239	$ 40,121	$ 442,359	436.67	$ 1,013.03	As adjoining development occurs
C40	Drainage Channel	0.1959	$ 587,723	$ 51,584	$ 639,306	436.67	$ 1,464.06	As adjoining development occurs
C41	Drainage Channel	0.1422	$ 426,500	$ 34,389	$ 460,889	436.67	$ 1,055.47	As adjoining development occurs
	Contingency		$ 12,958,258	$ 2,914,176	$ 15,872,433	436.67	$ 36,348.95	
	Fill contingency		$ -	$ -	$ -	436.67	$ -	
	Total		**$ 115,389,668**	**$ 52,860,097**	**$ 168,249,766**		**$ 385,303.38**	

Plan Administration						**NDA**		
Essential works								
	Plan Administration for 'essential Infrastructure'		$ -	$ 3,197,424	$ 3,197,424	436.67	$ 7,322.32	Progressively over the life of the Plan
Non Essential works								
	Plan Administration for 'non-essential infrastructure'		$ -	$ 466,935	$ 466,935	436.67	$ 1,069.31	Progressively over the life of the Plan

B.4 Works location maps

RPS

LEPPINGTON PRECINCT - OPEN SPACE & COMMUNITY FACILITIES ACQUISITION MAP



No.	Date	Revision Details	INI
A	02-11-2016	FIRST ISSUE	MD

DATE OF PLAN: 02-11-2016
GIS REF: PR134078-001-DevelopableLand

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Metres

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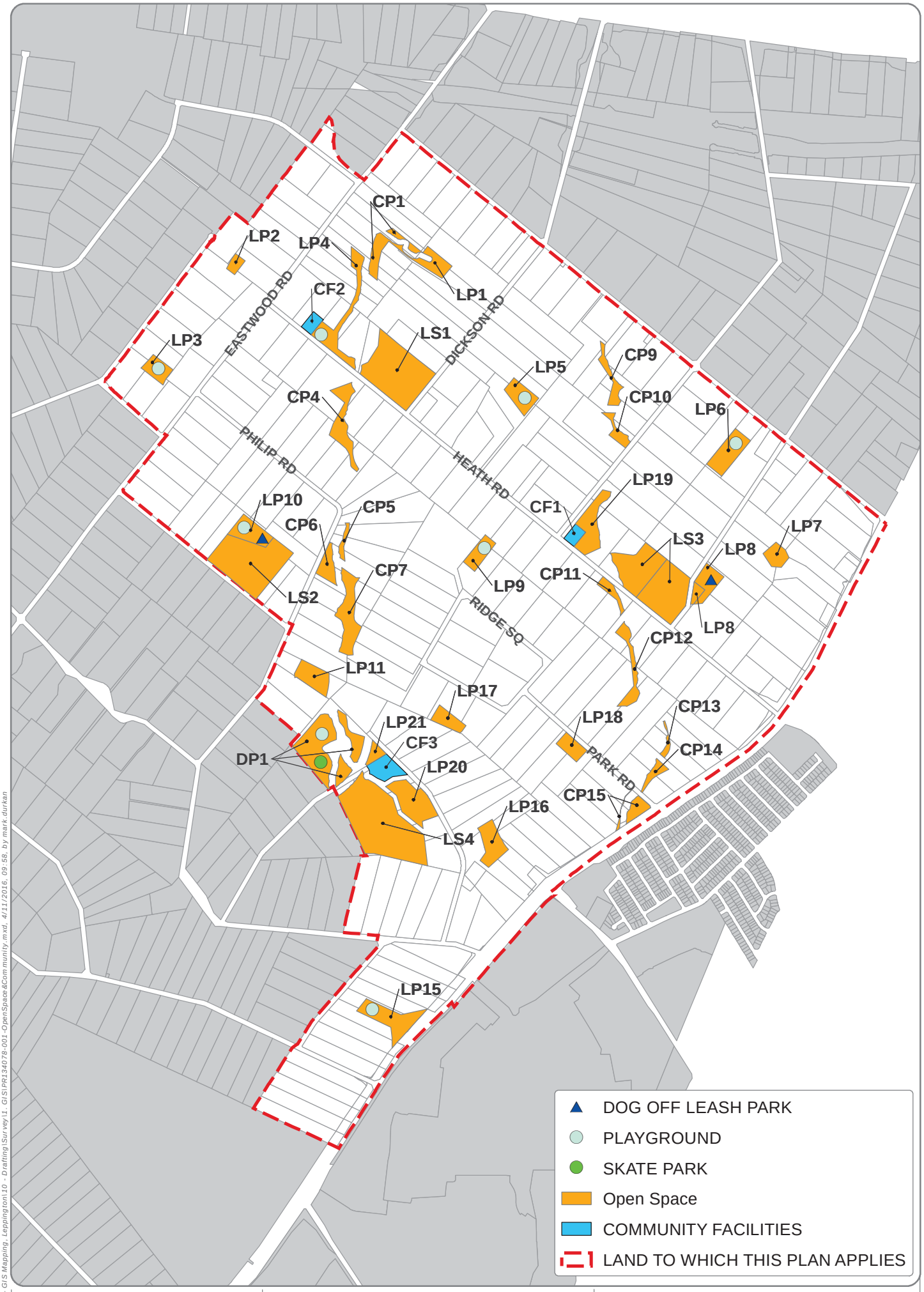
LEPPINGTON PRECINCT - OPEN SPACE & COMMUNITY FACILITIES WORKS MAP



No.	Date	Revision Details	INI
A	19-10-2016	FIRST ISSUE	HAK

DATE OF PLAN: 19-10-2016
GIS REF: PR134078-001-OpenSpace&Community

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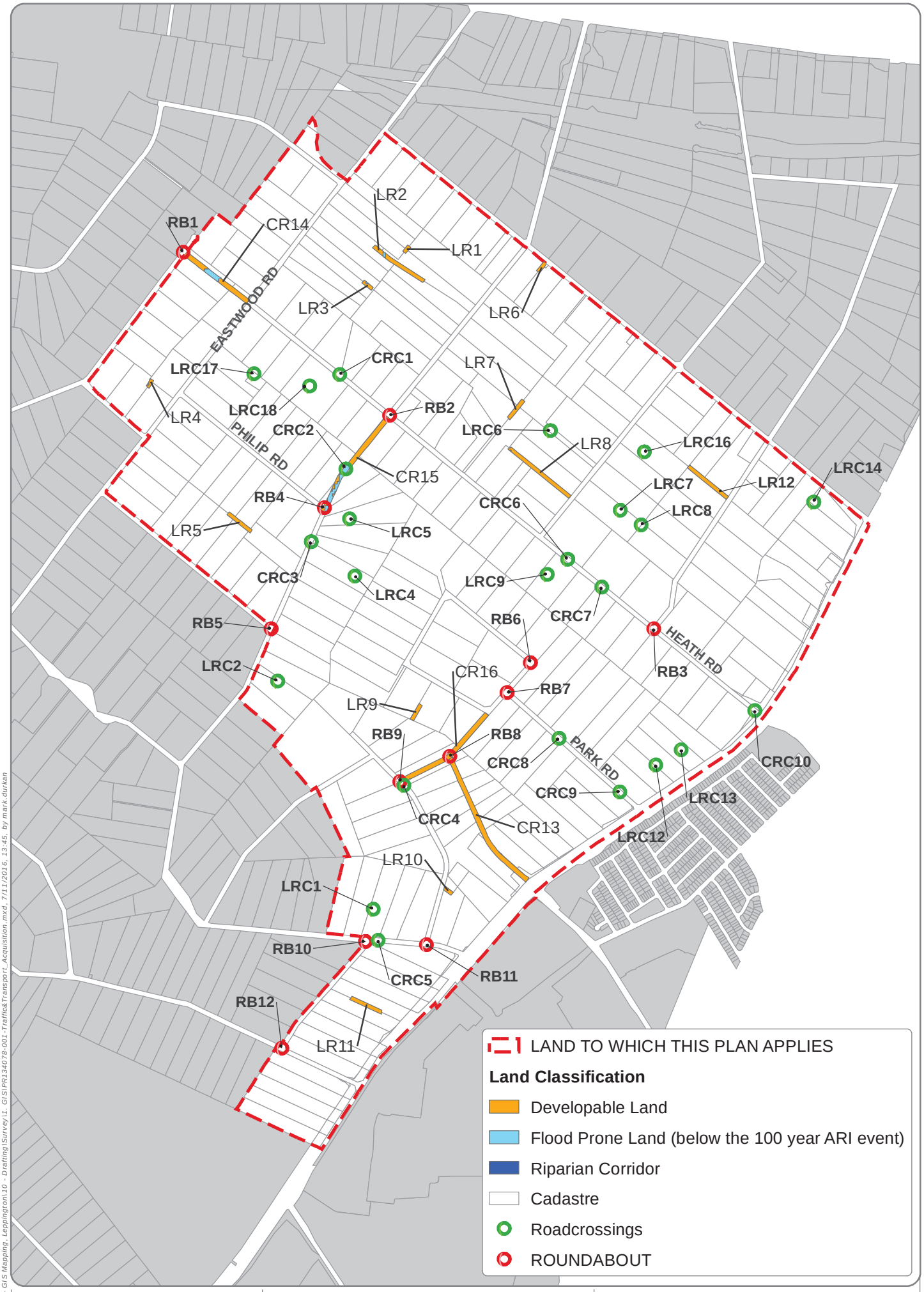
RPS

LEPPINGTON PRECINCT - TRAFFIC & TRANSPORT ACQUISITION MAP



No.	Date	Revision Details	IN
C	16-02-2017	POST EXHIBITION UPDATE	MC
B	04-11-2016	MULTIPLE CHANGES	MD
A	03-11-2016	FIRST ISSUE	MD

DATE OF PLAN: 04-11-2016

GIS REF: PR134078-001-Traffic&Transport_Acquisition

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Metres

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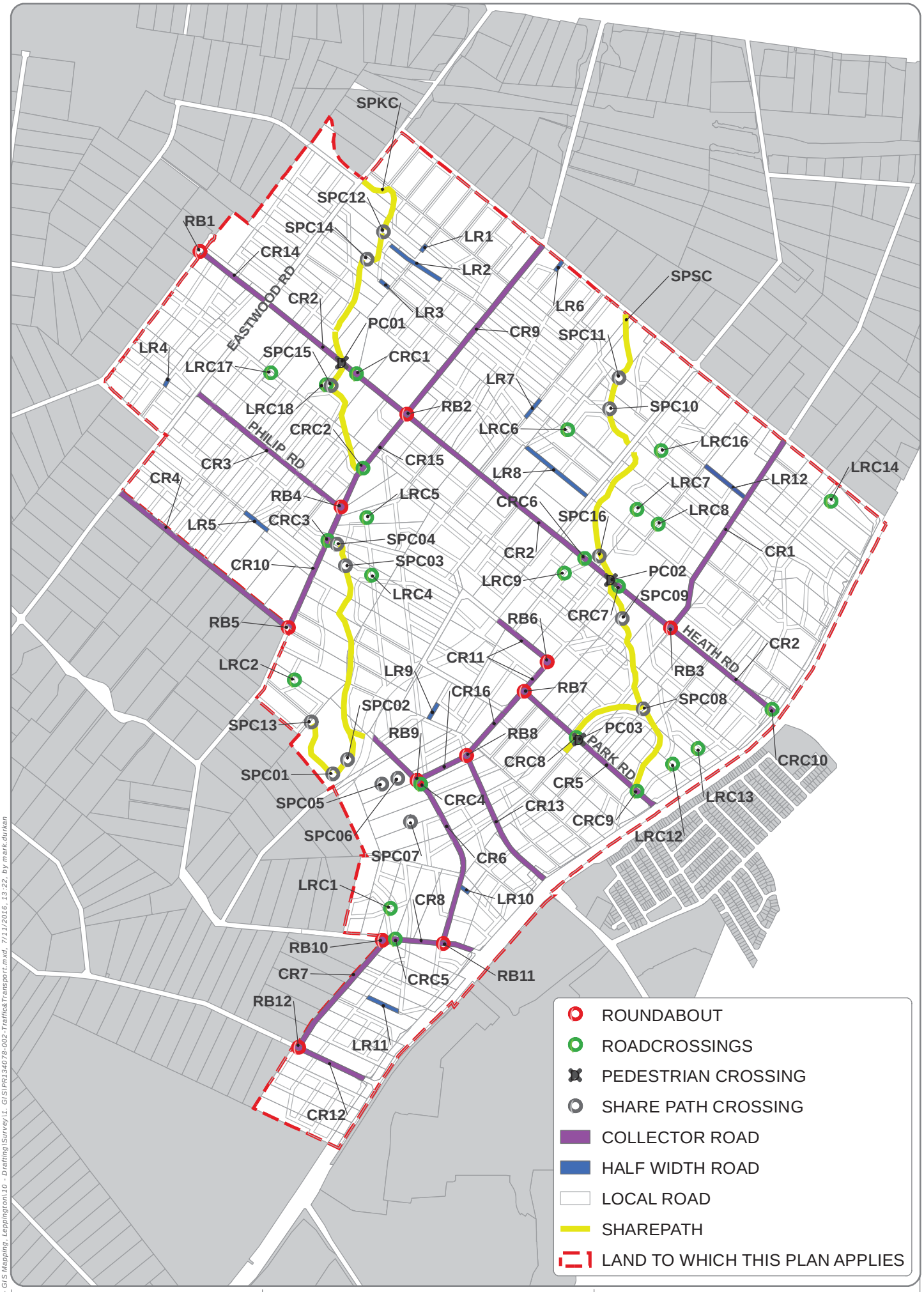
LEPPINGTON PRECINCT - TRAFFIC & TRANSPORT WORKS MAP



No.	Date	Revision Details	IN
B	16-02-2017	POST EXHIBITION UPDATE	MC
A	19-10-2016	FIRST ISSUE	HAK

DATE OF PLAN: 19-10-2016

GIS REF: PR134078-002-Traffic&Transport

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Metres

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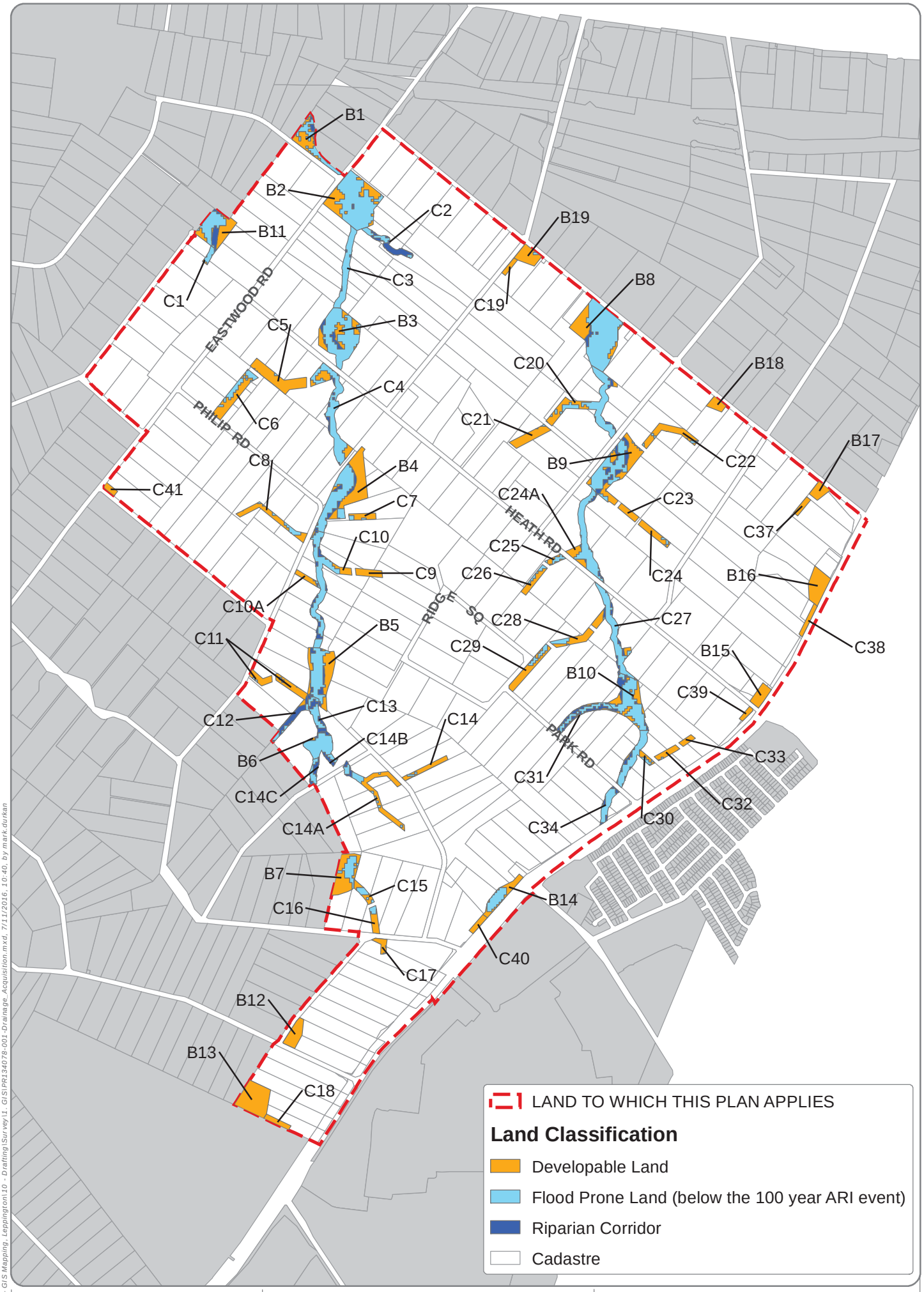
RPS

LEPPINGTON PRECINCT - DRAINAGE ACQUISITION MAP



No.	Date	Revision Details	INI
B	04-11-2016	MULTIPLE CHANGES	MD
A	02-11-2016	FIRST ISSUE	MD

DATE OF PLAN: 04-11-2016

GIS REF: PR134078-001-Drainage_Acquisition

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Metres

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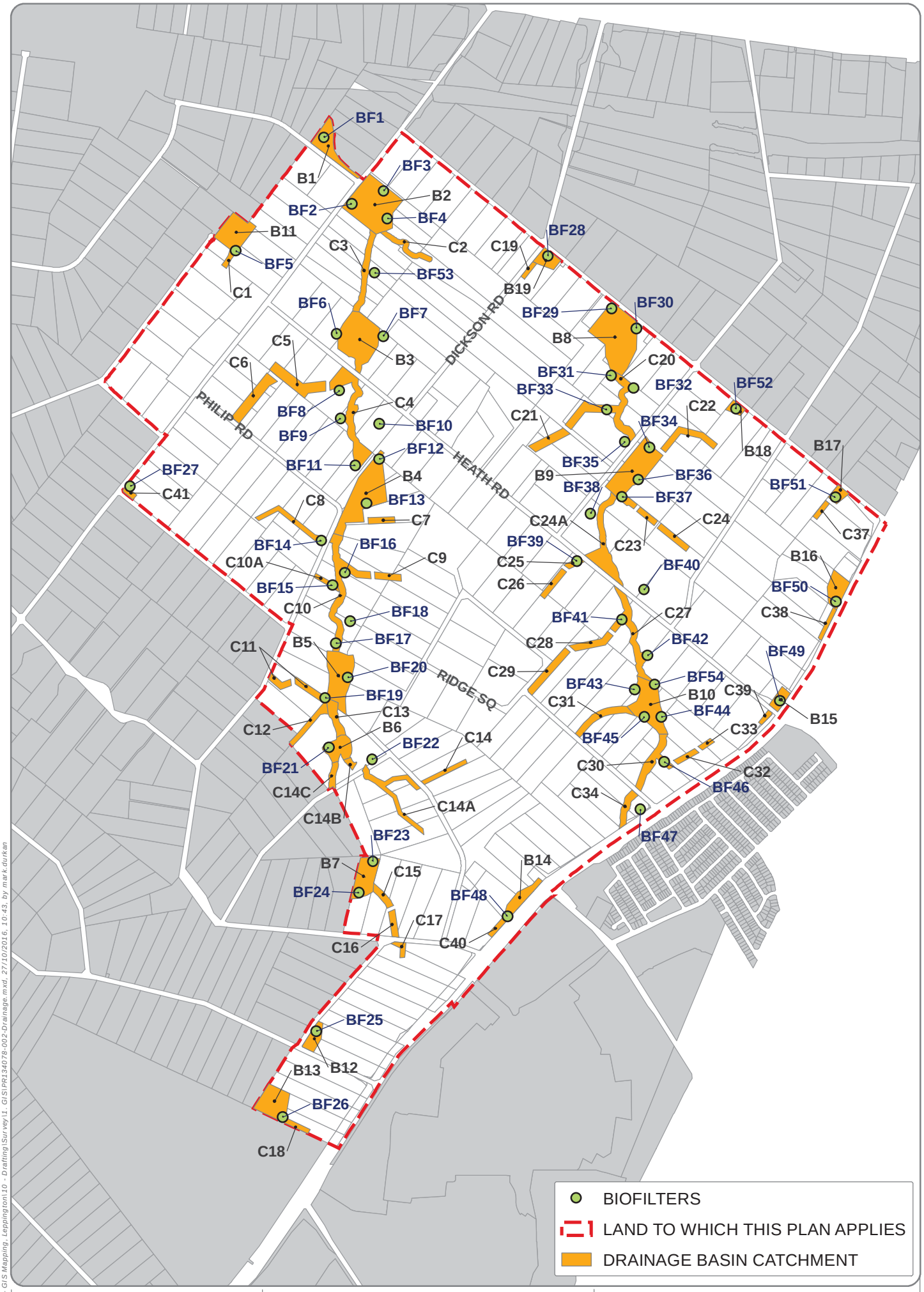
RPS

LEPPINGTON PRECINCT - DRAINAGE WORKS MAP



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No.	Date	Revision Details	INI
A	19-10-2016	FIRST ISSUE	HAK

DATE OF PLAN: 19-10-2016
GIS REF: PR134078-002-Drainage

1:20,000 @ A4

0 130 260 390 520 650 780

Metres

B.5 Background information

Leppington studies supporting infrastructure planning and costing

AECOM Australia Pty Ltd (2013) *Leppington Precinct Transport and Access Strategy*, prepared for NSW Department of Planning and Infrastructure

APP (2014), *Leppington Precinct Infrastructure Delivery Plan*, prepared for Department of Planning and Environment, Draft Report, June

ARUP (2014) *Rickard Road Strategic Route Study – Preferred Route Report*, prepared for NSW Department of Planning and Infrastructure

Department of Planning and Environment (2014), Leppington Precinct Planning Report

Civic MJD Valuations Pty Ltd (01 September 2019), *Land Valuations for the Leppington and Leppington North Precinct* (A1898)

Parsons Brinckerhoff Australia Pty Ltd (2013) *Preliminary sizing and costing of basins and watercourse crossings – Leppington Precinct (RevE)*, prepared for NSW Department of Planning and Infrastructure

SGS Economic and Planning Pty Ltd (2012), *Leppington Precinct Study – Final Report*, prepared for NSW Department of Planning and Infrastructure

C. Lowes Creek Maryland Precinct

Part C is structured as follows:

Part C.1 documents the expected development in the Lowes Creek Maryland Precinct and the likely demand for infrastructure arising from that development.

Part C.2 discusses the infrastructure that is required to meet the demands of the expected development.

Parts C.3 and C.4 contain schedules of infrastructure addressed by the plan and maps showing the locations of infrastructure items.

Part C.5 includes a list of documents used to determine the infrastructure needs and costs.

C.1 Infrastructure demand

C.1.1 Existing development

The boundary and location of the Lowes Creek Maryland Precinct is shown at **Figure C1**. The development in the Precinct that existed at the time the land was rezoned for urban purposes was a combination of rural residential and agricultural (with mainly pastoral land) uses. Most of the Precinct has been cleared for purposes such as grazing but there is some remnant vegetation along the central section of the creek line and woodlands in the hills.

Five (5) dwelling demand credits have been assumed and factored into the net population yield for contribution calculations as shown in **Table C1.** This is based on an assessment of residences on heritage sites and other lots that existed at the time that the plan commenced (Figures C2 and C3) but excludes those dwellings or lots that will be retained primarily as heritage estates.

The dwelling demand credits have been factored-in when calculating the net increase in demand for social infrastructure as discussed in **section 2.5** of the **Main Document**.

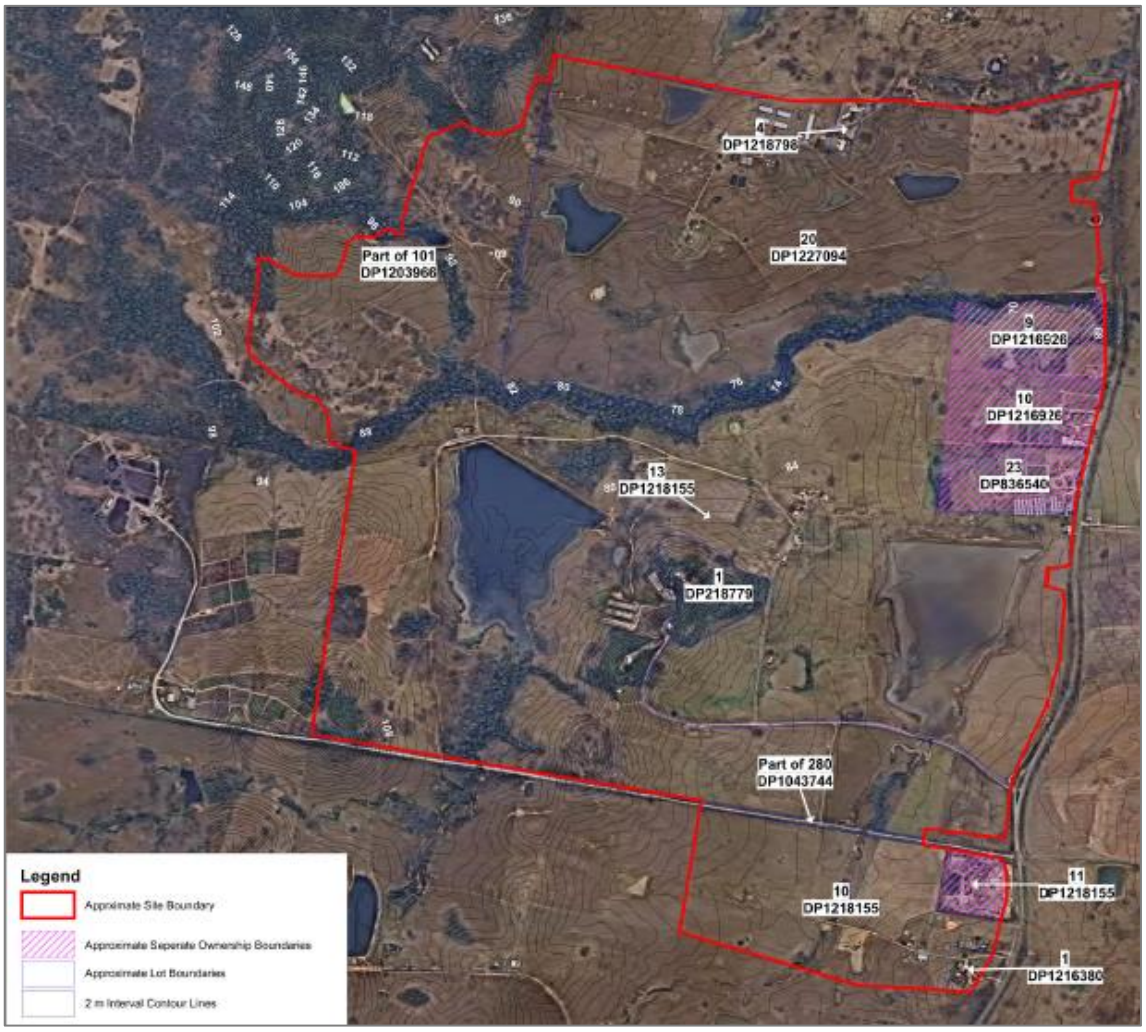
Table C1 Lots with dwelling demand credit

Property address	Lot and DP	Demand credits
749 The Northern Road, Bringelly	Lot 1 DP 1216380	1
895 The Northern Road, Bringelly	Lot 23 DP 836540	1
925 The Northern Road, Bringelly	Lot 9 DP 1216926	1
905B The Northern Road, Bringelly	Lot 10 DP 1216926	2

Source: Camden Council and Nearmap

Source: Pie Solutions (2022) on behalf of Camden Council

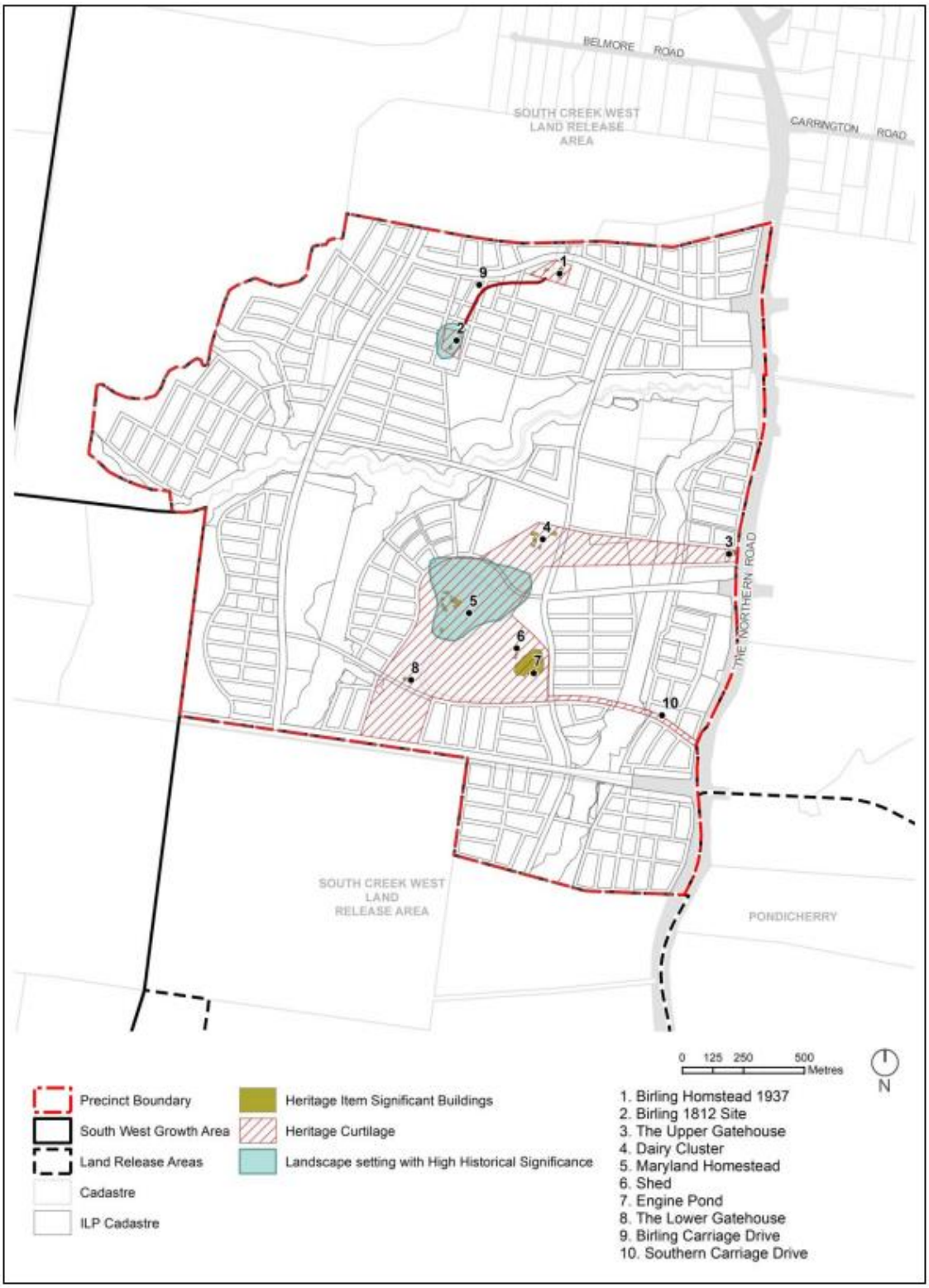
Figure C1 Lowes Creek Maryland Precinct



Source: Geoffrey Britton Environmental Design & Heritage Consultant (2018), *Lowes Creek Maryland Precinct Cultural Landscape and Visual Context Review* on behalf of Casey & Lowe (2016)

Note: not all the lots identified include existing residences.

Figure C2 Location plan with remnant estates of Maryland and Birling



Source: NSW DPE (2021), *Schedule 6 Lowes Creek Maryland Precinct*, Figure 2-6

Figure C3 European cultural heritage

C.1.2 Net Developable Area

The definition of NDA is included in **section 5.10** of the **Main Document** of this plan.

The following land is excluded from NDA in the Lowes Creek Maryland Precinct:

- Land zoned for public open space – parks or sports fields (61.74 ha)
- Land zoned for a community centre (0.94 ha)
- Land zoned for drainage purposes (28.25 ha)
- Land zoned for major roads (28.87 ha)
- Land zoned for an electricity substation (1.23 ha)
- Land zoned for the proposed school location (7.15 ha), and
- Land zoned for private recreation as heritage sites (35.31 ha).[34]

The Lowes Creek Maryland Precinct has an estimated net developable area (NDA) of approximately 265.03 hectares, as shown in **Table C2** and **Figure C4**.

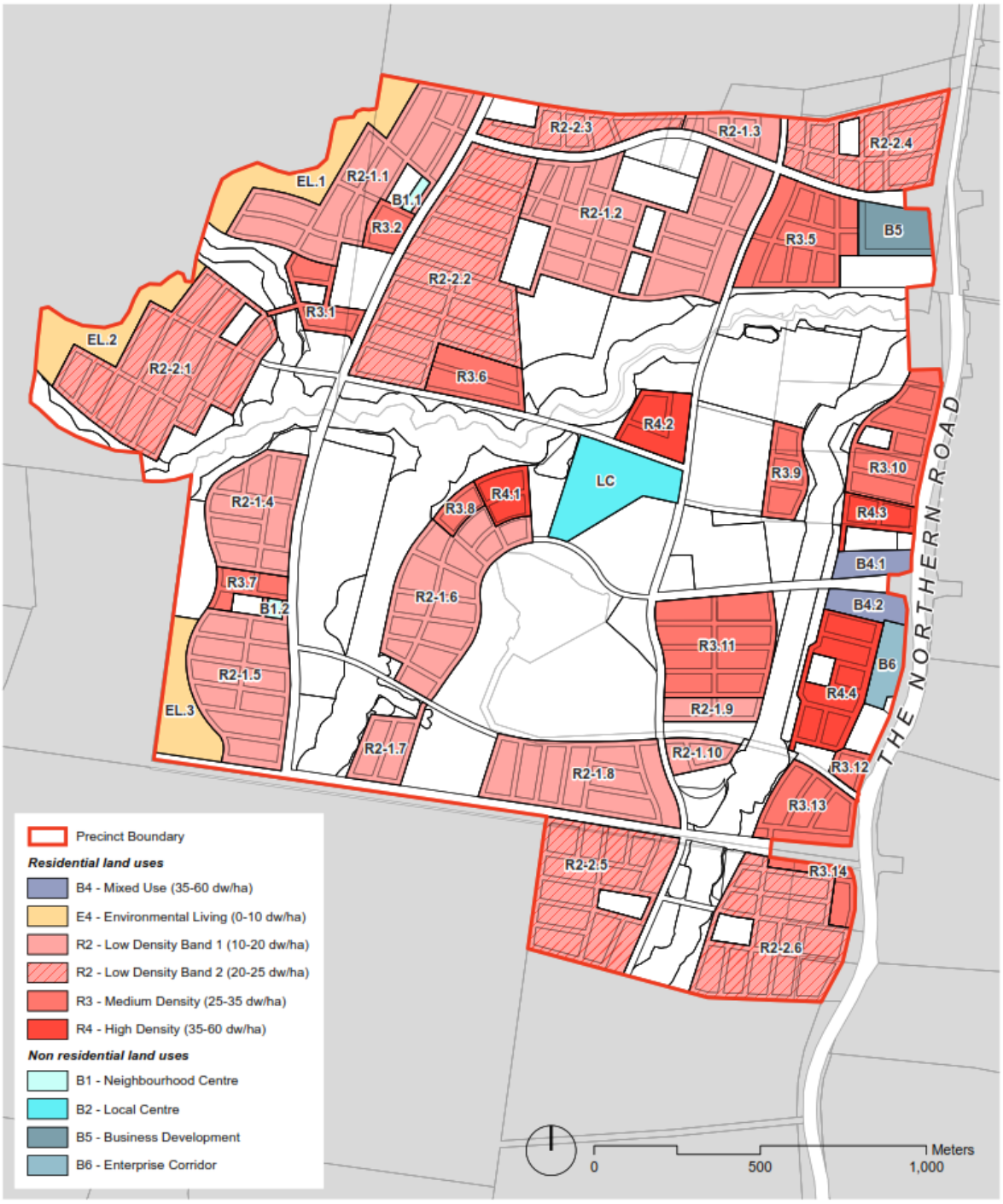
Table C2 Expected Net Developable Area – Lowes Creek Maryland Precinct

Land use zone	Net Developable Area (ha)
E4 Environmental Living* (max 10 dwellings per ha)	7.90*
R2 Low Density Residential Band 1 (10-20 dwellings per ha)	92.67
R2 Low Density Residential Band 2 (20-25 dwellings per ha)	84.86
R3 Medium Density Residential (25-35 dwelling per ha)	49.10
R4 High Density Residential (40-60 dwellings per ha)	14.76
B4 Mixed Use	3.66
B1 Neighbourhood Centre	0.59
B2 Local Centre	6.18
B5 Bulky Goods/Highway Services	5.32
Total	**265.03**

* the NDA for land zoned E4 Environmental Living has been adjusted in calculating contributions (assuming 20 dwellings per ha) to ensure that each detached dwelling in this zone is charged traffic and transport and water cycle management contributions at the same rate as each detached dwelling in the R2 Low Density Residential zone.

Source: NSW DPIE, provided to Council, June 2021

[34] NSW Department of Planning, Industry and Environment (DPIE), provided to Council, December 2020

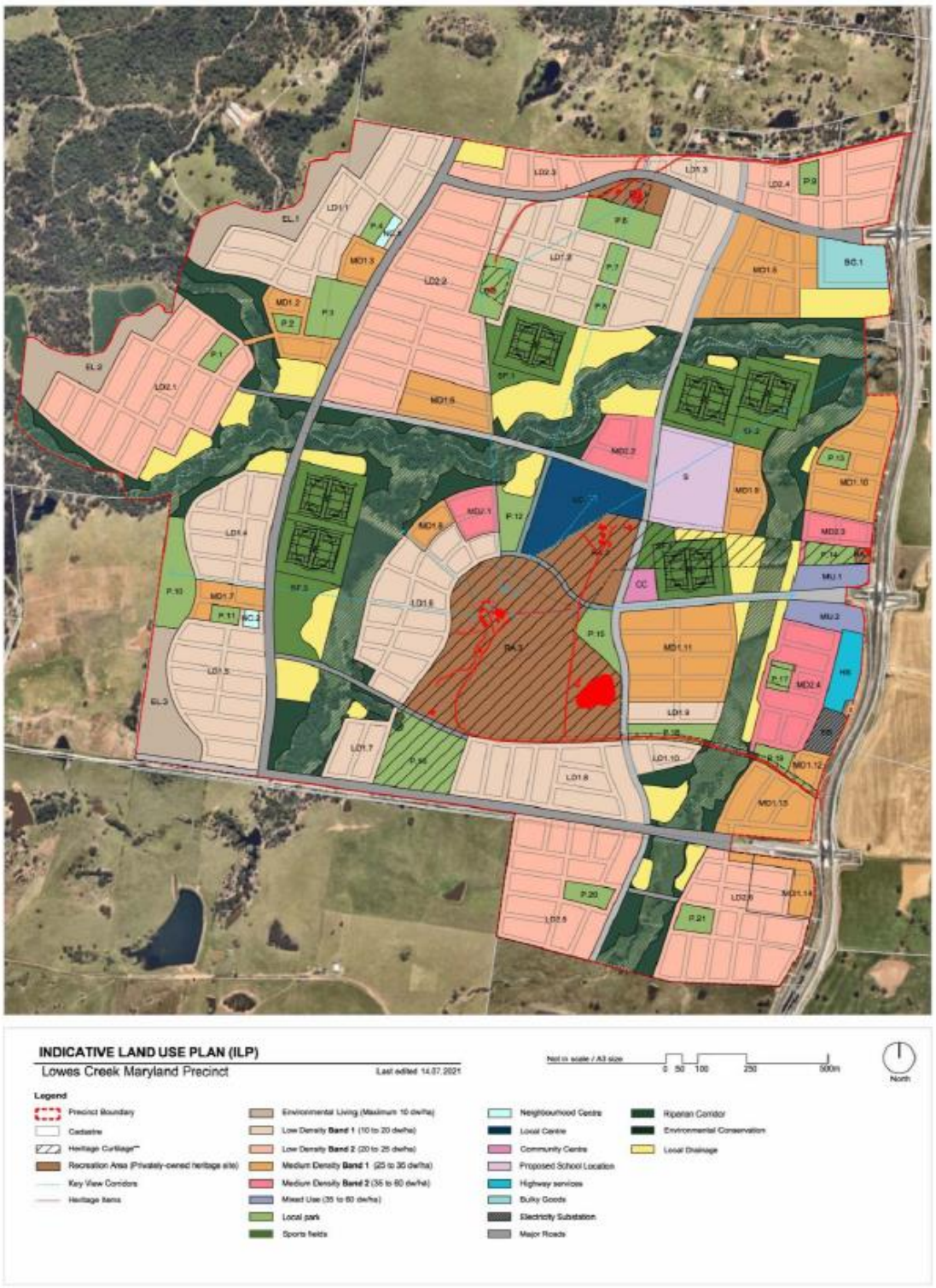


Source: Pie Solutions (2021) prepared on behalf of GLN Planning for Camden Council

Figure C4 Net Developable Area

C.1.3 Expected development

The proposed land uses in the Lowes Creek Maryland Precinct are shown in the final indicative layout plan (ILP) in **Figure C5**.



Source: NSW DPIE, Final ILP provided to Camden Council, June 2021

Figure C5 Expected land use in Lowes Creek Maryland Precinct

The Precinct will include a central hub featuring the new local centre, a nearby primary and high school and community centre with good connections to The Northern Road and with public access to Maryland Homestead.

There will be environmental enhancement and restoration of watercourses and riparian areas to assist with stormwater storage, water quality and biodiversity. Stormwater infrastructure will include detention and bioretention basins.

A network of roads, bike paths and green pathways will connect all land uses. Approximately 33% of the land will be preserved as green space (including public open space, riparian corridors, drainage infrastructure and environmental conservation), and around 7% of the land for heritage conservation.

Specific controls will be developed and implemented to protect the heritage sites, provide for their adaptive reuse (with public access), and ensure surrounding development is sensitive and responds to the heritage values.[35]

C.1.4 Expected population

The final ILP proposes a maximum of approximately 6,952 dwellings with a mix of detached dwellings, town houses, low rise apartment buildings and shop top housing, accommodating around 20,735 net additional people.

The *Demographic and Social Infrastructure Assessment - Lowes Creek Maryland Precinct* prepared by Elton Consulting (August 2018) compared the existing rural residential population with that of the populations of Bringelly-Cobbitty and Leppington-Rossmore-Catherine Fields. These populations are characterised by an older population and more family households compared with Greater Sydney and mostly owner-occupied single detached housing.

The incoming population to Lowes Creek Maryland is expected to have similar demographic characteristics to the population of Oran Park, largely dominated by young families with mortgages, and:

- a significantly higher proportion of people aged 25-34 years, children aged 0-4 years, and households comprised of couples without children,
- a significantly lower proportion of people aged over 65 years compared to Camden LGA and Greater Sydney,
- a relatively high average household size, consistent with Camden LGA,
- more property owners with a mortgage than Greater Sydney but consistent with Camden LGA,
- a significantly higher proportion of renters than Camden LGA but lower than Greater Sydney, and
- a relatively low level of social disadvantage. [36]

The estimated net additional population in the Lowes Creek Maryland Precinct as a result of new development has been determined on the basis of the NDA for various types of residential development, the maximum density of dwellings in those areas, and the assumed average occupancy rates for those dwellings.

[35] DPE (2018), *Lowes Creek Maryland Precinct Plan - Discussion Paper*, September, pp 9-10

[36] Elton Consulting (2018), *Demographic and Social Infrastructure Assessment - Lowes Creek Maryland Precinct,* September (later referred to as LCM Social Infrastructure Assessment), pp 21-24

The anticipated population is shown in **Table C3**.

Table C3 Expected resident population – Lowes Creek Maryland Precinct

Land use zone	Maximum density (dwelling / ha)	Projected dwellings	Assumed dwelling occupancy rate	Population
E4 Environmental Living	10	158	3.2	505
R2 Low Density Residential Band 1	20	1,853	3.2	5,931
R2 Low Density Residential Band 2	25	2,121	3.2	6,788
R3 Medium Density Residential	35	1,718	2.9	4,984
R4 High Density Residential	60	886	2.3	2,037
B4 Mixed Use Residential	60	220	2.3	506
Less assumed existing population				-16
Expected net additional population				20,735

* the NDA for land zoned E4 Environmental Living has been adjusted to ensure that each detached dwelling in this zone is charged traffic and transport and water cycle management contributions at the same rate as each detached dwelling in the R2 Low Density Residential zone (assuming 20 dwellings per ha).

Source: NSW DPIE, provided to Council, June 2021 and Council workings.

C.1.5 Expected non-residential floor space

The Precinct will also have a mix of non-residential land uses as outlined in **Table C4**.

Table C4 Expected non-residential floor space – Lowes Creek Maryland Precinct

Non-residential land use type and location	Gross floor area (GFA) (m^2)
Local centre	20,000
Mixed-use retail at the main entry to the Precinct from The Northern Road	4,000
Highway services adjacent to the mixed-use fronting The Northern Road	4,000
Bulky goods at the northern sub-arterial entrance to the precinct	5,000
Local and district community facility	1,875

Source: NSW DPIE, provided to Council, June 2021

C.1.6 Demand for infrastructure

Existing public amenities and services in the Lowes Creek Maryland Precinct have been essentially designed to accommodate the existing rural residential development. A change in the development profile of the Precinct from rural to urban development is expected.

The urban development in this area, and the population that will occupy such development, can only be sustained by a significant investment in new and augmented public amenities and services.

Research on infrastructure needs for the impending urban development has identified the following impacts on public services and public amenities:

- increased demand for facilities that will support safe and convenient travel between land uses both within the Precinct and to and from destinations outside of the Precincts, such as new roads, intersection and cycleway facilities,
- increased demand for stormwater drainage facilities as a result of the extra stormwater runoff generated by impervious surfaces associated with urban (as distinct from rural) development,
- increased demand for active and passive recreation facilities, such as parks, sports fields, sports courts, playgrounds, and shared paths
- increased demand for spaces that will foster community life and the development of social capital in the Precinct, such as a multi-purpose community centre.

A range of public facilities and public amenities have been identified as being required to address the impacts of the expected development, including:

- traffic and transport management facilities
- water cycle management facilities
- open space and recreation facilities
- community facilities.

C.1.7 Development to be tied to infrastructure staging

Ownership of the Precinct is highly concentrated with just six landowners, and a single landowner owning 92% of the site.[37] Therefore, timely infrastructure provision should occur with adjoining development throughout the Precinct.

The lead developer has prepared a Services Infrastructure Strategy and Services Infrastructure Implementation Plan (SIIP) for servicing the Precinct to support orderly development.

At the time that this plan was prepared, it was envisaged that development would occur in multiple stages and at least two development fronts per year. Occupancy of the first dwellings is expected in March 2023 with an expected development rate ranging from 250 lots per year to 500 lots (subject to market conditions) and all dwellings delivered over a forecast development life of 15 years. However, the staging and timing of development is variable and subject to change.

[37] DPE (2018), *Lowes Creek Maryland Precinct Plan - Discussion Paper*, September, p 16

C.2 Infrastructure strategies

C.2.1 General

C.2.1.1 How have the infrastructure costs been derived?

The capital works costs for open space, stormwater and transport facilities have been estimated by a quantity surveyor, Mitchell Brandtman in January 2021 with final revisions to costs estimates provided in September 2022. Mitchell Brandtman reviewed the original cost estimates by Cardno and Craig & Rhodes for stormwater facilities, and the various technical studies regarding the infrastructure needs of Lowes Creek Maryland.

Unit cost rates for land and other land cost discounts and allowances were advised by a registered valuer, as shown in **Table C5**. The 'after discounts' apply only to partially constrained or heritage-affected sites.

Table C5 Unit cost rates for land

Land category	Unit cost rate per square metre
Non-developable land (riparian corridors, constrained land) below the 1:100 year ARI event	$30
Environmental Living Residential (E4)	$300
Low Density Residential (R2) (Band 1 & 2)	$400
Medium Density Residential (R3) Band 1	$500
Medium Density Residential (R3) Band 2	$600
High Density Residential/Mixed Use (R4/MU)	$650
Commercial Centre Land (B2 zoning)	$400
Other Commercial Land (B5 zoning)	$500
After discount – heritage curtilage	80% of underlying zoning
After discount – below flood line (developable)	40% of underlying zoning
Extra allowance for non-market heads of compensation	10%, $/sqm

Source: Urban Atlas Economics (2021).

C.2.1.2 Contribution catchments and apportionment

The section 7.11 monetary contribution rate for each of the Precinct facilities is determined by dividing the total cost of the facility by the contribution catchment (which is expressed in either persons or NDA).

Demand for each of the different categories of infrastructure is expected to be fairly consistent across residential development in the Precinct. Demand for transport and stormwater infrastructure is also expected to be shared with non-residential development.

The proposed infrastructure and amenities have generally been sized to meet the demand generated by the expected development within the Lowes Creek Maryland Precinct, with the exception of the proposed multi-purpose community centre which has been sized as a district-level facility which will serve both the Lowes Creek Maryland Precinct and future precincts within South Creek West structure plan area.

The contribution catchments for each infrastructure type are as follows:

- In the case of water cycle management and traffic and transport management land and works, the estimated total NDA for the Lowes Creek Maryland Precinct (**Table C2**).
- In the case of open space and recreation facilities land and works, the expected additional resident population of the Lowes Creek Maryland Precinct (**Table C3**).
- In the case of land for the multi-purpose community centre (Contribution Item reference "CC"), the expected additional resident population of the *South Creek West Context Plan Area – lower density scenario* (78,814 people) with the population of the Lowes Creek Maryland Precinct comprising 20,735 people or 26% of that catchment. [38]

[38] Elton Consulting (2018), *Demographic and Social Infrastructure Assessment - Lowes Creek Maryland Precinct* (Revised draft report), 18 August and NSW Department of Planning and Environment (2021), *South West Growth Area Lowes Creek Maryland – Finalisation Report*, July

C.2.2 Traffic and transport facilities

C.2.2.1 What is the relationship between the expected types of development and the demand for additional public facilities?

Occupants of expected development in the Lowes Creek Maryland Precinct will utilise a transport network comprising:

- facilities for private vehicles, including roads and intersections;
- facilities for public transport, including bus facilities; and
- facilities for walking and cycling.

The existing transport network has been planned to serve a small and scattered rural population, and not an urban environment. As such, the existing rural roads will need to be replaced by a new urban road network to service the new development, with appropriate public and active transport facilities.

C.2.2.2 Proposed road network

The proposed road network complements a broader hierarchy envisaged for the South West Priority Growth Area**.**

The Lowes Creek Maryland Precinct has good access to existing major roads, and future rail and airport facilities, in light of a range of regional influences, including:

- The Western Sydney Aerotropolis which will continue to attract transport and infrastructure investments to provide better connections to surrounding areas
- The Northern Road and Bringelly Road upgrades as part of the Australian and NSW Governments' Western Sydney Infrastructure Plan 2018
- The planned M12 motorway connection to the M7 Motorway near Cecil Hills to the Northern Road at Luddenham, providing direct access from the motorway network to the Western Sydney Airport.
- The proposed Sydney West Metro linking the Aerotropolis Core Precinct to St Marys, and the possible extension southward on the eastern side of The Northern Road towards Narellan and Oran Park.
- The planning underway for the Outer Sydney Orbital (M9), a 70km motorway and freight rail line outside the SWGA boundary linking growth areas, the planned Western Sydney Airport and future employment lands.[39]

The local road network has been aligned with the surrounding higher order road network and designed to maximise permeability and move people around the site as efficiently as possible. In general, local roads have been planned to run parallel to the sub arterial roads to improve residential amenity.

C.2.2.3 Facilities addressed by this plan

The *Lowes Creek Maryland Precinct - Traffic, Transport and Access Assessment* for the Lowes Creek Maryland Precinct (Transport Assessment)[40] identified the range of transport

[39] DPE (2018), *Lowes Creek Maryland Precinct Plan - Discussion Paper*, September, pp 61-62

infrastructure that will be required to accommodate the expected development and mitigate the impacts.

The proposed road network with intersection treatments, as per the Transport Assessment and reflected in Schedule 6 of the Camden Growth Centre Precincts DCP is shown in **Figure C6.**

Three intersections on the Northern Road which provide access to the Precinct are being provided as part of the Western Sydney Infrastructure Plan, and so are not required to be funded by this plan, i.e.:

- Two new sub-arterial road intersections at the northern (Lowes Creek Link Road) and southern (Maryland Link Road) extents of the Precinct
- One new collector road intersection midway between the abovementioned sub-arterial roads providing the main entry to the local centre.[41]

In December 2022 the DPE confirmed that the sub-arterial roads previously included in the plan and identified in **Figure C6** served a regional transport function and were eligible to be provided as works-in-kind as an offset to any Special Infrastructure Contribution (SIC) obligation secured via a State Planning Agreement. As a result, the plan has been amended to remove the sub-arterial roads and related intersections and creek culvert crossings as they will no longer be funded by the plan.

The remaining roads and intersections (collector level and selected local level) will be funded by the plan, together with the other intersections and road segments as shown in the final ILP for the Precinct (**Figure C5**), as follows:

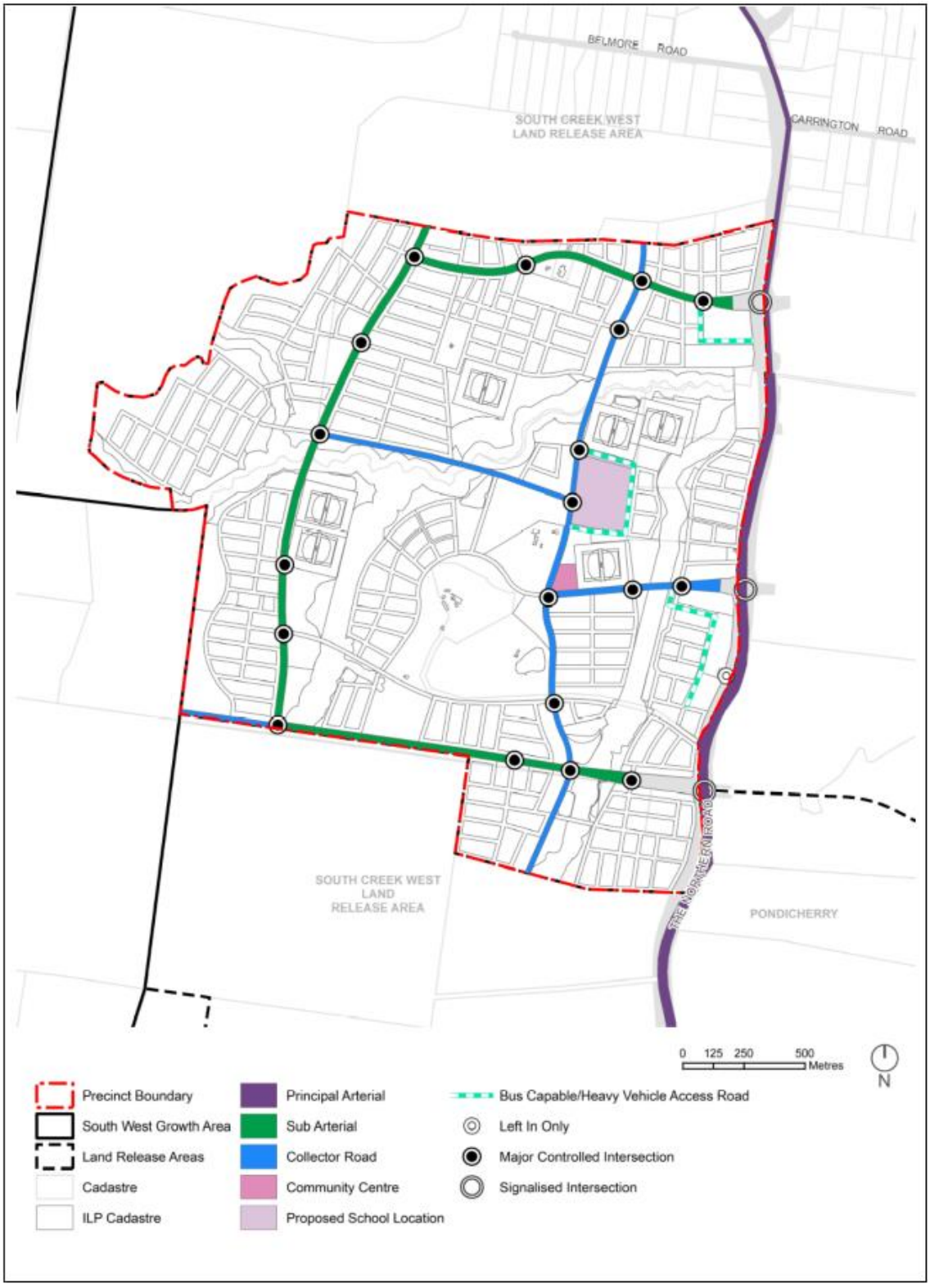
- Extension west of the collector road segment midway through the Precinct,
- A local road segment from the eastern collector road to the park next to the main centre, dissecting private heritage land,
- A local road segment from the new western sub arterial road to the corner of the local park (LP16) and private heritage land for the Maryland Homestead, predominantly through open space and environmental conservation land, and
- Another local road in the southeast of the Precinct to provide access to a local park (P21).

The proposed cycleway and shared pathway network is as proposed in *Schedule 6 Lowes Creek Maryland Precinct Development Control Plan* (DCP) (as part of the Growth Centres DCP), (Figure 2.13).

The full schedule of items and maps showing the location of transport facility items, including the road and cycleway network, are provided in **sections C3 and C4**.

[40] GHD (2018), *Lowes Creek Maryland Precinct – Traffic, Transport and Access Assessment*, prepared for Macarthur Developments Pty Ltd on behalf of the then NSW Department of Planning and Environment (now DPIE), September 2018

[41] Transport Assessment, pp 12-13



Source: Camden Growth Centre Precincts DCP - DPE (2021)

Figure C6 Proposed road and intersection network

C.2.3 Water cycle management facilities

C.2.3.1 What is the relationship between the expected types of development and the demand for additional public facilities?

Current stormwater infrastructure has been sized and designed to cope with storm and flooding events within a rural context. The new urban areas in Lowes Creek Maryland Precinct will increase the stormwater runoff due to increased impervious areas which are also likely to exacerbate flooding issues and erode existing creek systems.

In addition to increased stormwater runoff, pollutants from the new urban areas will reduce water quality and the stormwater needs to be treated prior to it being discharged into the natural creek system.

C.2.3.2 Pre-development conditions

In the pre-development model, the entire catchment was designated as Pervious Area, being agricultural lands only.

All existing tributaries through the Lowes Creek Maryland Precinct form part of the South Creek catchment. The most significant waterway is Lowes Creek. Lowes Creek originates to the west of the Precinct and conveys flow through the site in an easterly direction before discharging through culverts on the eastern Precinct boundary under The Northern Road. The Lowes Creek crossing of The Northern Road is the primary discharge point for the Precinct.

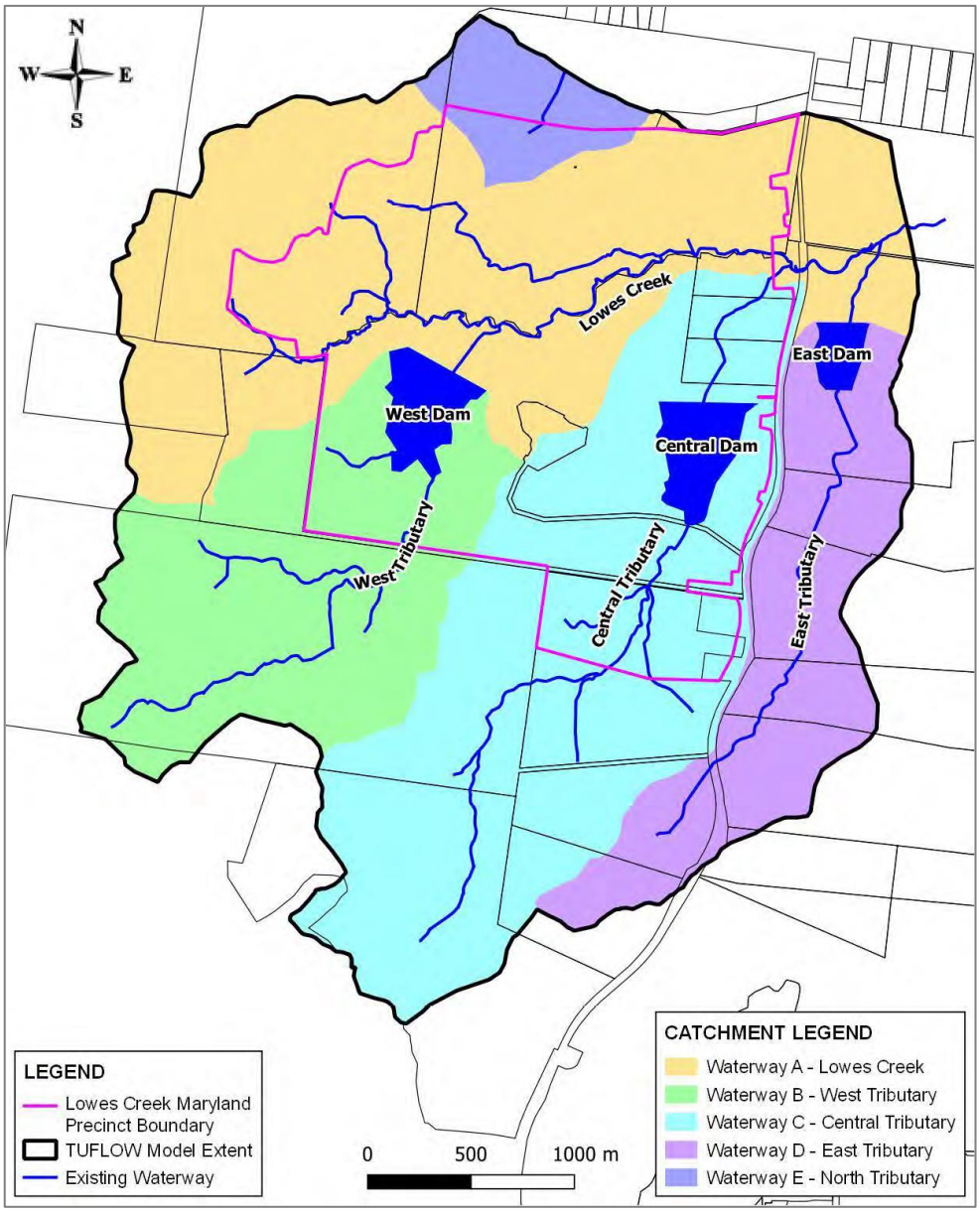
Other major waterways within the study area (noting **Lowes Creek** is **Waterway A** in this list) are:

- **Waterway B – West Tributary**: This tributary of Lowes Creek originates from the south-west of the Lowes Creek Maryland Precinct and generally flows in a northerly direction before converging with Lowes Creek close to the centre of the Precinct.
- **Waterway C – Central Tributary**: This tributary originates from the south of the Lowes Creek Maryland Precinct and generally flows in a northerly direction before converging with Lowes Creek immediately upstream of the Precinct discharge point.
- **Waterway D – East Tributary**: This catchment originates from the south-east of the Precinct conveying flow on the eastern side of The Northern Road, converging with Lowes Creek downstream of the Precinct.
- **Waterway E – North Tributary**: In addition to Lowes Creek and its tributaries, there is a minor catchment on the northern side of the Precinct which does not discharge to Lowes Creek. This catchment flows in a north-east direction converging with South Creek immediately downstream of the Bringelly Road crossing, so it is still part of the upper South Creek catchment.

The waterways are shown in **Figure C9**, together with the three existing large farm irrigation dams.

C.2.3.3 Proposed stormwater management network

To ensure that the future urban development of the Lowes Creek Maryland Precinct appropriately manages drainage and water quality issues, Cardno was first commissioned by NSW DPE to establish a water cycle management strategy.



Source: Original WCM Strategy, p 17.

Figure C7 Waterway catchments and existing irrigation dams in study area

Cardno based the strategy on water sensitive urban design principles and undertook flood modelling to assess the effectiveness of proposed water quantity, riparian corridor and floodplain management strategies. It also developed a water quality strategy to mitigate potential stormwater pollutant impacts.

Cardno's report, *Lowes Creek Maryland Precinct Water Cycle Management Study*, 26 September 2018 (**Original WCM Strategy**) also provided input into the riparian land management and planning controls; assessed the flood risk management approach and developed a flood evacuation strategy for the Precinct.

The post-development hydraulic model accounted for a number of proposed changes to the site:

- Increased stormwater run-off from the developed catchments of the proposed development
- Impact of proposed online and offline detention basins.
- Filling of developable areas on the fringes of the floodplain
- Proposed road crossings of the various waterways in the Precinct;
- The road raising of The Northern Road (not the box culvert upgrade), and
- Proposed works within the riparian corridor including re-aligning of channels and vegetation.[42]

The Original WCM Strategy's preferred scheme also needed to meet minimum water quantity and quality standards and benchmarks, as drawn from the Council's Development Control Plan. It combined some local catchment and larger regional sub-catchment controls, and adopted distributed online stormwater retarding for quantity control and separate 'bio-filter' footprint areas for water quality treatment. Bio filter areas could be in the form of a raingarden or tree pit or any vegetated area and would be co-located with the stormwater retarding basins. Both on- and off-line stormwater basins were also a feature of the recommended approach.

The approach was considered to have:

- relatively lower ongoing operation and maintenance requirements, and
- moderate land-take resulting from its use of online basins within the riparian corridor, which can also be used for passive recreation purposes.[43]

Storm Consulting and Craig & Rhodes were later engaged by Macarthur Developments, the lead developer in the Precinct, to review and refine the Original WCM Strategy. These investigations comprised several key waterway considerations such as flooding, water quality and geomorphology management and were undertaken with approval from both Council and DPIE.

The report (*Lowes Creek Maryland Precinct Water Cycle Management Strategy Report – Addendum*, September 2020 (**Amended WCM Strategy**)) built on the assessments already undertaken by Cardno, but with updated modelling methodologies and results.

In particular, the Amended WCM Strategy determined the minimum detention storage requirements to attenuate post development flows to pre-development levels; and the minimum treatment device areas required to achieve Council's water quality targets. Essentially, this took into account proposed changes to the locations of some of the detention basins and bioretention basins, lot layout, road alignments, as well as areas that the stakeholders would prefer to be flood-free. However, the overall catchment areas are similar to those identified by Cardno.[44]

C.2.3.4 Facilities addressed by this plan

A series of offline and online stormwater detention basins and bioretention basins are proposed for the Lowes Creek Maryland Precinct in the plan, consistent with the Amended WCM Strategy.

[42] Original WCM Strategy, p 30

[43] Refer to Table 5.14 of the WCM Strategy

[44] Amended WCM Strategy, p 10

The basins have been sized through an iterative design and modelling process to ensure that discharges from the Lowes Creek Maryland Precinct do not exceed the pre-development scenario results.

A number of the basins are combined detention and bioretention basins. These typically consist of bioretention basins provided to treat the low flows, with excess flows designed to bypass the system and discharge into the detention basins for flood attenuation prior to release into Lowes Creek.

Online detention basins

Two major dams are to be reconfigured into online basins within an 80m wide riparian corridor. The West Dam is configured as one basin, Online Basin 01. The Central Dam is reconfigured into two interconnected basins, Online Basins 11 and 12. The purpose of the online basins is as discussed in the Original WCM Strategy. Online basins do not have bioretention facilities.[45]

Offline detention basins

A network of offline basins is proposed for developed catchments discharging directly to Lowes Creek and two other northern tributaries.[46]

Bioretention basins

A network of bioretention basins is proposed for the developed catchments discharging directly to the waterway network. The bioretention basins do not significantly detain stormwater flows. Their primary role is water quality treatment.

Design of the bioretention basins has typically matched the Original WCM Strategy where the basin filter media area is equivalent to approximately 1.1% of the developable area within the Precinct excluding riparian corridors.[47]

Gross pollutant traps and bioretention traps are proposed at a sub catchment scale to intercept and treat stormwater prior to discharge to Lowes Creek.

Culvert creek crossings

There are also 6 culvert creek crossings in the plan, over Lowes Creek and various tributary locations.

The schedule of items and maps showing the location of stormwater management infrastructure, are provided in **sections C3 and C4**.

Almost all the developed areas drain to a bioretention system for treatment prior to discharge with only a minor portion untreated, due both to topography and drainage configurations.

[45] Amended WCM Strategy, p 19

[46] Amended WCM Strategy, p 20

[47] Amended WCM Strategy, p 22

C.2.4 Open space and recreational facilities

C.2.4.1 What is the relationship between the expected types of development and the demand for additional public facilities?

Elton Consulting undertook the *Demographic and Social Infrastructure Assessment - Lowes Creek Maryland Precinct* (**LCM Social Infrastructure Assessment**) in August 2018 to determine the requirements for open space and recreation facilities.

The assessment was undertaken at two levels, with detailed analysis for the Lowes Creek Maryland Precinct itself, and a higher order assessment for a broader site, encompassing some adjoining areas. The broader area is referred to as the Context Plan Area and encompasses all the parts of the Bringelly, Lowes Creek and Maryland Precincts that lie to the west of The Northern Road, south of Greendale Road and north of the Oran Park Precinct boundary.[48] **Figure C10** shows the Context Plan Area.

The information below summarises the LCM Social Infrastructure Assessment's conclusions about the likely demand for open space and recreation facilities arising from the expected development in Lowes Creek Maryland, with reference to apportionment for shared demand for facilities with the broader Context Plan Area, as needed.

C.2.4.2 Existing provision

Consistent with its current use for agricultural purposes and small, scattered population, there is no existing social infrastructure within the Lowes Creek Maryland Precinct or broader Context Plan Area.[49]

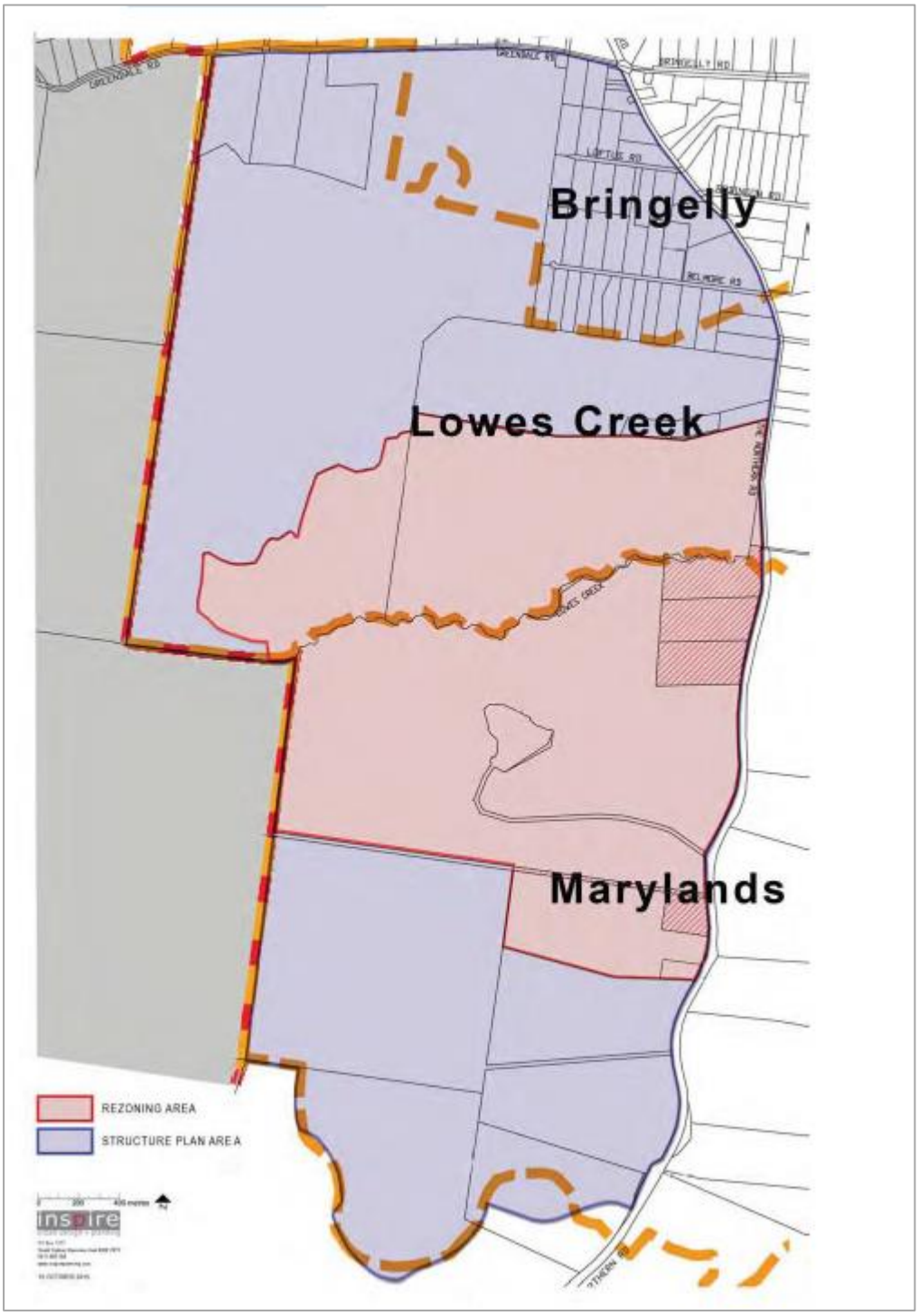
The Assessment noted that future residents in the north of the Context Plan Area, generally outside Lowes Creek Maryland Precinct, could make use of the Bringelly Community Centre and Recreation Reserve although it is located across Bringelly Road in the Liverpool Local Government Area (LGA).[50]

To the south of the broader Context Plan Area, any spare capacity which exists in facilities is likely to be taken up by on-going development in the Oran Park Precinct.

The open space and recreation facilities in Oran Park have been planned and sized only to meet the needs of the populations forecast for the Oran Park, Turner Road and Catherine Fields (part) Precincts and will not have capacity to also accommodate demand from the Lowes Creek Maryland Precinct and broader Context Plan Area.[51]

Accordingly, a full range of new local and district open space facilities and services will be required to meet the needs of the Lowes Creek Maryland Precinct population.[52]

[48] The LCM Social Infrastructure Assessment identified that the lower density scenario for the Balance of the Context Plan Area (excluding the LCM Precinct) is expected to yield 17,761 dwellings and a future population of 58,079 people
[49] LCM Social Infrastructure Assessment, p 25
[50] LCM Social Infrastructure Assessment, p 27
[51] Ibid.
[52] Ibid.



Source: LCM Social Infrastructure Assessment, Figure 2 (on behalf of Macarthur Developments).

Figure C8 Lowes Creek Maryland Precinct and broader Context Plan Area

C.2.4.3 Planning principles for open space and recreation

The open space and recreation principles by which Camden Growth Areas social infrastructure planning abides by were identified in earlier needs assessment studies for Leppington and Leppington North.

The LCM Social Infrastructure Assessment noted how Council is in the process of developing a new Camden Open Space Design Manual (OSDM). The seven principles described in those guidelines propose that all open spaces:

1. Are meaningful and appealing to the community. They should integrate the geographic and heritage features of the precinct, reflect and complement the natural and visual character of the local topography, vegetation and riparian corridors, and capitalise on features unique to the area, such as views from elevated areas.
2. Are multi-functional and adaptable to changing needs to allow a range of users to enjoy them. Open spaces should maximise joint use and co-location with other uses to minimise duplication and maximise use of sporting facilities outside of training and competition periods.
3. Provide diverse recreational opportunities to meet a wide range of needs. They should cater for all age groups, both genders, different cultural backgrounds, physical abilities and levels of socio-economic status. This means incorporating universal access principles and features such as shade and shelter, barbecues, seating, lighting and pathways.
4. Encourage social interaction, recognising that the public domain provides a focal point for meeting and gathering. Design features should encourage both incidental and planned social interaction and cultural activity.
5. Promote health and wellbeing, through encouraging physical activity, providing spaces for rest and relaxation and enhancing a sense of safety and personal security through environmental design principles. Chief among these is the principle of promoting natural surveillance of open space areas, with parks having a frontage to a road where possible.
6. Provide equity and accessibility. Open space should be publicly provided, where possible, to ensure public access, and it should provide recreation opportunities that are inclusive of all members of the community. Access to facilities should be convenient, easy and safe, and open space areas should be linked and connected physically to provide an open space network.
7. Are sustainable - environmentally, socially, culturally and financially. This includes protecting and conserving watercourses, water bodies and wetlands and incorporating natural areas and riparian corridors into the open space corridors, where possible. It also refers to the integration of the network of open space with stormwater management and water-sensitive urban design.[53]

The LCM Social Infrastructure Assessment also referenced The Government Architect Office's Draft Open Space and Recreation Guide (2018) which nominates a set of performance criteria for open space and recreation.

Each of the individual performance criteria are aligned to a set of performance indicators. The draft Guide does not adopt open space benchmarks based on quantifiable targets. It instead assesses the open space needs using the six criteria summarised in **Table C6,** together with the associated indicators.

[53] LCM Social Infrastructure Assessment, pp 72-73

Table C6 Performance criteria and indicators for open space and recreation

Accessibility and connectivity	Distribution
An integrated network of open space connections: • High density (greater than 60 to 100 dwellings / ha): 2-3 minutes' walk, or 200m walking distance to local, district and / or regional park. • Medium to low density: 5 minutes' walk, or 400m walking distance to local, district and / or regional park. • All density: 25 minutes' walk, or 2km to district open space; Up to 30 minutes travel time, by public or private transport, to regional open space.	Distance to travel to: • Regional open spaces, greater than 5 ha in size, is 5-10km • District open spaces, between 2 to 5 ha in size, is 2km • Local open spaces, from 0.5/2 ha in size, is 400m, with the adjustment for high density provided above • Workplace, school or education facilities to open space is 400m.
Size and shape	**Quantity**
• Minimum size for a local park is 3,000 m^2 • In high density areas, parks may be 1,500 m^2 as new provision is challenging and opportunities for re-embellishment or re-use may arise • Visibility and road frontage need to become important considerations.	Quantity should be considered: • In the number of opportunities available, as larger public open space areas mean more opportunities can be provided in one location • With size and shape, to meet sporting needs, as there are minimum areas needed for different sporting outcomes.
Quality	**Diversity**
Key characteristics which influence open space quality include: • Visual and physical access • Landscape setting • Condition of facilities and equipment • Maintenance • Number of activations within the space • Size, shape, and topography • Adjacent land uses • Amount of vegetation • Biodiversity outcomes.	Different outdoor recreation opportunities are categorised as: • Local play for the very young • Local children's play • Older children's activity space • Youth recreation space • Local recreation space • Active recreation space • Large community outdoor recreation area • Fitness and exercise space • Trail and path-based recreation • Organised sport and recreation • Off-leash dog exercise area.

Source: LCM Social Infrastructure Assessment, pp 72-73

C.2.4.4 Recreation demand assessment based on forecast demographics

New open space and recreation facilities in Lowes Creek Maryland Precinct must cater for the needs of an additional 20,735 residents.

Using the Growth Centres Development Code standard of 2.83 ha per 1,000 persons, the Lowes Creek Maryland Precinct will need to provide a **minimum of 58.68 ha** of public open space to satisfy this benchmark.

The LCM Social Infrastructure Assessment provides details on the expected population mix within the Precinct. It assumed that the new population would have similar characteristics to that moving into other new release areas in nearby parts of the Camden LGA, such as Oran Park and Gregory Hills.[54]

These populations are predominantly characterised by families including mature families, with children across a range of age groups and young families, including young couples yet to start a family or with one or two young children. There would also be a small proportion of empty nesters and retirees, and a diverse mix of cultural backgrounds amongst new residents.

Altogether, this incoming population to the Precinct, will demand a range of open space and recreation facilities, including:

- A variety of parks that support family and community activities located within 400-500m walking distance of residences.
- Outdoor areas for larger gatherings and cultural events, for example, group picnics, amphitheatre and markets.
- Playgrounds which offer a range of play experiences for all ages and other outdoor adventure activities such as bike tracks and skateboarding.
- Parks and public spaces designed to be friendly to young people, providing meeting places that are safe and welcoming and allow for social interaction and informal games.
- Walking and cycling tracks, with opportunities for individual fitness in parks and trails
- Multi-purpose playing fields suitable for a variety of field sports and other sporting activities
- Both outdoor and indoor courts for court sports, and indoor spaces for activities such as dance, martial arts, yoga, fitness, gym.
- Access to aquatic facilities that include a variety of leisure and fitness activities.[55]

Specific requirements for facilities are guided by Council's strategies and plans, including the draft Spaces and Places Strategy 2020, Camden Play Space Strategy 2010-2020 and Camden Council Sportsground Strategy 2020-2024.

Relevant Council standards for the rate of provision of open space and recreation facilities include:

- a 50:50 split between passive and active space, where possible
- 1 playground per 2,000 residents
- 1 sports court per 1,075 residents

[54] LCM Social Infrastructure Assessment, pp 22-24

[55] LCM Social Infrastructure Assessment, p 72

- 1 double sportsground per 3,700 residents.

C.2.4.5 Facilities addressed by this plan

The final ILP incorporates 61.74 ha of open space, which exceeds the benchmark provision rate (minimum of 2.83 hectares per 1,000 people) but takes into account broader planning considerations, including the topography of the Precinct and proximity of facilities to residential land uses. The amount of open space further reflects that:

- all local parks are a minimum of 5,000 m^2 in size, consistent with Council's Space and Place Strategy.[56]
- open space around the scar trees was expanded in the final ILP to conserve the health and vitality of the scar trees.[57]
- areas of public recreation have been strategically placed to ensure all residents will be within 400m walking distance to a park in accordance with the Premier's Priorities.[58]

Drainage basins will not contribute to the provision of formal public open space but these basins will be appropriately landscaped to aid in cooling and greening the Precinct and may be informally used for recreational purposes.[59]

The final ILP identifies six sports fields and 21 parks, however as part of the rezoning of the precinct only the sports fields and the 11 parks holding heritage values are proposed to be zoned RE1 Public Recreation and identified for land acquisition. This allows the exact location of other proposed future parks to be moved or reconfigured at the Development Application stage without requiring a Planning Proposal. However, the remaining parks are still intended to be delivered generally consistent with the ILP, and the land costs are still included in the plan.[60]

Table C7 provides the breakdown by passive and active open space facility categories.

Table C7 Open space planned provision

Type of open space facility	Area (ha)
Passive open space	
Local parks	16.17
District parks	13.19
Active open space	
Double sports grounds	32.37
Total	**61.74**

Source: NSW Department of Planning, Industry and Environment, June 2021

This plan includes the various open space facilities included in the final ILP, which reflect the required infrastructure needs of the expected development identified in the LCM Social

[56] DPIE Finalisation Report, pp 14-15
[57] DPIE Finalisation Report, p 27
[58] DPIE Finalisation Report, pp 14-15
[59] Ibid.
[60] Ibid.

Infrastructure Assessment. **Table C8** provides details of the intended provision of facilities in the Precinct.

Table C8 Open space and recreation facilities requirements

Facility	Recommended Size	Description	Planned Provision in Precinct
Local parks	Minimum 0.5 ha up to 2 ha	Parks to be provided both with and without local playspace, depending on location (Council's has identified the need for 7 local playspaces in 'passive parks' (and 2 larger playgrounds as below).	17 local parks from 0.5 ha to 1.9 ha in size
District parks (passive)	Minimum 2 ha up to 5 ha	District parks are both with and without large playgrounds or local playspace, depending on location. Parks will provide activities for all ages and include a combination of outdoor, multipurpose sports courts (approximately 20 courts in total)[a], skate park[b], bike paths, play equipment, fitness equipment, water features, picnic facilities, barbecue facilities and areas for unleashed dogs.	4 district parks from 2.6 to 4.9 ha in size
Local sportsgrounds	5 ha	Double fields are preferred to provide economies of scale for infrastructure provision. Multi-purpose playing fields will allow for summer and winter seasonal sports and will be adequately sized and shaped to accommodate use by various codes. Facilities will include lighting to enable night-time use, playground and barbecue facilities, and amenity facilities and be accessible by public transport, pedestrians and cyclists. Car parking requirements are for a minimum of 50 spaces per field plus disabled parking.	6 double playing fields provided, with two double fields co-located in two district sports parks (10.43 and 11.26 ha in size) and one double field each in two district parks (5.15 and 5.53 ha in size).

a It is noted that clustered courts are favoured by Council but it already provides a regional netball complex at Kirkham Park.

b The LCM Social Infrastructure Assessment recommended that a skate park be provided adjacent to the indoor recreation centre, however only base level embellishment can be funded under the plan.

Source: NSW DPIE, LCM Final ILP, June 2021 and LCM Social Infrastructure Assessment, pp 78-80, 82

C.2.4.6 Indoor recreation centre

The LCM Social Infrastructure Assessment acknowledged that the expected population in the broader Context Plan Area would provide enough collective demand for an indoor recreation centre and/or aquatic centre, but Lowes Creek Maryland Precinct does not alone.

An indoor recreation centre has not been included in the plan (as non-essential infrastructure) at this time. Instead, as development plans progress in surrounding areas to Lowes Creek Maryland, Council will consider planning for such a centre, subject to determination of the scale of facilities and site location required. One option is for the facility to be located in Lowes Creek

Maryland Precinct within the proposed district sports park (adjacent to the multipurpose community facility).

Once Council determines the need for a facility including its size and location, it will also consider whether it needs to amend this plan to apportion the cost of the land across the broader demand catchment (Context Plan Area).[61]

C .2.4.8 Riparian corridors / linear parks

The riparian corridors of Lowes Creek and its tributaries provide excellent opportunities to create walking and cycling paths along them.

In the final ILP, a path network is proposed along corridor routes and sub-arterial roads in the Precinct, connecting to open space and other key destinations. This corridor land has not been included in this plan to reduce costs. Instead, it is expected that much of the land will be dedicated to Council for ongoing ownership and management subject to the provisions of Council's Constrained Lands Policy. However, the construction of shared pathways are included in the plan as part of the active transport network.

[61] LCM Social Infrastructure Assessment, p 81

C.2.5 Community and cultural facilities

C.2.5.1 Existing provision

There are no existing community facilities within the Lowes Creek Maryland Precinct prior to the proposed urban development.

The closest community centre is the Bringelly Community Centre on Greendale Road in Bringelly Precinct to the north of the Precinct. The Bringelly Community Centre is owned and managed by Liverpool City Council and comprises a large function room (capacity 120 people) available to the community for hire.

Elton Consulting, in the LCM Social Infrastructure Assessment, acknowledged that the Bringelly Community Centre could service an incoming population south of Greendale Road, even though the centre is owned and managed by Liverpool City Council. However, this generally applies to Bringelly Precinct land and any potential future development there, rather than the Lowes Creek Maryland Precinct further south. Therefore, new facilities are required to service the needs of the growth population in Lowes Creek Maryland.[62]

C.2.5.2 Leading practice for community facilities

Leading practice supports the provision of relatively large multi-purpose facilities for a broader population catchment that can provide a variety of higher quality, social and recreational amenities and combine a variety of functions in one location. Community centre hubs, as they are often referred to, reduce upfront and ongoing costs and provide opportunities for centralised staffing, which can in turn, increase the facilities' levels of service activity.[63]

The LCM Social Infrastructure Assessment identified that district multi-purpose community centres should also incorporate:

- A variety of flexible spaces suitable for a range of social, leisure and cultural activities.
- Multi-functional spaces of different sizes, also suitable for adult education or training activity. Council's Community Facility Team has identified that smaller meeting spaces are currently underutilised and there is demand for larger multifunctional rooms and spaces, such as in Gregory Hills Community Centre.
- Space for informal social interaction and unstructured activity – the 'community living room' model.
- Space for displays and exhibitions.
- Office space for a community development worker, and for other human service providers.
- Rooms for the delivery of services such as baby health clinic, counselling or family support services, either as outreach, sessional or full-time services.
- Kitchen suitable to support private functions such as birthday parties.
- Plenty of storage to meet the needs of a variety of user groups.
- A room for children's activities which opens onto an enclosed garden. This might be used for child-minding for parents attending centre activities, for playgroups, and for before and after school or vacation care.

[62] LCM Social Infrastructure Assessment, pp 25-27

[63] LCM Social Infrastructure Assessment, p 55

- Adjacent outdoor space with children's play equipment and barbecue, to provide for spill over social events and activities for children and young people.[64]

C.2.5.3 Community facilities demand assessment based on forecast demographics

The LCM Social Infrastructure Strategy established how new social infrastructure will help integrate the new populations and promote social cohesion in the Precinct. It referenced the guiding thresholds for community facility provision contained in the Growth Centres Development Code (2006):

- 1 local community centre: 6,000 residents
- 1 district community centre: 20,000 residents
- 1 youth centre: 20,000 residents.[65]

It also referenced Council's standards for 1 library per 40,000 residents and for community facility floorspace provision, relevant to the Lowes Creek Maryland Precinct:

- a minimum of 42 m^2 per 1,000 residents for the provision of local community facilities
- a further minimum of 13 m^2 per 1,000 residents for district community facilities, resulting in a total requirement of 55 m^2 per 1,000 residents, and
- land requirements equivalent to 2.5 times the amount of community facility floorspace proposed.[66]

Based on an additional population of 20,735 expected in the LCM Precinct, Council's standards suggest the need for at least 1,120 m^2 of total floorspace for community centre facilities. However, the application of the standards should also have regard to:

- the proposed distribution and hierarchy of centres (within the context of the broader catchment area)
- natural catchment areas, travel distances and barriers to movement such as main roads and creek corridors.

Elton Consulting identified the need for at least one district community centre in the LCM Precinct. It further recommended two local community centres to the north and south of the LCM Precinct to achieve an equitable distribution of facilities in the broader Context Plan Area.[67]

The Social Infrastructure Assessment did not recommend a branch library in the LCM Precinct but that the provision of key library programs and services (such a book drop off and collection, homework club and story time) be provided within the district multi-purpose community centre. Council is considering the provision of a district or regional library in the northern part of the SWGA.[68]

Cultural facility demand at the regional level is proposed to be met by the existing Camden Civic Centre and proposed cultural / performing arts centre at Leppington major centre. The Social

[64] LCM Social Infrastructure Assessment, p 57

[65] LCM Social Infrastructure Assessment, pp 56 & 59

[66] LCM Social Infrastructure Assessment, p 56

[67] LCM Social Infrastructure Assessment, p 66

[68] LCM Social Infrastructure Assessment, p 60

Infrastructure Assessment proposed that district-level cultural space demand should be met by the recommended district multi-purpose community centre.[69]

C.2.5.4 Facilities addressed by this plan

The final ILP for the Lowes Creek Maryland Precinct has addressed the requirements for the incoming population as recommended by the LCM Social Infrastructure Strategy. It has proposed land of 0.94 ha for one large community centre which combines the local and district community floorspace for the Lowes Creek Maryland Precinct (1,120 m^2) and the district floorspace for the balance of the Context Plan Area at 755m^2) for a total facility of 1,875 m^2 GFA located next to a double playing field, and across a road from a recreation area and park. Car parking will be co-located at this site for the adjacent double playing field.

An apportioned share of this land take only, amounting to 0.34 ha or 26% of 0.94 ha, is included in the plan. This takes into account the fact that:

- at this stage, the population of LCM Precinct could represent an estimated 26% of the broader catchment area (or Context Plan Area lower growth scenario of 78,814 people, as identified by Elton Consulting);
- the Growth Centres Development Code standard is for 1 district community centre per 20,000 residents
- Council's standards for community facilities identified the need for around 0.47 ha of land for community facilities (1,875 m^2 in floorspace x 2.5 for land take). Taking into account additional car parking provision at the site for adjacent open space facilities, this is broadly consistent with the site area proposed, and
- capital works for community facilities are not on the NSW Government's Essential Works List for contributions plans like this one (with contributions above threshold levels for an IPART assessment), and so are excluded from the plan.[70]

Future contributions plans prepared for the Context Plan Area should include an apportioned contribution towards the cost of acquiring the land for the proposed community centre identified in this plan.

Council intends to address the needs of young people within the multipurpose community centre and, potentially in the future, by providing an indoor recreation centre with a youth focus, likely somewhere in the Context Plan Area.

The list of social infrastructure items included in the plan, and their locations in the Precinct, are shown in **sections C3** and **C4**.

[69] LCM Social Infrastructure Assessment, p 50

[70] NSW Department of Planning and Environment (2019), *Practice note – Local infrastructure contribut*ions, January, section 3.2

C.3 Works schedules

Ref	Item	Land area in m^2	Land cost	Works cost	Total Cost (indexed to $Jun21)	Apportionment factor (%)	Apportioned cost ($)	Contribution catchment (persons)	Contribution rate ($/person)	Indicative Scheduling of Works
Open space and recreation										
Essential works										
P.1	Local Park inc. picnic tables & bench seats	6,975	$2,377,695	$889,772	$3,267,467	100%	$3,267,467	20,735	$158	2031/32-2035/36
P.2	Local Park inc. picnic tables & bench seats	4,583	$1,826,810	$577,181	$2,403,991	100%	$2,403,991	20,735	$116	2031/32-2035/36
P.3	Local Park with large playground inc. shade sail,picnic & BBQ facilities, bench seats	25,522	$11,271,259	$3,659,753	$14,931,012	100%	$14,931,012	20,735	$720	2031/32-2035/36
P.4	Local Park inc. picnic tables & bench seats	6,770	$2,842,433	$809,613	$3,652,046	100%	$3,652,046	20,735	$176	2031/32-2035/36
P.5	Local Park inc. picnic tables & bench seats	19,413	$7,098,877	$2,344,880	$9,443,757	100%	$9,443,757	20,735	$455	2026/27-2030/31
P.6	Local Park with large playground inc. shade sail, picnic & BBQ facilities, bench seats	25,681	$7,095,150	$4,132,052	$11,227,202	100%	$11,227,202	20,735	$541	2026/27-2030/31
P.7	Local Park inc. picnic tables & bench seats	7,681	$3,095,567	$906,403	$4,001,970	100%	$4,001,970	20,735	$193	2026/27-2030/31
P.8	Local Park inc. picnic tables & bench seats	7,485	$2,551,737	$885,961	$3,437,698	100%	$3,437,698	20,735	$166	2026/27-2030/31
P.9	Local Park with local playspace inc. shade sail, picnic table, bench seats	6,321	$2,547,567	$1,291,976	$3,839,543	100%	$3,839,543	20,735	$185	2022/23-2026/27
P.10	Local Park with local playspace inc. shade sail, picnic table, bench seats	31,506	$10,433,273	$3,517,468	$13,950,741	100%	$13,950,741	20,735	$673	2031/32-2035/36
P.11	Local Park inc. picnic tables & bench seats	5,002	$2,268,159	$621,583	$2,889,742	100%	$2,889,742	20,735	$139	2031/32-2035/36
P.12	Local Park with local playspace inc. shade sail, picnic table, bench seats	16,242	$5,428,579	$2,521,926	$7,950,505	100%	$7,950,505	20,735	$383	2026/27-2030/31
P.13	Local Park with local playspace inc. shade sail, picnic table, bench seats	5,019	$2,053,080	$1,234,730	$3,287,810	100%	$3,287,810	20,735	$159	2022/23-2026/27
P.14	Local Park inc. picnic tables & bench seats	10,257	$3,521,786	$1,656,564	$5,178,350	100%	$5,178,350	20,735	$250	2031/32-2035/36
P.15	Local Park with local playspace inc. shade sail, picnic table, bench seats	15,714	$5,609,916	$2,477,749	$8,087,665	100%	$8,087,665	20,735	$390	2026/27-2030/31
P.16	Local Park inc. picnic tables & bench seats	49,215	$11,171,302	$5,579,766	$16,751,068	100%	$16,751,068	20,735	$808	2026/27-2030/31
P.17	Local Park with local playspace inc. shade sail, picnic table, bench seats	6,217	$1,503,412	$1,381,989	$2,885,401	100%	$2,885,401	20,735	$139	2022/23-2026/27
P.18	Local Park inc. picnic tables & bench seats	14,734	$5,068,457	$1,731,552	$6,800,009	100%	$6,800,009	20,735	$328	2022/23-2026/27
P.19	Local Park inc. picnic tables & bench seats	9,706	$4,415,369	$1,211,538	$5,626,907	100%	$5,626,907	20,735	$271	2022/23-2026/27
P.20	Local Park inc. picnic tables & bench seats	9,344	$1,506,395	$1,294,355	$2,800,750	100%	$2,800,750	20,735	$135	2026/27-2030/31
P.21	Local park with local playspace inc. shade sail, picnic table, bench seats	9,099	$2,988,799	$1,712,505	$4,701,304	100%	$4,701,304	20,735	$227	2022/23-2026/27
SF.1	Mutipurpose sportsfields/large playground inc. picnic/BBQ, parking facilities	55,315	$6,566,257	$10,475,929	$17,042,186	100%	$17,042,186	20,735	$822	2026/27-2030/31
SF.2	Mutipurpose sportsfields/large playground inc. picnic/BBQ, parking facilities	104,297	$12,873,698	$17,745,345	$30,619,043	100%	$30,619,043	20,735	$1,477	2022/23-2026/27
SF.3	Mutipurpose sportsfields/large playground inc. picnic/BBQ, parking facilities	112,649	$8,145,810	$17,485,732	$25,631,542	100%	$25,631,542	20,735	$1,236	2031/32-2035/36
SF.4	Mutipurpose sportsfields/large playground inc. picnic/BBQ (parking facilities with CC)	51,761	$11,734,647	$10,123,762	$21,858,409	100%	$21,858,409	20,735	$1,054	2026/27-2030/31
	Sub Total	**616,508**	**$135,996,033**	**$96,270,084**	**$232,266,117**		**$232,266,117**		**$11,202**	

Ref	Item	Land area in m2	Land cost	Works cost	Total Cost (indexed to $Jun21)	Apportionment factor (%)	Apportioned cost ($)	Contribution catchment (persons)	Contribution rate ($/person)	Indicative Scheduling of Works
Community facilities										
Essential works - land acquisition only										
CC	Local and District community centre with carparking for adjacent sports field (SF.4)	9,441	$4,720,435		$4,756,286	26%	$1,251,315	78,814	$16	2026/27-2030/31
	Sub Total	**9,441**	**$4,720,435**		**$4,756,286**		**$1,251,315**		**$16**	
Non-essential woks - not collected for by plan										
CC	Local and District community centre containing approximately 1,120m2 of Local and District floor space for the Lowes Creek Maryland precinct and approximately 755m2 of District floorspace for the remainder of the South Creek West Context Plan Area. Includes additional allowance for uncovered area, carparks and landscaping.	1,875		$7,031,250	$7,031,250	0%	$0	78,814	$0	2026/27-2030/31
	Sub Total	**-**			**$0**		**$0**		**$0**	
	TOTAL LAND - COMMUNITY FACILTIES		**$4,720,435**		**$4,756,286**		**$1,251,315**		**$16**	

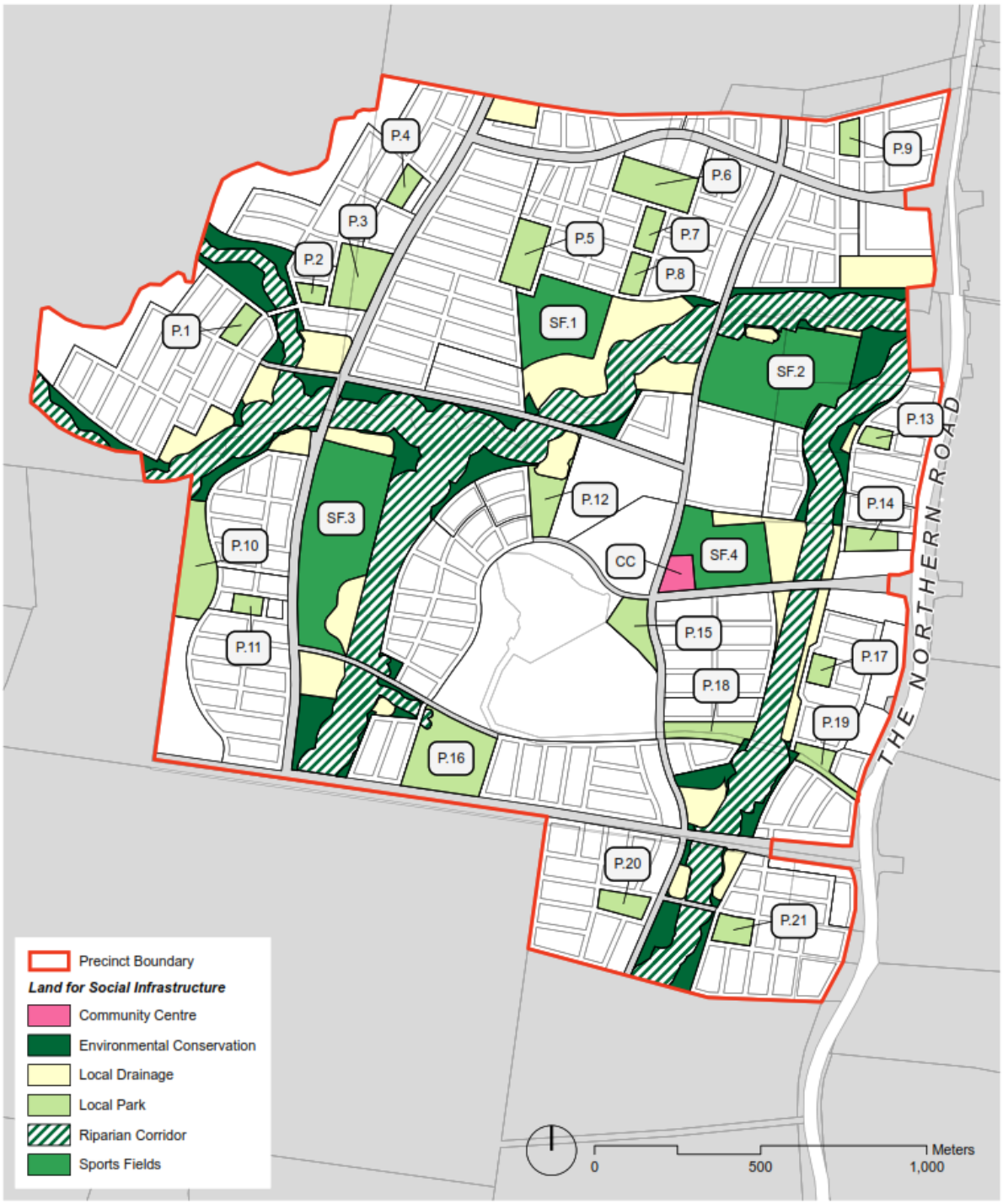
Ref	Item	Required land (m^2)	Land cost	Required works (m^2)	Works cost	Total Cost (indexed to $Jun21)	Apportionment factor (%)	Apportioned cost ($)	Contribution catchment (ha)	Contribution rate ($/ha)	Indicative Scheduling of Works
Stormwater infrastructure											
Essential works											
1	Western online detention basin - DB1	14,162	$428,097	62,543	$5,499,000	$5,927,097	100%	$5,927,097	265	$22,364	2026/27-2030/31
2	Offline detention basin & bioretention - DB2 and B2	15,723	$2,534,786	18,321	$3,906,498	$6,441,284	100%	$6,441,284	265	$24,304	2026/27-2030/31
4	Offline detention basin & bioretention - DB4 and B4	10,271	$1,655,841	14,212	$2,472,354	$4,128,195	100%	$4,128,195	265	$15,576	2026/27-2030/31
5	Offline detention basin & bioretention - DB5 and B5	11,062	$4,434,178	15,207	$2,700,089	$7,134,267	100%	$7,134,267	265	$26,918	2026/27-2030/31
6	Offline detention basin & bioretention - DB6 and B6	7,440	$955,805	9,215	$1,783,656	$2,739,461	100%	$2,739,461	265	$10,336	2031/32-2035/36
7	Offline detention basin & bioretention - DB7 and B7	14,453	$1,372,137	17,085	$2,963,205	$4,335,342	100%	$4,335,342	265	$16,358	2031/32-2035/36
8	Offline detention basin & bioretention - DB8 and B8	8,408	$913,284	9,993	$1,871,243	$2,784,527	100%	$2,784,527	265	$10,506	2031/32-2035/36
9	Offline detention basin & bioretention - DB9 and B9	15,115	$2,261,909	18,311	$3,037,951	$5,299,860	100%	$5,299,860	265	$19,997	2026/27-2030/31
11	Central online detention basin - upper & bioretention - DB11	4,280	$129,375	51,448	$6,117,021	$6,246,396	100%	$6,246,396	265	$23,568	2022/23-2025/26
12	Central online detention basin - lower & bioretention - DB12	23,525	$2,986,697	34,969	$3,817,888	$6,804,585	100%	$6,804,585	265	$25,674	2022/23-2025/26
20	Offline detention basin & bioretention	15,574	$7,017,516	16,922	$3,248,440	$10,265,956	100%	$10,265,956	265	$38,735	2031/32-2035/36
3	Bioretention basin - B3	2,694	$1,085,784	850	$447,668	$1,533,452	100%	$1,533,452	265	$5,786	2031/32-2035/36
10	Bioretention basin - B10	3,369	$101,838	1,340	$523,688	$625,526	100%	$625,526	265	$2,360	2022/23-2025/26
13	Bioretention basin - B13	4,668	$56,441	1,840	$600,629	$657,070	100%	$657,070	265	$2,479	2022/23-2025/26
14	Bioretention basin B14	12,034	$1,940,064	5,990	$1,262,109	$3,202,173	100%	$3,202,173	265	$12,082	2022/23-2025/26
15&18	Bioretention basin - B15 & B18	12,508	$151,236	3,330	$841,587	$992,823	100%	$992,823	265	$3,746	2022/23-2025/26
16	Bioretention basin - B16	6,504	$78,641	2,650	$730,966	$809,607	100%	$809,607	265	$3,055	2022/23-2025/26
19	Bioretention basin - B19	4,729	$1,334,177	2,330	$682,135	$2,016,312	100%	$2,016,312	265	$7,608	2026/27-2030/31
CT8	Bioretention basin - CT8	1,998	$24,158	1,100	$486,650	$510,808	100%	$510,808	265	$1,927	2022/23-2025/26
LC7	Bioretention basin - LC7	1,930	$58,340	1,000	$470,069	$528,409	100%	$528,409	265	$1,994	2022/23-2025/26
I1	Offline detention basin & bioretention	26,680	$1,924,909	26,680	$4,140,965	$6,065,874	100%	$6,065,874	265	$22,887	2026/27-2030/31
I2	Offline detention basin & bioretention	36,570	$1,105,432	36,570	$5,575,336	$6,680,768	100%	$6,680,768	265	$25,207	2026/27-2030/31
K1	Offline detention basin & bioretention	16,650	$503,294	16,650	$2,832,649	$3,335,943	100%	$3,335,943	265	$12,587	2022/23-2025/26
K2	Offline detention basin & bioretention	14,800	$447,372	14,800	$2,618,365	$3,065,737	100%	$3,065,737	265	$11,567	2022/23-2025/26
NT1	Offline detention basin & bioretention	11,560	$4,659,119	12,172	$2,229,734	$6,888,853	100%	$6,888,853	265	$25,992	2026/27-2030/31
CC1	CC1- One culvert crossing - Northwest Tributary - Box Culverts	-	Inc. in road costs			-	-	-	-	-	2022/23-2025/26
CC2-CC4	CC2-CC4 - Three culvert crossings - West Tributary - Box culverts with pipes, two upstream of proposed online basin and two downstream	-	Inc. in road costs			-	-	-	-	-	2031/32-2035/36
CC5-CC6	CC5-CC6 - Two culvert crossings - Central Tributary - Box culverts with pipes, upstream of proposed online basin	-	Inc. in road costs			-	-	-	-	-	2026/27-2030/31
	Sub Total	**296,707**	**38,160,429**	**395,528**	**60,859,895**	**99,020,324**		**99,020,324**		**373,614**	
Additional costs (compensation, conveyancing etc.)											
	Additional costs on acquisitions		$3,816,043			$3,816,043	100%	$3,816,043	265	$14,398	
	Total		**$41,976,472**			**$102,836,367**		**$102,836,367**		**$388,013**	

Ref	Item	Required (m^2)	Land cost	Works cost	Total Cost (indexed to $Jun21)	Apportionment factor (%)	Apportioned cost ($)	Contribution catchment (ha)	Contribution rate ($/ha)	Indicative Scheduling of Works
Transport infrastructure										
Essential works										
CR.1	North/south collector road between Precinct boundaries (Eastern side)	55,503	$17,935,001	$19,762,665	$37,697,666	100%	$37,697,666	265	$142,237	2022/23-2025/26
CR.2	East/west collector road mid Precinct from CR.1 past SR2 to MD1.1	27,006	$5,959,780	$9,560,348	$15,520,128	100%	$15,520,128	265	$58,559	2026/27-2030/31
CR.3	East/west collector road joining CR.1 to existing intersection at The Northern Road	18,568	$7,863,871	$10,035,431	$17,899,302	100%	$17,899,302	265	$67,536	2022/23-2025/26
LR.1	Local Road - From SR.2 to end of P.16 (between Maryland Homestead & Home Farm)	10,560	$1,160,830	$5,649,856	$6,810,686	100%	$6,810,686	265	$25,697	2031/32-2035/36
LR.2	Local Road segment - From Eastern Collector Rd (CR.1) to end of P.12 (between Maryland Homestead & local open space)	11,856	$711,805	$5,989,386	$6,701,191	100%	$6,701,191	265	$25,284	2026/27-2030/31
LR.3	Local road from Collector Rd (CR.1) across ripariand corridor	2,560	$77,383	$2,787,281	$2,864,664	100%	$2,864,664	265	$10,809	2026/27-2030/31
I.1	Roundabout (collector) between I.11 & I.13	-		$440,581	$440,581	100%	$440,581	265	$1,662	2022/23-2025/26
I.2	Signalised CR.1/CR.3 (Collector x 4)	-		$729,370	$729,370	100%	$729,370	265	$2,752	2022/23-2025/26
I.3	Signalised CR.1/CR.2 (Collector x 3 + sports leg)	-		$729,370	$729,370	100%	$729,370	265	$2,752	2022/23-2025/26
I.4	Roundabout (collector) between I.14 & I.16	-		$440,581	$440,581	100%	$440,581	265	$1,662	2022/23-2025/26
I.5	Roundabout (sub-arterial) between I.15 & I.2	-		$548,573	$548,573	100%	$548,573	265	$2,070	2022/23-2025/26
I.6	Roundabout (collector) between I.13 and I.18	-		$440,581	$440,581	100%	$440,581	265	$1,662	2022/23-2025/26
I.7	Roundabout (collector) on CR.3 near Northern Rd intersection	-		$440,581	$440,581	100%	$440,581	265	$1,662	2022/23-2025/26
Shared pathway	Cycleway/Pedestrian path along riparian corridors linking parks, centres & the Northern Rd shared pathway including creek crossings	22,738		$9,850,507	$9,850,507	100%	$9,850,507	265	$37,167	2031/32-2035/36
	Bus Stops	16		$400,000	$400,000	100%	$400,000	265	$1,509	constructed with roadwork
	Sub Total	**126,053**	**$33,708,670**	**$67,805,111**	**$101,513,781**		**$101,513,781**		**$383,022**	
Additional costs (compensation, conveyancing etc.)										
	Additional costs on acquisitions		$3,370,867		$3,370,867	100%	$3,370,867	265	$12,719	
	Total		**$37,079,537**	**$67,805,111**	**$104,884,648**		**$104,884,648**		**$395,741**	

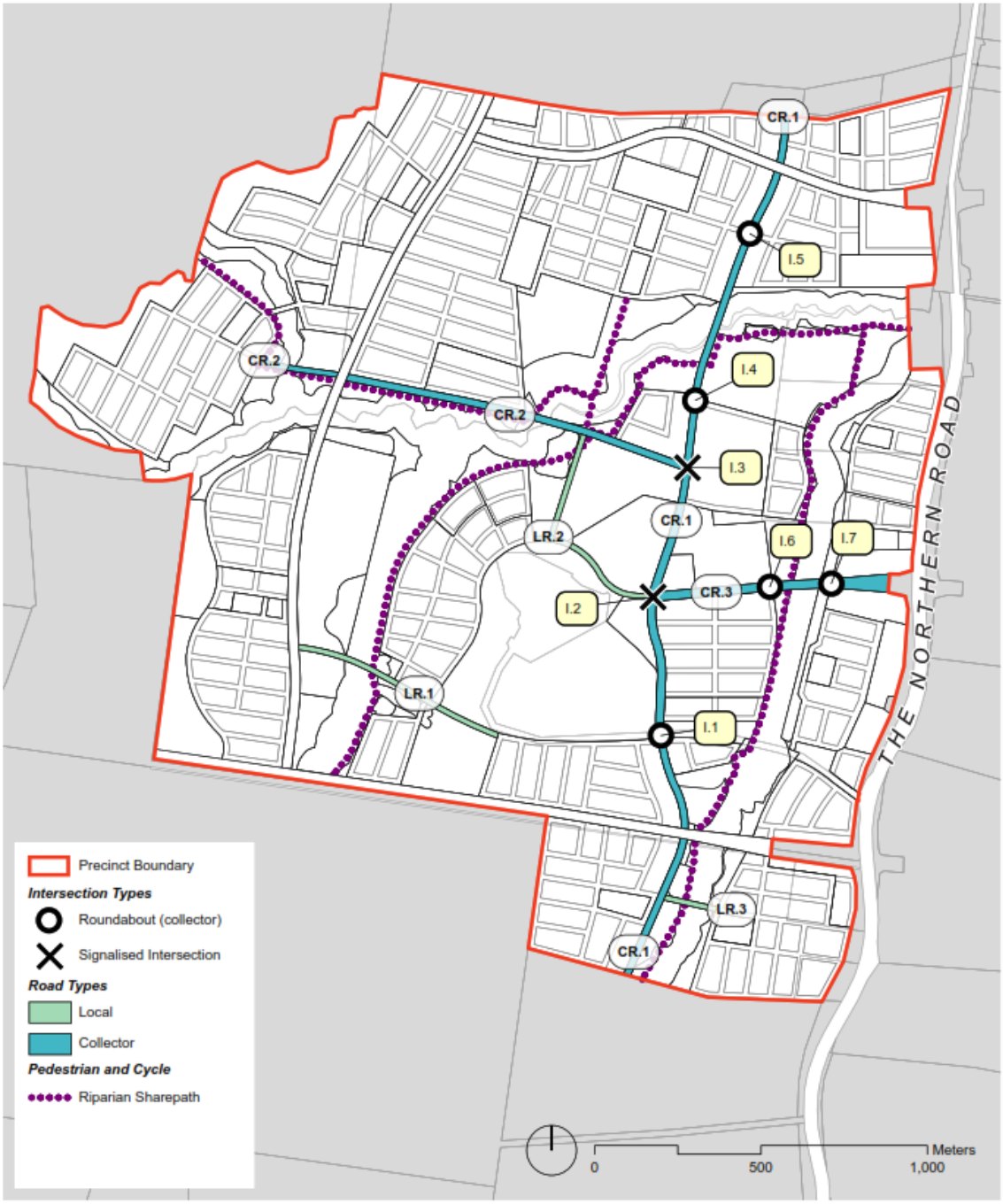
Ref	Local Infrastructure item	Source	Rate	Unit	Total cost of works in plan ($)	Total cost ($)	Apportionment factor (%)	Apportioned cost ($)	Contribution catchment (ha)	Contribution rate (ha)
Plan Administration - essential works										
	Based upon construction cost of works	IPART	1.5%	-	$224,935,090	$3,374,026	100%	$3,374,026	265.0	$12,731
	Sub Total				**$224,935,090**	**$3,374,026**		**$3,374,026**		**$12,731**
Plan Administration - non-essential works (indicative only - not levied under plan)										
	Based upon construction cost of works	IPART	1.5%	-	$7,031,250	$105,469	26%	$27,747	265.0	$105
	Sub Total				**$7,031,250**	**$105,469**		**$27,747**		**$105**

C.4 Works location maps

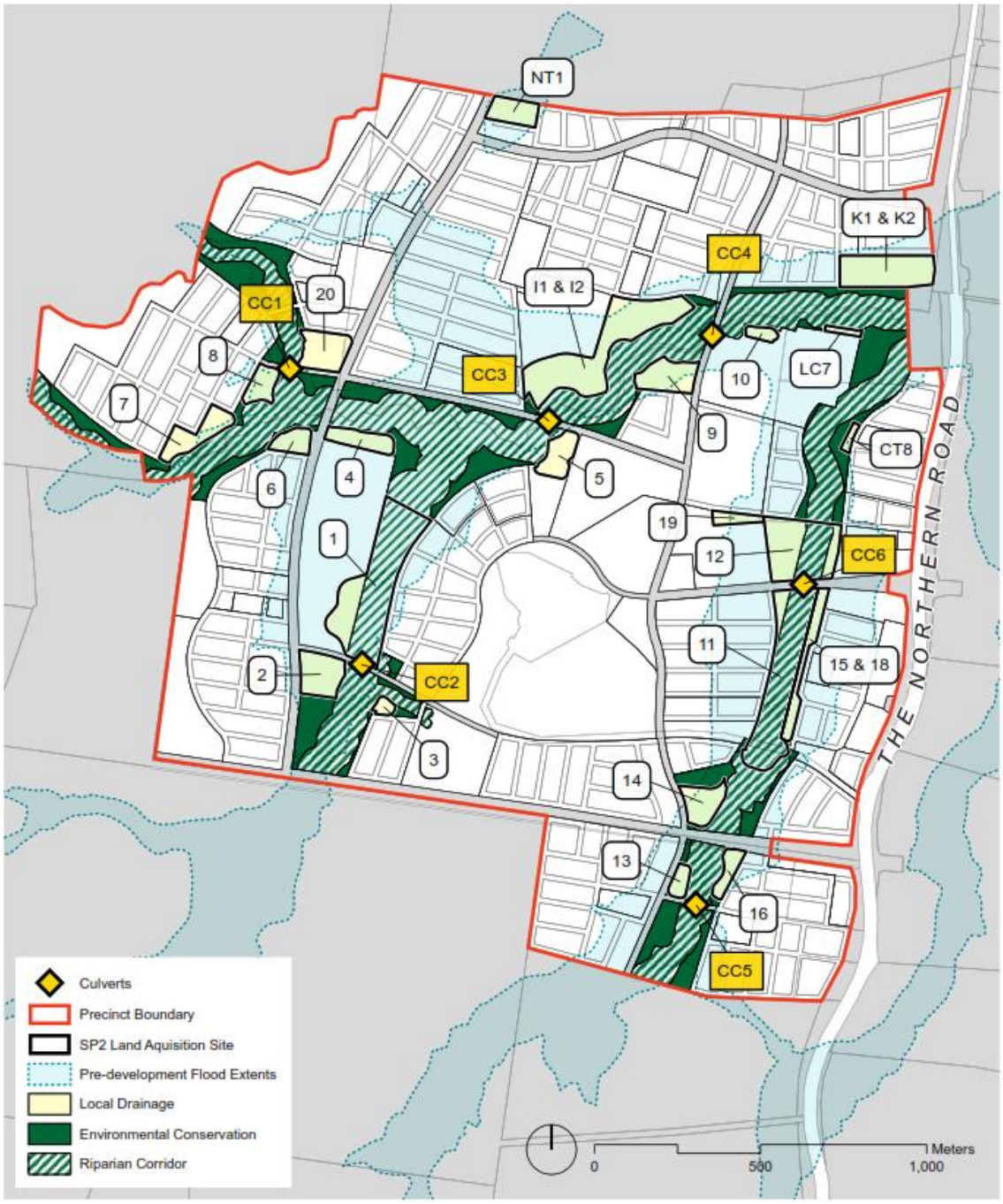
OPEN SPACE AND RECREATION; COMMUNITY FACILITIES



TRANSPORT


CR.1
I.5
CR.2
CR.2
I.4
I.3
CR.1
LR.2
I.6
I.7
CR.3
I.2
LR.1
I.1
LR.3
CR.1
THE NORTHERN ROAD
Precinct Boundary
Intersection Types
Roundabout (collector)
Signalised Intersection
Road Types
Local
Collector
Pedestrian and Cycle
Riparian Sharepath
0
500
1,000
Meters

STORMWATER INFRASTRUCTURE



C.5 Background information

Atlas Urban Economics (2021), *Lowes Creek Maryland Precinct Generic Value Assessment*, prepared for GLN Planning on behalf of Camden Council, January

Cardno (2018), *Water Cycle Management Study - Lowes Creek Maryland Precinct* (Draft report), prepared for NSW Department of Planning and Environment, 26 September

Deep End Services (2018), *Retail and Economic Analysis – Lowes Creek Maryland Precinct,* prepared for NSW Department of Planning and Environment on behalf of Macarthur Developments, September

Douglas Partners (2018), *Report on Land Capability Study - Lowes Creek Maryland Precinct*, prepared for NSW Department of Planning and Environment and Camden Council on behalf of Macarthur Developments, September

Elton Consulting (2018), *Demographic and Social Infrastructure Assessment - Lowes Creek Maryland Precinct* (Revised draft report), 18 August

Geoffrey Britton Environmental Design & Heritage Consultant (2018), *Lowes Creek Maryland Precinct Cultural Landscape and Visual Context Review*, September

GHD (2018), *Lowes Creek Maryland Precinct – Traffic, Transport and Access Assessment* (Revised report), prepared for Macarthur Developments on behalf of NSW Department of Planning and Environment, September

GHD (2018), *Lowes Creek and Maryland Precinct Water, Wastewater and Electricity Servicing Feasibility Report*, prepared for NSW Department of Planning and Environment on behalf of Macarthur Developments, September

GHD (2021), *Report for Macarthur Developments Pty Ltd – Lowes Creek and Maryland*, February

Macarthur Developments (with Storm Consulting, Craigs & Rhodes and Enspire Solutions) (2020), *LCM Basin Review* (Version 2), 22 April.

Mitchell Brandtman (2022), *Lowes Creek and Marylands Park Contribution Plans Benchmark Estimates*, prepared for GLN Planning on behalf of Camden Council, September

NSW Department of Planning and Environment (2021), *Camden Council Growth Centre Precincts - Lowes Creek Maryland Main Body DCP amendments*, December

NSW Department of Planning and Environment (2021), *Schedule 6 Lowes Creek Maryland Precinct Development Control Plan*, December

NSW Department of Planning and Environment (2021), *South West Growth Area Lowes Creek Maryland – Finalisation Report*, July

NSW Department of Planning and Environment (2018), *Lowes Creek Maryland Precinct Plan - Discussion Paper*, September

NSW Department of Planning and Environment (2019), *Practice note – Local infrastructure contributions,* January

NSW Minister for Planning and Infrastructure, *Environmental Planning and Assessment (Local Infrastructure Contributions) Direction 2012*, as amended

Storm Consulting/Craigs & Rhodes (2020), *Lowes Creek Maryland Precinct Water Cycle Management Strategy Report Addendum*, prepared for Macarthur Developments, 4 September