Draft Development Control Plan – Telopea Precinct

Draft for Public Exhibition

May 2021

Note: If adopted, this DCP would form an amendment to the Parramatta DCP 2011 (Section 4.3 Strategic Precincts)

CITY OF PARRAMATTA

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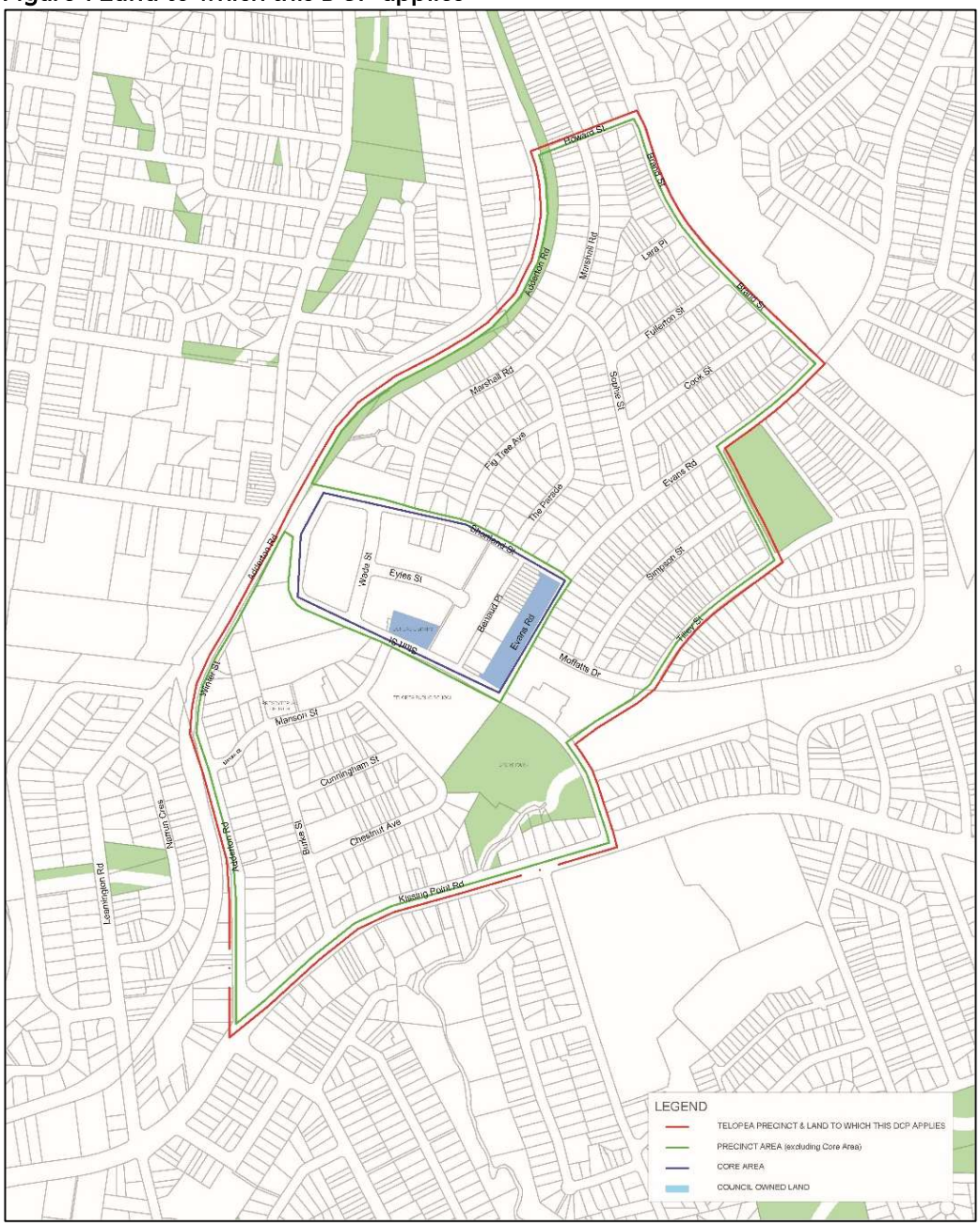
Figures & Tables

1. Telopea Precinct

1.1 Application

The provisions of this section of the DCP apply to development within the Telopea precinct as shown in **Figure 1** and any relevant controls in Parts 2, 3 and 5 of the Parramatta DCP 2011. Where there is any inconsistency the Telopea Precinct provisions of this part will prevail.

Figure 1 Land to which this DCP applies



1.2 Desired Future Character and General Objectives

Anchored by the Parramatta Light Rail, the Telopea Precinct is placed to become a transit-oriented development where the distribution of densities and land uses enable

a more compact, walkable and sustainable community delivering improved access to public transport and a range of community and retail services.

The planning controls for Telopea facilitate the transformation of the Precinct, including the provision of new retail, community facilities, roads, and the renewal of existing buildings to deliver additional social, affordable and private market housing.

The highest densities will be located in the street block opposite the light rail stop known as the 'Core' where retail offerings and community facilities are to be located. The Core will be permeable, with new roads and pedestrian links which will be designed to assist pedestrians to navigate the topography, and include opportunities to provide lifts, escalators and ramps for the public. Outside of the Core, land uses will be residential, with the densities and heights transitioning down from apartments to townhouses toward the perimeter of the precinct.

A new public arrival plaza will be located adjacent to the Light Rail stop with opportunities for new public and publicly accessible open space and links to be provided throughout the precinct. Sturt Park and Acacia Park will be the primary open space for residents in the neighbourhood, with the Ponds Creek Reserve and Rapanea Community Forest providing important environmental and recreation functions.

The precinct will be part of the recycled water network of the Greater Parramatta and Olympic Park precinct, as new buildings will contain dual water systems. The Precinct will improve liveability by designing buildings and spaces that cool and protect the community from heat stress.

Wherever possible existing mature trees and new plantings will help inform the design of private and public domains, including landscaped setbacks and private communal open space. In streets and public spaces trees will enhance the walking environment and landscape character of Telopea. The State heritage-listed dwellings 'Redstone" and its heritage curtilage will continue to be protected.

General Objectives

O.1 To create a vibrant, cohesive and safe mixed-use precinct which delivers shared civic spaces, community facilities and services and retail facilities.

O.2 To deliver new open spaces, public domain, pedestrian links and streets to support higher densities in the Core. These spaces should provide amenity, places for interaction and aid in navigating the topography of the precinct.

O.3 To design buildings that respond to the topography, landscape and solar access, and improve safety and connectivity by clearly identifying between private and public spaces.

O.4 To ensure development promotes the reduction of water and energy consumption, reducing the impact of urban heat and improving pedestrian comfort.

O.5 To ensure development maximises opportunities for future planting of trees and retention of existing significant trees within the public and private domain.

1.3 Council owned land

In the context of the transformation of Telopea Precinct, Council will investigate the future of its sites within Telopea – namely 21 Sturt Street (the current Dundas Community Centre and Library) and the land between the existing Waratah Shops and the formed section of Evans Road (also known as Benaud Place). These Council owned sites are shown on **Figure 1**.

Council has identified that the medium to long term needs of the community include delivery of a new multipurpose neighbourhood centre and Telopea District Library. The delivery of adjacent green space or public domain areas should be considered as a complementary part of a new library and community facility.

Any future investigation of the Council owned land at Sturt Street (the current Dundas Community Centre and Library) will consider the future increased demand for community facilities and the potential relocation of community facilities to alternative sites. The investigation should include the potential to consolidate this land with adjoining properties or redevelop this property with or without community facilities but only where it is intended that the existing and proposed community floor space has been or will be permanently relocated on other sites in or around the community facility.

Any future investigation of the Council owned-land between the existing Waratah Shops and the formed section of Evans Road (also known as Benaud Place) will consider the potential to consolidate with adjoining private land owners as part of a future mixed use or residential development (only if the road reserve is no longer required to provide access to adjoining privately owned sites). Should the Council land be consolidated, any subsequent development should retain an area of adjacent green space or public domain to complement the development.

2. Traffic and Transport

2.1 Road Connections

Principles

P.1 Provide new or relocated road connections and intersections to service the new retail precinct and residential developments.

P.2 Road connections are to be provided to increase accessibility and appropriately navigate the topography of the precinct for motorists, pedestrians and cyclists.

P.3 To ensure new streets are designed to maximise equitable access, where possible, and as topography permits.

P.4 Where possible, that new road connections connect with the existing street pattern in order to provide direct connections.

Controls

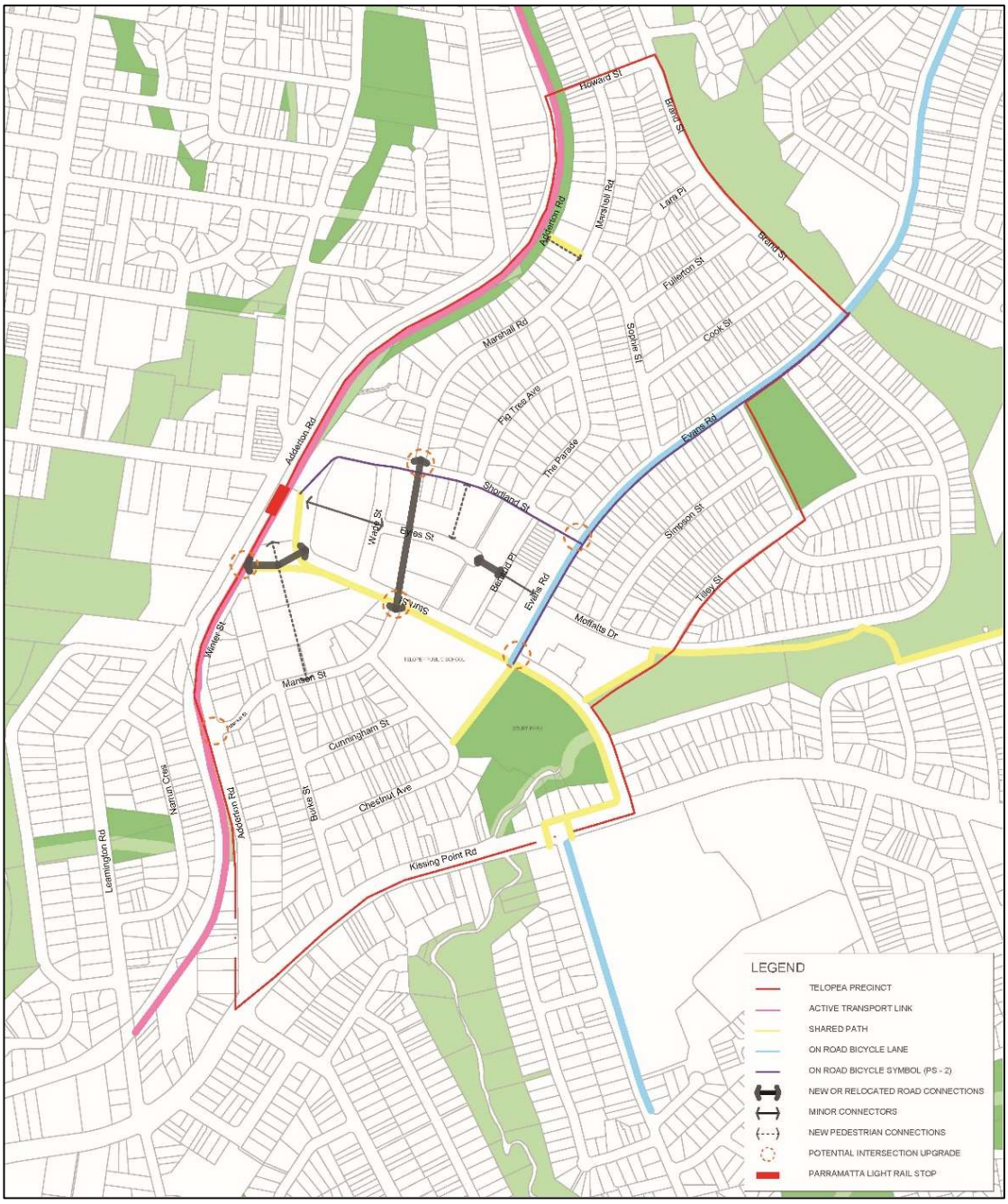
C.1. Any new road or any relocation of an existing road or active transport connections are to be provided in accordance with Figure 2 and the specifications in Table 1.

C.2 Any additional new road connections not listed in Table 1 shall be designed to incorporate a minimum of a 7 metre wide carriageway and a minimum 2.5 metre parking indented parking bays to one side of the street and a minimum of 3 metre verges.

Table 1 Dimensions for new road and upgraded connections in Telopea

Road/Connection	Road Carriageway (including roadway and on street parking)	On street Parking (included in road carriageway width)	Footpath with landscape verge	Activated frontage (where active uses on ground level)
Wade Street (relocated)	13.0m	On both sides	3.0m each side	3.0m-5.0m
Extension of Elyse Street	10.0m	On the northern side of the street.	4.0m-5.0m each side	-
Benaud Place	9.0m	One the western side of the street.	3.0m each side	-

Figure 2 Road and Transport Connections



2.2 Vehicle Access

Controls

C.1 Driveways should be:

a) Provided from lanes and secondary streets rather than the primary street, wherever practical.

b) Located to take into account any services within the road reserve, such as street lights or power poles, drainage inlet pits and existing street trees.

c) Located a minimum of 10 metres from the perpendicular of any intersection of any two roads.

d) Designed so that vehicles can enter and leave in a forward direction without the need to make more than a three-point turn.

e) Separated and clearly distinguished from pedestrian access.

f) Located at least 2 metres from the side boundary with any public domain area, street, lanes or parks.

C.2 Access to basement parking or service areas should be located in combined and consolidated entries to minimise impacts on pedestrians.

C.3 Vehicular crossing widths are to comply with AS2890.1.

C.4 Doors to vehicle access points in apartment buildings are to be non-solid roller shutters or tilting doors fitted behind the building façade and to be of materials that integrate with the design of the building and contribute to a positive public domain.

2.3 Off-Street Parking and Bicycle Storage

Objectives

O.1 Development shall provide adequate off-street car parking which responds to Telopea as a suburban centre and access to the Parramatta Light Rail.

O.2 Development shall encourage sustainable and active transport usage by residents and visitors.

Controls

C.1 Development must provide a minimum number of the car parking spaces specified in Table 2 below.

C.2 Car parking will be generally be incorporated into basement (for apartments, shopping centres and community facilities) and utilised by occupants or visitors.

Table 2 – Telopea Precinct Parking Rates

Type	Rate	
Residential flat buildings, shop top housing or mixed use development with a residential accommodation component		
Studios, 1, 2, and 3+ bedroom apartments	Minimum Car Parking: Rate: Studio 1 2 3+	 0.6 spaces 0.6 spaces 0.9 spaces 1.4 spaces
Visitors parking	Minimum 1 space per 5 dwellings.	
Car share spaces	A minimum of 1 space is to be allocated to car share for developments with 50 or more dwellings. Any car share spaces should be located on street where practical, if	

Type	Rate	
	not practical car share spaces can be provided in basements.	
Affordable and social housing parking		
Studios, 1, 2, and 3+ bedroom apartments	Minimum car parking rates as per the State Environmental Planning Policy (Affordable Rental Housing) 2009	
Non-residential uses parking		
Supermarket and Specialty Shops	1 space per 30m^2 of Gross Floor Area	
Commercial (including medical and professional consulting)	1 space per 50m^2 of Gross Floor Area	
Community Uses, Places of Public Worship or Recreation Facilities	Assessed on merits based on a submitted Traffic Impact Assessment Report, and will take into account integration of retail/community uses and ability to share car parking as it would facilitate multi-stop facilities	
Other non-residential uses	To comply with rates in Part 3 of the Parramatta DCP 2011. Any uses not specified in Part 3 will be assessed against the RMS Guide to Traffic Generating Development	
Bicycle parking areas		
Land Use	**Residents**	**Visitors**
Residential accommodation	Minimum 1 bicycle storage space per dwelling	Minimum 1 bicycle storage space per 15 dwellings.
All non-residential uses	To comply with rates in Part 3 of the Parramatta DCP 2011.	

2.4 Active Transport Connections

Objectives

O.1 To encourage walking and cycling and public transport use in order to reduce the number of motor vehicles travelling to and from the precinct.

O.2 To improve existing and create new quality pedestrian and cycling routes which seek to improve permeability and access to and from the community facilities, the retail precinct and the light rail stop.

Controls

C.1 Any new or improved pedestrian or cycle connections are to be provided in accordance with Figure 2.

C.2 A new pedestrian connection extending from the existing through site link from Manson Street toward the new Light Rail line crossing shall be provided as part

of any new development. It is to have a minimum width of 3.5 metres. It should be publicly accessible at all times and adjoining buildings should be designed to provide passive surveillance.

C.3 The new shared pedestrian and cycleway connections from Marshall Road to the Greenway Corridor are to have a minimum width of 3 metres and be provided as an extension of Sophie Street. This connection shall be provided as part of any new development and in this case setbacks and deep soil requirements specified in this precinct DCP may be varied to ensure the delivery of the link.

2.5 Electric Vehicle Charging Infrastructure

The following technical terms are used as part of controls in this section of the draft DCP:

EV Ready Connection is the provision of a dedicated spare 32A circuit provided in an EV Distribution Board to enable easy future installation of cabling from an EV charger to the EV Distribution Board and a circuit breaker to feed the circuit.

Private EV Connection is the provision of a minimum 15A circuit and power point to enable easy future an EV in the garage connected to the main switch board.

Shared EV Connection is the provision of a minimum Level 2 40A fast charger and Power Supply to a car parking space connected to an EV Distribution Board.

EV Distribution Board is a distribution board dedicated to EV charging that is capable of supplying not less than 50% of EV connections at full power at any one time during off-peak periods, to ensure impacts of maximum demand are minimised. To deliver this, the distribution board will be complete with an EV Load Management System and an active suitably sized connection to the main switchboard.

EV Load Management System is to be capable of:

- reading real time current and energy from the electric vehicle chargers under management
- determining, based on known installation parameters and real time data, the appropriate behaviour of each EV charger to minimise building peak power demand whilst ensuring electric vehicles connected are full recharged.
- scale to include additional chargers as they are added to the site over time.

Objectives

O.1 To recognise the positive benefits of increased electric vehicle adoption on urban amenity including air quality and urban heat.

O.2 To ensure new development in Telopea provides the necessary infrastructure to support the charging of electric vehicles.

O.3 To minimise the impact of electric vehicle charging on peak electrical demand requirements.

Controls

C.1 All apartment residential car parking must:

a) Provide an EV Ready Connection to at least one car parking space per dwelling.
b) Provide EV Distribution Board(s) of sufficient size to allow connection of all EV Ready Connections and Shared EV connections.
c) Locate EV Distribution board(s) so that no future EV Ready Connection will require a cable of more than 50 metres from the parking bay to connect.
d) Provide adequate space for the future installation (post construction) of compact meters in or adjacent to the EV Distribution Board, to enable the body corporate to measure individual EV usage in the future.
e) Identify on the plans the future installation location of the cable trays from the EV Distribution Board to the car spaces allocated to each dwelling that are provided a Future EV connection, and to make spatial allowance for it when designing in other services.

C.2 All car share spaces and spaces allocated to visitors must have a Shared EV connection.

C.3 All commercial building car parking must provide 1 Shared EV connection for every 10 commercial car spaces distributed throughout the carpark to provide equitable access across floors and floor plates.

C4. The bicycle storage facility is to include 10A e-bike charging outlets to 10% of spaces with no space being more than 20 metres away from a charging outlet. Chargers are to be provided by the owner.

3. Development and Design

This section provides built form and public domain and open space controls for future developments within the Telopea precinct.

The planning controls for Telopea Precinct envisages delivery of high-quality buildings and public places. The Telopea Precinct planning controls allow for significant transformation and renewal of existing buildings, however new buildings and places shall be designed to maintain existing site characteristics such as mature trees, topography and access to open spaces to retain and enhance the sense of place.

Design excellence of buildings will be required to be demonstrated as required by the *Parramatta Local Environmental Plan 2011*. Development applications for new buildings or external alterations to existing buildings within the Telopea Precinct must demonstrate that it exhibits design excellence. This ensures that new development contributes positively to the natural, cultural, visual and built character values of the area. Further, development applications for development higher than 55 metres or a capital value of more than $100 million, or where chosen by the applicant, must undertake an architectural design competition.

3.1 Development within the Core Area

The following principles and controls apply to all development within the Core Area, which is bounded by Sturt Street, Shortland Street and Evans Road as identified in Figure 1.

Objectives

O.1 To facilitate the development of a new neighbourhood retail, commercial and residential precinct which supports activation, a quality public domain and pedestrian connections to the Parramatta Light Rail.

O.2 To ensure taller buildings are slender in form and are adequately separated to ensure solar access, view to the sky and minimise wind impacts.

O.3 To encourage an urban form which works with the topography, addresses the streets, maximises solar access and creation of views.

O.4 To ensure development facilitates a healthy environment for landscaping and street trees.

Design Principles

P.1 Provide appropriate building depth, bulk and separation which protects amenity, daylight penetration, privacy between adjoining developments and increases solar access and amenity to the public domain.

P.2 Allow building setbacks which reinforce the human scale of the streets, mitigate wind impacts, enable views to the sky in streets and public places, and recognise the variation in street setbacks within the precinct to allow for an appropriate response to topography, street trees and other site constraints.

P.3 Maximise amenity to below street level apartments, including privacy, solar access and natural light.

P.4 Ensure that the design and material selection of buildings and the public domain contribute to a high quality, durable and sustainable urban environment.

P.5 Maximise the opportunity for deep soil to encourage retention of, and planting of new trees, as well as the provision of landscaping on public and private land.

Controls

3.1.1 Lodgement of a Concept Application

C.1. Prior to, or concurrently with, the lodgement of a development application for all or part of the Core Area, a Masterplan or a Concept Development Application shall be lodged with Council for consideration. The Masterplan or Concept Application must address the Objectives, Principles within the DCP, and demonstrate that the controls are capable of being complied with when detailed development applications are submitted for each stage within the Core.

C.2. The following information shall be submitted as part of the Masterplan or Concept Application for the Core:

a) Street and pedestrian layout and hierarchy;

b) Each development lot and indicative staging;

c) Building envelopes – the footprints, heights, building typologies, gross floor areas and separation distances for each development lot;

d) Indicative location of all communal open space, including at grade and roof top areas;

e) Setbacks to streets and setbacks between building and buildings on podia;

f) Streets and street sections, including building and basement setbacks;

g) Public domain plan based on Council's Public Domain Guidelines;

h) A contour and slope plan;

i) Trees to be retained and additional tree planting in the public domain;

j) A deep soil network plan;

k) A basement plan, including entry locations; and

l) Future land ownership and responsibilities as it relates to publicly accessible spaces.

C.3. The Masterplan or Concept Application shall calculate residential gross floor area (GFA) at a minimum of 75% of the building envelope and the residential and non-residential GFA is to be allocated to each Development Lot.

C.4 The Masterplan or Concept Application shall allocate to each development lot a GFA range for both residential and non-residential uses, including calculations demonstrating that the proposed envelopes can accommodate the allowable GFA including a reasonable allowance for building articulation

C.5 That the maximum gross floor area for development lots are not to exceed the gross floor area nominated by a Notice of Development Consent granted by a relevant consent authority.

C.6 A minimum of 900 square metres of public open space, provided as one contiguous area, and associated with the new community and library facility.

3.1.2 Existing Waratah Shops

C.6 A Masterplan or Concept Application for the area known as Waratah Shops (the area bounded by the street block Evans Road, Shortland Street, Sturt Street and Benaud Lane) is to address the controls for concept application required in Section 3.1.1 of this DCP and to incorporate the following design principles:

a) Where possible, consolidate the existing holdings into development sites comprising privately owned and Council land including the existing Benaud Place car parking and landscaped area along Evans Road.

b) Building forms should be articulated to ensure solar access to private open space and future apartments.

c) Consolidated vehicular access to basements from Benaud Lane.

d) Consider publicly accessible pedestrian and/or vehicle connection extending directly from Eyles Street.

e) Potential retail uses are to be located, in their current location along Benaud Place if the site is not consolidated.

3.1.3 Core Area Built Form Controls

C.7 The maximum length of a building, (excluding perimeter block buildings) is 50 metres.

C.8 Where the length of a perimeter building exceeds 50 metres, it is to be broken into two or more components. Building breaks should be a minimum of 3m deep and 3m wide.

C.9 Street setbacks within the Core Area should be as follows:

a) Between 0 metres to 3 metres for activated street frontage with retail or commercial uses; or
b) Between 3 metres and 6 metres (or greater) where residential uses are at ground level to allow for landscaping and the protection of significant trees.
c) The setbacks are measured to the face of the building.

C.10 Buildings that are of a podium and tower form, should provide a street wall of between 2 and 4 storeys, with a tower setback of between 3 metres and 6 metres.

C.11 Upper levels of any buildings are not to extend over the lower levels.

C.12 The maximum floorplates for residential buildings is 1,000sqm. The floorplate must be measured to the outside face of the building including balconies, vertical and horizontal circulation, internal voids and external walls.

C.13 Where the building is setback from the street, 30% of the balconies or architectural elements may project up to 400mm into front building setbacks. This excludes awnings at the ground floor used for wind mitigation and weather protection, which may extend to a maximum of 3 metres (maintaining a distance of 600mm from the face of the kerb) from the building face.

C.14. The ground floor of buildings used for retail and/or commercial use are to have a minimum floor to ceiling height of 4.2 metres. All retail and commercial floors above the ground floor are to have a minimum floor to ceiling height of 3.3 metres.

C.15 All development applications must include a streetscape analysis and provide details of the street wall and perimeter block. The analysis must include:

a) the street wall elevation at 1:200 scale in context showing existing buildings on the block.

b) a detailed street wall elevation at 1:100 scale including immediately adjacent buildings accurately drawn.

c) sections through the street wall and awning at 1:50 scale including the public domain.

d) detailed facade plans/sections at 1:20 scale including ground floor active frontage and awning details.

C.16 Basement car parking is to be predominately located under the building footprint and cannot extend into the street or deep soil set-backs. Externally visible basement car parking cannot protrude above ground by more than 1metre .

3.1.4 Street Frontages and Access

C.17 Buildings must:

a) address a street.

b) be articulated with depth, relief and shadow on the street façade. A minimum relief of 150mm between the masonry finish and glazing face must be achieved.

c) Utilise legible architectural elements and spatial types such as doors, windows, loggias, reveals, pilasters, sills, plinths, frame and infill. Plinths are particularly encouraged in Telopea so that the topography is emphasised.

C.18 Apartments can be located below the street level, where it demonstrated that they cannot be located at street level due to the slope of the land. If located below street level the following applies:

a) Adequate solar access to habitable rooms and balconies is demonstrated;

b) The distance of the apartment front wall is a minimum of 5 metres from the street boundary or adequate privacy screening and landscaping is demonstrated;

c) the FFL of the lowest apartment is not more than 1500mm below the level of the street; and

d) The minimum floor to floor height of 3.3 metres, with a minimum floor to ceiling height of 2.9 metres and the head height of the windows is not less than 300mm from the underside of the slab above for ground floor and level 1 apartments.

C.19 Ramp access must demonstrate that it can be accommodated without compromising the entrance to the building or the ground floor apartments. If ramp access cannot be adequately accommodated, disability access is to be provided within the building.

C.20 Retaining walls must:

a) be located within the lot boundaries on all development lots or on the boundary if the land is within the same ownership;

b) be designed in consultation with Council if adjoining existing or future Council-owned land;

c) retain a horizontal line, with minimal stepping;

d) be fully masonry or a combination of masonry and timber; and

e) enable casual seating where possible.

3.2 Development within Precincts

This section sets out the objectives, design principles and controls for development within the Precinct Areas which is identified in Figure 1.

New development in Telopea must develop a sound response to the precinct's unique topography, subdivision and curvilinear streets. The hillside character of Telopea offers many opportunities for views across the Dundas Valley. It also presents many challenges to minimising the environmental, visual and amenity impacts of increased development on the surrounding landscape. These differences are reflected in the high and low sides of the streets, the irregular subdivision pattern on curved streets, and the sites that have a steep slope along the frontage. The following design guidance should be considered as part of all applications in Telopea.

Objectives

O.1 To allow for the renewal of housing stock.

O.2 Encourage the amalgamation of lots where possible to achieve a better built form.

O.4 To provide opportunities for publicly accessible pedestrian through site links between large street blocks, including new pedestrian and cycle links to the Greenway Corridor.

O.5 To develop residential buildings that maximise frontage to the street.

O.6 To provide adequate deep soil networks which allow for infiltration of water, reduce stormwater runoff, maintain natural ground water movement, support tree retention, promote healthy growth of trees and vegetation and provide amenity for residents.

O.7 Minimise the need for partially undergrounded apartments and encourage a level transition between apartments and the street or rear setback zone.

O.8 Take up site level changes within the building design to avoid excessive cut and fill or high retaining walls.

O.9 Preserve natural features of the precinct such as knolls or ridgelines through sensitive site grading.

Design Principles

P.1 Buildings are to form a continuous pattern of consistent street setbacks and building separation to create a comfortable neighbourhood environment.

P.2 Development is designed to enhance and maintain the topography, streetscape and natural environment as key features of Telopea.

P.3 Development is to provide breaks between the buildings to provide opportunities for views to the Dundas Valley.

P.4 To maximise the number of apartments facing the street, provide separation between buildings and allow for greater rear and front setbacks and contiguous landscape areas.

P.5 Front and rear setbacks and basement design is to respond to topography, allow for landscaping, privacy and amenity and minimise the undergrounding of apartments.

P.6 To design buildings to retain existing trees, where possible, and provide opportunities to plant new trees.

Design Principles for Sloping Sites

P.7 Match building design to suit the degree of slope, adapting proposed slab construction to either take up the slope of the site with additional half levels or step to complement the slope.

P.8 Prevent site benching and large retaining walls at shared property boundaries to minimise overshadowing, overlooking and drainage issues.

P.9 Locate vehicular crossings where they minimise the need for steep ramping from the street, so that the visual impact of driveways is minimised.

P.10 For sites that are located on the low side of the street (generally sloping from the street down to the rear boundary as per Figure 5):

a) Consider how the fall of the site may be utilised by sleeving the first level of basement with apartments to the rear.
b) Consider designing buildings with higher street wall / building height on the low side of the street than buildings on the high side of the street. This can help balance the space created on the street.

P.11 For sites that are located on the high side of the street (generally sloping from the rear boundary down to the street as per Figure 5):

a) Development may utilise the provision for basements to be built to the front boundary where it is necessary to minimise apartments at the rear being located below natural ground.
b) The larger 6 metre front setback may be more appropriate to assist with vehicular access to the basement.

P.12 For cross slope sites that slope along the street (generally sloping from one side boundary to the other):

a) Vehicular access should be provided at the lowest point of the street frontage.
b) The split slab arrangement of the ground floor is encouraged to manage access requirements and prevent large retaining walls on the high side of the site.

Controls

C.1 New developments should be sited and designed in accordance with the Indicative Block and Building Layout Plan at Figure 3.

Figure 3: Indicative Block Plan and Building Layout

C.2 Development of a residential flat building should have a minimum site frontage of 24 metres, except 18 metres for sites with two street or lane frontages.

C.3 New development must provide between a 4 to 6 metre setback to the street as outlined in Figure 4. The setback must demonstrate that it adequately considers the following site conditions:

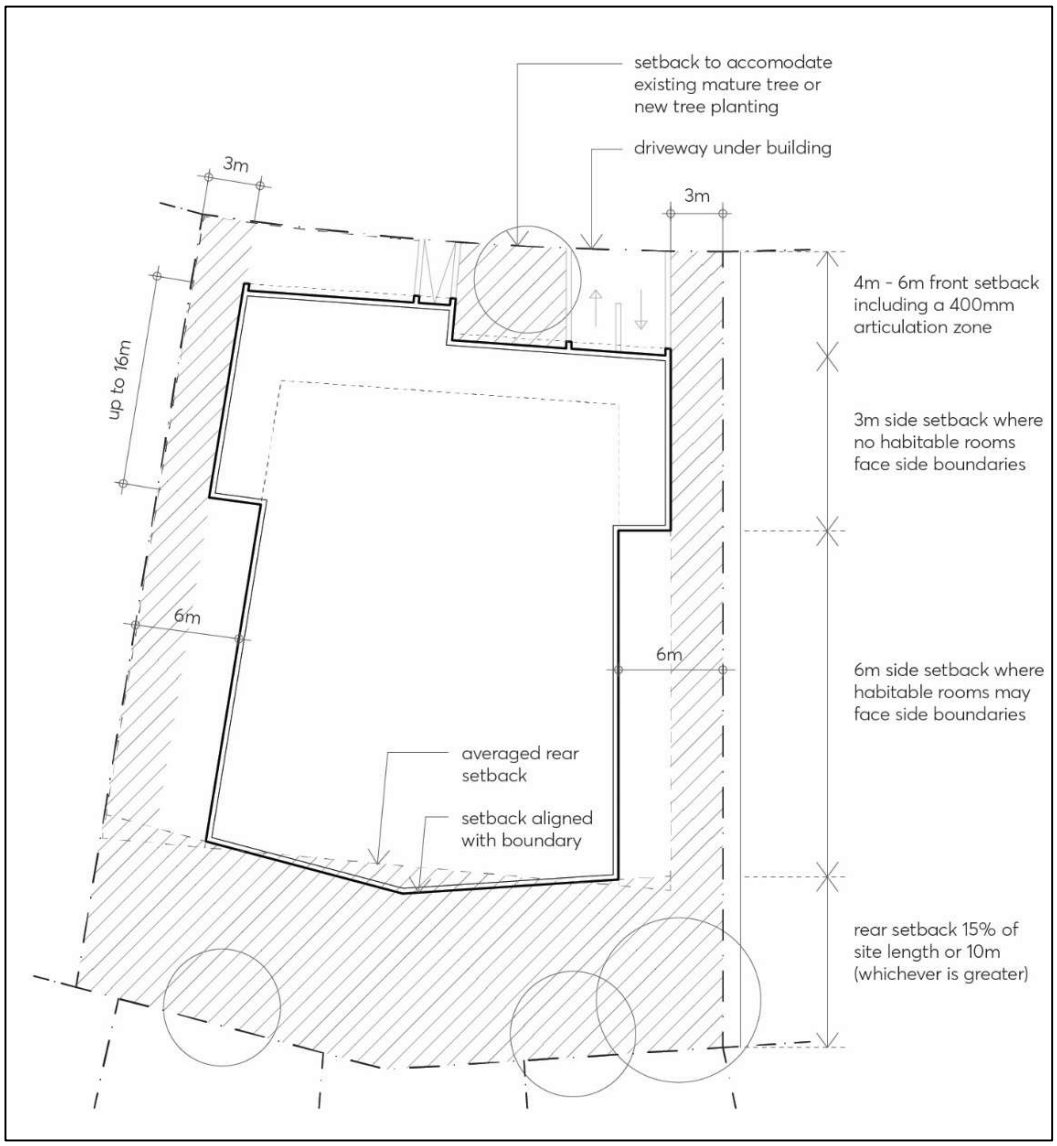
a) site levels;
b) existing vegetation;
c) topography;
d) surrounding built form; and
e) footpaths and boundaries.

C.4 The minimum setback to the side boundaries is 3 metres for part of the length of the building. Where apartments habitable rooms only face the side boundary, allow a 6 metre wide side setback, as outlined in Figure 4.

C.5 The rear setback is to be a minimum of 10 metres or 15% of the total length of the site as measured from centre of the rear boundary (whichever is the

greater), as shown in Figure 4. The setback can be averaged to align with the building footprint where the rear alignment is not regular.

Figure 4: Building Setback Plan



C.6 Buildings along the western side of Marshall Road should be designed to provide passive surveillance to the Greenway.

C.7 Where the building alignment is setback from the street alignment, 30% of balconies or architectural elements such as bay windows, may project up to 400mm into front building setbacks only.

C.8 Provide a minimum of 30% of deep soil zone on the site area, with the following requirements:

a) A minimum of half of the total deep soil area is located at the rear of the site.

b) A minimum of 7% of the total site area which is provided as deep soil area shall be designed to have a minimum dimensions of 6 metres (or greater).

The remaining deep soil areas shall provide minimum dimensions of 4 metres (or greater). Noting that a deep soil with a minimum dimension of less than 4 metres does not contribute to the deep soil calculation.

C.9 Deep soil should be designed to create a contiguous deep soil network formed with adjacent lots.

C.10 Removal of existing trees should be avoided, and new trees should be planted, as detailed in Section 4.1 Tree Preservation and Enhancement of this DCP.

C.11 Where significant excavation is required as part of new development, it must be demonstrated that deep soil back fill must comprise constructed horticultural soil profiles in order to support local vegetation communities.

C.12 Basements are to be located predominately under the footprint of the building, as shown in Figures 5 and 6. As detailed in the Design Principles for Sloping Sites contained in this DCP, there may be conditions where basements may extend into the front setback to avoid raising from ground at the rear and/or extending into the rear setback.

C.13 Basement car parking entries should be located under the apartment building as shown in Figures 6 and 7. Any above ground car parking structures should be of a solid, masonry construction. Ventes to car parking must not be located at the street frontage.

C.14 Basement car parking should be located below existing ground level. Where the slope conditions mean this is unachievable, the basement structures may project to a maximum of 1 metre above ground.

C.15 Front setbacks are to be landscaped and where trees are located in the front setback above basement, the minimum soil depth is to be 1 metre above drainage layer on the slab.

C.16 Impervious surface at ground level must be minimised in all setback areas.

Figure 5. Indicative Street Section

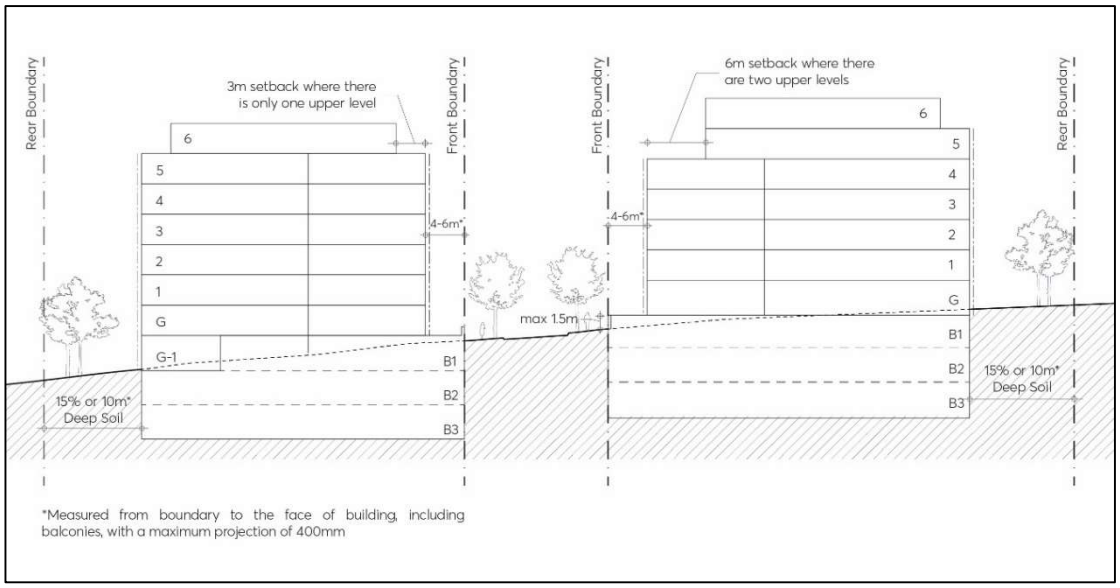


Figure 6: Indicative Basement and Deep Soil Plan

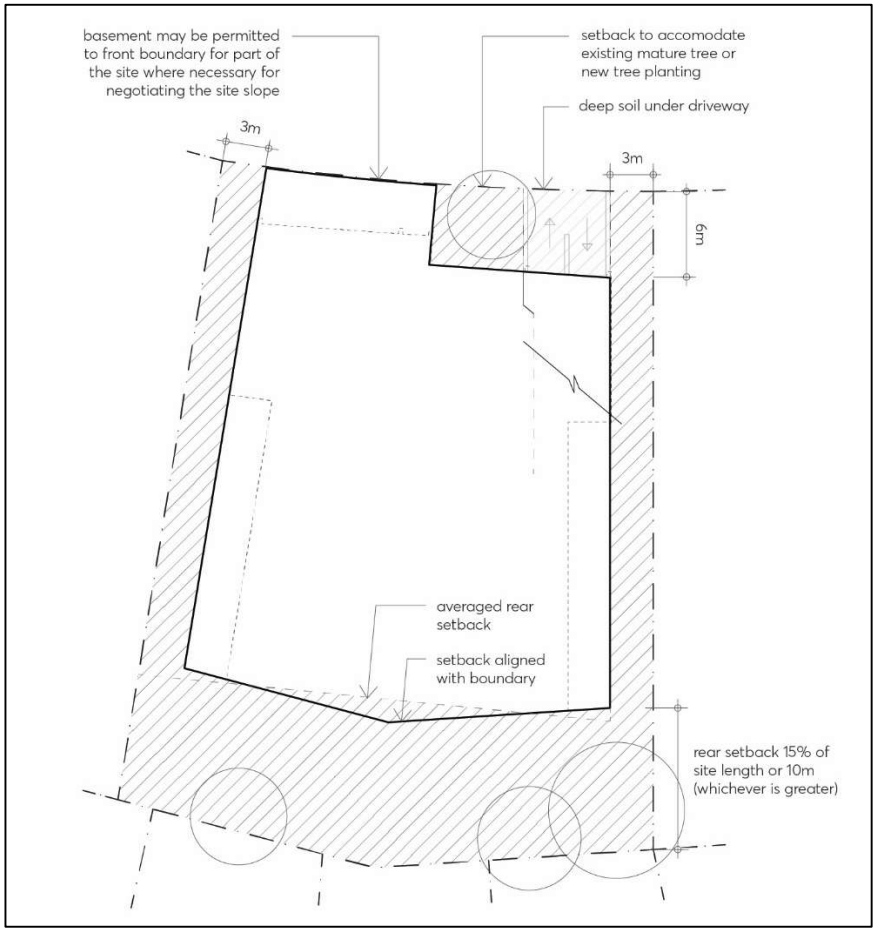
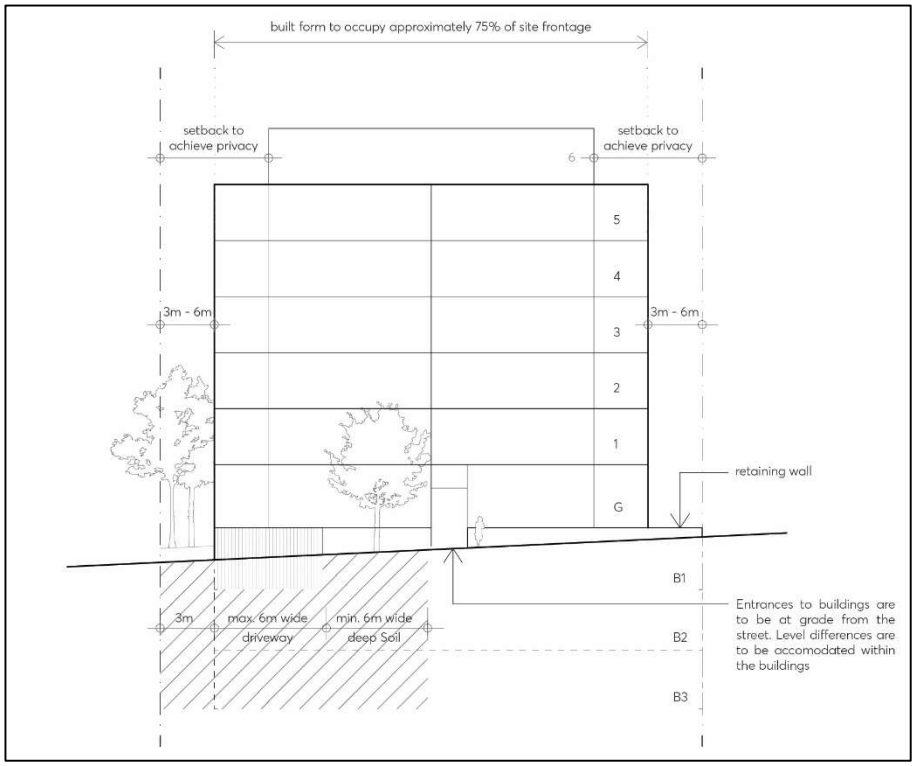


Figure 7: Indicative Street Frontage



C.17 Development of 5 and 6 storeys in height shall be designed as a street wall building, as outlined in Table 3.

C.18 Development of 7 and 8 storeys shall provide a 6 storey street wall and shall setback upper level storeys in accordance with the Table 3.

C.19 Development of 9 storeys shall provide a 7 storey street wall and shall setback upper level storeys in accordance with the Table 3.

Table3 : Street wall and upper level storeys and setbacks

Total height (in storeys)	Street wall in storeys	Upper Storeys and Upper Level Setbacks
5 storeys	5 storeys	0
6 storeys	5 storeys; or 6 storeys	1 storey setback 3 metres from the building line; or 0
7 storeys	6 storeys	1 storey setback back 3 metres from the building line
8 storeys	6 storeys	2 storeys setback 6 metres from the building line
9 storeys	8 storeys; or 7 storeys	1 storey setback 3 metres from the building line; or 2 storeys setback 6 metres from the building line

C.20 Buildings are to occupy approximately 75% of the street frontage to maximise potential for apartments facing the street as outlined in Figure 7.

C.21 Where the length of a perimeter building exceeds 50 metres, it is to be broken into two or more components. Building breaks should be a minimum of 3 metres deep and 3 metres wide.

C.22 Front fences are to be designed to:

a) be articulated at any gates and visually permeable in part to enhance the feeling of address and passive surveillance along this edge of the development;

b) be integrated with dividing masonry walls between the private open spaces where the fences relate to individual apartments facing the street;

c) be located on the front boundary and be designed to form a consistent edge along the street;

d) Not be comprised of sheet metal; and

e) address the slope of the site by providing a masonry base with a minimum height of 300mm. This base should form a horizonal plinth with minimal stepping. Upper portions of the fence are to be made of open and lightweight material.

C.23 Retaining walls must:

a) be located within the lot boundaries on all development lots or on the boundary if the land is within the same ownership;

b) be designed in consultation with Council if adjoining existing or future Council-owned land;

c) retain a horizontal line, with minimal stepping;

d) vary to suit the topography with a maximum height of approximately 1500mm.

e) be of fully masonry construction or a combination of masonry and timber

f) utilise terracing where necessary to subtly manipulate the existing landscape, avoiding large areas of cut and fill.

g) Be open and lightweight where front fences are located above retaining walls.

3.3 Public Domain and Open Space

Objectives

O.1 That new development provide quality public domain, including publicly accessible open space and plazas.

O.2 To maximise the areas for contiguous deep soil network to sustain existing and new vegetation and street tree canopy planting and to provide for permeable ground surface.

O.3 To provide universal access and key connections to transport nodes (buses, light rail, taxi stand etc), community facilities and retail precinct.

Principles

P.1 Clearly delineate public open space separate from private open space.

P.2 Incorporate passive and active recreational facilities to complement and enhance those already provided in Sturt Park and other nearby Council public open spaces.

P.3 Provide safe opportunities and points of interest for the community to gather / meet, walk, engage in physical activity and children's play.

P.4 Improve pedestrian connections to and between existing open spaces.

P.5 Maximise solar access to public areas during winter months and shade during summer months.

Controls

C.1. A Public Domain Plan is to be provided for all new developments over six (6) storeys. The Public Domain Plan is to detail:

a) upgrades to the surrounding public domain network, including footpaths, street tree planting, street furniture, street lighting and the like.

b) Consistency with Council's Public Domain Guidelines and finishes/street trees specified should be in line with Council's preferred palette for Telopea.

c) Street and pedestrian lighting in accordance with AS/NZS 1158.0:2005 – Lighting for roads and public spaces.

C.2 All public open spaces and connections are to be publicly accessible 24 hours, 7 days a week.

C.3 All public space that is dedicated to Council is to be designed:

a) on deep soil with no underground car parking;

b) to maximise solar access across the year;

c) to maximise its frontage with a public road or laneway or pedestrian pathway with a minimum width of 4 metres;

d) to be associated with other public amenity such as libraries, community facilities and transportation nodes; and

e) to provide equitable universal access across the whole site.

C.4 Wherever possible, universal access is to be provided in the public domain or through a community facility building. Existing streets cannot be relied upon to provide universal access.

C.5 Where universal access routes for the public are provided within a building, they are to be designed to be:

a) clearly visible and accessible from the public domain;

b) communicate that it is operable 24/7 without the need for signs;

c) provide protection from the weather;

d) clearly connect via the shortest distance to the nearest associated vertical access (lift).

C.6 Vertical access (lifts) and internal routes for the public to be designed to provide access to all levels and amenity between the street levels within the publicly accessible open space. In the event of a breakdown of any one vertical access (lifts), alternative systems/options to move across the site are to be integrated in to the public domain and to be clearly visible without an over reliance on signs.

C.8 The primary access point to all private buildings and vertical lifts are to be universally accessible, contained within the building. Ramps and landings do not interfere with the public domain.

3.3.1 Arrival and Retail Plaza

C.9. The new hilltop Arrival Plaza and pocket park will be located adjacent to the Light Rail stop. The detailed design of the Arrival Plaza should incorporate the following:

a) Integration with the future Light Rail stop and retail services across Sturt Street.

b) Bicycle parking spaces to encourage transition between active transport and other modes.

c) Safe cycle access through the Arrival Plaza to link with the Greenway Corridor and other regional cycle connections.

d) Integration with future design of bus stop, taxi rank and pick up/drop off zones.

e) Pedestrian footpaths to provide clear sightlines and minimise the number of pathways to prevent the 'carving up' of plaza space.

f) Optimising active and passive recreational opportunities.

g) Complement and integrate with any adjacent open space, including any future retail plaza.

C.10. If a retail plaza is located between Wade Street and Sturt Street~~,~~ it is to be designed to:

a) provide access to internal lifts, escalators or similar to help people move between Wade Street and Sturt Street through the retail centre;

b) be publicly accessible 24 hours 7 days a week;

c) have an area of at least 600 square metres;

d) achieve 3 hours of solar access to at least 300sqm of the plaza during mid-winter; and

e) Be active which may include retail frontages, residential entrances to individual properties, residential lobbies and residential communal facilities.

3.3.2 New pedestrian and cycleway connections

C.11 Any new pedestrian and / or cycleway connections are to be designed to:

a) Respond to the level change by providing an accessible vertical transportation (lift, escalator and/or travelator) 24/7;

b) Have a general width of between 6 and 12 metres if the connection is for pedestrians and cyclists only. The connection may widen in order to provide for tree retention and stair landings.

c) Have clear sight lines.

d) If the connection is pedestrian only, basement parking may extend below this area, except where those areas are intended to be dedicated to Council~~.~~

4. Natural Environment and Heritage

4.1 Tree Preservation and Enhancement

This section shall be read in conjunction with Section 5.4 Preservation of Trees or Vegetation of the Parramatta DCP 2011. The controls in this Part, to the extent of any inconsistency in relation to trees, take precedence over the controls in the Parramatta DCP 2011.

Objectives

O.1 To maintain natural amenity, increase biodiversity and reduce urban heat through preservation and enhancement of tree canopy.

O.2 To ensure the longevity of the trees through minimising disturbance to their root zone and canopy, the disruption of the subterranean water table and the reduction of solar access.

Principles

P.1 Street layout and building location and design should demonstrate viable retention of existing trees of high significance, including clusters of significant trees.

P.2 To ensure the existing canopy tree character is maintained by planning for and implementing replacement tree planting to naturally replace the existing trees.

P.3 New street trees should be planted to maximise and enhance tree canopy cover and provide opportunities for wildlife corridors.

P.4 Building setbacks and public domain should maximise deep soil zones to accommodate existing and newly planted large trees.

Controls

C.1 As part of any development application where a tree, as defined by 5.4.1 in the Parramatta DCP 2011, is proposed to be removed, or directly impacted by the development, the following information may be required to be submitted with the application:

a) An Arboricultural Impact Assessment (AIA) report prepared by an AQF Level 5 consulting arborist and prepared in line with the Australian Standard AS4970-2009 Protection of trees on development sites.

b) If there are trees to be retained, a detailed, site specific Tree Management Plan (TMP) should be provided to ensure that the design can be successfully implemented without detrimental impacts to the trees proposed for retention.

c) A Landscape Plan showing existing tree retention, protection zones and any additional trees to be planted, including in the public domain.

C.2 Where a tree is proposed to be removed, removal will only be granted where it is demonstrated that the removal of the tree will result in significant benefit in relation to built form, heritage or public domain outcomes.

C.3 If removal of a tree is required on private land, replacement trees are required to be provided as part of the Landscape Plan submitted with the development application as follows:

a) Approximately 1 canopy tree per 80 square metres of ground level landscaped area including natural deep soil area is required. Trees are to be capable of reaching a mature canopy height of 13 metres.

b) Additional trees can be provided on podium in set down slabs (not planter boxes) with minimum dimensions in accordance with Apartment Design Guide.

C.4 Tree species shall be in accordance with Council requirements as per the Parramatta DCP, Section 3.3.1 Landscaping.

4.2 Natural Environment

Objectives

O.1 To protect and enhance natural areas to provide habitat to native flora and fauna, as well as for the enjoyment of the community.

Controls

C.1 Future development will retain, protect and improve those areas nominated as Core Habitat and Habitat Vegetation of Figure 8.

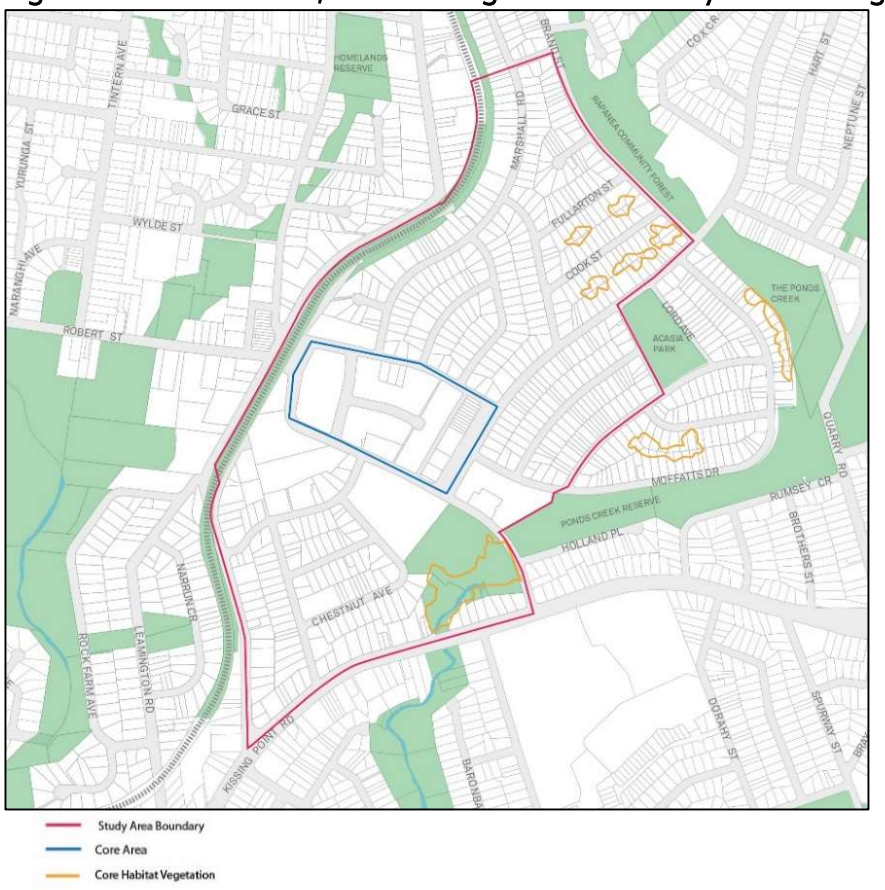
C.2 Any enhancement of Sturt Park, where proposed, should be undertaken using native species characteristic of Alluvial Woodland and using local native provenance where possible.

C.3 The boundaries of impacted areas should be clearly delineated using fences or similar means to prevent encroachment of the works into the surrounding bushland and riparian areas.

C.4 Sediment and erosion control plans are to be submitted with each development application. Installation of sediment and runoff control measures are to be installed prior to any construction works commencing to prevent runoff entering adjacent riparian areas and watercourses.

C.5 Areas proposed for disturbance where noxious weeds are present should be managed according to the weed class.

Figure 8 Core Habitat, Habitat Vegetation and Key Mature Vegetation



4.3 Heritage

A State heritage site, known as known as Redstone, is located at the corner of Adderton Road and Manson Street. The building was designed by Sir Walter Burley Griffin in 1935 and the garden is an intact example of an interwar garden which contributes to the setting of the house. Adjacent to the Telopea Precinct is Acacia Park, which is listed as an archaeological site under the Parramatta LEP 2011. The large tract of bushland known as the Rapanea Community Forest along the north-eastern edge of the Precinct is listed as a local heritage item under the Parramatta LEP 2011.

Principles

P.1 Any new development must demonstrate consideration of and response to minimising the impact on the heritage and archaeological significance of the listed items in Telopea.

Controls

C.1 A new development located within 200 metres of the heritage item 'Redstone' may require a specific heritage impact statement (HIS) to be submitted as part of a development application. This is to ensure that detailed design is sympathetic and responds appropriately to the heritage items in terms of design, form, materiality, setbacks. Council can provide advice, prior to the submission of a development application, if the nature and size of the development would require the preparation of the HIS.

C.2 There will be no removal or pruning of trees shown on Figure 9 unless the application is accompanied by a heritage impact statement demonstrating that the removal or pruning of the tree does not detrimentally impact on the contextual setting of Redstone.

C.3 Any future development located within the Telopea Precinct and located adjacent to or facing Acacia Park and the Rapanea Forest will require a specific heritage impact statement, including consideration of potential archaeological impacts, to be submitted as part of any development application.

Figure 9 Trees to be retained in relation to Redstone

5. Sustainability

5.1 Dual Water Systems

Objectives

O.1 To increase resilience and water security by providing an alternative water supply to buildings.

O.2 To reduce the technical and financial barriers to upgrading buildings to connect to future non-drinking water supply infrastructure.

O.3 To support the growth infrastructure requirements for the Greater Parramatta Olympic Peninsula area.

Controls

C.1 All development must install a dual reticulation system to support the immediate or future connection to a recycled water network. The design of the dual reticulation system is to be such that a future change-over to an alternative water supply can be achieved without significant civil or building work, disruption or cost.

C.2 The dual reticulation system is to provide:

a) One reticulation system servicing drinking water uses, connected to the drinking water supply, and

b) One reticulation system servicing non-drinking water uses, such as toilet flushing, irrigation and washing machines. The non-drinking water system is to be connected to the rainwater tank (if available) with drinking water supply back up, until an alternative water supply connection is available.

c) Metering of water services is to be in accordance with the current version of Sydney Water's *Multi-level individual metering guide*. Individual metering of the non-drinking water service is optional.

5.2 Urban Heat

The following controls aim to reduce and remove heat from the urban environment at the city and local scale. These are innovative controls based on Australian and international evidence on cites and the urban heat island effect. The controls address the:

- reflectivity of building roofs, podia and facades;
- reduce the impacts of heat rejection sources of heating and cooling systems.

Solar heat reflectivity should not be confused with solar light reflectivity, as these are distinctly different issues. Solar heat contributes to urban warming and solar light reflectivity can be the cause of glare.

These controls do not consider energy efficiency or thermal comfort within buildings. These important issues are dealt with in other controls, State Environmental Planning Policies and the National Construction Code.

The following technical terms are used as part of controls in this section of the draft DCP:

Solar heat reflectance is the measure of a material's ability to reflect solar radiation. A 0% solar heat reflectance means no solar heat radiation is reflected and 100% solar heat reflectance means that all of the incident solar heat radiation is reflected. In general, lighter coloured surfaces and reflective surfaces such as metals will have typically higher solar heat reflectance, with dark coloured surfaces or dull surfaces will typically have lower solar heat reflectance. External solar heat reflectance measured at the surface normal (90 degrees) is used in these controls.

Solar transmittance is the percentage of solar radiation which is able to pass through a material. Opaque surfaces such as concrete will have 0% solar transmittance, dark or reflective glass may have less than 10%, whilst transparent surfaces such as clear glass may allow 80 to 90% solar transmittance.

Solar Reflectance Index (SRI) is a composite measure of a materials ability to reflect solar radiation (solar reflectance) and emit heat which has been absorbed by the material. For example, standard black paint has a SRI value of 5 and a standard white paint has a SRI value of 100.

Reflective Surface Ratio (RSR) is the ratio of reflective to non-reflective external surface on any given façade.

Reflective surfaces are those surfaces that directly reflect light and heat and for the purposes of this DCP are defined as those surfaces that have specular normal reflection of greater than 5% and includes glazing, glass faced spandrel panel, some metal finishes and high gloss finishes.

Non-reflective surfaces are those surfaces that diffusely reflect light and heat and for the purposes of this DCP are defined as those surfaces that have specular normal reflection of less than 5%.

Maximum External Solar Reflectance is the maximum allowable percentage of solar reflectance for the external face of a Reflective Surface. The percentage of solar reflectance is to be measure at a normal angle of incidence

Objectives

O.1 To reduce the contribution of development to urban heat; and

O.2 To improve user comfort in the local urban environment (private open space and the public domain).

5.2.1 Roof Surfaces

Objectives

O.3 To reflect and radiate heat from roofs and podium top areas;

O.4 To improve user comfort of roof and podium top areas.

Controls

C.1 Where surfaces on roof tops or podia are used for communal open space or other active purposes, the development must demonstrate at least 50% of the accessible roof area complies with one or a combination of the following:

a) Be shaded by a shade structure;

b) Be covered by vegetation consistent with the controls on Green Roofs or Walls;

c) Provide shading through canopy tree planting, to be measured on extent of canopy cover 2 years after planting.

C.2 Where surfaces on roof tops or podia are not used for the purposes of private or public open space, for solar panels or for heat rejection plant, the development must demonstrate the following:

a. Materials used have a minimum solar reflectivity index (SRI) of 82 if a horizontal surface or a minimum SRI of 39 for sloped surface greater than 15 degrees; or

b) 75% of the total roof or podium surface be covered by vegetation; or

c) A combination of (a) and (b) for the total roof surface.

5.2.2 Vertical facades

Objectives

O.5 To minimise the reflection of solar heat downward from the building façade into private open space or the public domain.

Controls

C.3 The extent of the vertical façade of street walls, podia, perimeter block development (or if no street wall, as measured from the first 12 metres from the ground plane) that comprise Reflective Surfaces must demonstrate a minimum percentage of shading as defined in Table 4 as calculated on 21 December on the east facing façade at 10am, northeast and southeast facing façade at 11.30am, north facing façade at 1pm, northwest and southwest facing façade at 2.30pm and the west facing faced at 4pm.

Table 4: Minimum percentage shading for the street wall or first 12 metres from the ground plane of a building

Reflective Surface Ratio (RSR)	<30%	30%-70%	>=70%
Minimum percentage shading (%)	0	1.5*RSR-45	75

C.4 Calculation of RSR for each relevant façade must be submitted with the development application.

C.5 Shadow diagrams must be submitted with the development application quantifying the extent of shading at 10am, 11.30am, 1pm, 2.30pm and 4pm on 21 December for each relevant façade. Shadows from existing buildings, structures and vegetation are not considered in the calculations. Refer to Table 5 for sun angles corresponding to shading reference times.

C.6 Where it is demonstrated that the RSR is less than 30% shadow diagrams are not required to be submitted with the development application.

Table 5 Shading sun angles

Façade Orientation	Sun Angles
East ± 22.5°	Reference Time: 10am AEDT (UTC/GMT+11) Sun Elevation: 51° Sun Azimuth: 86°
Northeast/Southeast ± 22.5°	Reference Time: 11.30am AEDT (UTC/GMT+11) Sun Elevation: 69° Sun Azimuth: 66°
North ± 22.5°	Reference Time: 1pm AEDT (UTC/GMT+11) Sun Elevation: 80° Sun Azimuth: 352°
Northwest/Southwest ± 22.5°	Reference Time: 2.30pm AEDT (UTC/GMT+11) Sun Elevation: 67° Sun Azimuth: 290°
West ± 22.5°	Reference Time: 4pm AEDT (UTC/GMT+11) Sun Elevation: 48° Sun Azimuth: 272°

C.7 The extent of the vertical façade of the tower (above the street wall or if no street wall, as measured above the first 12 metres from the ground plane) that comprise Reflective Surfaces must demonstrate a minimum percentage of shading as defined in Table 6 as calculated on 21 December on the east facing façade at 10am, northeast and southeast facing façade at 11.30am, north facing façade at 1pm, northwest and southwest facing façade at 2.30pm and the west facing faced at 4pm.

Table 6: Minimum tower percentage shading

Reflective Surface Ratio (RSR)	<30%	30%-70%	>=70%
Minimum percentage shading (%)	0	0.8*RSR-24	40

C.8 Calculation of RSR for each relevant façade must also be submitted with the development application.

C.9 Shadow diagrams must be submitted with the development application quantifying the extent of shading at 10am, 11.30am, 1pm, 2.30pm and 4pm on 21 December for each relevant façade. Shadows from existing buildings, structures and vegetation are not considered in the calculations. Refer to Table 5 for sun angles corresponding to shading reference times.

C.10 Where it is demonstrated that the RSR is less than 30% shadow diagrams are not required to be submitted with the development application.

C.11 Shading may be provided by:

d) External feature shading with non-reflective surfaces;

e) Intrinsic features of the building form such as reveals and returns; and

f) Shading from vegetation such as green walls that is consistent with the controls on Green Roofs or Walls.

C.12 Non-reflective surfaces of vertical facades do not require shading and these areas can be excluded from the calculations.

C.13 Where it is demonstrated that shading cannot be achieved in accordance with the above controls, a maximum external solar reflectance as defined in Table 7 is generally acceptable.

Table 7 Maximum solar reflectance of Reflective Surfaces.

Reflective Surface Ratio (RSR)	<30%	30%-70%	>=70%

Maximum External Solar Reflectance (%)	No Max.	62.5-0.75*RSR	10

C.14 Where multiple reflective surfaces or convex geometry of reflective surface introduce the risk of focussing of solar reflections into the public spaces:

g) Solar heat reflections from any part of a building must not exceed 1,000W/m2 in the public domain at any time;

h) A reflectivity modelling report may be required to qualify extent of reflected solar heat radiation.

5.2.3 Awnings

Objectives

O.6 To ensure awnings are designed to improve user comfort, providing shelter from the sun and reduced solar heat at the street level.

Controls

C.15 All awnings and shading devices should have non-reflective surfaces

C.16 Transparent awnings are not encouraged on buildings. If transparent awnings are used, the awning must have a maximum solar transmittance of 20.

5.2.4 Heating and Cooling Systems – Heat Rejection

Objectives

O.7 To reduce the impact of heat rejection from heating, ventilation and cooling systems from contributing to the urban heat island effect in the Parramatta Local Government Area; and

O.8 To avoid or minimise the impact of heat rejection from heating, ventilation and cooling systems on user comfort in private open space and the public domain.

Controls

C.17 Residential apartments within a mixed-use development or residential flat building should incorporate efficient heating, ventilation and cooling systems which reject heat from a centralised source on the upper most roof.

C.18 Where the heat rejection source is located on the upper most roof, these should be designed in conjunction with controls in this Section of the DCP relating to Roof Surfaces and Green Roofs or Walls.

C.19 Heat rejection units are strongly discouraged from being located on building facades or on private open space, such as balconies and courtyards. However, where it is demonstrated that heat rejection cannot be achieved in accordance with the above controls C.17 and C.18 above and these units are installed, the HVAC system must demonstrate:

a) Heating, ventilation and cooling systems exceeds current Minimum Energy Performance Standard requirements; and

b) The heat rejection units are situated with unimpeded ventilation, avoiding screens and impermeable balcony walls; and

c) The area required by the heat rejection units is additional to minimum requirements for private open space.

C.20 Where a mixed use development or residential flat building proposes wintergardens as the primary private open space, no heat rejection source from heating, ventilation and cooling systems are permitted to be located in the wintergarden.

5.2.5 Green Roofs or Walls

Objectives

O.9 To ensure that green roofs or walls are integrated into the design of new development.

O.10 To encourage well designed landscaping that caters for the needs of residents and workers of a building.

O.11 To design green walls or roofs to maximise their cooling effects.

O.12 To ensure green walls and roofs are designed and maintained to respond to local climatic conditions and ensure sustained plant growth.

Controls

C.21 Green roofs located on upper most roofs or podium levels should be designed as part of communal open space for residential development and as part of usable roof top space for commercial developments.

C.22 Green roof and wall structures are to be assessed as a part of the structural certification for the building. Structures designed to accommodate green walls should be integrated into the building façade.

C.23 Waterproofing for green roofs and walls is to be assessed as a part of the waterproofing certification for the building.

C.24 Where vegetation or trees are proposed on the roof or vertical surfaces of any building, a Landscape Plan must be submitted which demonstrates:

a) Adequate irrigation and drainage is provided to ensure sustained plant growth and health and safe use of the space;

b) Appropriate plant selection to suit site conditions, including wind impacts and solar access; and

c) Adherence to the objectives, design guidelines and standards contained in the *NSW Department of Planning and Environment's Apartment Design Guide* for 'Planting on Structures'.

C.25 Green roofs or walls, where achievable, should use rainwater, stormwater or recycled water for irrigation.

C.26 Container gardens, where plants are maintained in pots, may be an acceptable alternative, however should demonstrate that the containers are of significant scale to support high quality vegetation growth for cooling and amenity.

C.27 Register an instrument of positive covenant to cover proper maintenance and performance of the green roof and walls on terms reasonably acceptable to the Council prior to granting of the Occupancy Certificate.

5.2.6 Solar light reflectivity (glare)

Objective

O.13 To ensure that buildings restrict solar light reflected from buildings to surrounding areas and other buildings.

Controls

C.28 New buildings and facades should not result in solar light reflectivity that results in glare that is hazardous, undesirable or causes discomfort for pedestrians, drivers, and occupants of other buildings or users of public spaces.

C.29 Solar light reflectivity from building materials used on facades must not exceed 20%.

C.30. Subject to the extent and nature of glazing and reflective materials used, a Reflectivity Report that analyses potential solar light reflectivity from the proposed development on pedestrians, motorists, or surrounding areas may be required.

C.31 Buildings greater that 40m in height require a Reflectivity Report that includes the visualisation and photometric assessment of solar light reflected from the building on the surrounding environment. Analysis is to include:

a) the extent of solar light reflections resulting from the development for each day in 15 minute intervals; and

b) A visual and optometric assessment of view aspects where solar light reflections may impact pedestrians, or drivers, occupants of other buildings or users of public spaces including assessment of visual discomfort and hazard.

5.3 Water Sensitive Urban Design

Objectives

O.1 To manage the quantity of stormwater run-off

O.2 To protect and enhance existing natural or constructed drainage networks including channel bed and banks by controlling the magnitude and duration of erosive flows.

O.3 To ensure that downstream flora and fauna are protected from stormwater impacts during and post construction.

O.4 To minimise surcharge from the existing drainage systems.

O.6 To ensure that on-site stormwater management measures are operated and maintained in accordance with design specifications.

Controls

C.1 The development must:

a) integrate WSUD principles into the development through the design and use of 'green' stormwater systems, biological water retention and treatment and integration of water management into the landscape rather than relying on 'end of pipe' proprietary treatment devices prior to discharge.

b) employ operating practices that prevent contamination of stormwater.

c) maximise pervious surfaces and use soft landscaping and deep soil to promote infiltration and reduce stormwater run-off.

d) WSUD elements should be located and configured to maximise the impervious area that is treated through them.

e) make adequate provision for the control and disposal of stormwater run-off from the site to ensure that stormwater has no adverse impact on Council's stormwater drainage systems, natural watercourses, the development itself, or adjoining properties.

f) Stormwater drainage design criteria are to be in accordance with Council's Stormwater Disposal Policy and current Development Engineering Design Guidelines.

g) Stormwater, including overland flows entering and discharging from the site, must be managed. The site drainage network must provide the capacity to safely convey stormwater run-off resulting from design storm events listed in Council's Development Engineering and Guidelines.

h) Council will generally not permit the construction of stormwater drainage lines through public reserves.

i) The design and location of stormwater drainage structures, such as detention and rainwater tanks, is to be in accordance with Council's Stormwater Disposal Policy and current Development Engineering and Design Guidelines

j) Run-off entering directly to waterways or bushland is to be treated to reduce erosion and sedimentation, nutrient and seed dispersal.

k) The discharge of polluted waters from the site is not permitted. Discharges from premises of any matter, whether solid, liquid or gaseous is required to conform to the Protection of the Environment Operations Act and its Regulations, or a pollution control approval issued by the NSW Environmental Protection Authority for Scheduled Premises.

C.2 Where site conditions mean that water sensitive urban design cannot be integrated within the landscape area, the applicant must demonstrate to Council why integration is not possible and the range of alternatives considered.

C.3 Development applications must prepare and implement a Site Stormwater Management Plan (SSMP) incorporating water sensitive urban design measures is required. The SSMP must:

a) identify the potential impacts associated with stormwater run-off for a proposed development and provide a range of appropriate measures for water quantity, water quality, water efficiency and re-use; and

b) be developed in accordance with Council's Stormwater Disposal Policy and current Development Engineering and Design Guidelines; and

c) to the maximum extent practical, achieve pollution reduction targets identified in Table 8 and consider measures including vegetated swales; vegetated filter strips; sand filters; bioretention systems; permeable pavements; infiltration trenches; infiltration basins; landscape developments; Gross Pollutant Traps and filters; and

d) utilise the MUSIC modelling tool (or equivalent) to determine pollution load reduction as defined in Table 8; and

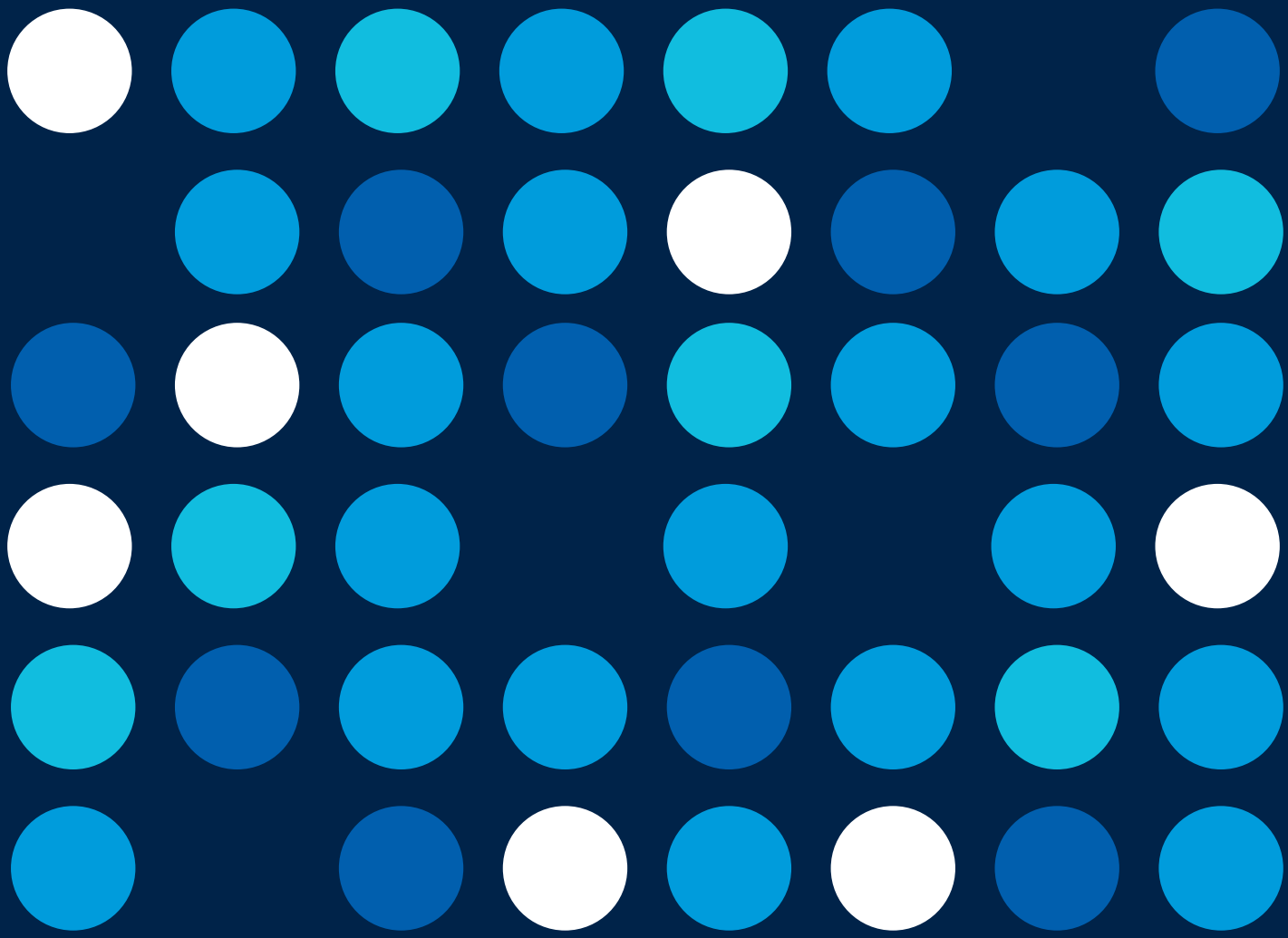
e) be prepared by a suitably qualified professional.

Table 8 Stormwater Treatment Targets for Development

Pollutant	Performance Target reduction loads
Gross Pollutants	95% reduction in the post development mean annual load of (greater than 5mm)
Total Suspended Solids	90% reduction in the post development mean annual load of Total Suspended Solids (TSS)
Total Phosphorus	85% reduction in the post development mean annual load of Total Phosphorus (TP)

Total Nitrogen	65% reduction in the post development mean annual load of Total Nitrogen (TN)
Hydrocarbons, motor oils, oil and grease	No visible oils for flows up to 90% of the one-year ARI peak flow specific for service stations, depots, vehicle body repair workshops, vehicle repair stations, vehicle sales or hire premises, car parks associated with retail premises, places of public worship, tourist and visitor accommodation, registered clubs and pubs

NOTE: Reductions in loads are relative to the pollution generation from the same development without treatment



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