# CITY OF PARRAMATTA COUNCIL

# Draft Melrose Park South Site-Specific Development Control Plan (Holdmark Sites)

Date Adopted: xx 2022



CITY OF PARRAMATTA

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# 1. INTRODUCTION

## APPLICATION

The provisions of this section of the DCP apply to development in Melrose Park South precinct as shown in Figure 1 and will prevail where there is any inconsistency with other sections of this DCP.

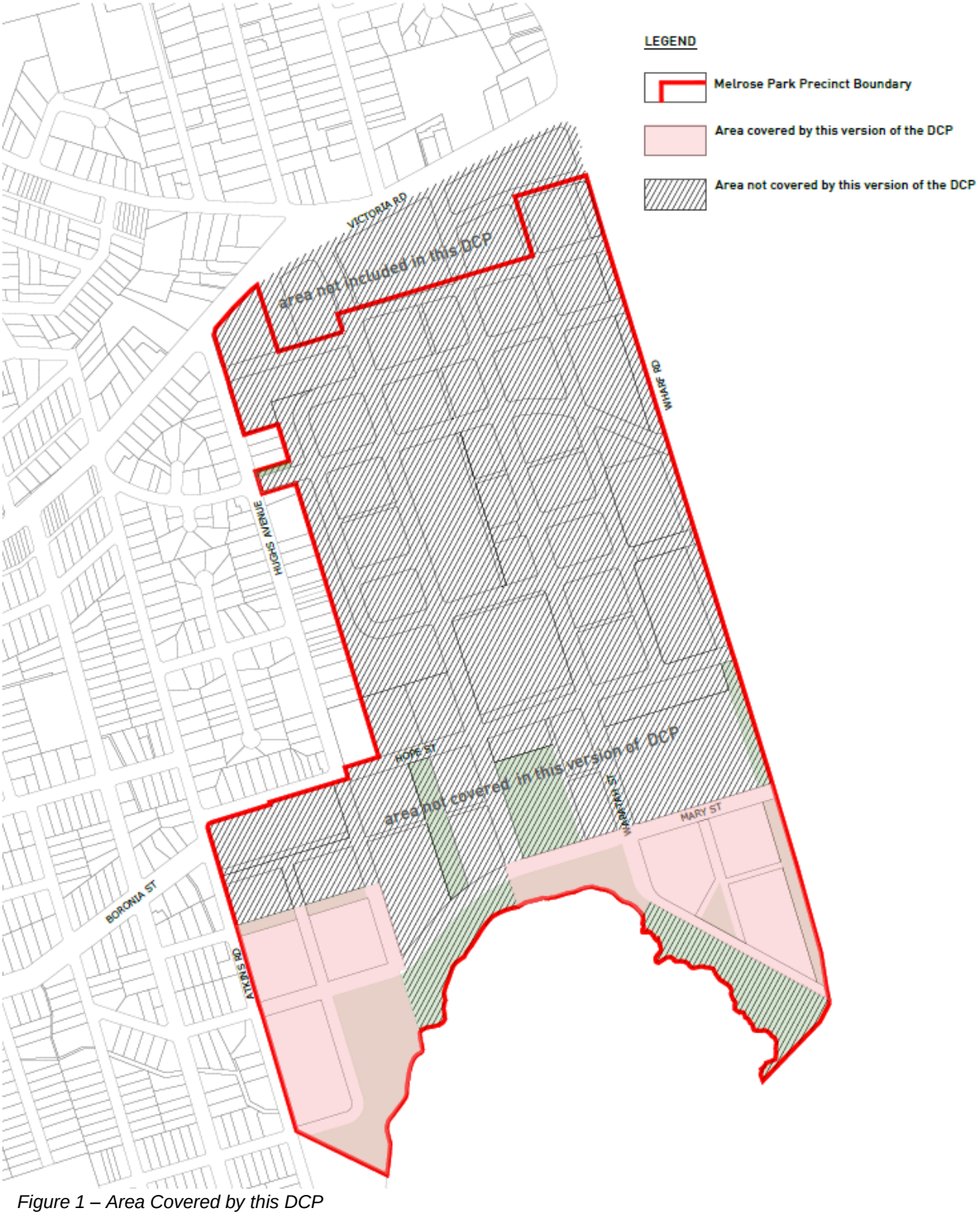


*Figure 1 – Area Covered by this DCP*

## THE DCP

This DCP is to be used in conjunction with the following documents:

**Melrose Park South Structure Plan**

The Structure Plan identifies:

- Street, block, open space and building layout, locations of pedestrian connections and public open space, development lot locations, indicative building footprints and required view corridors. Refer to Appendix 1.
- Maximum floor space ratios (FSRs), gross floor areas (GFAs) and building heights for each development lot.

**Parramatta LEP 2011**

**City of Parramatta DCP 2011**

**Melrose Park South Street Schedule**

**Council's Standard Construction details**

**Parramatta Public Domain Guideline**

## GENERAL OBJECTIVES

The City of Parramatta Council aims to foster the development of a lively, diverse, and healthy LGA, one which celebrates a sense of place and local character in both the public and private realms. To the east of the Parramatta CBD Melrose Park is being developed on ex-industrial land located between Victoria Road and the Parramatta River. There are three precincts the Wharf Road Precinct located on Victoria Road is the most northerly precinct. Melrose Park North extends from the Wharf Road Precinct to Hope Street. MelrosePark South extends from Hope Street to the Parramatta River. This DCP applies to the Melrose Park South Precinct. The overall precinct slopes south to the river and is surrounded by low density detached housing on the east and the west. On completion, Melrose Park North and South will be home to approximately 25,000 people, provide retail and entertainment facilities, schools and parks.

The amenity and quality of Melrose Park for its residents and their neighbours is the underlying consideration for all the objectives and controls in the DCP. The DCP is underpinned by and relates to the Melrose Park South Structure Plan . The Structure Plan has been prepared by City of Parramatta and responds to the topography and the street context of the precinct. The streets are organized to optimize connectivity for people and vehicles, minimize perceived densities, address water management, enable canopy planting and support the proposed built form. Buildings are organised to define the streets and open spaces, provide deep soil and create a legible public domain with amenity and spatial complexity. The building envelopes provide the opportunity for high quality architectural resolution.

The clarity and quality of public spaces are essential to this conception of a place centered on people. The public spaces – streets, and parks – will be the basic and enduring structuring spaces of Melrose Park, of which streets are the most prevalent. The interaction of buildings and public spaces is critical in shaping the way the place is experienced particularly at the lower levels where detail design plays an important part in the creation of a stimulating pedestrian environment.

### General Objectives

O.01 Create a legible, coherent, and attractive suburb characterised by generous diverse streets and public spaces reinforced by the built form and vegetation.

O.02 Organise the buildings so that they form a coherent outcome, address, and define the streets, pedestrian connections, courtyards, and special places.

O.03 Ensure that the spaces of the public domain - streets, squares and parks are of high quality and amenity.

O.04 Facilitate sustainable resilient buildings that address climate, topography, energy consumption, urban heat, pedestrian scale, and internal amenity.

O.05 Protect and improve the natural environment and biodiversity.

O.06 Provide sufficient detail of Council requirements and expectations to enable Development Applications to be easily assessed

O.07 Safely manage overland flow and storm water through the site and broader precinct and design buildingsand landscape in response.

O.08 Ensure that infrastructure is delivered in accordance with the staging plan and TMAP Implementation Plan.

### Control

C.01 An Infrastructure development application is required to be lodged for the entire precinct upfront prior to individual DAs being lodged on a site-by-site basis, detailing the following:

- The proposed lot boundaries
- Site levels including cut and fill and retaining wall locations

- The design of the roads including drainage
- Public open space provision
- Demonstrate how the obligation under the Planning Agreement will be addressed.

## DESIGN EXCELLENCE

The promotion of good design in the built environment is an objective in the Environmental Planning and Assessment Act, and good design is a central aim for all development in the LGA.

Design is a complex synthesis of multiple factors - technical, social, environmental, historic, aesthetic, and economic. It responds to the context, physical as well as cultural, and generates sustainable living and working environments. It is concerned not only with how buildings look but includes fundamental considerations of amenity for occupants and how buildings contribute to the development of quality urban places.

Good design generates spaces with a sense of appropriateness in which people naturally feel comfortable. It has detail and material quality, is long lasting, and it creates financial return through the making of places that people value.

Good design also incorporates an understanding that individual buildings should relate to each other as well as contribute to a larger whole. This conception of the importance of collective urban form is an underlying principle of the DCP and informs design quality processes in the LGA.

Design quality procedures in the City of Parramatta include the Design Excellence process in the City Centre led and coordinated by the City Architect, and the LGA-wide Design Excellence Review Panel (DEAP).

In Melrose Park, under the Design Excellence process, design competitions are required for sites with buildings 55m and above in height.

In addition, the Urban Design Unit within Council provides guidance and advice on design in all relevant matters within the LGA.

These procedures aim to embed design quality as an integral part of development in the City of Parramatta. An important aspect of this is to ensure that design intent is documented in detail and carried through all stages of projects to completion.

Melrose Park South is a high-density environment and design quality is therefore paramount. Quality is not just of the individual buildings but how the buildings relate one to another. Careful definition of the spaces between the buildingsin plan and section; preservation of all views to the sky and discrete modulation of the buildings are required to ensure variety and interest in the public domain and amenity in the apartments.

### Objectives

O.01 Ensure that development individually and collectively contributes to the architectural and overall urban design quality of Melrose Park

O.02 Incorporate design quality in public and private development as a central consideration through all stages of the process from design to completion.

O.03 Ensure that the integrity of design quality is carried through to the construction and completion of developments.

O.04 Incorporate overall coherence of the architecture within the whole precinct with variety in the detail architectural resolution

### Controls

C.01 Design Excellence Competitions are to be undertaken for buildings 55m and above in height.

C.02 Competition briefs should reference to the objectives and controls contained within this DCP.

C.03 Architectural Reference Designs developed as part of a Design Competition brief should use this DCP as the basis for building envelopes.

C.04 This DCP should form the primary basis of assessment of all Design Excellence winning schemes.

C.05 For all Development Applications in Melrose Park that are not subject to a Design Competition, the Architect should provide sufficient detailed documentation for the building facades and external areas to form part of the consent documents. These should include fully annotated 1:20 scale cross sections and partial plans of facades, details of typical and important junctions, and details and materials specification of all external works.

C.06 The Landscape Architect and Civil Engineer for all Development Applications require fully coordinated Public Domain Alignment Drawings. (Chapter 2 Parramatta Public Domain Guidelines.)

C.07 Allocation of sites to different architects based on the lots being dispersed along the street network or relate to particular intersections is encouraged to provide variety in the detail design.

## WATER MANAGEMENT PLAN

Due to development, the overland flow paths have been considerably altered from their natural state. Water management aims to reverse any negative environmental impacts that have arisen because of these changes so that a sustainable water environment can be recreated.

Despite the precinct being located within close proximity to Parramatta River, it is not affected by riverine flooding, however still considered to be at high risk of potentially polluting the river. The precinct is subject to overland flow flooding reflecting the two historical watercourses that once traversed the precinct from north to south-east (Wharf Road) and from north-west to south (Hope Street).

The proximity of the Melrose Park North Precinct to the Parramatta River means that this development is likely to cause pollution and other degradation of the river unless effective water quality management is implemented and maintained.

### Principles

P1. The pre-development (natural) overland flow paths and flow regimes are to be acknowledged in water management planning, while recognizing this is a substantially changed urban environment requiring complex water management systems.

P2. Post-development run-off must not result in a harmful impact on surrounding properties or the environment.

P3. Water management practices must be sustainable.

P4. The Water Management Control Plan governs water aspects of development and infrastructure, landscape and environment in the precinct and includes:

- Flooding and overland flow management;
- Road and public domain piped drainage;
- Flood reduction using public and private water detention systems;
- WSUD - Environmental management of private and public low flows with Water Sensitive Urban Design to reduce pollutant loads and create habitats
- Rainwater harvesting and use

### Objectives

O.01 Ensure that overland water flows are to be managed and conveyed safely across the precinct within the roads, reserves and identified public open spaceareas

O.02 Ensure that post-development run-off does not result in a net negative impact on surrounding properties or the environment resulting in damage to public and private assets.

O.03 Ensure that sustainable water management practices are applied, where practicable.

### Controls

C.01 A piped drainage reticulation system capable of carrying the 5% AEP stormwater flows is to be provided

throughout the precinct for all roads, public domain areas and private lots. This system must be designed and constructed to Council standards and specifications and reasonable satisfaction. This drainage infrastructure is to be dedicated to Council at appropriate stages in the development process for ongoing operation by Council

C.02 Excess peak flows are to be detained in both on-site and collective detention systems.

C.03 Excess peak flows from private lots, public roads and public domain are to be detained in both on-site and collective detention systems. Detention systems are to be integrated into a sustainable overall water management plan for the site which may include WSUD and rainwater harvesting.

C.04 Peak flows are to be limited throughout the catchment in a 1% AEP storm event to estimated peak flows under 1999 conditions, regardless of whether future redevelopment within the catchment occurs which improves the quantity of overland flow entering the precinct.

C.05 Lower flows are to be managed within the landscape and directed through landscape water quality biotreatment systems (Water Sensitive Urban Design) including deep soil.

C.06 On-site detention (OSD) systems are to be integrated into a sustainable overall water management plan for the site, where possible.

C.07 Subject to maintaining environmental flows and irrigation of the public domain landscapes, rainwater must be captured and used on site wherever feasible.

C.08 Each proposal for private development and for public infrastructure and public domain development must be supported by a water management plan that addresses the water aspects of the proposal, and the affected landscape and environment. It must address:

- Flooding and overland flow management
- Road and public domain drainage
- Flood reduction using public and private water detention systems
- WSUD – environmental management of private and public low flows with Water Sensitive Urban Design to reduce the pollutant loads and create habitats
- Rainwater harvesting and use

C.09 The Water Management Plan submitted to support a proposal shall be in accordance with the Principles, Objectives and Controls set out in this Water Management Control Plan to Council's reasonable satisfaction

# 2 BUILT FORM

## 2.1 GUIDING PRINCIPLES

The following principles apply to all development in Melrose Park South

P.01 The floor space is generally consistent with the Gross Floor Area (GFA) as derived from the Floor Space Ratio (FSR).

P.02 The street network, building locations, height and setbacks are generally consistent with the Structure Plan to enable deep soil planting, reinforce the human scale of the streets, and enable views to the sky in streets and public places.

P.03 Building depth, bulk and separation protects amenity, daylight penetration, privacy between adjoining developments and minimises the negative impacts of buildings on the amenity of the public domain.

P.04 Buildings should align with the streets so that positive spaces are formed within the streets and the lots

P.05 Towers are to be appropriately proportioned and maximise their slender form.

P.06 The design and materials selection of buildings and the public domain are to contribute to a high quality, durable and sustainable urban environment.

P.07 Buildings are organised to create spatially defined streets and courtyards that are well proportioned, comfortable, safe, functional, and attractive.

P.10 The collective built form should reinforce the variety evidenced in the topography and the spatial organisation of the streets and open spaces

P.11 Variety within the precinct is to be derived from the detail resolution of the buildings and not from excessivedifferences in the form of the buildings and / or the selection of materials.

P.12 Taller buildings are to be located away from the perimeter of the precinct, in the central part of each site. Building heights are to transition down from the centre towards the perimeter.

## 2.2 ALLOCATION OF GROSS FLOOR AREA

### Objectives

O.01 Regulate the density of development identifying a maximum GFA for lots, resulting from the maximum floor space ratio in the PLEP 2011.

O.02 Ensure development floor plate sizes and building footprints are not excessive.

### Controls

C.01. The maximum GFA for any development lot is to approximate the GFA detailed in Figure 2 (site area x FSR).

C.02. The GFA attributed to each lot results from the FSR controls in the PLEP 2011 or as otherwise nominated in a Notice of Development Consent granted by a relevant consent authority.

C.03. The indicative allocation of the total floor space relates to the Structure Plan and is based on the capacity of the building envelope on each lot. The GFA is calculated at 75% of the building envelopes and the Gross Building Area (GBA) for residential.

C.04. The maximum GFA is approximate for each lot and includes all buildings accommodated on a development lot.

C.05. The floor space is to be generally distributed as shown in the Building Envelopes. The 4-6-8 storey perimeter block is to be retained and floor space is not to be redistributed into towers where heights would enable greater height.

C.06. Development applications must submit supporting plans that demonstrate the GFA outcome on the development lot is consistent with PLEP 2011 or as otherwise nominated in a Notice of Development Consent granted by a relevant consent authority.

C.07. Should a maximum GFA not be able to be achieved for a development lot or has minor variations, that amount of GFA may potentiallybe transferred to another development lot under the same ownership subject to consideration against the relevant provisions in this DCP and maintaining the gross permitted FSR across the development lots.

C.08. For purposes of these controls, serviced apartments should be treated as a residential use.


*Figure 2 – Maximum GFA Plan per Lot*

## 2.3 STREET, BLOCK, OPEN SPACE and BUILDING LAYOUT

### Objectives

O.01 Optimise the internal and external connectivity

O.02 Provide views to sky and views that are not blocked by buildings at the ends of streets

O.03 'Reveal' the topography '

O.04 Minimise 'perceived' density

O.05 Define a street hierarchy considering the landform, street widths and built form.

O.06 Enable generous canopy tree planting

O.07 Enable all road users to move safely

O.08 Provide access to parking basements

O.09 Enable streets to be dedicated to Council

O.10 Accommodate passive and active recreational needs of the residents and workers

O.11 Manage overland floodwater as well as local stormwater drainage, water sensitive urban design (WSUD) and ground water

O.12 Minimise non-permeable surfaces

O.13 Enable buildings to achieve setbacks, solar access, and separation requirements, optimise the amenity of the apartments, define the public domain and minimise perceived density

**Controls**

C.01. The street network, pedestrian connections and blocks should generally be consistent with layout, dimensionsand sections in the Structure Plan and Public Domain Plan

C.02. All streets are to be at ground and public streets be dedicated to Council

C.03. Pedestrian connections that are above basements and privately owned should be publicly accessible 24/7.

C.04. All subdivision plans should comply with the Structure Plan.

C.05. The locations of all buildings, tower and perimeter block should comply with the Structure Plan

## 2.4 THE BUILDING ENVELOPE

The building envelopes resulting from the setbacks, floorplate and height constitute a three-dimensional volume within which, together with all other applicable controls, should result in a coherent built form being designed. The envelope heights in the Structure Plan are generous and designed to enable a well-considered architectural response rather than 'filling' the envelope.

The building envelopes have been located to reinforce view corridors, create a layered spatial network and minimise perceived density. The taller towers are located strategically with generous separation. The building envelopes are designed to enhance the topography and have been tested for separation distances and overshadowing of public parks.

### Objectives

O.01 Provide a coherent spatial and built form structure for the precinct

O.02 Create meaningful variety related to street character and topography

O.03 Define the streets, intersections, and open spaces in plan and in section

O.04 Enable the resolution of quality architecture within the building envelopes

O.05 Optimise the number of units with outlook to open spaces, courtyards and views

O.06 Minimise overshadowing on open spaces and adjacent residential development

O.07 Minimise perceived density

O.08 Provide view corridors within the site and to the surrounding context.

O.09 Enable satisfactory resolution of the slope and the water management of the precinct

### Controls

C 01 The building envelopes as defined in the Structure Plan are to form the basis of the architectural resolution

C.02 All view corridors as defined by the streets and pedestrian connections in the Structure Plan are to be retained.

C.03 The floor space is to be distributed as shown in the Structure Plan density table in Appendix 1 and in Figure 2.

## 2.5 STREET SETBACKS

The purpose of establishing street setbacks relates to interface with the street, ground floor usage and building separation.

There are two principal categories for the ground floor:

a) The buildings that have a residential ground floor frontage

b) The buildings that have an active ground floor frontage.

On lots with residential ground floors, the buildings should be set back from the street alignment allowing an arrangement which balances the need for resident privacy as well as engagement with the street. The setback provides the necessary space for deep soil; landscaping and amenity, both for residents and the street.

Due to the sloping topography of the precinct, issues of resident amenity may also be addressed by raising the building ground floor levels relative to the site topography where residential uses are located adjacent to a pedestrian connection or public boundary.

On lots that have active frontages and no set back, the ground floor design of the buildings is the part of the development that has most impact on the street and public domain experience as it defines and articulates the street with appropriate scale and detail.

### Objectives

O.01 Reinforce the appropriate spatial definition of streets and public spaces.

O.02 Emphasise the importance of the street as a distinct spatial entity and design the street interface and street wall with an appropriate human scale and sense of enclosure for the street.

O.03 Ensure consistent street frontages with buildings having common setbacks and alignments.

O.04 Provide building forms that achieve comfortable public domain conditions for pedestrians, with adequate daylight, appropriate scale and adequate mitigation of wind effects of tower buildings.

O.05 Create a clear delineation between public and private space.

O.06 Provide a landscape interface for residential buildings with the streets and room for street trees

O.07 Emphasise the courtyard spaces as a distinct spatial entity and design with an appropriate human scale and sense of enclosure and landscaping.

O.08 Reinforce important elements of the local context including public spaces, key intersections, public and heritage buildings, and landscape elements.

O.09 Provide space on residential sites for ground level residents to engage appropriately with the street and for landscape that contributes to the public domain

**Controls**

C.01 Building setbacks from the streets should comply with those identified in Appendix 4.

C.02 The perimeter-block residential buildings up to 6 storeys can extend for the full frontage of lots within the nominated street setbacks and except where there are courtyards or pedestrian connections. There are no setbacks at the ends.

C.03 The 6 storey residential buildings can have an upper setback of one or two storeys maximum.

C.04 All residential buildings 8 storeys and above are based on a maximum length of 50 metres

C.05 Residential towers are to have a minimum of 2m, 5m or 6m from the street boundary/ podium edge, to suit final design refer to Figure 3.

C.06 A streetscape analysis is to determine the most appropriate relationships along, across the street and at these intersections.

C.07. A 400mm articulation zone is permitted forward of the setback, in which building elements such as bay windows, balconies, shading devices may occupy a maximum of approximately one third of the area of the façade. Services or lift shafts are not permitted in the articulation zone.

C.08 Setbacks should be measured perpendicular to the boundary to the outer faces of the building, refer to Figure 3. Elements in the articulation zone are excluded.

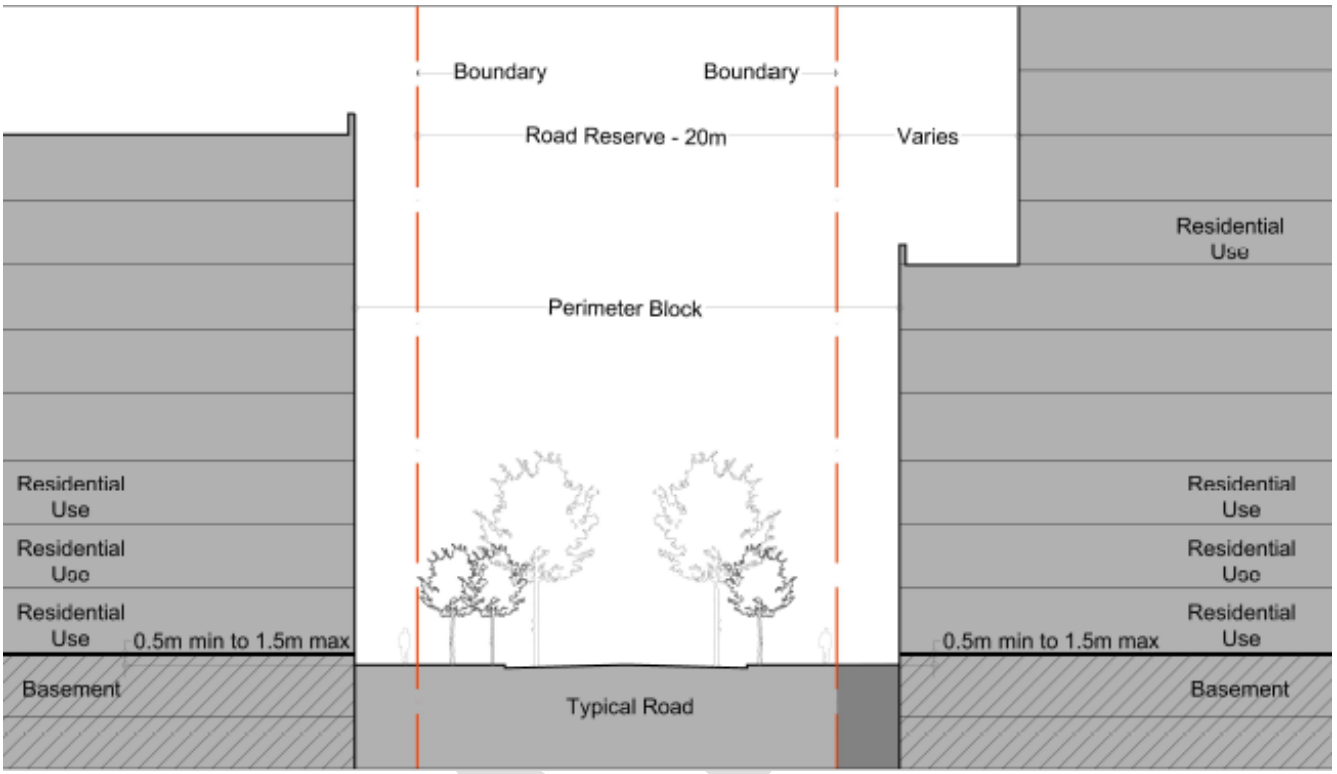


*Figure 3 - –Street Wall Height at Typical East West Street, NTS*

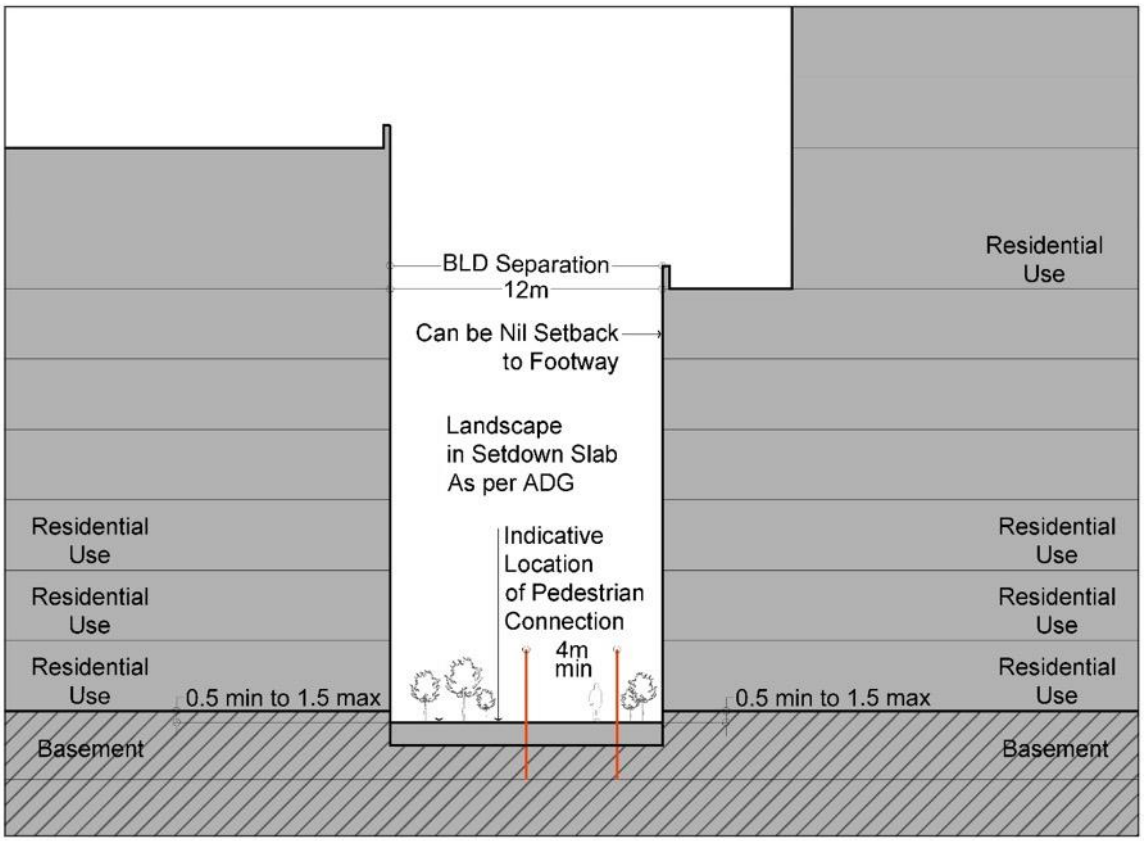


*Figure 4. – Street Wall Height at Pedestrian Connection, NTS*

## 2.6 BUILDING SEPARATION

Building separation for residential buildings is based on, the proportions of the pedestrian connections, courtyards and streets and overshadowing. Issues of privacy and surveillance are to be resolved in the architectural resolution.

### Objectives

O.01 Protect and manage the impact of development on the public domain and neighbouring sites.

O.02 Protect the amenity of streets and public places by providing a healthy environment for street trees and allowing adequate daylight and views to the sky.

O.03 Ensure a pattern of built form and spatial definition that contributes to the character of the suburb.

O.04 Provide access to light, air, and outlook for the occupants of buildings, neighbouring properties and future buildings.

### Controls

C.01 The separation distances of buildings across courtyards are 24 metres minimum building to building and is to be appropriately landscaped

C.02 The separation distances of buildings across the pedestrian connections are 12 metres building to building. Within this space a straight pedestrian path minimum 4 metres wide is to be located. Private gardens and entrances to apartments are permitted from these pedestrian paths.

C.03 Issues of visual and noise privacy are to be addressed in the design of the buildings.

C.04 Separation distances should be measured perpendicular to the boundary to the outer faces of the building. Elements in the articulation zone are excluded.

## 2.7 TOWER DESIGN AND SLENDERNESS

The slenderness of towers is important both to achieve elegance of form as well as to minimise the perceived density, maximise amenity and environmental performance. Plan area, plan proportion, alignment and height are contributing factors in the perception of slenderness. . Their design needs to respond to context, climate, and views and to provide a continuity of built form but with subtle differences.

The silhouettes of many buildings are significant and contribute to the identity of the place and its skyline. The massing and arrangement of the skyline and building silhouettes should be carefully considered and proposed development should be designed so that its appearance complements the broader skyline.

### Objectives

O.01 Towers have slender proportions.

O.02 Towers are well-proportioned, reflect their orientation and address the public domain.

O.03 Minimise the potential adverse effects that buildings may have on the public domain

O.04 Achieve living and working environments with good internal amenity.

O.05 Minimise the need for artificial heating, cooling, and lighting.

### Controls

C.01 The maximum floorplate for a residential tower over 8 storeys should be 1,000m$^2$

C.02 The maximum floorplate for a commercial tower should be 1,500m$^2$ No perimeter block should exceed 8 storey in height (2 of which recessed).

C.03 The maximum length of the part of a building above 8 storeys should be 50m.

C.04 Tower component height should be approximately twice of the podium component height (e.g. 18 storey building where 12 storey minimum tower sits on 6 storey maximum podium)

C.05 Tower forms should not extend around corners so that they are 'L' shaped in plan.

C.06 Upper levels of towers should not extend over the lower levels and create unsightly under-croft spaces except where there is minor articulation or where a tower meets a perimeter base building.

C.07 The higher building forms are to be integrated with the lower levels and should define positive spaces for streets, open spaces,and courtyards

C.08 Towers should meet sustainability measures

## 2.8 BUILDING HEIGHTS

### Objectives

O.01 Recognise the variation in perimeter block buildings and the podium heights throughout the site driven by topographical features and allow flexibility to respond to the slope without the need for stepping the buildings.

O.02 Minimise solar impacts on existing residential areas

O.03 Minimise adverse wind, reflectivity, glare, and urban heat impacts

O.04 Provide adequate solar access to streets, open spaces, and neighbouring buildings.

O.05 Form a balanced composition when viewed from within the street, neighbouring areas and the river

### Controls

C.01. Heights should be generally consistent with the maximum heights as shown in the number of storeys in the Structure Plan and Appendix 2

C.02.The perimeter block residential buildings are to be 8 storey maximum, including a maximum of two storey upper level setback.

## 2.9 FLOOR TO FLOOR HEIGHTS

### Objectives

O.01 Provie adequate amenity for buildings

O.02 Ensure that floor heights support a range of uses and enable a change of use over time.

C.01 The differences in the ground levels are to be taken up within the lower levels of the buildings and not by stepping the upper levels of the buildings. Depending on the slope of the site there may be minor increases in height above that nominated heights on the lower.

C.02 Minimum floor to floor heights are identifies in Table 1

*Table 1 – Minimum floor to floor heights*

| USE | MINIMUM FLOOR TO FLOOR HEIGHT |
|---|---|
| Commercial | 3.6m |
| Residential floor to floor heights from level 1 and above.<br>Floor to ceiling heights greater than the minimum 2.7metres are encouraged. | 3.1m |
| Ground floor active street frontage | 4.5m |
| Residential floor to floor heights for ground floor | 3.6m |

## 2.10 THE PERIMETER BLOCK BUILDINGS AND PODIUM

Together with the public domain, the perimeter block residential building frontages and the retail podium are the built elements that shape the way most of Melrose Park is experienced. As the primary means of providing definition and spatial enclosure to the streets and other public spaces, they are the principal architectural component of collective civic intent. That is, they should operate in concert with other buildings to form a satisfyingly rich experience for the public spaces of the town, and its modulation, articulation and character should be guided by this understanding of its role. The design of the lower parts of the building should be derived from the attributes that generate successful streets – human scale, expressed detail, and tactile material quality.

The lower levels of all buildings should complement each other. The lower-level buildings act as a mitigating element for the tower building, able to define the street at the appropriate height and protect the street from the wind effects of the tower. The perimeter buildings and podiums are set to address the street setbacks, building separation, and the proportions of the street and overshadowing.

Erosions of the lower levels of towers and the podium in the form of undercrofts are not appropriate.

Where U shaped buildings where the courtyards are located with the ends of the U to the street,the landscaping in the courtyard is to relate to the street interface but to allow for a reading of the built formand open space from the street.

### Objectives

O.01 Define the space of the street, pedestrian connections, parks and courtyards by articulating their edges with perimeter block buildings and the podium.

O.02 Create visual interest and variety in the streetscape within an overall framework of consistency in the definition of the street and its character

O.03 Reveal the topography and provide rhythm.

O.04 Provide a facade design which intensifies the walking experience

## Controls

C.01 The perimeter block buildings and the podium should:

a) be built to align with the street along their full frontage as generally shown on the Structure Plan. Minor recesses in the profile for modulation and articulation, entrances are permissible.

b) be modulated in vertical increments to provide rhythm to the street.

c) be articulated horizontally to reveal the topography

d) be articulated horizontally to address any negative impacts of wind from the taller buildings

e) be of predominantly masonry character with no lightweight panel construction or curtain walling.

f) be 8 storey maximum, including a maximum of two storey upper level setback if perimeter block

g) be 6 storey maximum if the podium (if in isolated cases, the podium exceeds this maximum height ,e.g., waterfront, a maximum of 2 upper level setback storey can be considered. This 2 upper-level setback extension is to be recessed and designed to minimize its visual impact

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

i) utilise legible architectural elements and spatial types - doors, windows, loggias, reveals, pilasters, sills, plinths, frame, and infill, etc. - not necessarily expressed in a literal traditional manner. Horizontal plinths are particularly encouraged in Melrose Park so that the topography is emphasised

C.02 Under-crofts or other interruptions of the street wall that expose the underside of towers and amplify their presence on the street are not encouraged.

C.03 All development applications should include a streetscape analysis and provide details of the street wall and perimeter block. Submissions should 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) detail facade plans/sections at 1:20 scale including ground floor active frontage and awning details.

## 2.11 RETAIL GROUND FLOOR FRONTAGE

### Objectives

O.01 Enable retail uses at key locations

O.02 Ensure retail frontages have comfort and shelter for pedestrians

O.03 Provide visual interest

### Controls

C.01 Ground floor commercial uses should be located where the adjoining public domain will be activated

C.02 Service frontages should be minimised.

C.02 The internal tenancy widths, foyers and lobbies to the towers should create a fine grain frontage.

C.03 Active ground floor frontages should include:

a) a nominal 500mm interface zone at the frontage should be set aside to create interest and variety in the streetscape, to be used for setbacks for entries, opening of windows, seating ledges, benches, and general articulation;

b) a masonry façade that allows for fine grain tenancy widths.

c) a high level of expressed detail and tactile material quality.

d) a well resolved meeting with the ground that takes account of any slope.

e) a horizontal plinth, at the base of glazing to the footpath.

f) a clear path of travel for disabled access.

g) legible entrances.

h) awnings in accordance with Section AWNINGS

C.05 An appropriate freeboard at ground floor level is to be provided, where required.

C.06 Fire escapes and service doors should be seamlessly incorporated into the facade with qualitymaterials.

C.07 Colonnades are not encouraged

C.08 All required major services should be incorporated in the design of the ground floor frontage at DA stage, refer Section SERVICING AND UTILITIES.

C.09 Security doors or grilles should be designed to be fitted internally behind the shopfront, fully retractable and a minimum 50% transparent when closed.

## 2.12 RESIDENTIAL GROUND FLOOR FRONTAGE

Residential buildings should be set back from the street boundary or set at a different level to the street / pedestrian connections to provide amenity for ground floor residents. Setbacks are to enable a landscaped setting for buildings.

The area between the façade and the street boundary should receive attention both in design and in its material quality. The subtleties involved in the design of ground level entries, private terraces or balconies, fences, walls, level changes and planting play an important part in the articulation of the street. A detailed resolution of these elements is essential in contributing to an unambiguous definition of public space, good street form, pedestrian scale, clarity of access and address, and a balance of privacy and passive surveillance. These details should all be designed with the same level of care given to the building

### Objectives

O.01 Deliver a ground floor that achieves amenity and privacy for residents as well as engagement with and passive surveillance of the street.

O.02 Enable a landscape setting where buildings are set back from the public domain.

O.03 Provide appropriate amenity for:

- apartments that are located below street level
- apartments that have no set back to the public domain

O.04 Locate the disability access so that it relates seamlessly to the building design.

O.05 Minimise the impact of basements

O.06 Acknowledge and safely accommodate with design, the overland flow flooding and stormwater conveyance in residential and ground floor frontage treatments

### Controls

C.01 Basements are to be located under the footprints of the buildings. They can extend under courtyards but not into the street setbacks, refer Figure 7.

C.02 Generally, ground floor apartment levels should be a minimum of 500mm and maximum of 1500mm abovefootpath level except where the buildings front the pedestrian connections or additional height above the ground is required for privacy and / or to address the slope, refer to Figure 5.

C.03 Where individual apartment entries from the street serve as a primary address, separation between the entry and private open space, and a front door with a distinct entry space within the apartment, should be provided. If the entries are only for the use of residents they should be understated, with post boxes and street numbers located at the common entry. Individual entries are permitted from the Pedestrian Connections

C.04 Unless easy ramp access can be provided without compromising the entrance to the building or the ground floor apartments, disability access should be provided as per AS1428.

C.05 Apartments cannot be located below the street level except in the following situations at Council's discretion:

a) Where the adjacent public road or public land is not an overland flow flood path as shown in approved flood maps included in the Water Management Strategy, or in any other flood study approved by Council.

b) Where the proposed apartment will not be subject to flooding in a 1%AEP flood plus 500mm freeboard as identified by Council.

c) Where the orientation is not south

d) The distance of the apartment front wall is a minimum of 5 metres from the street boundary

e) Where the finished floor level of the lowest apartment is not more than 1500mm below the level of the

street

C.06 The head height of the windows is not more than 300mm from the underside of the slab above.

C.07 For a building that is adjacent to a road, or public domain, or other land adjacent, that is part of an overland flow path or flood storage area:

- Where Council is satisfied that the roadway, or public domain, or other land adjacent to a building, is an overland flow path or flood storage area in the 1% AEP event with 100% blockage, Council will require minimum finished floor levels of habitable rooms to be 500mm freeboard above the adjacent 1% AEP water surface level as mapped in the 2 Dimension (Tuflow) overland flow model accepted by Council. This level may vary along the site /building boundary with changing water levels.

C.08 For a building that is adjacent to a road, or public domain, or other land adjacent, that is not part of an overland flow path or flood storage area:

- Finished floor levels at the boundary adjacent to a road that is accepted by Council as not being an overland flow path, or flood storage area, in a 1% event, including 100% blockage, must be a minimum of the adjacent top of kerb levels plus 2% rising grade to the boundary.

- Where there is no road, such as paving or landscape, and Council accepts the area is not part of an overland flow path, or flood storage area, in a 1% event including a 100% blockage, surface levels must fall away from the building entrances and openings to the adjacent drainage/WSUD system at a minimum of 2% or greater if necessary, to ensure adequate surface drainage.

C.09 The ground floor design including variations to floor levels are to (refer to Figure 5):

a) address privacy and articulation where the buildings have no set back from the public domain boundary

b) be articulated to provide a sense of address and passive surveillance along the edge of the development

C.10 The setback area should be designed to relate to the footpath and as common property for landscaping. Canopy trees should be planted in this area, a minimum 3.5 metres from any structure.Trees are to achieve greater than 13 metres mature height and spread, at the rate of 1 canopy tree for every 15 lineal metres of frontage.

C.11 Enable canopy trees in the setbacks that are 5 metres or greater and in the setbacks that have 2 metres adjacent to the street that contribute to the landscape character of the street and residential amenity.

C.12 Establish lower scale planting including hedges at street boundary for a minimum of 1 metre in street set back zone

C.13 Establish canopy planting in courtyards to achieve amenity and privacy for residents as well ascontributing to the street.

C.14 Co-locate the deep soil planting with the courtyard planting where the courtyards face the streetsetback

C.15 Minimise impervious surfaces at ground level in the setback areas

C.16 All required major services should be incorporated in the design of the ground floor frontageat DA stage, refer Section SERVICING AND UTILITIES

C.17 A fully illustrated and coordinated ground floor design, showing all the necessary levels and detail, should accompany applications. Drawings should include the following:

a) a detail ground level plan and sections as part of the architectural submission which illustrates the relationships between the interior and the exterior spaces of the setback area, including the landscape and hydraulic detail, and extends into the public domain.

b) any required services should be discreetly integrated into the frontage design.

c) the architectural drawings should be fully coordinated with the landscape and hydraulic drawings.

d) elevations and sections at minimum 1:50 scale of all built elements in the setback area should be provided and should illustrate Floor to Floor heights of 3.6 m and Floor to Ceiling heights of

2.9m.

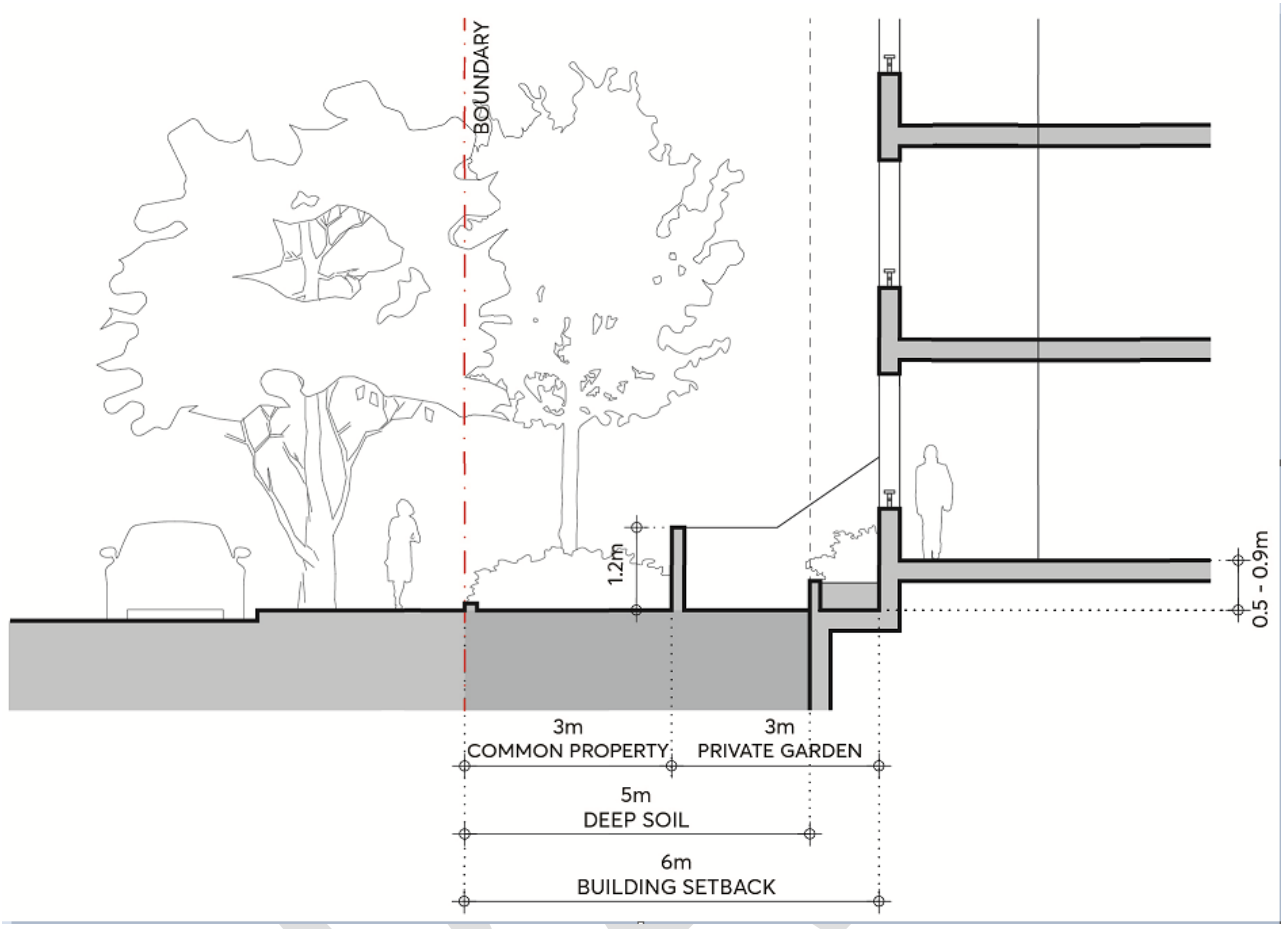


*Figure 5. Residential ground floor*

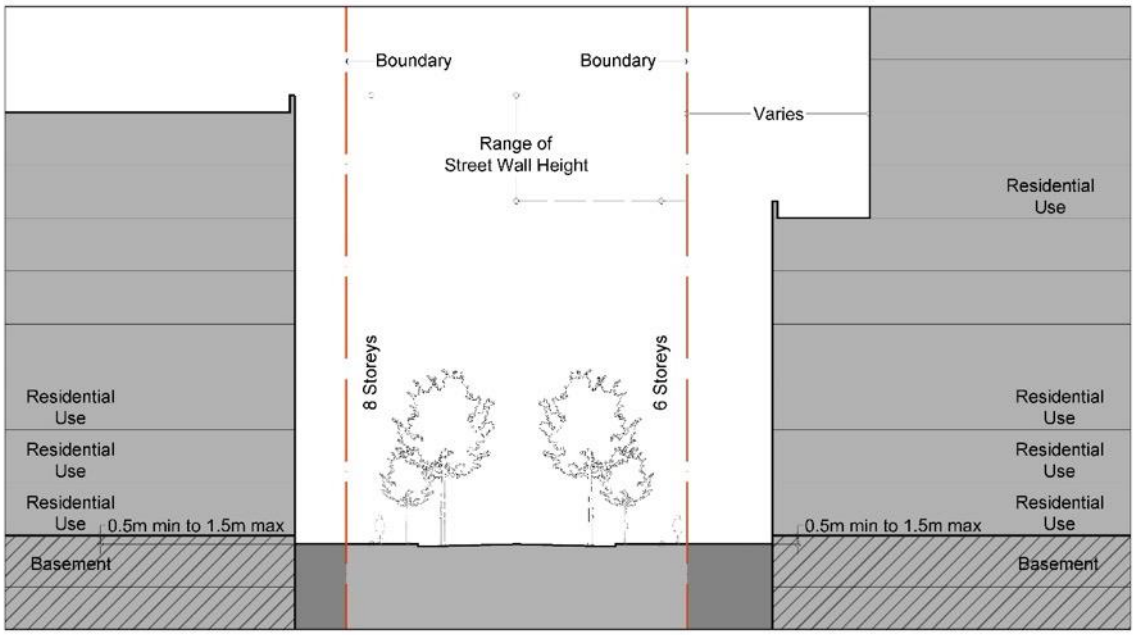


*Figure 6 -–Podium / Street Wall Height with Setback, NTS*

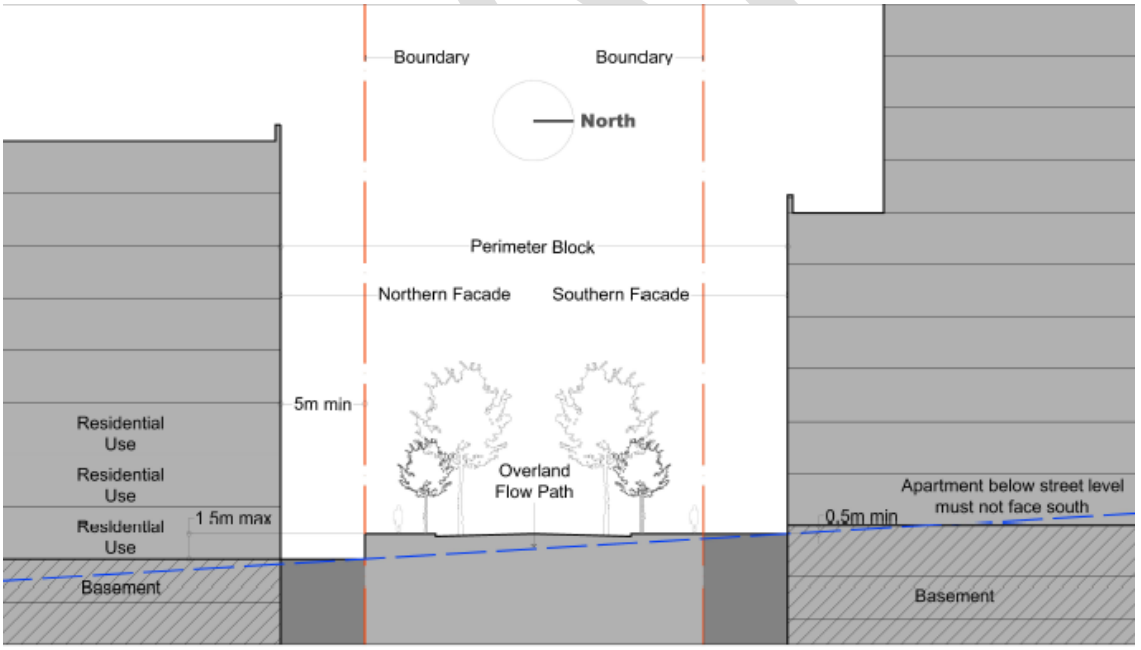


*Figure 7 – Apartment below Street Level, NTS*

## 2.13 RESIDENTIAL APARTMENT DESIGN QUALITY

### Objectives

O.01 Ensure development achieves good amenity standards for residents.

### Controls

C.01 Upper levels of buildings should not extend over the lower levels

C.02 Building floorplates and sections should define positive spaces for streets, open spaces, and courtyards

C.03 Building indentations providing light and ventilation to apartments should have a minimum width to depth ratio of 2:1.

C.04 High-level windows should not be used as the primary source of light and ventilation for habitable rooms.

C.05 Where practicable, balconies should be rectangular in shape with the longer side parallel to the façade of the building.

C.06 Divisions between apartment balconies should be of solid construction and extend from floor to ceiling.

C.07 Common open space should include a unisex WC, seating, solid sun shading, and a BBQ and food preparation area with a sink.

C.08 Balustrades should take account of sightlines to balance the need for privacy within apartments and views out of apartments. A proportion of solid or translucent material should be used, which will vary according to outlook and height relationships.

C.10 The following details should be resolved in principle and shown on drawings at DA stage so as not to compromise amenity, built form and aesthetics at a later stage:

a) HVAC equipment should be grouped within designated plant areas either on typical floors or on roof tops. If HVAC equipment is located on roof tops of lower buildings, it is to be screened as necessary to minimise impacts of heat buildup and noise to neighbouring units.

b) wall mounted equipment (e.g., instantaneous gas hot water heaters) and associated pipe workshould be concealed into wall cabinets and ducts.

c) the above items should be positioned so that they are not visible from common areas or the public domain adjacent to the development.

d) if equipment is located on private balconies, additional area above ADG minimums should be provided.

e) rainwater downpipes should be integrated into the building fabric and coordinated with stormwater drawings

C.11 Apartment design should consider incorporating suitable spaces that can be utilised as a work from home space.

## 2.14 SOLAR ACCESS (RESIDENTIAL)

### Objectives

O.01 Ensure that development does not unreasonably diminish sunlight to private open space and habitable rooms of neighbouring properties within the development site.

### Controls

C.01 Where residential development cannot strictly comply with the design criteria of the ADG, it should demonstrate how site constraints and orientation preclude meeting the design criteria andhow the development meets the Objectives and Design Guidance 4A-1 of the Apartment Design Guide

## 2.15 WINTERGARDENS

### Objectives

O.01 Improve amenity of balconies in high rise apartments above 8 storeys and apartments fronting noisyenvironments.

O.02 Provide acoustic attenuation for internal living areas.

O.03 Improve thermal environment

O.04 Balance ventilation and wind impacts in high rise apartment balconies

O.05 Maximise daylight access, views, and comfort of balconies.

### Controls

C.01 Wintergardens are only permitted above 8 storeys or where there are negative external impacts such as high levels of noise

C.02 Wintergardens should:

a) be designed and constructed as a private external balcony with drainage, natural ventilation and finishes acceptable to an outdoor space and should not be treated as a conditioned space or weatherproof space.

b) have 75% of the external wall (excluding balustrade) fully operable louvres or sliding glass panels. Casement or awning windows are not permitted.

C.03 All wintergardens are to have a balustrade less than 1.4m above finished floor level and a contiguous and permanently openable area between the balustrade and the ceiling level of not less than 25% of this area. This restriction shall apply to both elevations if the wintergarden has multiple elevations

C.04 A generous opening should be provided between the wintergarden and any adjacent living area to allow connection of the spaces when ambient conditions are suitable.

C.05 Acoustic control for living areas and bedrooms should be provided on the internal façade line between the wintergarden and the living area or bedroom

C.06 Glazing in the external façade of a wintergarden should have a solar absorption of less than 10% glass to have solar heat absorption not greater than a clear float glass of the same composition.

C.07 The flooring of the wintergarden should be an impervious finish and provide exposed thermal mass.

C.08 Air conditioning units should not be located on wintergarden balconies.

C.09 Wintergarden areas able to be excluded from Gross Floor Area should be limited to depth of 3 metres.

## 2.16 CLIMATE CONTROL AND PRIVACY

The precinct of Melrose Park experiences high temperatures and will be subject to urban heat impacts resulting from the density of buildings. Most towers and many of the perimeter block buildings have east and west facing facades so it is essential that climate control measures are included on the facades where those facades will not be overshadowed by neighbouring buildings.

Climate control devices should also be used to assist in protecting both visual and noise privacy.

### Objectives

Climate control devices are to:

O.01 Enhance the:

a) amenity of the balcony and interior spaces

b) design of the building facades

O.02 Provide:

a) individual apartment owners with the ability to moderate external impacts from climate, noise and overlooking

b) commercial tenants with the ability to moderate external impacts from climate, noise and overlooking

O.03 Ensure that the design of climate control devices can:

a) provide optimum control

b) be easily cleaned

c) assist in providing both visual and noise privacy

### Controls

C.01 Climate control devices such as louvres or blinds should be:

a) used on balconies

b) used where apartment facades are subject to solar loads and there are no other mechanisms that assist in climate moderation such as green walls

c) designed as an integral part of the building facade

d) have the capacity to be adjusted to suit sun access angles andallow the passage of air

e) should be able to be positioned to the direction of sun, wind, or noise

f) constructed in materials that meet the sustainability objectives

g) able to be cleaned from the apartment.

C.02 Climate control devices should:

a) have the ability to act as visual and noise privacy screens

## 2.17 DWELLING MIX AND FLEXIBLE HOUSING

### Objectives

O.01 Ensure a range of dwelling types and size.

O.02 Promote the design of buildings that are adaptable and incorporate flexible apartments to suit the changing lifecycle housing needs of residents over time

### Controls

C.01 The dwelling mix identified in Table 2 is to be used as a guide for the apartments in Melrose Park:

*Table 2 – Dwelling Mix*

| Dwelling Type | Dwelling Mix |
|---|---|
| **1 Bedroom** | 10 – 20% of total dwellings |
| **2 Bedroom** | 60 - 75% of total dwellings |
| **3 Bedrooms** | 10 - 20% of total dwellings |

C.02 A maximum 25% of the total apartments can be split into a pair of dual key apartments providing they overall dwelling mix is still achieved in the development. In all combinations the size and amenity should beconsistent with the ADG.

C.03 Dual key apartments are to be under one strata title.

C.04 Consider apartment designs in sole occupancy units that are fully serviced but that have internal moveable walls

## 2.17.1 MATERIALS

Melrose Park proposes very high densities with towers and perimeter block buildings in close proximity. To achieve both variety and continuity the perimeter block buildings and towers, require consistency in both form and the selection of materials so there is an overall continuity of built form throughout the precinct.

### Objectives

O.01 Ensure that materials contribute to the coherence of the precinct so that one building does not stand out from another. Variety within the precinct is derived from the detail resolution of the buildings and not from excessivedifferences in the selection of materials.

O.02 Use materials that meet sustainability objectives and requirements

O.03 Select a palette of materials for the buildings that enable a complementary response with the finishes in public domain

O.04 Employ materials that are durable, of an appropriate scale and easily maintained

### Controls

C.01 A selected palette of materials for buildings, fencing and retaining walls are to be agreed in consultation with Council.

C.02 Materials should:

a) ensure buildings do not stand out from another

b) meet sustainability requirements of embodied energy

c) be durable, of an appropriate scale and easily maintained

d) complement the materials in the public domain

## 2.18 RETAINING WALLS

Melrose Park is located on sloping terrain. The retaining walls may occur adjacent to the street boundary of a lot orwithin the lot depending on the topographical conditions and / or the specific lot design. Because of their highly visible location adjacent to streets and pedestrian connections, the design of retaining walls should provide continuity across the precinct and a sensitive interface with the public domain.

### Objectives

The retaining walls are to:

O.01 Provide continuity across the precinct

O.02 Be an integral element in the design character of the precinct

O.03 Employ construction details and materials that are durable and appropriate for the public domain interface.

O.04 Provide opportunities for casual seating

### Controls

C.01 Retaining walls should:

a) be located within the lot boundaries on all development lots

b) use a design and profile to meet PDG in consultation with Council.

c) select a limited palette of durable materials in consultation with Council

d) enable casual seating where appropriate

e) have horizontal tops and minimal stepping

## 2.19 FENCING

### Objectives

O.01 Relate to the scale and materiality of the buildings

O.02 Define the public/ private edge

O.03 Provide privacy and visibility

O.04 Be durable

O.05 Relate to and reveal the slope of the land

### Controls

C.01 Fencing is to:

a) be located at the street boundary or to private terraces on ground floor units.

b) provide a combination of solid and porosity

c) reveal the slope by introducing a horizontal element such as a masonry or similar plinth

d) be a height and detailing that reflects the scale buildings

e) define the public edge to the property and reinforce the edge to the public domain.

f) provide continuity with subtle differences across the precinct

g) use construction details and materials that are durable and appropriate for the public domain interface

C.02 Fencing to private terraces where ground floor units extend into the street setback are to be designed to relate to any fencing on the property boundary.

C.03 Where there are 5m and 6m street setbacks, the 3m on the street can be common property.

C.04 The height of fences can vary up to approximately 2000mm.

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## 2.20 COURTYARDS

Courtyards provide communal open space for residents at ground level associated with deep soil supporting large crown canopy trees. Courtyards provide alternative, secondary entry points to the building linked to the pedestrian connections and public domain. Courtyards provide visual extension to the public domain. Courtyards provide relief to the overall physical and visual bulk of the built form and perceived density.

**Objectives**

O.01 Reinforce the built form and open space structure of the precinct.

O.02 Expand and enhance the public domain

O.03 Provide outlook from the apartments

O.04 Provide a communal space for relaxation and communal activities

O.05 Provide passive surveillance opportunities public areas

O.06 Have generous planting

O.07 Assist with reducing urban heat

O.08 Assist with flood management

**Controls**

C.01 Courtyards are to be located as shown in Appendix 2.

C.02 Courtyards should:

- be visually and physically linked with streets, open spaces and pedestrian connections
- be delightful outdoor rooms and should be considered regarding aspect andheight to width, and depth to width proportions.
- include vegetation and canopy planting
- generally, be the same level as the street to facilitate access and integration with thepublic domain. Where they are not level access stairs and ramps are to be located on the private lot.

C.03 Courtyard levels are to address flood management

C.04 Where courtyards are located over basements, canopy planting is to be set down in the slab

C.05 Refer to Figure 8 for guidance on street interface.

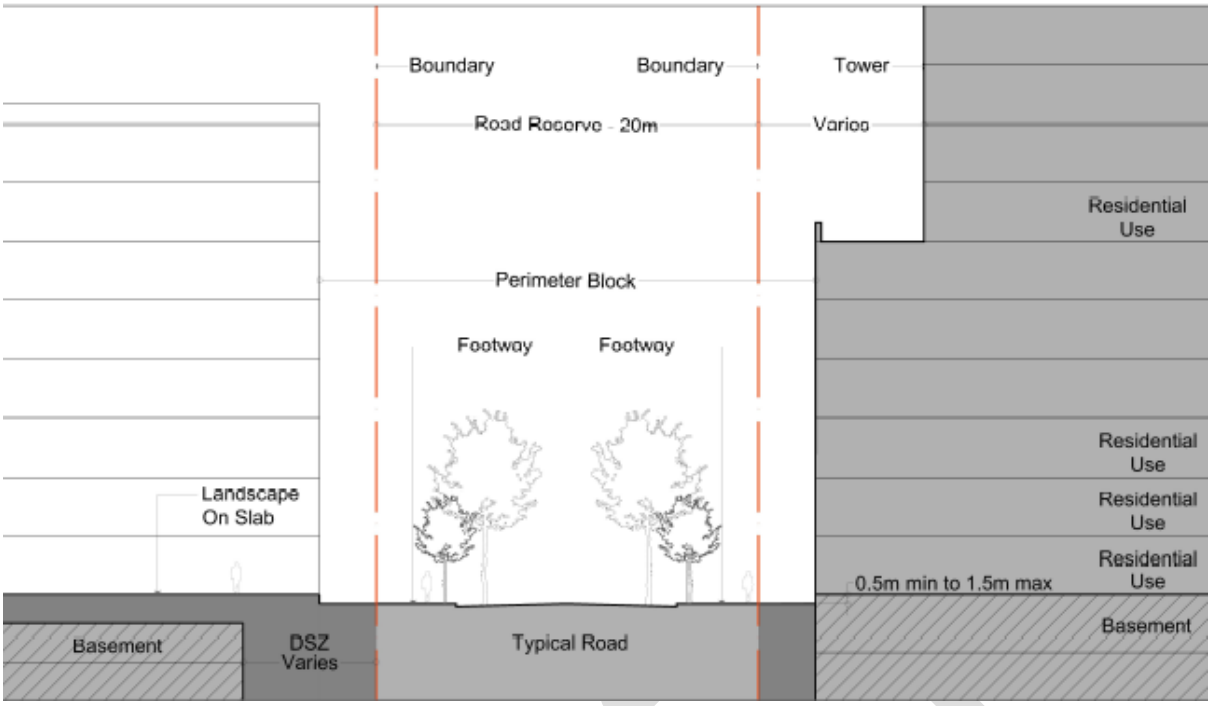



*Figure 8 - Courtyard Basement – Interface with Street*

## 2.21 SERVICING AND UTILITIES

The location of utilities and services can adversely affect the ground floor street frontage if not properly taken account of in the initial design stage. It is also essential that building services are located and designed to be free from flooding impacts.

### Objectives

O.01 Minimise the extent of space and blank walls occupied by services, including electricity substations, fire boosters, fire doors, plant, and equipment hatches.

O.02 Locate building services so that they are free from flooding impacts.

O.03 Encourage design and location solutions for services and utilities that minimise adverse visual, environmental and access impacts.

O.04 Organise garbage collection and recycling facilities to have minimum impact on the development and public domain

### Controls

C.01 Wherever possible, services and utilities should be located on secondary street frontages, or non- active street frontages.

C.02 Substations are to be designed within the building.

C.04 Services and utilities should be designed and located to minimise the length of ground floor frontage occupied.

# 3. PUBLIC DOMAIN

The Structure Plan, the Public Domain Plan and the Public Domain Guidelines, indicate intended publicdomain for Melrose Park South.

Public spaces – streets, squares, and parks – are the most enduring spaces of the city, the shared social and cultural domain that make up the organising framework of the city. Their clarity, quality and amenity contribute in a fundamental way to the experience and identity of Melrose Park South.

This section details aspects of the design of the public domain and should be read in conjunction with the Structure Plan, the Public Domain Plan, and the latest publicly available version of Public Domain Guidelines with particular reference to Melrose Park. These set out the process, design guidelines and submission requirements for all new public domain assets in the City of Parramatta LGA.

Street tree form shown in the public domain cross sections, Figures 9-17 are indicative. For final street tree arrangements refer to the Public Domain Plan and the Public Domain Design Guidelines.

## 3.1 STREET NETWORK AND FOOTPATHS

The streets and footways in Melrose Park South are accessible to the public. The elements in the street such as footpaths and paving widths, parking lanes, tree planting and cycle ways should be designed to suit the street network.

### Objectives

O.01 Provide a safe, efficient, and generous network of pedestrian, bicycle, and vehicular movements for a precinct of this density.

### Controls

C.01 The streets network, hierarchies and widths are to be laid out as per the Structure Plan and Appendix 7.

C.02 Streets, footways and footpath layout and widths vary for each street type and should be laid out as per the street section in this DCP and the Public Domain Plan.

C.03 Materials for the footpath shall be as per the Public Domain Plan and Public Domain Guidelines - Melrose Park South.

C.04 Street Trees are to be planted as per latest version of Public Domain Plan and Public Domain Guidelines. -Melrose Park South

C.05 Street trees are to be planted in the parking lanes and the footway as per the Public Domain Plan. The spacing of trees in the parking lanes should aim to achieve a closed tree canopy at tree maturity – selected tree species as per latest version of Parramatta Public Domain Guidelines - Melrose Park South.

C.06 Street tree planting to use best practice water sensitive urban design (WSUD) measures that provide best long-term sustainability to support that tree. The planter pit length should be no less than the min car parking bay width, preferably larger, and the soil profile will be as per the Soil Profile Strategy and should be detailed prior to DA approvals to the satisfaction of Council.

C.07 All cycleways and bike paths are to be provided and designed in accordance with Council's Bike Plan.

**Melrose Park Street Type Cross-Sections**

**LEGEND FOR ALL STREET CROSS SECTIONS:**

| | | | |
|---|---|---|---|
| F | FOOTPATH | L | LANDSCAPE |
| V | VEHICULAR LANE | LR | PARRAMATTA LIGHT RAIL 2 |
| B | BIKE PATH | B/V | LANE ABLE TO ACCOMMODATE BUSES |
| P | PARKING | | |

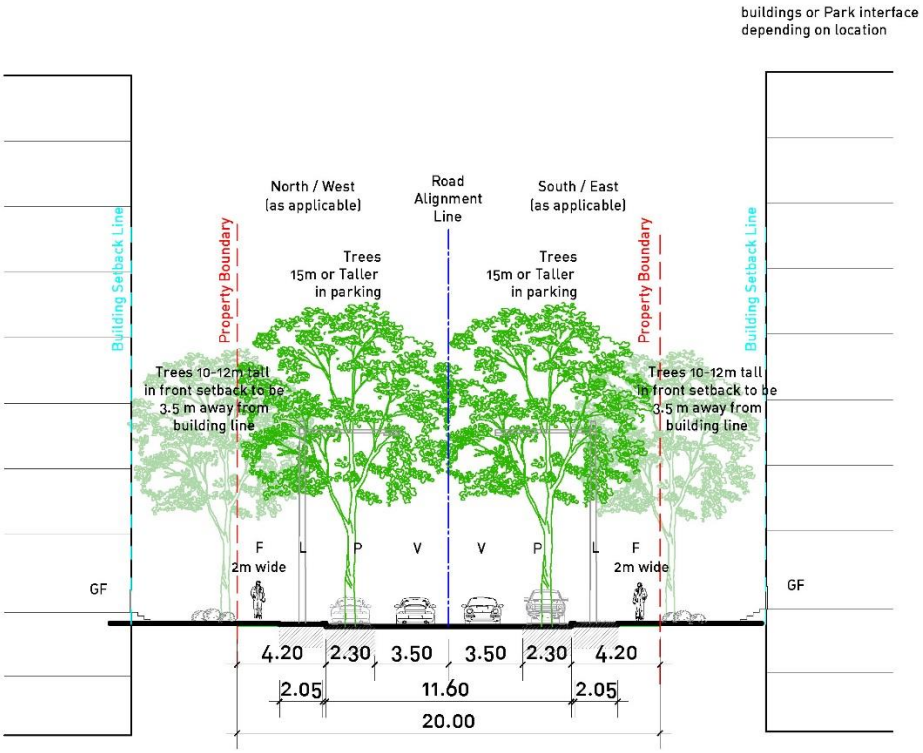
Note:

a. Level changes to be managed within the building footprint

b. Light poles are indicative and for locations only. Lighting is subject to specialist design. Light pole and type to be confirmed.

**Type 4 – Local Street, Two way**

- 20 m wide road corridor
- 2 x 3.5 m lanes
- 2.3 m Parking both sides
- 2 m wide footpaths both sides
- Trees in parking lanes
- WSUD details to be applied where possible




TYPICAL 20 M WIDE STREET - Applicable to HUGHES AVENUE & EWR 8 (Mary Street)

Note: Building setbacks vary per street, and are as per the setback drawing
EWR 8 predominantly has the River Park interface on the southern side

*Figure 9 – Type 4 Local Street (Hughes Avenue & EWR 8/ Mary Street)*

**Type 5a – Local Street, Two way**

- 15.8 m wide road corridor
- 2 x 3.2 m lanes
- 2.3 m Parking both sides
- 2.4 m wide footpaths both sides
- Tree planting in parking zone

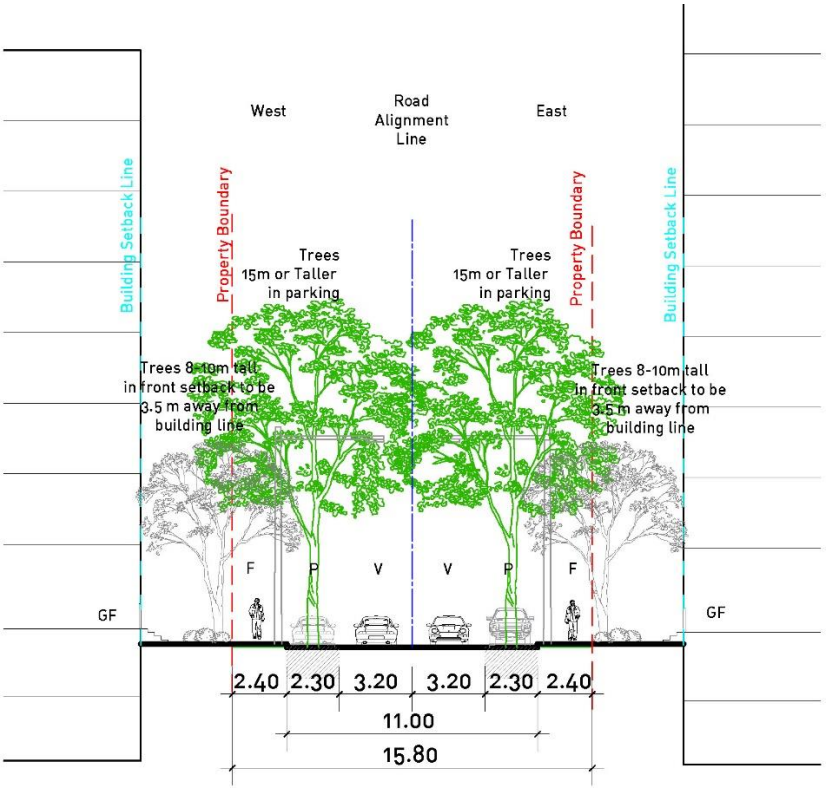



*Figure 10 – Type 5a Local Street (NSR 5)*

**Type 5b – Local Street, Two way, Interim configuration** (until precinct is built completely)

- 15.8 m wide road corridor
- 2 x 3.2 m lanes
- 2.3 m Parking both sides
- 2.4 m wide footpaths both sides
- Tree planting in parking zone

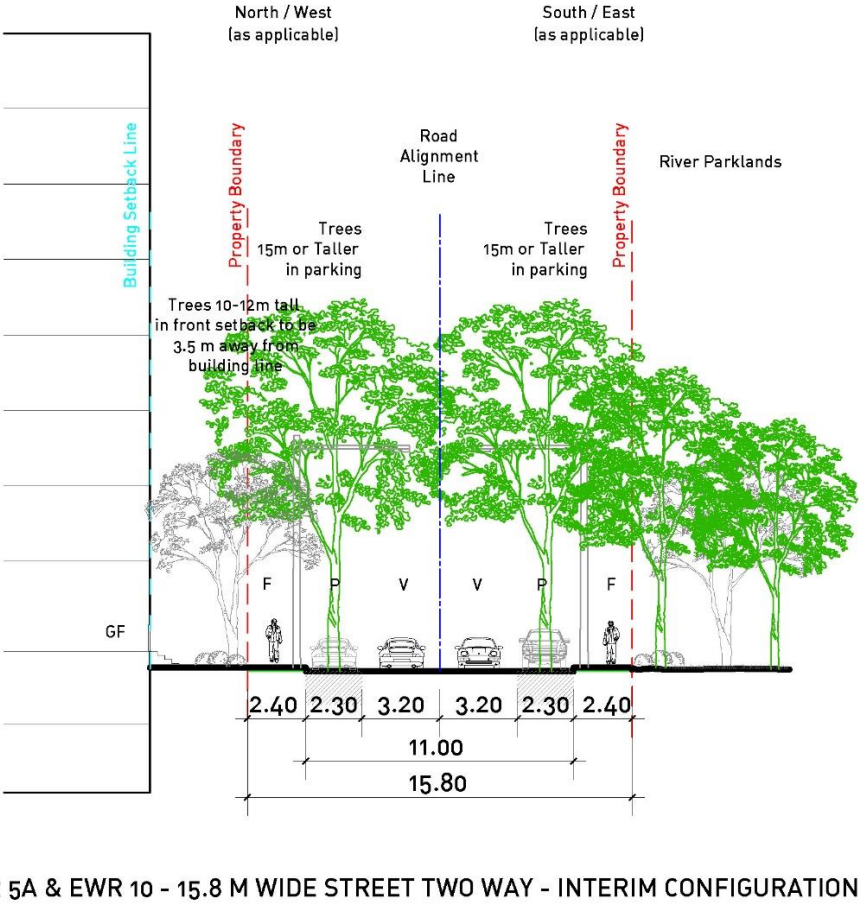



*Figure 11 – Type 5b Local Street Interim Configuration (NSR 5A and EWR 10)*

**Type 5b – Local Street, One way, Final configuration** (after precinct is built completely)

- 15.8 m wide road corridor
- 3.5 m single lane, one way
- 2.3 m Parking both sides
- 2.9 m planted verge with trees, one side (northern or western edge of street, as applicable)
- 2.4 m wide footpaths both sides
- Tree planting in parking zone one side (southern or eastern edge of street, as applicable)

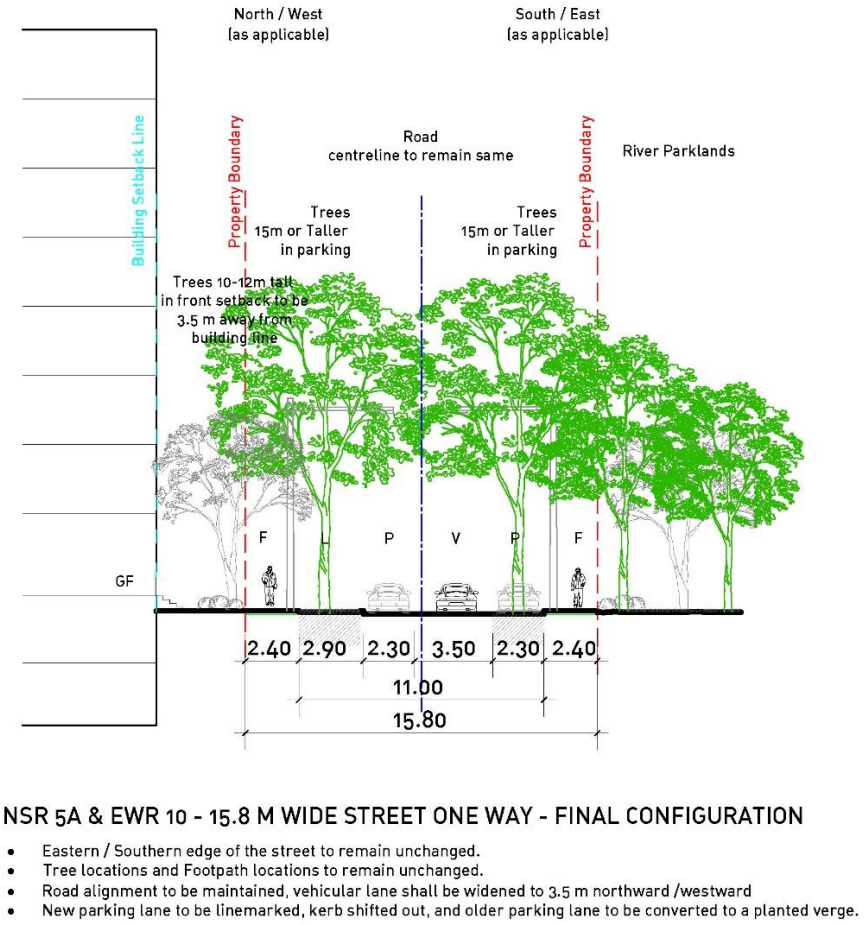
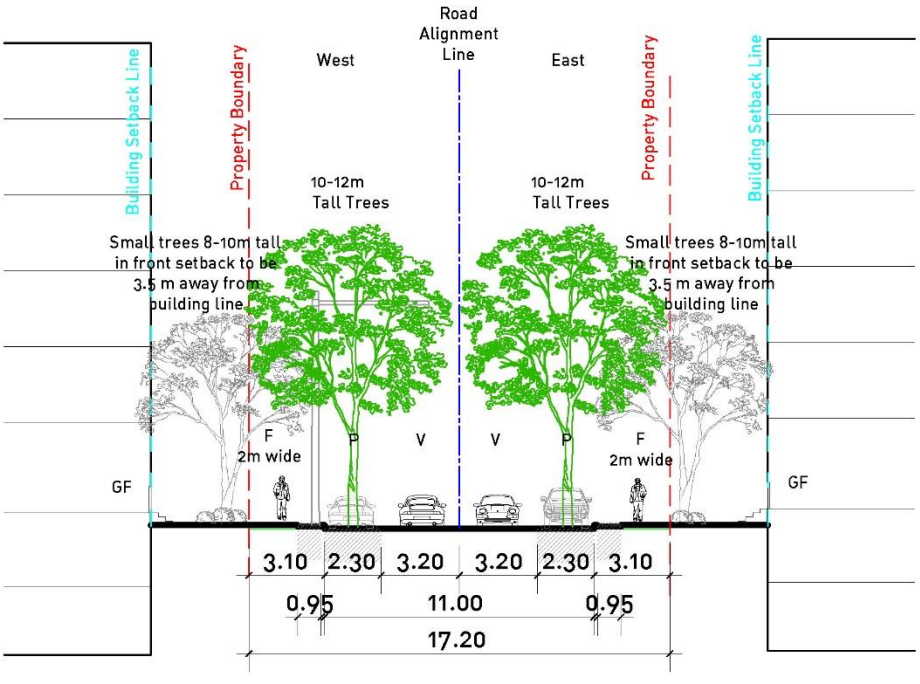



*Figure 12 – Type 5b Local Street Final Configuration (NSR 5b & EWR 10)*

**Type 6 – Local Street, two-way**

- 17.2 m wide road corridor
- 2 x 3.2 m lanes
- 2.3 m Parking both sides
- 2 m wide footpaths both sides
- 0.95 m planted verge both sides
- Tree planting in parking zone




NSR 6 -17.2 M WIDE ROAD

*Figure 13 – Type 6 Local Street (NSR 6)*

**Type 7 – Local Street, One way**

- 7-9.3 m wide road corridor
- 3.5 m single lane, one way
- 2.3 m Parking one sides depending on location along street
- 2 m wide footpath one side
- Tree planting in verge 1.5m wide, beside footpath
- Interface with PLR corridor and stop as per location along street

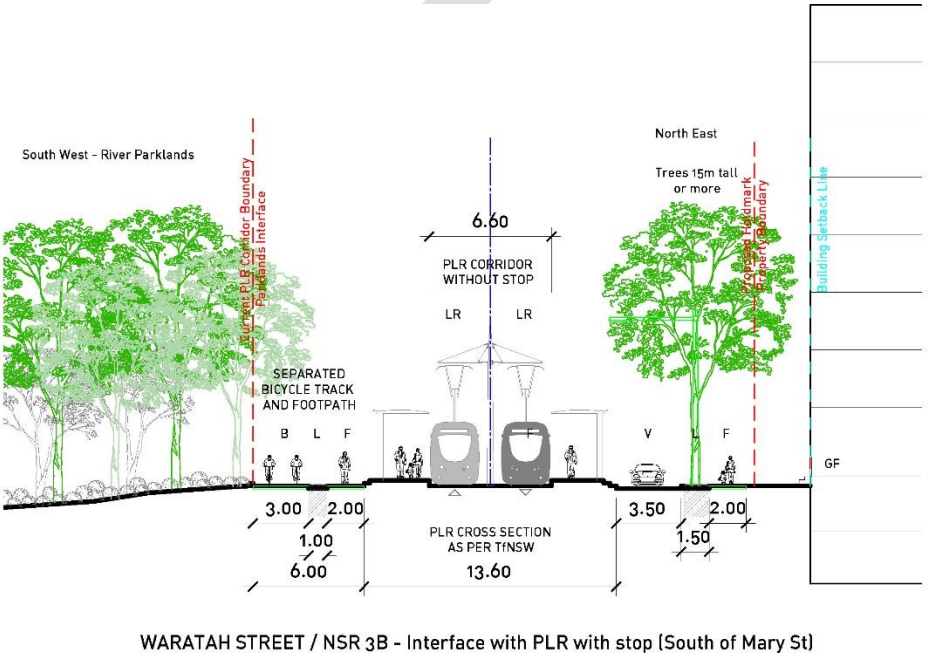



*Figure 14 – Type 7 Local Street (NSR 3B with Stop)*

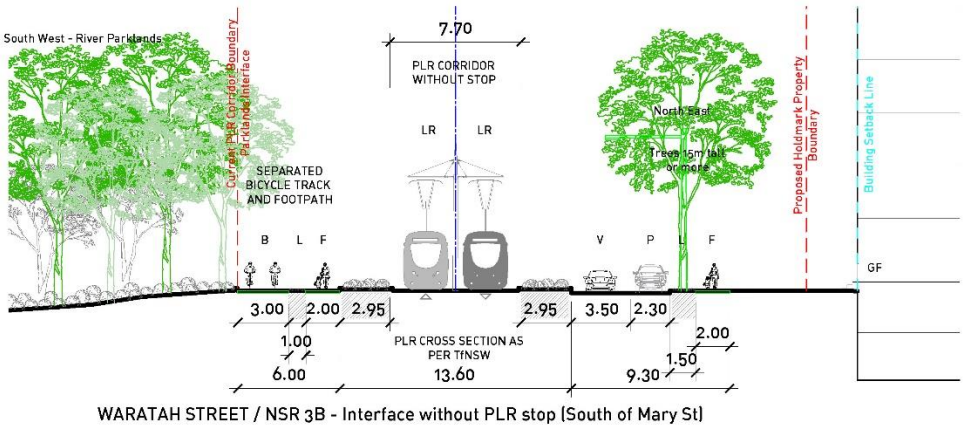
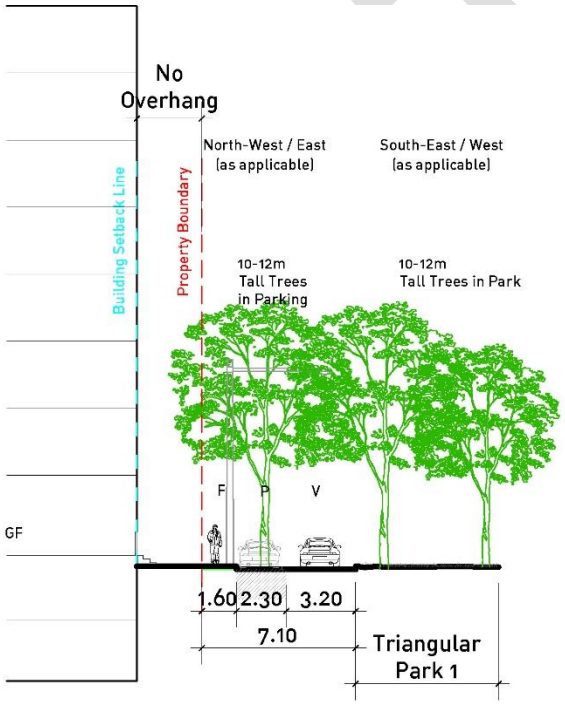



*Figure 15 – Type 7 Local Street (NSR 3B in areas without Stop)*

**Type 8 – Local Street, One Way**

- 7.1 m wide road corridor
- 3.2 m single lane, one way
- 2.3 m Parking one side
- 1.6 m wide footpath one side
- Tree planting in parking, one side

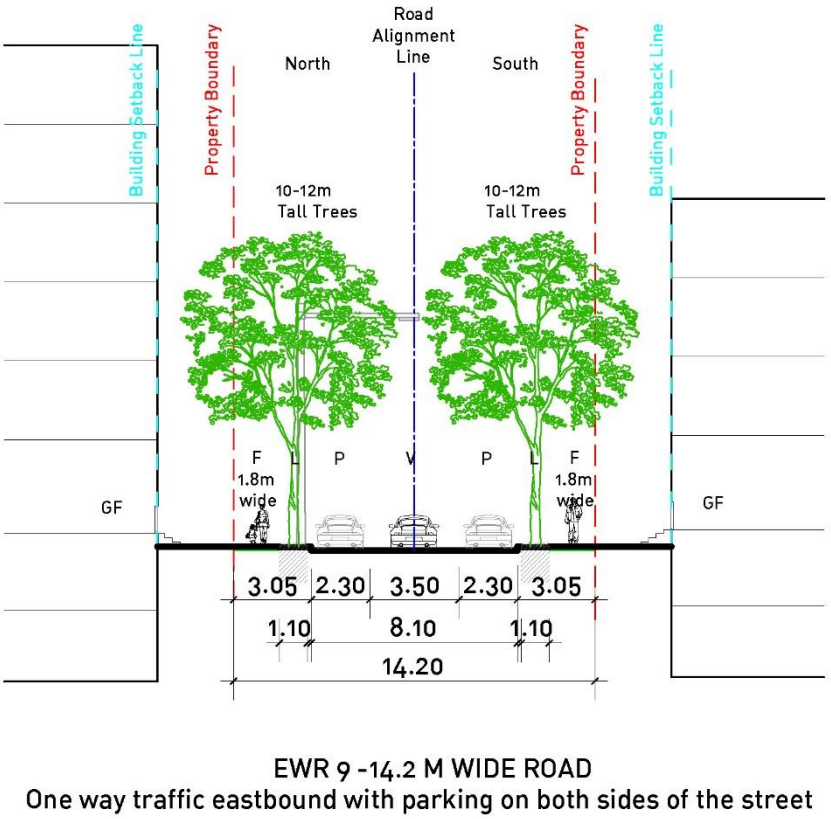



7.1 M WIDE LOCAL ONE WAY STREET with parking on one side -
NSR 6A (southbound) & EWR 9A (northeast-bound)

*Figure 16 – Type 8 Local Street (NSR 6 A & EWR 9A)*

**Type 9 – Local Street, One Way**

- 14.2 m wide road corridor
- 3.5 m single lane, one way
- 2.3 m Parking both sides
- 1.8 m wide footpaths both sides
- Tree planting in verge 1.1m wide, both sides




EWR 9 -14.2 M WIDE ROAD
One way traffic eastbound with parking on both sides of the street

*Figure 17 – Type 9 Local Street (EWR 9)*

## 3.2 PEDESTRIAN CONNECTIONS (where applicable)

The benefits of a finer network of connections are numerous: greater connectivity, increased frontage for entries and business opportunities, and a spatial intimacy and variety in the public domain.

Pedestrian connections in Melrose Park South enable access for service vehicles but are narrower in width than streets.

Refer Council's Public Domain Guidelines sub-section Melrose Park South for site specific guidance for the materials, finishes and treatment of the pedestrian connections.

### Objectives

O.01 Pedestrian connections are to increase connectivity and spatial variety in the street network.

break up built form

O.02 Provide a direct path of access to the Town Centre, Public Amenities, Parks, and modes of Transport.

O.03 Enable alternative access points to apartments. .

O.04 Link the open spaces to the overall precinct

O.05 Have a fully public nature equivalent to the public domain

### Controls

C.01 The pedestrian connections should be -

a) consistent with the Structure Plan

b) 24/7 publicly accessible

c) extend from street to street or street to park

d) open to sky

e) available for controlled access for light weight maintenance/service vehicles

f) fully accessible using, in order of preference:

- graded walkways (no steeper than 1:20);
- limited use of ramp system as per DDA;
- 24/7 clearly visible publicly accessible lift service within the building structure; or
- alternative options for approval.

C.02 The pedestrian connections should have:

a) view lines along that align across all blocks

b) building to building separation generally as 24m

c) a public path with a minimum width of 4 metres within the separation between buildings

d) trees in deep soil (preferably) or in set down slabs and planters to encourage and sustain large canopy trees generally consistent with the ADG requirements including soil volumes, soil

depth, irrigation, and sub-soil drainage

e) pedestrian lighting to provide safe 24/7 access using without reflecting into residential properties

C.03 Materials as per the PDG

C.04 The pedestrian connections can provide secondary entry to the buildings and courtyards

C.06 Landscaping, lighting, and street furniture elements such as seating (formal and incidental) is to be developed as an overall design, and be strategically located, with recognition of the grades and sight lines across the site.

## 3.3 STREET TREES

Street trees help improve the quality of environment for the residents by reducing temperatures, providing shade, attracting fauna, and providing outlook. Street trees will be the elements in public domain which will define the spaces and relate to the scale of buildings in Melrose Park South.

**Objectives**

O.01 Maintain existing and plant additional street trees within the public domain.

O.02 Improve and enhance environmental biodiversity and mitigate temperature at ground level.

O.03 Select tree species and planting regime to maximise connected street tree crown

O.04 Improve visual amenity of the public domain and from the buildings.

**Controls**

C.01 Street trees should be provided along those streets as per the ParramattaPublic Domain Guidelines - Melrose Park South.

C.02 The location of trees in public domain should be as per the Public Domain Plan and Public Domain Guidelines.

C.03 Street trees in the footway should be 12 - 15 m or higher high mature height, at 8-10m centres and planted generallyin accordance with the Public Domain Guidelines and Council Design Standards.

C.04 Street trees in the street parking lanes should have a mature height of more than 15m are to be installed as per the Public Domain Plan and street cross sections above and latest version of Parramatta Public Domain Guidelines, - Melrose Park. Spacing of the trees to ensure tree crown touching at maturity.

C.05 Development applications should be consistent with the Public Domain Plan.

C.06 Public domain documentation indicating the street tree locations as detailed in the Public Domain Plan should be submitted prior to Development Applications and Construction Certificate Applications approval.

## 3.4 OVERHEAD POWER LINES

**Objectives**

O.01 Ensure the appropriate location of all power lines within the precinct to provide an aesthetic appeal and necessary function.

**Controls**

C.01 All new power lines are to be undergrounded for all new streets where possible (excluding the high voltage power lines) of Melrose Park South for full lengths of the development site street frontages and should be in accordance with the Public Domain Guidelines.

## 3.5 AWNINGS & AWNING DESIGN

Awnings assist in encouraging pedestrian activity along streets by providing comfortable conditions at footpath level and, in conjunction with active ground floor frontages, contribute to the vitality of the streets.

On public footpaths with active frontages, awnings are preferred to provide shelter and weather protection for pedestrians.

Well-designed awnings provide a sheltered, humanly scaled space on the footpath that creates an accommodating pedestrian environment for shopping, dining, walking and lingering. They also provide weather protection for the doorways, openings, and display areas of the active ground floor frontage of the building.

As an architectural element that is both part of the building as well as the public space of the street, the awning should integrate both with the characteristics of the building as well as existing and possible future adjacent awnings.In Melrose Park awnings are encouraged only at the town centre / mall and activated street frontages.

**Objectives**

O.01 Increase amenity in areas of high pedestrian volume by providing continuous protection from rain, sun, and wind down draft.

O.02 Design awnings to provide protection from rain, sun, and wind down draft.

O.03 Maintain complementary architectural detail between awnings

C.01 Awnings in Melrose Park South should be used at activated retail frontages.

C.02 New awnings should align with adjacent existing awnings and complement building facades

C.03 Where a proposed building is located on a street corner and an awning is not required on one frontage, the awning should extend around the corner by a minimum of approximately 6m.

C.04 Awning dimensions should generally be:

a) Minimum soffit height of 3.3 metres.

b) Low profile, with slim vertical fascias or eaves (generally not to exceed 300mm height)

c) Setback a minimum of 600mm from the face of the kerb

d) Minimum of 2.0 metres deep unless street trees are required.

e) Where street trees are required the entire length of the awning should be set back from the kerb by a minimum of 1.2 metres. Cut outs for trees and light poles in awnings are not permitted.

C.05 Dimensions of awnings should be in accordance with Typical Awning with Street Trees, Figure 18.

C.06 Double height awnings are not permitted except where emphasis is required for entries and the like.

C.07 All awnings are to have non-reflective surfaces

C.08 Glass in awnings should be used where climatically appropriate .and should comply with the controls outlined in Section SUSTAINABILITY

C.09 The awning roof should be designed so that all gutters are concealed, and downpipes incorporated in the building fabric.

C.10 Lighting and other fixtures should be recessed and integrated into the design of the soffit.


*Figure 18 - Typical Awning Condition with Street Trees*

## 3.6 PEDESTRIAN ACCESS AND MOBILITY

**Objectives**

O.01 Enable access and use of all spaces, services, and facilities through the creation of a barrier free environment in all public spaces, premises, and associated spaces.

O.02 Provide a safe and easy access to buildings to enable better use and enjoyment by people regardless of age and physical condition, whilst also contributing to the vitality and vibrancy of the public domain.

**Controls**

C.01 Disability access and provisions must be in compliance with the relevant Building Codes, Australian Standards and Disability Discrimination Act 1992.

## 3.7 SOLAR ACCESS & OVERSHADOWING OF PUBLIC SPACES

The provision of solar access throughout the year is critical to the success of public open space. In a densely occupied precinct, public open spaces with good solar access provide a respite and resource for residents, workers, and visitors. In addition, sunlight is important to ensure the necessary conditions for the health of trees and vegetation, another essential ingredient for public open space.

Public spaces have been identified in the Master Plan these provide valuable opportunities to maintain and to maximise use of solar access at ground level.

**Objectives**

O.01 Maximise solar access to the significant public parks and public spaces and streets during periods in the day when they are most used throughout the year.

O.02 Support the successful growth and survival of trees and vegetation within the streets, parks, and open spaces.

**Controls**

C.01 Development should demonstrate how built form massing, orientation and distribution of height will provide adequate sunlight to parks and public spaces identified in the Structure Plan.

## 3.8 PUBLIC OPEN SPACE

### Objectives

O.01 Create a strong definition of the public domain and maintain the range of public open spaces as shown in the Structure Plan, Public Domain Plan and Public Open Space Plan to support the new residential community to meet, walk and recreate. These are:

a) Southern Parklands West

b) Southern Parklands East

c) Wharf Road Gardens (South)

O.02 Ensure that the public open spaces are capable of:

a) accommodating a range of uses and events, experiences, and activities.

b) encouraging social interaction and use by people of different ages and abilities.

c) including key user groups needs including children, young people, the elderly, low-income earners and people with a disability.

O.03 Provide public open spaces that are attractive and memorable with high levels of amenity that consider safety, climate, activity, circulation, seating, lighting, and enclosure.

O.04 Contribute to the management of stormwater and enhancement of ecological values.

### Controls

C.01 Public open space is to be provided as identified in the Structure Plan and Appendix 6 - Public Open Space Plan and Public Open Space Key Characteristics, Table 3.

C.02 The designs for the public open spaces and the wetlands are to be developed in consultation with Council. They are to be designed to:

a) incorporate a palette of high quality and durable materials, robust and drought tolerant landscaping species,

b) include clear, accessible, safe, and convenient linkages to each other and to the surrounding public open space network

c) integrate stormwater management and urban tree canopy

d) include design elements, furniture, and infrastructure to facilitate active and passive recreation, community gatherings

e) maximise the safety and security of users consistent with ‘Safety by Design’ principles

f) provide deep soil throughout (no car parking or infrastructure underneath unless agreed to by Council)

g) encourage pedestrian use through the design of open space pathways and entrances

h) clearly delineate private and publicly accessible open space

i) provide access to both sunlight and shade

j) incorporate appropriate levels of lighting to maximise hours of use

k) accommodate high levels of use

l) be accessible 24/7

m) be capable of being well maintained within reasonable costs

C.03 All public open space is to be dedicated and then maintained by Council.

C.04 Landscaping and materials palette should respond to the character and environmental conditions of each space and should unite and relate to the other public open spaces throughout the precinct.

C.05 Vehicular movement through public open space should be restricted except for emergency vehicles, servicing, and special events.

C.06 Landscaping, plant species and structures such as retaining walls should be compatible with flood risk and not located on a flow path. Also see Retaining Walls in section Built Form.

C.07 Soil profile to be consistent with the Soil Profile Strategy – fill within the public domain and open spaces should not occur prior to undertaking a Soil Profile Strategy which has been agreed by Council.

C.08 Where open space performs dual recreation and stormwater detention functions, the design of the detention basin should:

a) provide an appropriate balance between stormwater management and recreation functions

b) include appropriate measures to restrict gross pollutants from entering the basin

c) allow the release of detained water within 24 hours of a significant rainfall event to protect landscaping within the basin

d) have one or more embankment batters of a maximum 1 in 3 gradient to provide for the safe exit of persons from the basin following a significant rainfall event

e) accommodate plant species and structures that can tolerate temporary flood inundation

*Table 3 - Public Open Space Key Characteristics*

| Site | Purpose/s | Use/s |
|---|---|---|
| Southern Parklands West | Foreshore Park | Active informal recreation, Passive Recreation, Community Events and Gatherings |
| Southern Parklands East | Foreshore Park | Passive recreation, gatherings |
| Wharf Road Gardens (South) | Landscape Buffer | Passive Recreation |

**I. Southern Parklands East and West**

The West and East Foreshore Parks will assist in creating one continuous foreshore park, once the entire south precinct is developed, along the Parramatta River. The West & East foreshore parks will have an area of approximately 22,126m$^2$:

- function as the key open space and principal gathering space for the Melrose Park precinct
- be edged by the existing Parramatta River cycle way to the south
- have a diverse mix of hard and soft landscaping and deep soil planting utilising indigenous, native and exotic species to suit park environmental conditions
- should provide:
  - a variety of outdoor spaces including, sheltered, sunny, shaded, intimate, expansive
  - informal seating areas, public amenities, BBQ, and shade structures, drinking fountains
- utilise durable materials to resist vandalism and graffiti
- include gathering spaces and play elements integrated into the landscape design
- provide opportunities and infrastructure to support small scale events
- facilitate cross-site and internal pedestrian connections that are sympathetically integrated to maintain the overall landscape character

**II Wharf Road Gardens (South)**

A linear park with a minimum width of approximately 17 metres; and an approximate area of 3,907m$^2$should be provided along the eastern boundary of the precinct as identified in the Structure Plan and should:

- explore opportunities to integrate references to the agricultural / pharmaceutical heritage
- provide a green buffer of soft landscaping to protect significant trees
- include deep soil planting utilising indigenous, native and exotic species
- incorporate shade and some formal and informal seating
- achieve direct sunlight to a minimum of 40% of the park between 10am and 2pm on 21 June

## 3.9 LANDSCAPE DESIGN

### Objectives

O.01 Ensure that the landscape is fully integrated into the design of development.

O.02 Optimise landscaping to ameliorate urban heat effects

O.03 Provide tree canopies to enhance the street character.

### Controls

C.01 A landscape concept plan should be provided for all landscaped areas. The plan should outline how landscaped areas are to be maintained for the life of the development.

C.02 Canopy trees should be provided in the street frontage setback deep soil to complement tree canopy species in accordance with the Public Domain Plan and the Public Domain Design Guidelines.

C.03 Ensure that A grade soil profile is appropriate for the planting in the deep soil zones

C.04 Landscape requirements should be as per Section 3.3.1 Landscaping, and 3.3.2 Private and Communal Open Space of the Parramatta DCP 2011 and where there is a conflict, this DCP shall prevail.

## 3.10 PLANTING ON STRUCTURES

Constraints on the location of car parking structures may mean that landscaping within the site and not in the setbacks might need to be provided over parking structures on roof tops or on walls.

### Objectives

O.01 Contribute to the landscape quality and amenity of buildings.

O.02 Encourage the establishment and healthy growth of landscaping in urban areas on structure.

O.03 Ensure that A grade soil profile appropriate for the proposed planting in the deep soil zones and for the landscaping on slab is provided.

### Control

C.01 Design for optimum growing conditions and sustained plant growth and health by providing minimum soil depth and, soil volume as per Table 4.3.10.4, and soil area appropriate to the size of the plants to be established,

C.02 Provide appropriate soil conditions including irrigation (where possible using recycled water) and suitable drainage.

C.03 Provide square or rectangular planting areas rather than narrow linear areas.

C.04 Provide a soil profile report that specifies A grade soil that meets the specific requirementsfor the proposed planting for 1metre above drainage in landscape planting on slab.

C.05 Tree planting and landscaping located on a slab is to be set down into the slab a minimum 1 metre plus drainage for trees and a lessor amount appropriate for other planting.

C.06 The minimum number of trees to be provided in landscaped areas is 1 tree per 80$m^2$ or as agreed by Landscape Management Officer.

*Table 4 - Minimum soil depth for plant establishment (in addition to drainage layer)*

| Plant type | Min soil depth | Min soil volume |
|---|---|---|
| Large trees (over 12m high, to 16m crown spread at maturity or to connect with other tree crowns) | 1.3m | 150 cu m |
| Medium trees (8-12m high, up to8m crown spread at maturity) | 1.0m | 35 cu m |
| Small trees (6-8m high, up 4m crown spread at maturity) | 800 mm | 9 cu m |
| Shrubs and ground cover | 500 m | n/a |

# 4. VEHICULAR ACCESS, PARKING, SERVICING

## 4.1 ACCESS AND PARKING

### Objectives

O.01 Minimise the impact of vehicle access points and driveway crossovers on streetscape amenity,pedestrian safety, and the quality of the public domain

O.02 Minimise the size and number of vehicle and service crossings to retain streetscape continuity and reinforce a high-quality public domain.

### Controls

C.05 Where practicable, provide one entry point to each lot for service vehicles and residential vehicles

C.06 Where practicable, vehicle access is to be from less busy streets; streets on the low side of lots where possible, rather than busy streets or streets with major pedestrian activity.

C.07 Where practicable, adjoining buildings are to share or amalgamate vehicle access points. Internal on-site signal equipment should be used to allow shared access. Where appropriate, new buildings should provide vehicle access points so that they are capable of shared access at a later date.

C.08 Vehicle access ramps parallel to the street frontage will not be permitted.

C.09 Doors to vehicle access points should be 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.

C.10 Vehicle entries should have high quality finishes to walls and ceilings as well as high standard detailing. No service ducts or pipes are to be visible from the street.

## 4.2 VEHICULAR DRIVEWAYS AND MANOEUVRING AREAS

### Objectives

O.01 Minimise the impact of vehicle access points and driveway crossovers on streetscape amenity, pedestrian safety, and the quality of the public domain by:

a) designing vehicle access to required safety and traffic management standards,

b) integrating vehicle access with site planning, streetscape requirements, traffic patterns

c) minimising potential conflict with pedestrians.

d) limiting street crossings.

O.02 Minimise the size and quantity of vehicle and service crossings to retain streetscape continuity and reinforce a high-quality public domain. Where possible limit vehicle entries to basement to one for each lot.

### Controls

C.01 Driveways should be:

a) provided from less busy streets rather than the primary street, wherever practical

b) located taking into account any services within the road reserve, such as power poles, drainage inlet pits and existing or proposed street trees.

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

d) located on the less busy streets

C.02 The number of street crossings and entrances to basement car parking should be minimised.
C.03 Where possible, limit basement vehicle entries to one per development lot.
C.04 Vehicle access should be designed to:

a) minimise the visual impact on the street, site layout and the building design,

b) integrated into the building design.

C.05 All vehicles should be able to enter and leave the site in a forward direction without the need to make more than a three-point turn.

C.06 Pedestrian and vehicle access should be separate and be clearly differentiated.

C.07 Vehicle access should be a minimum of 3 metres from pedestrian entrances.

C.08 Vehicular access should not ramp along boundary alignments edging the public domain, streets, lanes parks, water frontages and the like.

C.09 Driveway crossings should be designed in accordance with Council's standard Vehicle Entrance Designs, with any works within the footpath and road reserve subject to a Section 138 Roads Act approval.

C.10 Driveway entries and vehicle crossings should be in accordance with AS2890.1

C.11 Vehicle entries visible from the street when doors are open should have a high-quality finish to walls and ceilings as well as a high standard of detailing. No service ducts or pipes are to be visible from the street.

C.10 Loading docks and waste collection should be incorporated within the basement with one entry where possible

C.11 Car space dimensions should comply with the relevant Australian Standards.

C.12 Driveway grades, vehicular ramp width/ grades and passing bays and sight distance for driveways should be in accordance with the relevant Australian Standard, (AS 2890.1).

C.13 Vehicular ramps less than 20 metres long within developments and parking stations should be in accordance with AS 2890.

C.14 Access ways to underground parking should not be located adjacent to doors of the habitable rooms of any residential development.

C.15 Semi-pervious materials should be used for all uncovered parts of driveways/spaces to provide for some stormwater infiltration.

C.16 Entrances to basement facilities should not terminate the view at the ends of any streets or pedestrian connections

C.17 Entrance doors to basements should be:

a) located behind the façade of the building by a minimum of 500mm: or

b) designed to be recessive

c) be of materials that integrate with the design of the building and that contribute positively to the public domain.

C.18 Vehicle slip lanes in public streets for private use are not permitted.
C.19 Vehicular access, egress and manoeuvring should be provided in accordance with the NSW Fire Brigades Code of Practice – Building Construction – NSWFB Vehicle Requirements.

## 4.3 ON-SITE PARKING

Car parking should be provided on-site in discreetly located basements for all development. On-street car parking is to be optimised for casual car parking.

### Objectives

O.01 To facilitate an appropriate level of on-site parking provision in Melrose Park

O.02 To minimise the visual impact of on-site parking.

O.03 To provide adequate space for parking and manoeuvring of vehicles (including service vehicles and bicycles).

O.04 To recognise the complementary use and benefit of public transport and non-motorised modes of transport such as bicycles and walking.

### Controls

C.01 Car parking rates for Melrose Park are as per the rates identified in Table 3.6.2.3 within Paramatta DCP 2011. These rates are maximum rates and should not be exceeded.

C.02 Car parking should be generally provided in basements and semi-basements.

C.03 Car parking should be consolidated in basement areas under building footprints and courtyards to maximise the available for deep soil planting in setbacks.

C.04 Maximise the efficiency of car park design with predominantly orthogonal geometry and related to circulation and car space sizes.

C.05 Accessible parking spaces designed and appropriately signed for use by people with disabilities are to be provided to meet Australian Standards.

C.06 Separate motorcycles parking is to be provided at 1 car parking space, as a minimum, for every 50 car parking spaces provided, or part thereof. Motorcycle parking does not contribute to the number of parking spaces for the purpose of complying with the maximum number of parking spaces permitted.

C.07 On-site parking should meet the relevant Australian Standard (AS 2890.1 2004 – Parking facilities, or as amended).

C.08 Pedestrian pathways to car parking areas are to be provided with clear lines of sight and safe lighting especially at night.

C.09 If excavation is required management procedures as set out in the Parramatta Historical Archaeological Landscape Management Study is to be undertaken

C.10 Provide greater flexibility in the use of car parking by separating the title of car parking from the title of the apartments for sale.

C.10 Natural ventilation should be provided to underground parking areas where possible, with ventilation grilles and structures:

a) integrated into the overall façade and landscape design of the development,

b) not located on the primary street façade, oriented away from windows of habitable rooms and private open spaces areas.

## 4.4 BICYCLE PARKING

### Objectives

O.01 Ensure safe, accessible, and adequate bicycle parking is provided for residents and visitors of the precinct.

O.02 Ensure end of trip facilities are provided within developments in the precinct.

### Controls

C.01 Ensure Secure bicycle parking should be provided in residential and town centre buildings

C.01 Secure bicycle parking facilities are to be provided in accordance with Council's Bike Plan.

C.02 Where possible, bicycle parking for residents and or employees should be provided at-grade. Where bicycle parking is provided within the basement or above ground levels, it is to be located on the first level of basement or first level above ground and in proximity to entry / exit points.

C.03 Bicycle parking access and facilities are to be provided in accordance with Australian Standard AS2890.3.

C.04 Visitor bicycle parking shall be located at grade near entry point to the building, be undercover and be accessible at all times.

C.05 Where visitor bicycle parking cannot be provided at grade it is provided on the first level of basement or first level above ground adjacent to the visitor car parking and be accessible at all times.

C.06 The area required for bicycle parking is to be calculated in addition to storage areas required as per the ADG.

C.07 End of trip facilities for non-residential development (excluding the town centre) are to be provided at the following rates:

- 1 personal locker per bicycle parking space
- 1 shower and change cubicle for up to 10 bicycle parking spaces
- shower and change cubicles for 11 to 20 or more bicycle parking spaces are provided
- additional shower and cubicles for each additional 20 bicycle parking spaces or part thereof

C.08 Shower and change room facilities may be provided in the form of shower and change cubicles in a unisex area and are to be designed to accommodate separate wet and dry areas, including areas to hang towels and clothes.

C.09 End of tip facilities are to:

- Be located within the basement or above ground levels, it is to be located on the first level of basement or first level above ground and in proximity to entry / exit points
- Provide for a clear and safe path of travel to minimise conflict between vehicles and pedestrians
- Be in close proximity to bicycle parking facilities and the entry and exit points
- Be within an area of security camera surveillance, where there are such building security systems available

C.10 Development proposing multiple commercial tenancies must demonstrate how all tenancies will have access to the end of trip facilities and employee bicycle parking

## 4.5 VEHICLE FOOTPATH CROSSINGS

The design and location of vehicle access to developments should give priority to pedestrian movement to minimise conflicts between pedestrians and vehicles on footpaths, particularly along primarily pedestrian streets. Vehicle access should also be designed to minimise visual intrusion and disruption of the public domain.

Porte-cocheres are not encouraged as they disrupt pedestrian movement, do not contribute to active street frontage, and provide no public benefit.

**Objectives**

O.01 Enable pedestrian movement has priority when vehicles crossing the public domain.

O.02 Minimise the width of any vehicular crossing at the footpath.

**Controls**

C.01 Vehicle access ramps should be perpendicular to the street frontage to minimise the width of vehicle entry openings. Where driveway width exceeds the maximum dimension (typically) the driveway should be separated and coordinated with the street tree layout as per the Public Domain Plan.

C.02 Vehicle landings should comply with the relevant Australian Standards to maximise visual contact with oncoming pedestrians.

C.03 Vehicle crossings shall use Councils current standard vehicle crossing detail, as agreed by Council.

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# 5. SUSTAINABILITY

## 5.1 ENERGY AND WATER EFFICIENCY

### Objectives

O.01 Promote sustainable development which uses energy efficiently and minimises non-renewable energy usage in the construction and use of buildings.

O.02 Ensure that the Melrose Park development contributes positively to an overall reduction in energy consumption and greenhouse gas emissions.

O.03 Reduce energy bills and the whole of life cost of energy services.

O.04 Reduce consumption of potable water.

O.05 Harvest rainwater and urban stormwater runoff for use.

O.06 Reduce wastewater discharge.

### Controls

C.01. The development should:

a) Seek to achieve a BASIX Energy score of

- BASIX 50 (+25) for buildings with 2-15 storeys
- BASIX 45 (+20) for buildings with 16-30 storeys

b) Seek to achieve a BASIX Water score of at least 55

Provide photovoltaics to each of the buildings if sufficient roof space is available

## 5.2 RECYCLED WATER

New developments must be connected to a source of recycled or reuse water.
Recycled/reuse water means treating and using water, such as sewage, stormwater, industrial wastewater, or greywater, for non-drinking purposes such as for industry, toilets, cooling towers and irrigation of gardens, lawns, and parks.

### Objectives

O.01 Increase resilience and water security by providing an alternative water supply to buildings.

O.02 Reduce the technical and financial barriers to upgrading buildings to connect to future non-drinking water supply infrastructure.

O.03 Support the growth infrastructure requirements for the Greater Parramatta Olympic Peninsula.

**Control**

C.01. 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.02. The dual reticulation system should have:

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

b) one reticulation system servicing all 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 with drinking water supply backup, 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 is optional.*

## 5.3 ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

### Terminology

The following Electric Vehicle (EV) technical terms are used:

**EV Ready Connection** is the provision of a cable tray and 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 switchboard.

**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. The distribution board must provide adequate space for the future installation (post-construction) of compact meters in or adjacent to the distribution board, to enable the body corporate to measure individual EV usage in the future.

### Objectives

O.01 Recognise the positive benefits of increased electric vehicle adoption on urban amenity including air quality and urban heat.

O.02 Ensure that Melrose Park provides the necessary infrastructure to support the charging of electric vehicles.

O.03 Minimise the impact of electric vehicle charging on peak electrical demand requirements.

### Controls

C.01 EV Load Management System is to be capable of:

a) reading real time current and energy from the electric vehicle chargers under management

b) 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.

c) being scaled to include additional chargers as they are added to the site over time.

C.02 All apartment residential car parking must:

a) provide an EV Ready Connection to at least one car 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 50m from the parking bay to connect.

d) Identify on the plans submitted with the DA 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, with confirmation of adequacy from an electrical engineer. Spatial allowances are to be made for cable trays and EV Distribution Board(s) when designing in other services.

C.03 All car share spaces and spaces allocated to visitors must have a Shared EV connection.

C.04 All commercial building car parking must:

a) Provide 1 Shared EV connection for every 10 commercial car spaces distributed throughout the car park to provide equitable access across floors and floor plates.

C.05 The bicycle storage facility is to include 10A e-bike charging outlets to 10% of spaces with no space being more than 20m away from a charging outlet. Chargers are to be provided by the owner. (chargers excluded).

## 5.4 URBAN HEAT

Urban heat or the Urban Heat Island effect refers to the higher temperatures experienced in urban areas compared to rural or natural areas. Urban heat impacts our communities, businesses, and natural environment in many ways, including increase demand for electricity and water, a less comfortable public domain for pedestrians and associated health impacts. On average, Melrose Park experiences more frequent hotter days than Sydney average (Australian Bureau of Meteorology).

As more development occurs in the Parramatta Local Government Area, the build-up of heat in the environment occurs through increased hard surfaces, reduced vegetation, and heat rejection from buildings surfaces and air conditioning units. The build-up of heat is compounded as more dense urban environments reduce the amount of heat able to be removed by wind and re-radiation to the night sky, extending the period of discomfort.

This section of the DCP provides controls which 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, podiums, and facades; and
- reduce the impacts of heat rejection sources of heating and cooling systems.

The following complementary controls contained in the DCP assist with the reduction of urban heat:

- encouraging laminar wind flows and reducing turbulence through the setbacks above street wall and podia height controls
- vegetation and retention of soil moisture through Water Sensitive Urban Design
- street trees and vegetation in the public domain (PDG)
- well-designed landscaping and Green Roofs and Walls

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, which is covered in section 4.3.3.1.

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.

### Terminology

**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 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 can 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 an SRI value of 5 and a standard white paint has an 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

**PRINCIPLES**

P.01 Reduce the contribution of development in Melrose Park to urban heat in the Parramatta LocalGovernment Area.

P.02 Improve user comfort in Melrose Park (private open space and the public domain).

## 5.5 ROOF SURFACES

### Objectives

O.01 Reflect and radiate heat from roofs and podium top areas.

O.02 Improve user comfort of roof and podium top areas.

### Controls

C.01 Where surfaces on roof tops or podiums 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 in Section 2.9 Landscaping;

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

C.02 Where surfaces on roof tops or podiums 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.

## 5.6 VERTICAL FACADES

### Objectives

O.01 Minimise the reflection of solar heat downward from the building façade into private open space or the public domain.

### Controls

C.01 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 should 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*

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

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.

Calculation of RSR for each relevant façade must also 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)<br>Sun Elevation: 51°<br>Sun Azimuth: 86° |
| Northeast/Southeast ± 22.5° | Reference Time: 11.30am AEDT (UTC/GMT+11)<br>Sun Elevation: 69°<br>Sun Azimuth: 66° |
| North ± 22.5° | Reference Time: 1pm AEDT (UTC/GMT+11)<br>Sun Elevation: 80°<br>Sun Azimuth: 352° |
| Northwest/Southwest ± 22.5° | Reference Time: 2.30pm AEDT (UTC/GMT+11)<br>Sun Elevation: 67°<br>Sun Azimuth: 290° |
| West ± 22.5° | Reference Time: 4pm AEDT (UTC/GMT+11)<br>Sun Elevation: 48°<br>Sun Azimuth: 272° |

C.02 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 should 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 |

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

C.03 Shading may be provided by:

a) external feature shading with non-reflective surfaces;

b) intrinsic features of the building form such as reveals and returns; and

c) shading from vegetation such as green walls that is consistent with the controls on Green Roofs or Walls in Section 2.9 Landscaping.

C.04 Non-reflective surfaces of vertical facades do not require shading and these areas can be excluded from the calculations.

C.05 Where it is demonstrated that shading cannot be achieved in accordance with the above controls, a maximum external solar reflectance as defined in Table 4.3.10.7 is generallyacceptable.

*Table 4.3.10.7 - 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.02** Where multiple reflective surfaces or convex geometry of reflective surface introduce the risk of focusing of solar reflections into the public spaces:

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

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

## 5.7 HEATING AND COOLING SYSTEMS – HEAT REJECTION

### Objectives

O.01 Reduce the impact of heat rejection from heating, ventilation and cooling systems in Melrose Park from contributing to the urban heat island effect in the Parramatta Local Government Area; and

O.02 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.01 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.02 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 the controls on Green Roofs or Walls.

C.03 No heat rejection units should be located on the street wall frontage on the primary street.

C.04 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.01 and C.02 above and these units are installed, the HVACsystem 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.

## 5.8 GREEN ROOFS AND WALLS

### Objectives

O.01 Ensure that green roofs or walls are considered for integration into the design of new development.

O.02 Design green walls or roofs to maximise their cooling effects.

O.03 Ensure green walls and roofs are designed and maintained to respond to local climatic conditions and ensure sustained plant growth.

### Controls

C.01 Green roofs and wall structures are 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.02 Waterproofing for green roofs and walls is to be assessed as a part of the waterproofing certification for the building.

C.03 Where vegetation or trees are proposed on the roof or vertical surfaces of any building, a Landscape Plan should be submitted which demonstrates:

a) adequate irrigation and drainage are 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, Industry and Environment's Apartment Design Guide for 'Planting onStructures'.

C.04 Green roofs or walls, where achievable, should use rainwater, stormwater, or recycled water for irrigation.

C.05 Container gardens, where plants are maintained in pots, are not considered to be green roofs, however they are acknowledged as contributing to the reduction of urban heat.

C.06 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.

C.07 Green roof planting, structures and toilet facilities are permitted to exceed the height plane

## 5.9 SOLAR LIGHT REFLECTIVITY (GLARE)

### Objectives

O.04 To ensure that buildings in Melrose Park restrict solar light reflected from buildings to surrounding areas and other buildings.

O.05 To minimise the risk of bird collision due to high transparency, through treatment of external windows and other glazed building surfaces.

### Controls

C.08 New buildings and facades must not produce 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.09 Solar light reflectivity from building materials used on facades must not exceed 20%.

C.10 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.11 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:

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

**e)** 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**.**

C.12 Demonstrate that development will not significantly affect migratory or threatened bird species because of illumination or obstruction of flight pathways into Melrose Park. Consideration is to be given to the *National Light Pollution Guidelines for Wildlife* (Migratory Shorebirds) and the *Industry Guidelines for Avoiding, Assessing and Mitigating Impacts on EPBC Act Listed Migratory Shorebird Species*.

C.13 A report is to be prepared by a suitably qualified consultant at DA stage to determine appropriate treatments of building surfaces for buildings within close proximity to open space and water bodies.

## 5.10 BUILDING FORM AND WIND MITIGATION

### Objectives

O.01 Ensure that building form enables the achievement of nominated wind standards to maintain safe and comfortable conditions in the precinct.

O.02 Ensure wind mitigation methods do not to enable full development of street tree canopy.

### Controls

C.01 Wind Effects Report is to be submitted with the DA for all buildings greater than 32m in height. Report recommendations cannot rely on or include street trees to assist to mitigate wind down draft effects on the public domain. For buildings over 50m in height, results of a wind tunnel testare to be included in the report.

C.02 Site design for tall buildings (towers) should:

a) Set tower buildings back from lower structures built at the street frontage.

b) Protect pedestrians from strong wind downdrafts at the base of the tower.

c) Ensure that tower buildings are well spaced from each other to allow breezes to penetrate city centre.

d) Consider the shape, location, and height of buildings to satisfy wind criteria for public safety and comfort at ground level.

e) Ensure usability of open terraces and balconies.

C.03. Buildings and public and private open spaces are to be designed in response to wind testing outcomes.

C.04 Historical data of wind speed and direction collected over a minimum of 10 years should be used as the basis of a pedestrian level Wind Effects Report. Data from the Bankstown Airport Bureau of Meteorology anemometer starting earliest in 1993 is to be used and adequately corrected for the effects of differences in roughness of the surrounding natural and built environment. The use of wind data for daytime hours between 6am and 9pm is generally recommended and may be specifically requested by the City of Parramatta, however, wind data for all hours may be used as well, where appropriate. Climate data are to be presented in the Wind Effects report.

C.05 The criteria for pedestrian level wind comfort and safety are based on published research, particularly on the criteria developed by Lawson (1990). Pedestrian safety and comfort are affected by both the mean and the gust wind speed. As such, the criteria defined above are to be applied to both the mean wind speed and the Gust Equivalent Mean (GEM), i.e. the 3 s gust wind speed in an hour divided by 1.85.

## 5.11 ECOLOGY

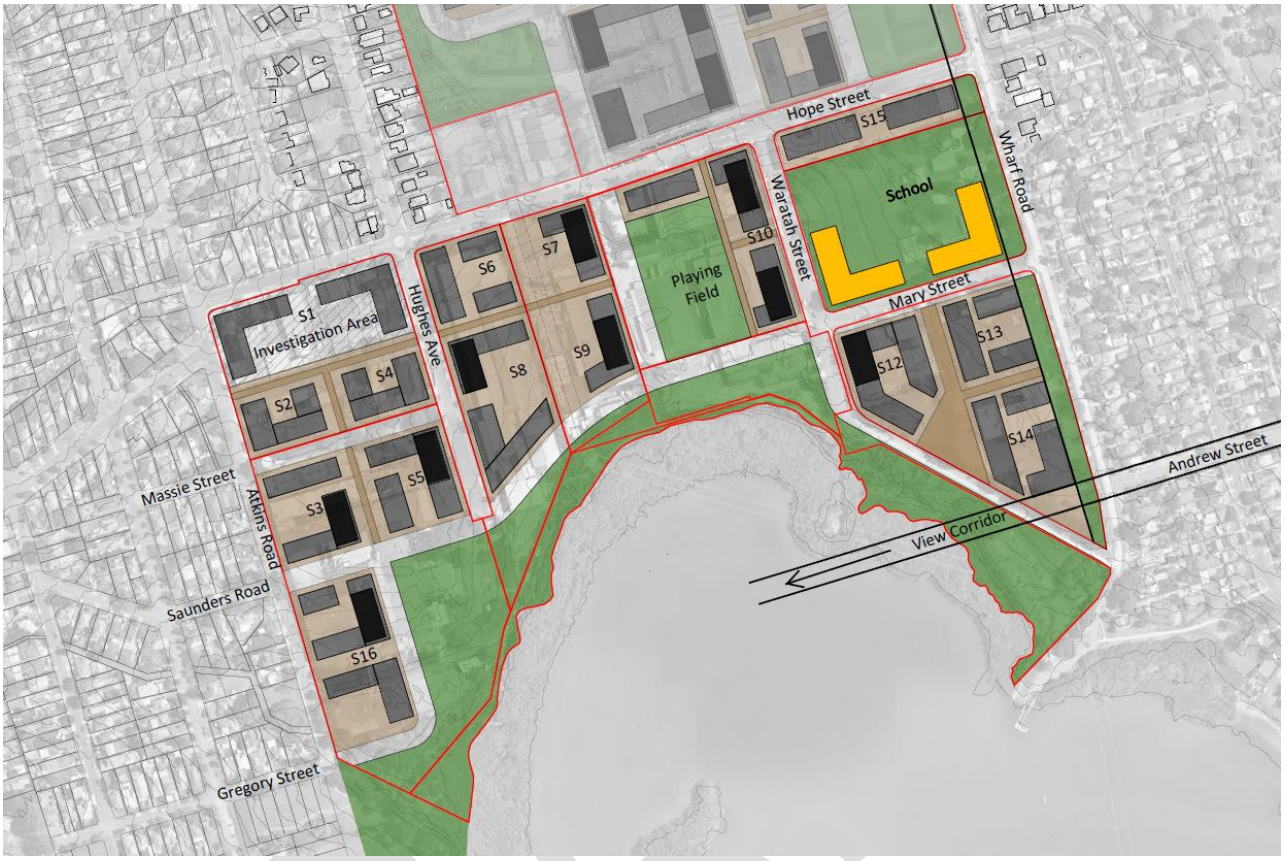
### Objective

O.01 Ensure that potential flora and fauna species located on the site are identified and managed appropriately

### Control

C.01. A survey of all buildings is to be undertaken to identify any species occupying vacant buildings.

# Appendix 1 – Melrose Park South Structure Plan & Density Schedule

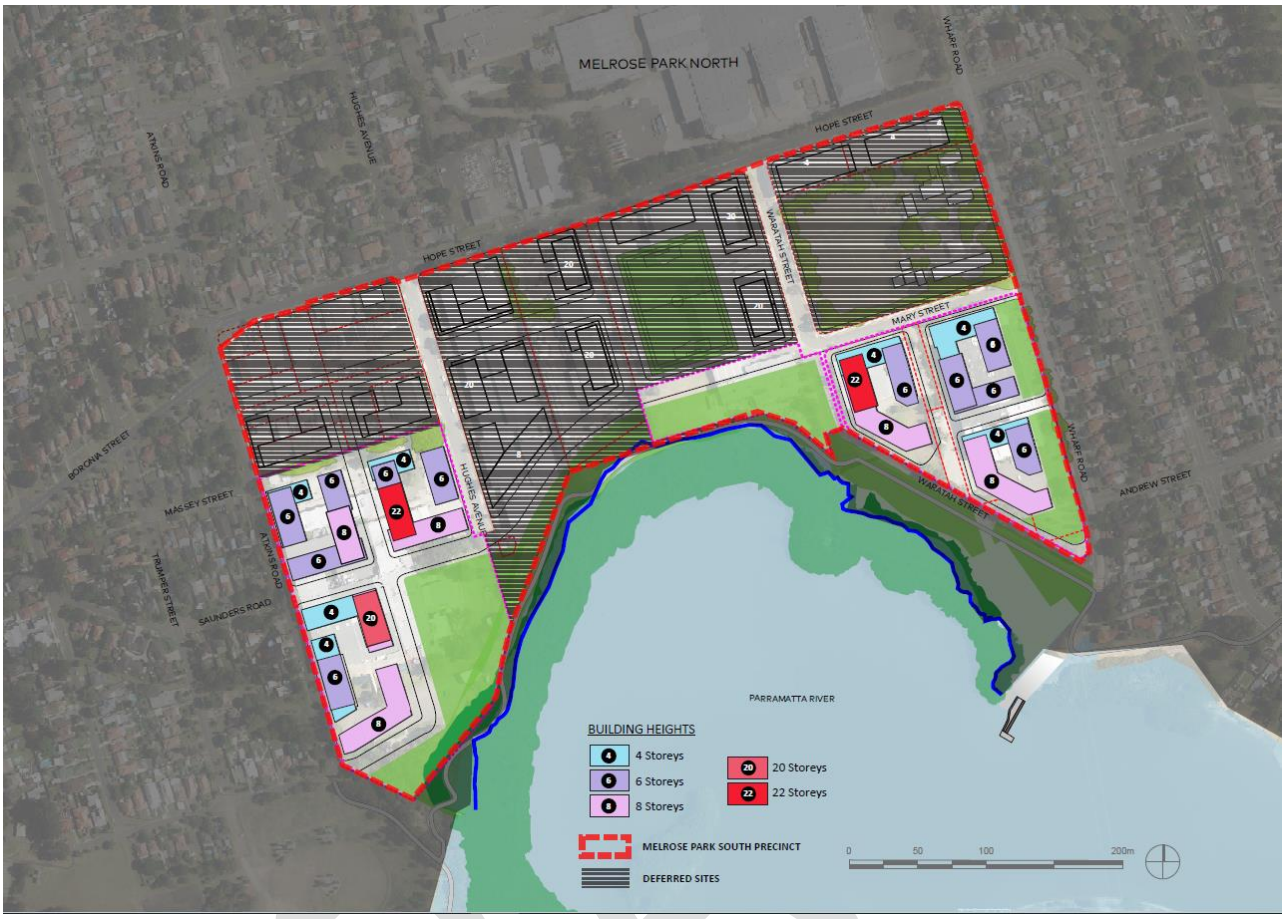



| | Site Area | GFA | FSR | Max Height (m) |
|---|---|---|---|---|
| LOT S1 (TBC) | 12608 | 12608 | 1.0 | 12 |
| LOT S2 | 4178 | 11643 | 2.8 | 20 |
| LOT S4 | 4186 | 8812 | 2.1 | 20 |
| LOT S3 | 8074 | 18533 | 2.3 | 20 |
| LOT S5 | 7948 | 30465 | 3.8 | 58 |
| LOT S16 | 11093 | 43355 | 3.9 | 58 |
| LOT S6 | 5128 | 14991 | 2.9 | 26 |
| LOT S8 | 10458 | 26515 | 2.5 | 26 |
| LOT S7 | 4754 | 15600 | 3.3 | 58 |
| LOT S9 | 6380 | 16656 | 2.6 | 58 |
| LOT S10 | 9539 | 45436 | 4.8 | 63 |
| LOT S12 | 9508 | 32241 | 3.4 | 64 |
| LOT S13 | 7328 | 16429 | 2.2 | 26 |
| LOT S14 | 6217 | 22135 | 3.6 | 26 |
| LOT S15 | 6763 | 12230 | 1.8 | 26 |
| Overall Net FSR | **114160** | **327649** | 2.9 | :1 |

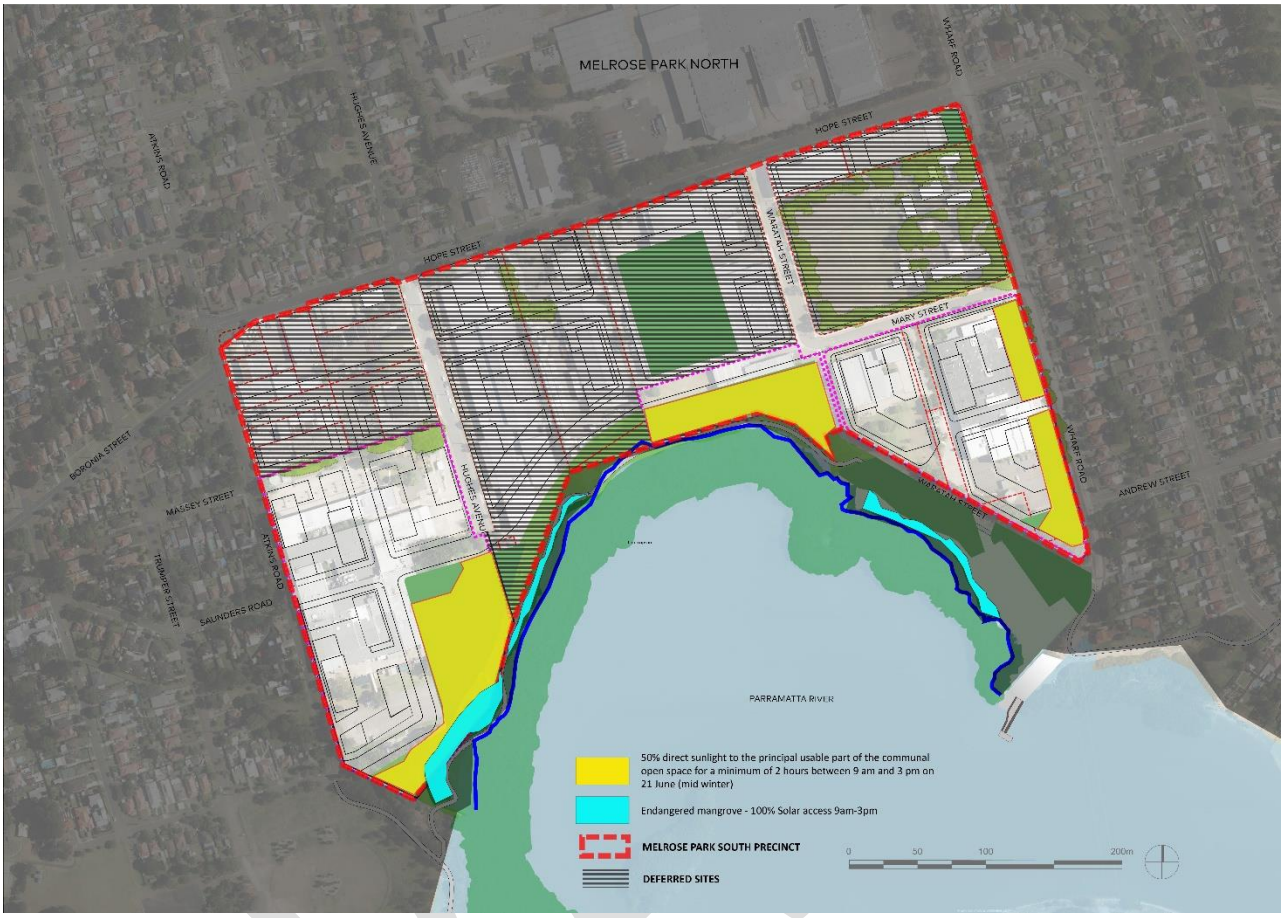
| | | | |
|---|---|---|---|
| Mixed Precinct | **24390** | 33064 | **1.36 :1** |
| Site Area (Holdmark West) | **51607** | 92353 | **1.79 :1** |
| Site Area (George Weston) | **22823** | 41506 | **1.82 :1** |
| Site Area (Powerlines) | **16472** | 32256 | **1.96 :1** |
| Site Area (Goodman) | **25593** | 45436 | **1.78 :1** |
| Site Area (Holdmark East) | **42694** | 70805 | **1.66 :1** |
| Site Area (Hope St sites) | **6740** | 12230 | **1.81 :1** |
| Total | **190319** | 327649 | **1.72 :1** |

# Appendix 2 – Courtyard Locations

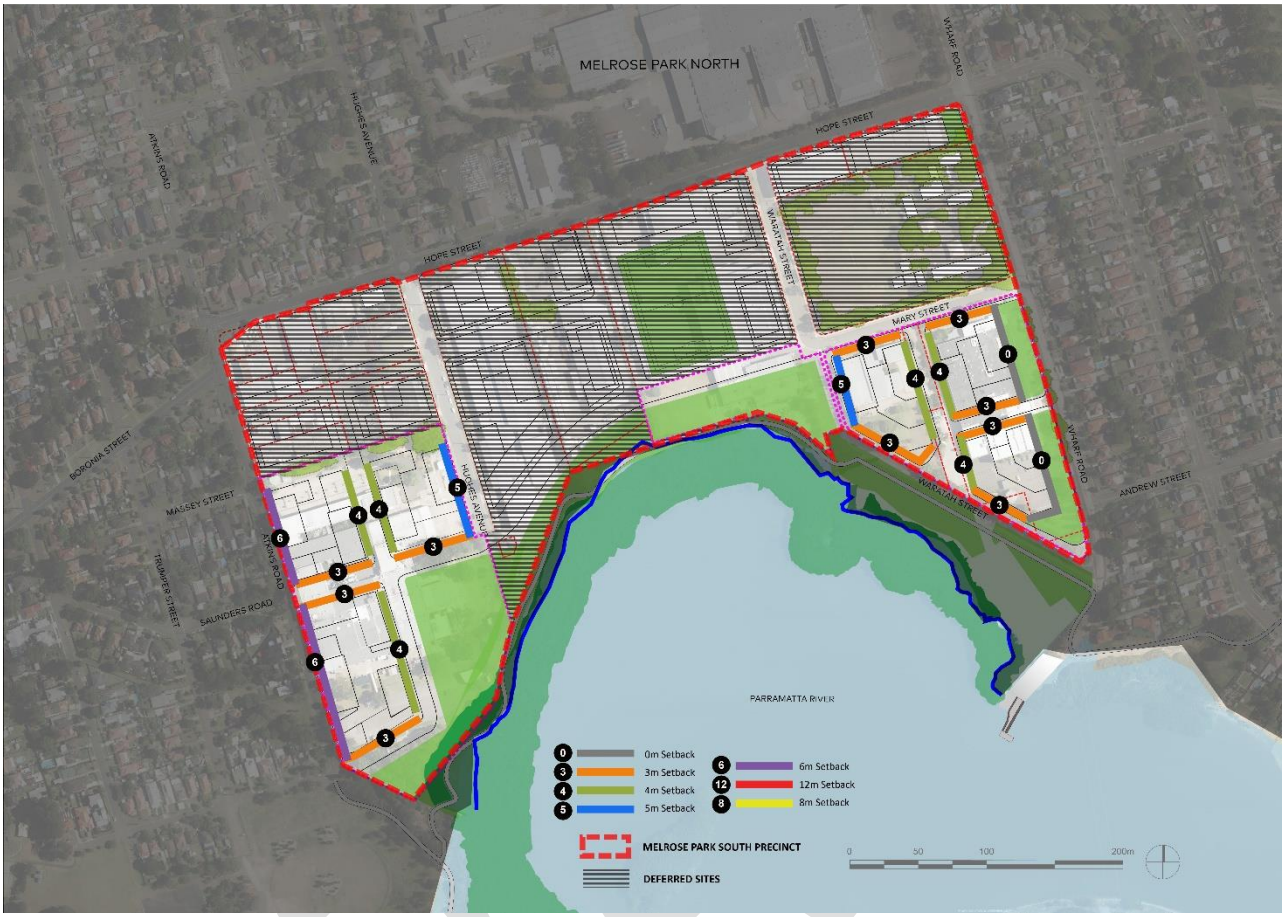
# Appendix 3 – Building Heights



# Appendix 4 – Solar Access Plan

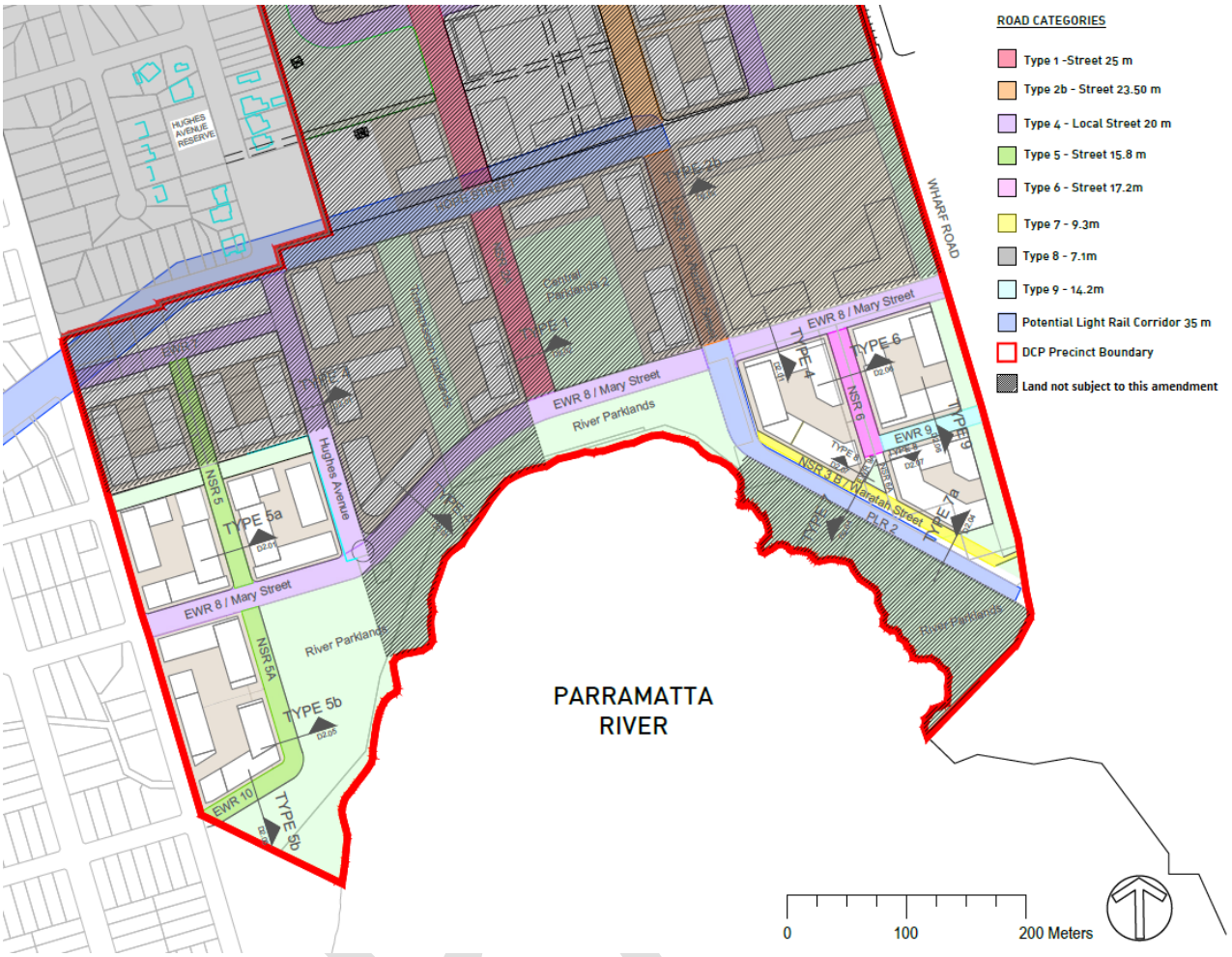


# Appendix 5 – Building Setbacks



# Appendix 6 – Public Open Space

# Appendix 7 – Street Hierarchy



# Appendix 8 – Public Domain Plan

# Appendix 9 - Water Management Plan

**Appendix 9**

# Melrose Park South
# Water Management Strategy

# Melrose Park South Precinct
# –Water Management Strategy –

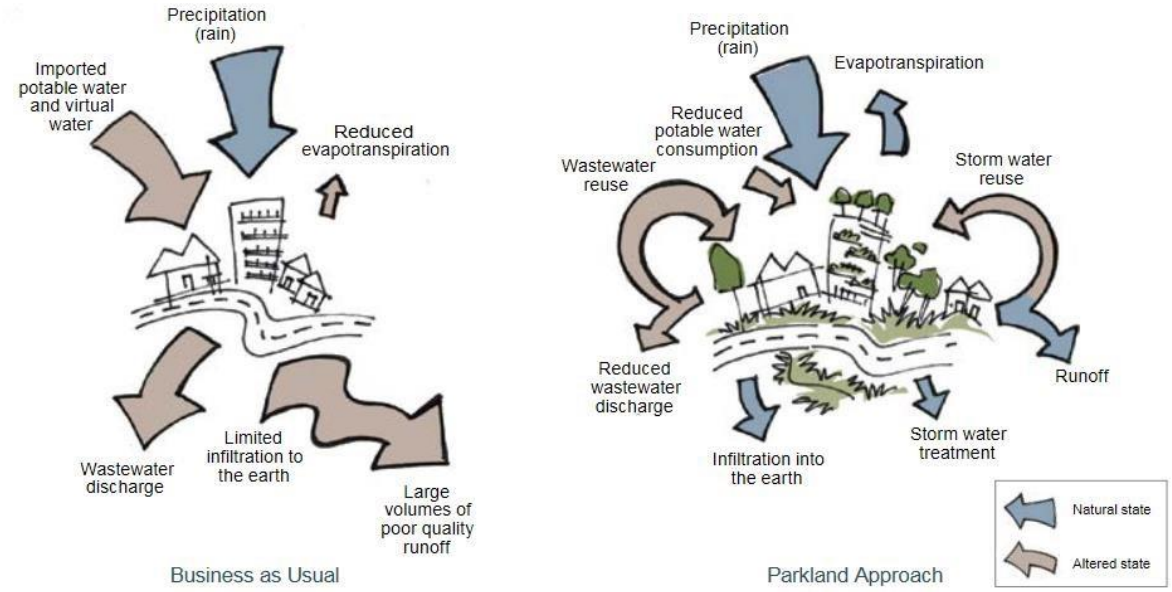
## Contents

# 1. Water Management Strategy - Overview

Urbanisation brings impermeable paving and roofing, replacing 'natural' landscapes. More rainwater runs off, and it runs faster. This substantially changes the catchment: flooding is increased, water and waterways become polluted, bushland degrades and there are numerous other impacts. Sustainable water management is required to counteract this.

Overland flow will traverse the catchment above the Melrose Park South precinct and the precinct itself during severe storms. There are catchments above Victoria Road and west of Melrose Park Precincts that contribute to this overland flow.

At present, overland flow and drainage across Melrose Park is partly managed and partly informal but allows overland stormwater to be delayed on its passage through the site.




**'Business as Usual' and 'Parkland Approach'**

Source: Urban Typologies and Stormwater Management – achieving a cool green liveable Western Parkland City, Sydney Water, Bligh Tanner and Architectus 2020

Once the Melrose Park North precinct development is completed, some but not all, of this overland flow will be managed to prevent accelerated runoff and other factors that would otherwise increase flooding below the site, particularly in Melrose Park South precinct. However, with this size of catchment and its terrain and character, some overland flow flooding is unavoidable, and this must be managed within the Melrose Park South precinct so that overland flow floodwaters are safely conveyed through the precinct to the Parramatta River.

In Melrose Park North, both private and public stormwater/floodwater detention will be implemented so that peak discharges from the northern precinct are reduced to at or below pre-development peak levels and at the same time Council's obligations regarding on site detention in the Parramatta River Catchment are met. This detention and flood peak management must occur for the range of storm/rainfall events up to the 1% AEP, and for higher events to ensure flood impacts are not significant.

Flood detention within Melrose Park North will not reduce the total volume of water flowing across and out of the site but will delay and reduce its peak so that flood levels are kept below predevelopment levels at least up to the 1% AEP events.

In Melrose Park North, private On-Site-Detention (OSD) will be provided within the privately owned sites for each development in accordance with the Upper Parramatta River Catchment Trust Handbook Edition 4.

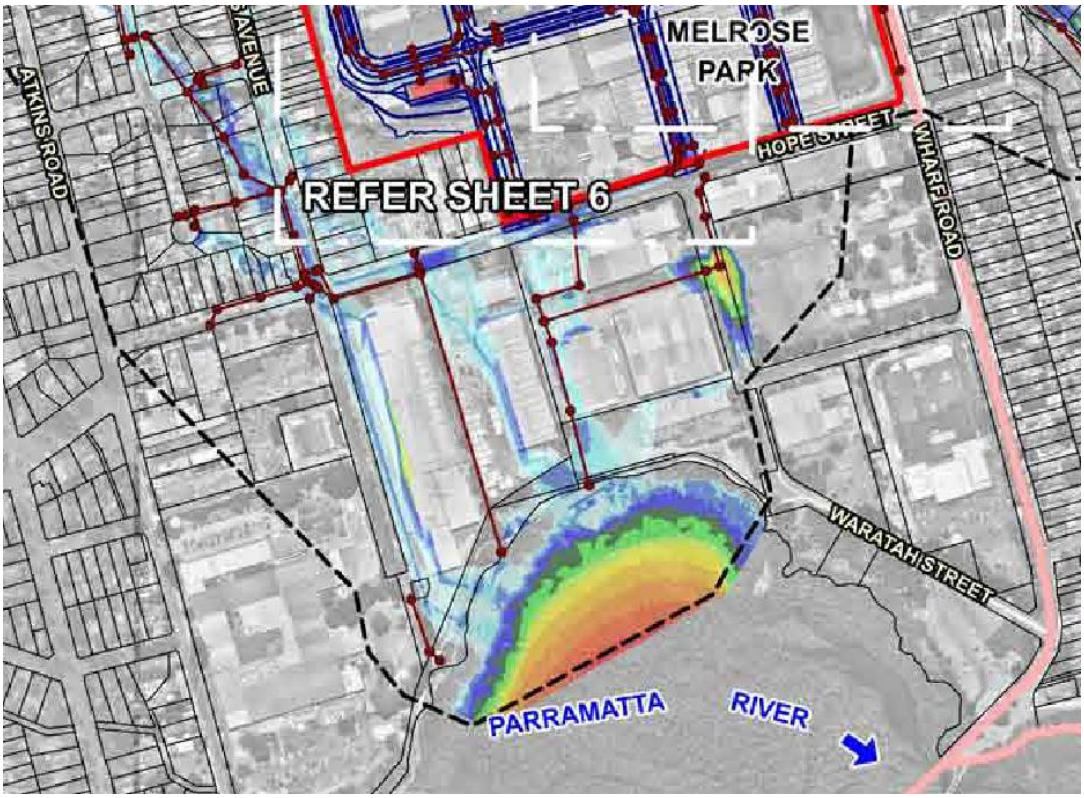
Water Sensitive Urban Design (WSUD) within the private sites will manage water quality as well as rainwater capture and use.

In addition, public OSD and WSUD will be provided within the road reserves where practicable, as well as playing fields, parks, and other public lands. The primary purpose of the public OSD systems is to ensure that flooding conditions are not exacerbated in existing development that lies downstream of the Melrose Park North Precinct for all storms up to 1% AEP in intensity. As a minimum, both overland and piped flows are to be detained in two surface detention systems which are to be located in the open space areas which are to be provided adjacent to Wharf Road and Hope Street.

Initial modelling[1] suggests there will be several overland flow paths from Melrose Park North flowing across the Melrose Park South precinct. All of these overland flow paths and those not yet modelled to the east and west that are not part of the Melrose Park precincts must be accommodated by planned and designed overland flow paths through the Melrose Park South precinct site.

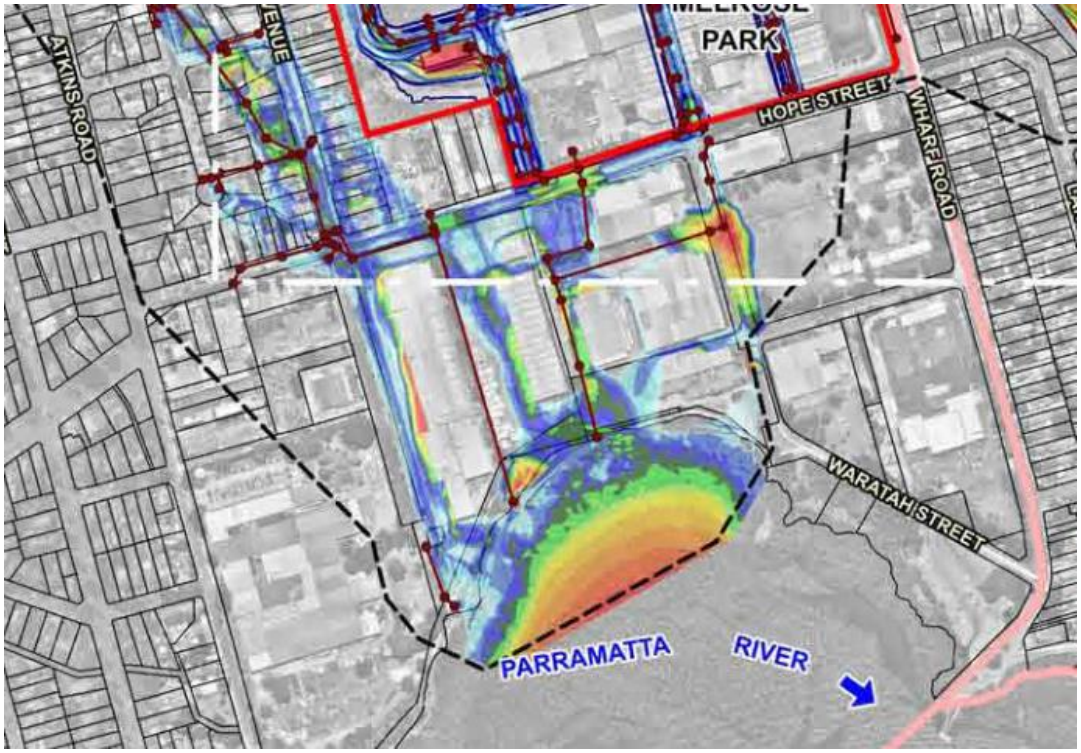
These flow paths are likely to be a combination of roadways and open space – which may be public domain, such as parks, or privately owned but protected with easements and covenants on title.

Unlike for the North, OSD within the Melrose Park South precinct may cause worsening of flooding due to this area's close proximity to the Parramatta River. An earlier undetained discharge from the precinct may be preferable. If this negative consequence can be demonstrated, it is possible, at Council's discretion, that the requirements for both public and private OSD will be waived.




[1] Lyall and Associates 2022

**Overland flow 1% AEP fully blocked condition. Indicative only. Not adopted by Council**




**Overland flow. PMF Indicative only. Not adopted by Council**
**Note there are additional catchments to the east and west that are not modelled here.**
**Source of both images: Lyall and Associates, January 2022**

The roads will theoretically convey up to the 5% AEP flows in the pipes and between opposite kerbs. The 'public' 1% AEP flows above the 5% AEP flows will be conveyed across the whole road reserve width between property boundaries and in designed floodways if the road width is not sufficient.

Flood planning levels for buildings adjacent to the overland flow paths will be derived from the condition in a 1% AEP event where drainage pits and pipes are assumed to be not functioning and all flow is overland (100% blockage). Flood Planning Levels will include 0.5m freeboard.

Both the private and public WSUD systems must achieve the water quality targets set out in this Development Control Plan.

The development of the Parramatta LGA and Melrose Park itself requires integrating water management within the landscape and urban design using appropriate, sustainable technology.

This appendix provides technical guidelines for water management for the whole Melrose Park South Planning Precinct. It applies to water management as follows.

The Water Management Strategy must be considered under six (6) interdependent aspects:

- Flooding and Overland flow management.
- Road and public domain piped drainage.
- Flood reduction using public and private water detention systems.

- Environmental management of private and public low flows with Water Sensitive Urban Design (WSUD).
- Rainwater harvesting and use
- Interactions with the Parramatta River

# 2. Flooding and Overland Flow Management

## 2.1 Flooding from Parramatta River and Overland Flow - Principles[2]

P 01. Assess and design for the safe conveyance (and detention) of overland flow through the site with protection of people, buildings, and property during rainfall events of 1% AEP (100 year) plus 0.5m freeboard and up to Probable Maximum Precipitation Floods (PMP, PMF).

P 02. Design conveyance and detention of overland flow to ensure there is no worsening of flooding in a 1% AEP event anywhere as a result of the development of the precinct and there is no significant worsening of flooding in higher events up to the PMP/PMF anywhere as a result of the development

P 03. Protect the Melrose Park South precinct from flooding from the Parramatta River

P 04. Protect the Parramatta River and its foreshore and riparian zone from suffering adverse environmental impacts caused by flooding and stormwater discharges from the Melrose Park South and North precincts.

## 2.2 Flooding and Overland Flow – Objectives

O 01. Protect the community and developments from river flooding rising from Parramatta River and its tributaries /creeks.

O 02. Protect the community and developments from overland flow flooding from rainfall within and up slope of the site.

O 03. Manage the risks for all floods up to the Probable Maximum Flood.

O 04. Identify and manage overland flow paths and buildings and land affected by them.

## 2.3 Design Controls – Overland flow flooding - assessment of flood behaviour

The following design controls are to be adopted for defining the nature of flooding under pre- and post-development conditions:

C 01. A set of hydrologic and hydraulic models are to be developed of the catchments within which the Melrose Park South Precinct is located. These models must be to Council's satisfaction and criteria.

C 02. The 'ensemble approach' prescribed in *Australian Rainfall and Runoff* (ARR) *2019* is to be adopted for deriving design discharge hydrographs for storms up to 0.2% AEP in intensity, while the 2003 update of the Bureau of Meteorology's *"The Estimation of Probable Maximum Precipitation in Australia: Generalised Short-Duration Method"* is to be used to derive estimates of Probable Maximum Precipitation.

C 03. The hydraulic model is to incorporate all of the features which influence flood behaviour in the study catchments, including details of the existing stormwater drainage system.

C 04. Blockage factors of 20% and 50% are to be applied to on-grade and sag type inlet pits, respectively when designing major/minor drainage systems.

C 05. Flood and stormwater behaviour is to be defined for design storms with AEPs of 5% and 1%, 1% plus climate change, as well as the Probable Maximum Flood (PMF).

C 06. Steady-state design discharge hydrographs are to be adopted for defining the maximum rate at which flow will discharge from each individual super lot within the Melrose Park

[2] Note riverine flooding directly affects the MP South precinct site, including the riverbank flow and stormwater discharge patterns in that area.

North Precinct under post-development conditions. Where OSD is to be provided, this flow rate is to be based on the OSD calculations which are referred to in this document and is to be adopted when defining flood behaviour under post-development conditions for storms up to 0.2% AEP in intensity. Uncontrolled flow from each super lot is to be adopted when defining flood behaviour for more intense storm events (for example, the PMF event).

C 07. The impact that a potential increase in design 1% AEP rainfall intensities associated with future climate change is to be assessed. The assessment is to be in accordance with the NSW Department of Planning, Infrastructure and Environment's floodplain risk management guideline entitled "Practical Considerations of Climate Change". Design storms of 0.5% and 0.2% AEP may respectively be adopted as being analogous to Representative Pathway Concentration 4.5 and 8.5 increases in 1% AEP design rainfall intensities under year 2090 conditions for the purpose of the assessment, noting that the assessment need only be undertaken for post-development conditions.

C 08. An assessment is to be undertaken into the impact a complete blockage of the existing and proposed piped drainage system in the vicinity of the Melrose Park South Precinct would have on flood behaviour for a 1% AEP storm event, as well as its implications on the proposed developments.

C 09. When modelling to determine flood levels and flood planning levels with respect to overland flow, the analysis and modelling of the overland flow paths must be with 2D modelling such as Tuflow, and must assume all flow is overland, while piped reticulation is fully blocked and not contributing to conveyance.

C 10 Flood modelling (and drainage design) must take account of tailwater levels in the Parramatta River, including with climate change.

C 11. This modelling must also assume that, where it is to be provided, on site detention is fully functional within the private lots and that such flows are discharging on to the surfaces of roads etc.

C 12. The Flood Planning Levels shall be the adjacent interpolated 1% AEP flood levels (100% blocked) plus 0.5m freeboard.

C 13. Minimum finished floor levels must be the respective Flood Planning Levels as defined above. For sloping sites these levels may be stepped.

C 14. There must be no habitable rooms / floors below the applicable flood planning level, including residential, retail, community use, gathering and performance spaces and offices. In addition, any uses that would present a significant risk of harm to occupants are not permitted below the applicable Flood Planning Levels.

C 15. As and if determined by Council, non-habitable rooms and floors such as car parks, waste and loading docks, plant rooms and the like may be constructed below the applicable Flood Planning levels, provided such floors are protected from flooding to Council's satisfaction by the building design from inundation up to the applicable Flood Planning Level(s) and, if required by Council, by additional means such as flood gates and flood doors up to the Probable Maximum Flood Level.

C 16. Council may require a sensitivity analysis for the effects of climate change.

C 17. For a building that is adjacent to a road, or public domain, or other land adjacent, that is part of an overland flow path or flood storage area:

a) Where Council is satisfied that the roadway, or public domain, or other land adjacent to a building, is an overland flow path or flood storage area in the 1% AEP event with 100% blockage, Council will require minimum finished floor levels of habitable rooms to be 500mm freeboard above the adjacent

1% AEP water surface level as mapped in the 2 Dimension (2D) overland flow model accepted by Council. This level may vary along the site /building boundary with changing water levels.

C 18. For a building that is adjacent to a road, or public domain, or other land adjacent, that, in Council's view, is not part of an overland flow path or flood storage area:

a) Finished floor levels at the boundary adjacent to a road that is accepted by Council as not being an overland flow path, or flood storage area, in a 1% event, including 100% blockage, must be a minimum of the adjacent top of kerb levels plus 2% rising grade to the boundary.

b) Where there is no road, such as paving or landscape, and Council accepts the area is not part of an overland flow path, or flood storage area, in a 1% event including 100% blockage, surface levels must fall away from the building entrances and openings to the adjacent drainage/WSUD system at a minimum of 2%, or greater if necessary to ensure adequate surface drainage.

# 3. Road and public domain piped drainage

## 3.1 Principles – Road and public domain piped drainage

P 01. Provide effective, safe conveyance of stormwater across the catchment using planned and managed overland flow paths, trunk, and local drainage.

### Objectives – Road and public domain piped drainage

O 01. Protect occupants of roads and the public domain and property from uncontrolled stormwater in events up to the 5% AEP (1 in 20 year) rainfall by installing underground or above ground drainage infrastructure to contemporary standards.

### Controls – Road and public domain piped drainage

C 01. All drainage work to be designed and constructed to Council standards

C 02. All civil designs for public infrastructure must be approved in writing by Council's Manager Assets prior to commencement of construction.

C 03. All construction of public infrastructure must be inspected and approved by Council's representative as the works proceed and upon completion prior to occupation or use.

C 04. Appropriate easements, restrictions, covenants, and land title dedications must be in place to Council's satisfaction prior to occupation or use.

# 4. Flood reduction using public and private stormwater detention systems

## 4.1 Overall Principles – public and private stormwater detention

P 01. Manage and moderate stormwater flow across the catchment to minimise the effects of urbanisation, which include increased amount of runoff, shorter times of concentration, faster and deeper overland flows, erosion and flooding.

P 02. Manage and moderate stormwater flow from individual sites to compensate for increased impervious areas and faster conveyance systems, using on site detention, WSUD, deep soil, permeability, and other measures.

P 03. Provide sustainable management, conveyance, and detention of stormwater within the Public Domain

P 04. Mitigate floods.

P 05. Melrose Park North requires a combination of on-site detention within the private lots and stormwater detention basins in the public domain to sufficiently attenuate flows prior to discharge from the precinct. These two systems must be designed to work together hydraulically in a full range of design storms.

P 06. Stormwater from the private lots must be attenuated using OSD in accordance with this DCP and generally in accordance with catchment management criteria advised by the Upper Parramatta River Catchment Trust in their Edition 4 OSD Design Handbook.

P 07. On site detention within the Melrose Park South precinct may cause worsening of flooding due to his area's close proximity to the Parramatta River. An earlier undetained discharge from the precinct may be preferable. If this negative consequence can be demonstrated, it is possible, at Council's discretion, that the requirements for private OSD will be waived.

## 4.2 Principles – Private stormwater detention

Council has identified the following design criteria which is to be adopted in the design of the Private OSD systems, noting for OSD on private land that it is generally in accordance with the Fourth Edition Upper Parramatta River Trust's On-site Stormwater Detention Handbook (**UPRCT Edition 4**). The design principles for stormwater conveyance and detention within private land are:

P 01. To ensure that new developments and redevelopments do not increase peak stormwater flows in any downstream area during major storms up to 1% AEP in intensity.

P 02. To reduce post-development peaks throughout the catchment in a 50% AEP storm event to be as close to natural levels as practical and

P 03. To encourage the integration of OSD with other water quality WSUD measures.

P 04. To prevent any increase in the site discharge to the downstream drainage system nor reduction in the volume of storage provided unless specifically allowed in the following sections or for rainwater storage.

### Objectives – Private Stormwater detention

The objectives of Stormwater detention and conveyance - private land shall be to:

O 01. To limit flow peaks throughout the catchment in a 1% AEP storm event, to estimated peak flows under 1999 conditions, even if the further development of the catchment is equivalent to full medium/high density redevelopment throughout the catchment thereby preventing any increase in downstream peak flows resulting from new developments or redevelopments by temporarily storing on-site the additional and quicker runoff generated.

O 02. Prevent increases in downstream flooding and drainage problems that could:

a) increase flood losses.

b) damage public assets.

c) reduce property values.

d) require additional expenditure on flood mitigation or drainage works.

O 03. Reduce post-development peaks, throughout the catchment, in the 50% AEP storm event to as close to natural levels as practical.

O 04. Encourage integration of OSD systems into the architectural design and layout of the development so that adequate storage areas are included in the initial stages of the site design.

O 05. Encourage integration of the OSD facilities into a sustainable overall water management plan for the site.

O 06. Require construction supervision of OSD systems by the OSD designer to improve construction standards.

## Controls – Private Stormwater detention

C 01. The private lot stormwater drainage system (including surface gradings, gutters, pipes, surface drains and overland flow paths) for the property must:

a) be able to collectively convey all runoff to the OSD system in a 1% AEP storm event with a duration equal to the time of concentration of the site; and

b) ensure that the OSD storage is by-passed by all runoff from neighbouring properties and any part of the site not being directed to the OSD storage, for storms up to and including the 1% AEP storm event.

c) direct all site runoff to the Private OSD. That is the storage is 'on-line'.

C 02. The Private OSD is to have two orifices (or other) outlets and a non-piped overflow spillway.

C 03. The primary or lower orifice or controlled discharge must have a $SRD_L$ of 40 L/s/ha. This must be located as close as possible to the storage invert.

C 04. A secondary orifice must be provided located at the base of a discharge control pit (DCP) providing HED with a $SRD_U$ of 150 L/s/ha.

C 05. $SRD_L$ (40 L/s/ha) and $SRD_U$ (150 L/s/ha) may need to be adjusted in accordance with the procedures set out in UPRCT ED 4 Section 5.1 when the entire site cannot be drained to the storage.

C 06. The crest of the DCP must be designed to be at the water level of the 50% AEP storm event when the volume in the lower storage ($SSR_L$) reaches 245 $m^3$/ha.

C 07. The secondary orifice must operate from when the water level in the storage exceeds the crest level and water starts to overflow into the DCP.

C 08. A non-piped spillway, of suitable length must be provided to prevent flooding of neighbouring lands if the OSD outlets become blocked. This overflow must be located at the top of the storage (i.e., at 396 $m^3$ /ha).

C 09. The $SSR_T$ and $SSR_L$ are only adjusted if a rainwater tank is included in the development / redevelopment and an airspace "credit" is claimed to partially offset the SSR.

C 10. The site area to be adopted for sizing the Private OSD systems in the individual super lots is to include half of the adjacent road reserve, appreciating that the portion of the site area which is not controlled by each individual Private OSD system may exceed the permissible 30% rule.

C 11. Unless otherwise advised by Council, Version 9 of the UPRCT Edition 4 OSD calculation sheet shall be used for sizing the various components of the Private OSD systems.

C 12. Guidelines to assist in determining depths and frequencies of ponding for different classes of storages are given in Table 6.1 of UPRCT Edition 4. It is emphasised that these are general guidelines that will be varied according to the nature of the development and the location of the storage.

C 13. In general, the maximum depth of ponding in above ground storages is 600 mm.

C 14. Council may approve deeper ponding in individual cases where the applicant demonstrates that safety issues have been adequately addressed. For example, warning signs and fencing must be installed where the depth exceeds 600 mm, or the ponding is adjacent to pedestrian traffic areas.

C 15. Surface storages should be constructed so as to be easily accessible, with gentle side slopes permitting walking in or out. A maximum gradient of 1(V):4(H) (i.e. 1 vertical to 4 horizontal) will be required on at least one side to permit safe egress in an emergency. Where steep or vertical sides are unavoidable, due consideration should be given to safety aspects, such as the need for fencing or steps or a ladder, both when the storage is full and empty.

C 16. Balustrades (fences) must comply with the Building Code of Australia (See Section D2.16 of the Code), while safety fences should comply with the Swimming Pool Act 1992. Fencing must not obstruct overland flow and floodwaters.

## Private OSD System Glossary[3]

| | |
|---|---|
| **Detention storage** | Detention devices capture and temporarily store stormwater runoff during major (infrequent) storm events. Stormwater is then discharged to the drainage system at a controlled rate. Detention devices act to mitigate potential downstream flooding impacts. |
| **Extended Detention storage** | The lower portion of the OSD storage, which detains stormwater in smaller, frequent storms up to the 50% AEP event in order to reduce stormwater runoff closer to the rates under natural, pre-development conditions. This helps minimise damage and disturbance to downstream watercourses and aquatic ecosystems. |
| **Flood Detention storage** | The upper portion of the OSD storage that detains stormwater to prevent any increase in downstream flooding in moderate to major storms. Water held in the Flood Detention storage drains away through both the primary and secondary orifice outlets. |
| **PSD** | Permissible Site Discharge - the maximum allowable discharge leaving the site in litres/sec/hectare (L/s/ha) |
| **SRD L** | the Site Reference Discharge from the extended detention storage in litres/sec/hectare (L/s/ha), or in litres/sec (L/s) when applied to a specific site, when the volume of runoff stored in the extended detention storage equals the $SRD_L$. In the case of the Melrose Park North Precinct, the $SRD_L$ has been set at 40 L/s/ha. |
| **SRD U** | the Site Reference Discharge from the DCP that receives stormwater when the volume of runoff exceeds the volume of the extended detention storage in litres/sec/hectare (L/s/ha), or in litres/sec (L/s) when applied to a specific site. The site reference discharge occurs when the DCP is completely filled and HED conditions are established at the commencement of flood detention. In the case of the Melrose Park North Precinct, the $SRD_U$ has been set at 150 L/s/ha. |
| **SSR L** | 33 the minimum volume (in m /hectare or in m when applied to a specific site) required for the lower Extended Detention storage when the outflow is restricted to the SRD. In the case of the Melrose Park North Precinct, the $SSR_L$ has been set at 245 L/s/ha. |
| **SSR T** | 3 the total volume (in m /hectare or in m when applied to a specific site) required for overall storage (combined Extended Detention storage and Flood Detention storage) when outflows occur through the primary and secondary orifice outlets. In the case of the Melrose Park North Precinct, the $SSR_T$ has been set at 396 L/s/ha. |

[3] From UPRCT OSD Handbook Edition 4.

# 5. Public stormwater detention systems

## 5.1 Principles – Public stormwater detention

P 01. The following principles, objectives and controls must be adopted in the design of the public stormwater conveyance and detention systems, noting that it is generally in accordance with the latest addition of Australian Rainfall and Runoff (**ARR 2019**).

P 02 Public stormwater detention within the Melrose Park South precinct may cause worsening of flooding due to his area's close proximity to the Parramatta River. An earlier undetained discharge from the precinct may be preferable. If this negative consequence can be demonstrated, it is possible, at Council's discretion, that the requirements for public OSD will be waived.

## Objectives – Public stormwater detention

O 01. Flooding conditions and risks must not be worsened anywhere for all storms up to 1% AEP in intensity.

O 02. Flooding conditions and risks must not be *significantly* worsened anywhere for storms that are more intense than 1% AEP up to the Probable Maximum Precipitation.

O 03. Ensure Safety, amenity, aesthetic, and ecological values affected by the detention systems are satisfactory.

O 04. Detention infrastructure can readily be maintained in perpetuity

## Controls – Public Stormwater Detention

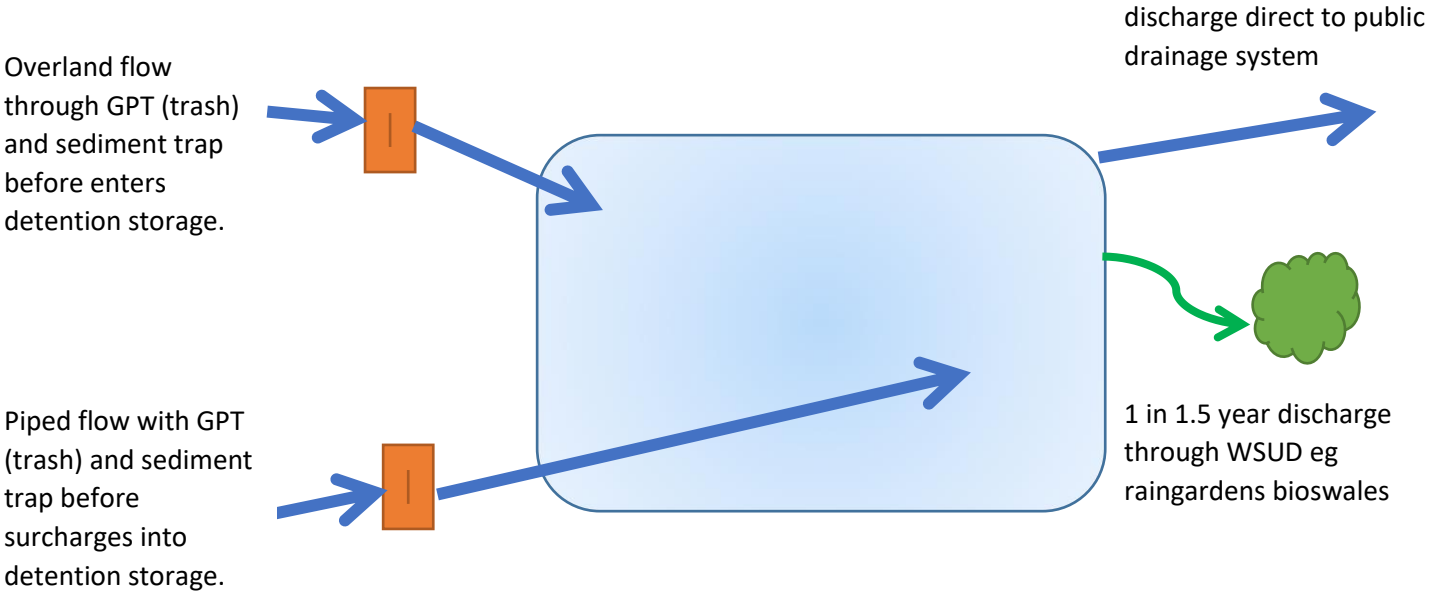
C 01. Sufficient area must be provided for above ground detention purposes within the public domain of the Melrose Park South precinct assuming max depths of 300mm – 600mm. To this is to be added sloping sides, inflow, and outflow swales etc.

C 02. Playing fields and open space are in suitable locations and of appropriate size to be used for stormwater detention purposes.

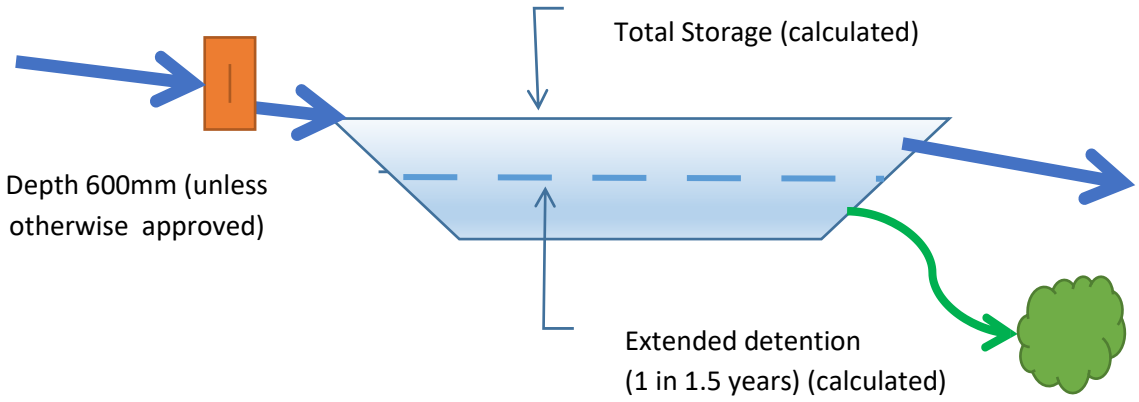
C 03. Unless otherwise approved by Council, basins shall be designed as a dry basin, with low level inundation potentially occurring statistically every 18 months (approx.) and will remain temporarily wet (for a few hours) after a triggering rain event.

C 04. The depth of the basins during severe storms will be typically 300mm to 600mm although greater depths may be necessary in extreme events. Basements must not pose a safety hazard or affect overall usability of the playing field under normal weather conditions.

# Melrose Park - Typical above-ground overland flow detention 1% AEP (1 in 100 year)




3 2



# 6. WSUD - Environmental management of private and public low flows with Water Sensitive Urban Design

## 6.1 Principles - Water Sensitive Urban Design (WSUD)

P 01. In the Melrose Park North Precinct all developments must implement Water Sensitive Urban Design (WSUD).

P 02. WSUD is used to ensure runoff water quality is within acceptable limits using landscape integration and if necessary, treatment technology

P 03. Water sensitive urban design is used to enhance the landscape, support tree canopies with rainwater and deep soil to increase evapotranspiration, urban heat reduction and to reduce uncontrolled runoff.

P 04. A water sensitive stormwater system must be designed to minimise the impact of urban development on the catchment, by improving the quality and quantity of stormwater runoff as well as providing ancillary benefits.

P 05. A WSUD system may contribute to aspects such as biodiversity, reduction of potable water use, carbon sequestration, habitat provision, amenity, community engagement in water resource management and reduction of urban heat island effect.

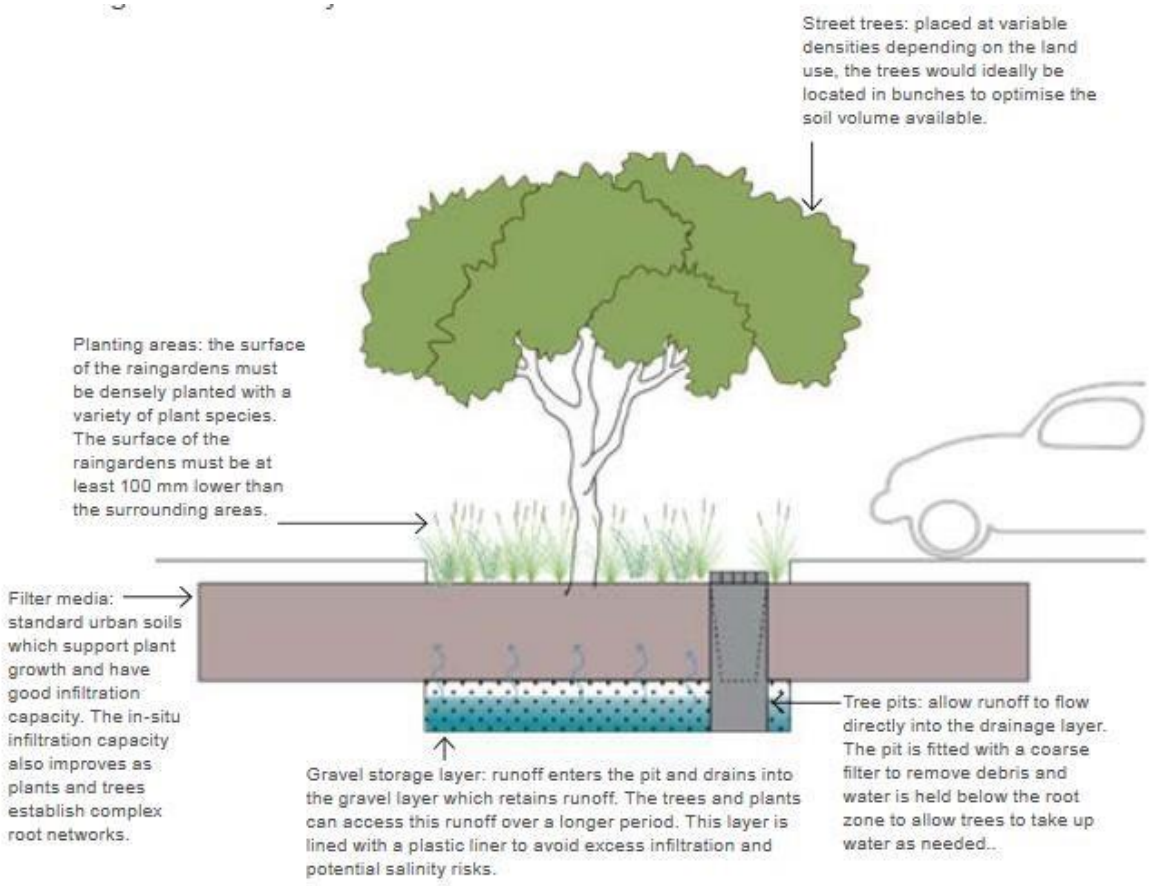
P 06. To protect and enhance natural water systems (creeks, rivers, wetlands, estuaries, lagoons, groundwater systems etc.).

## Objectives – WSUD

O 01. Use Water Sensitive Urban Design to manage water, particularly for rainfall events up to 1 in 1.5 years probability.

O 02. Implement successful Water Sensitive Urban Design and Stormwater Quality I improvements for the public domain.

O 03. Implement successful Water Sensitive Urban Design and Stormwater Quality improvements for private developments.




## Street Trees using WSUD – design and benefits

Source: Urban Typologies and Stormwater Management – achieving a cool green liveable Western Parkland City, Sydney Water, Bligh Tanner and Architectus 2020

Swales in carparks or near other large areas of pavement collect stormwater runoff and remove pollutants

Source: Sydney Water – 'Water Sensitive Urban Design' SW277 03/18

**WSUD at Northern Beaches Hospital**

## Controls - WSUD:

C 01. WSUD principles are to be integrated into the development through the design of the stormwater systems and landscaping scheme and in the orientation of the development rather than relying on 'end of pipe' treatment devices prior to discharge.

C 02. Some options for WSUD measures at Melrose Park include:

a) Vegetated and grassy swales
b) Vegetated filter and buffer strips,
c) Wetlands,
d) Sand and gravel filters (depending on indigenous soil suitability),
e) Bio-retention systems,
f) Permeable/Porous Pavements,
g) Infiltration Basins,
h) Rainwater Tanks,
i) Gross Pollutant Traps and Filters,
j) Passive watering systems for landscaped areas,
k) Additional deep soil areas,
l) Naturalised watercourses,
m) Rain gardens,
n) 'End of pipe' proprietary treatment devices (these must be used in conjunction with other landscape integrated measures to provide ancillary social, environmental, and economic benefits).

This is not an exclusive list and Council does not specify particular measures for particular types of development. These measures are typically employed in a 'treatment train' to maximise the range of pollutants removed.

C 03. Development is to be sited and designed to minimise disturbance of natural watercourses and overland flow paths.

C 04. Impervious surfaces are to be minimised and soft landscaping with deep soil and tree planting extensively used to promote infiltration, evapotranspiration and reduced stormwater run-off.

C 05. WSUD elements should be located and configured to maximise the impervious area that is treated.

a. WSUD must be adopted for the following development types:
b. Residential on lots greater than 1500m$^2$ or with 5 or more dwellings.
c. Commercial and Industrial – development, redevelopment and alterations/additions which increase gross floor area by more than 150m2 or alter and/or add more than 150m2 of impervious area. (Approach to WSUD will vary depending on lot size.)
d. Subdivisions of Industrial/commercial properties.
e. Subdivision of residential properties where the existing lot is greater than 1500m$^2$ or 5 or more lots are being created.
f. Other development >$50k in value which exceeds <u>either</u> of the following criteria:

g. Development which alters and/or adds more than 150 m$^2$ of impervious area
h. Development which results in an increase in gross floor area of more than 150 m$^2$

C 06. WSUD systems shall generally be designed to treat storm events up to the 1 in 1.5 year average recurrence interval. Low flows of this frequency must be separated from higher flows that will be diverted into OSD and other stormwater quantitative management systems.

C 07. WSUD must achieve the following pollution reduction targets:

| **Pollutant**<br><br>NOTE: Reductions in loads are relative to the pollution generation from the same development without treatment. | **Performance Target**<br>(% reduction in the post development mean annual load of pollutant) |
|---|---|
| Gross Pollutants (greater than 5mm) | 90% |
| Total Suspended Solids (TSS) | 85% |
| Total Phosphorus (TP) | 60% |
| Total Nitrogen (TN) | 45% |
| Hydrocarbons, motor oils, oil and grease | 90% |

C 08. The post development mean annual runoff volume from the entire site must be reduced by at least 10% from that pre-development. This may be achieved with rainwater tanks, infiltration into deep soil, minimising impervious areas, using permeable paving and other methods.

C 09. Rainwater is a valuable water resource to be harvested and used if possible.

C 10. The receiving waterway must be protected and enhanced.

C 11. Where water sensitive urban design measures are required**,** DA or other proposal lodgement must be supported by the following documentation to Council's satisfaction:

a) A WSUD report, describing the treatment train including all measures used, justification for this selection and a summary of design ancillary benefits.

b) MUSIC software modelling (or equivalent) to demonstrate that the proposed WSUD design achieves the required pollution reduction targets. Both a written summary of the assumptions, configuration and results of the model, and a digital copy of the model file must be submitted.

c) The above documentation must be prepared by a qualified hydraulic/environmental engineer in consultation with the project landscape and architectural professionals.

C 12. Council requires simple WSUD landscape designs that achieve water management objectives without unusual or complicated maintenance demands.

C 13. The DA must be accompanied with a management and maintenance Plan for the WSUD biological and landscape facilities for both establishment phase (3-5 years) and the long-term phase.

C 14. The DA must be accompanied with a Management and Maintenance Plan for the WSUD proprietary treatment devices (such as GPT's, filters etc).

C 17. The Applicant must also provide evidence to Council that they have signed a minimum 3-year contract with a suitable maintenance contractor to carry out ongoing maintenance of the water treatment facilities and technology installed on site.

C 18. The discharge of polluted waters from any 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 Environment Protection Authority for Scheduled Premises.

**WSUD at Northern Beaches Hospital**

**WSUD at Northern Beaches Hospital**

# 7. Rainwater Harvesting and Use

## 7.1 Principles – Rainwater harvesting and Use

P 01. Rainwater harvesting and use is encouraged in any water management system for individual lots and for the public domain.

P 02. Rainwater capture by WSUD direction of flows into deep soil will assist plant and tree growth, reduce ambient temperatures, trap pollutants and moderate runoff flows.

P 03. Captured rainwater is readily suited for landscape irrigation and, with treatment, for other internal uses such as toilet flushing.

P 04. Rainwater may be captured in a separate rainwater tank or a combined rainwater and on-site detention tank. Refer Edition 4 of the Upper Parramatta River Catchment Trust On-Site Detention Handbook.

P 05. Refer to Section 4 Sustainability of this DCP: 4.1 – Energy and Water Efficiency and 4.2 – Recycled Water

# 8. Interactions with the Parramatta River

Council GIS Parramatta River:  PMF, 1%  AEP and 5% AEP river flood extents as adopted by Council

## Principles – Interactions of precinct water management with the Parramatta River.

P 01. Melrose Park South precinct has a large interface with Parramatta River which must be managed to control environmental impacts.

P 02. The river's flooding for events up to the PMF does partially affect the precinct.

## Controls

C 01. All water management planning, implementation, and associated infrastructure, such as floodways, stormwater pipes and headwalls, must result in minimum disturbance and must not adversely affect the riparian and aquatic environment and riparian and aquatic ecology.

C 02. Flooding of the site by the Parramatta River for all flood events up to the PMF must be considered to Council's satisfaction in planning the precinct.

C 03. Elevated river levels must be considered (tailwater levels) to Council's satisfaction in design of hydraulic systems including floodways, stormwater pipes and detention systems.

# 9. Resources and Further Information

Australian Disaster Resilience Handbook 7, Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia (AIDR 2017), Australian Government

Australian Runoff Quality, Engineers Australia 2005

Melbourne Water, 2 -and-building/stormwatermanagement

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors) Australian Rainfall and Runoff: A Guide to Flood Estimation, © Commonwealth of Australia (Geoscience Australia), 2019.

Book 9: Runoff in Urban Areas: Coombes, P., and Roso, S. (Editors), 2019 Runoff in Urban Areas, Book 9 in Australian Rainfall and Runoff - A Guide to Flood Estimation, Commonwealth of Australia, © Commonwealth of Australia (Geoscience Australia), 2019.

CRC for Water Sensitive Cities, https://watersensitivecities.org.au/

Facility for Advancing Water Biofiltration 2008, Guideline Specifications for Soil Media in Bioretention Systems

Floodplain Development Manual NSW 2005 and updates on exhibition 2022

Flood Emergency Planning for Disaster Resilience, Australian Institute for Disaster Resilience, First Edition 2020

Melrose Park Flooding and Drainage Investigation – VRS and PP Development Sites – Lyall and Associates, 5 November 2020 - Figure 6: *Indicative Extent and Depth of Inundation - Post-VRS and PP Development and Complete Blockage Conditions – 1% AEP* (9 sheets) (Included as attachment)

MUSIC Modelling Guidelines for New South Wales - eWater Cooperative Research Centre 2009

South East Queensland Healthy Waterways Partnership 2010, Water by Design Guidelines and Resources - http://waterbydesign.com.au/guidelines/

Urban Typologies and Stormwater Management – achieving a cool green liveable Western Parkland City, Sydney Water, Bligh Tanner and Architectus 2020

Water Sensitive Planning Guide - www.wsud.org

Water Sensitive Urban Design Engineering Procedure: Stormwater, Melbourne Water.

Water Sensitive Urban Design Technical Guidelines for Western Sydney (UPRCT, 2004) - www. wsud.org/tech

## Council Resources:

Parramatta LEP 2011

Parramatta DCP 2011

Melrose Park North DCP

City of Parramatta Council, Stormwater Disposal Policy

City of Parramatta Council, Development Engineering guidelines June 2018

Upper Parramatta River Catchment Trust Handbook, Edition 4.