

8.2 LOCAL CENTRES

This Section contains development controls for areas identified as Local Centres in Council's [Local Strategic Planning Statement 2036](#). They are identified as being a focal point of neighbourhoods, are diverse, vary in size, with essential access to day-to-day goods and services. These centres are best served by and are generally in close proximity to public transport, public open spaces, schools, shops, and other community and commercial services. Local Centres' low-scale character and identity of suburban Parramatta are to be preserved and enhanced, while their mixed use business zones are to promote diverse and active uses at the street level to encourage lively neighborhoods with interest and vitality. Figure 8.2.1 illustrates each of the Local Centres across the City.

Where there are inconsistencies between the controls contained within this Section and other controls within this DCP, these controls prevail to the extent of the inconsistency.

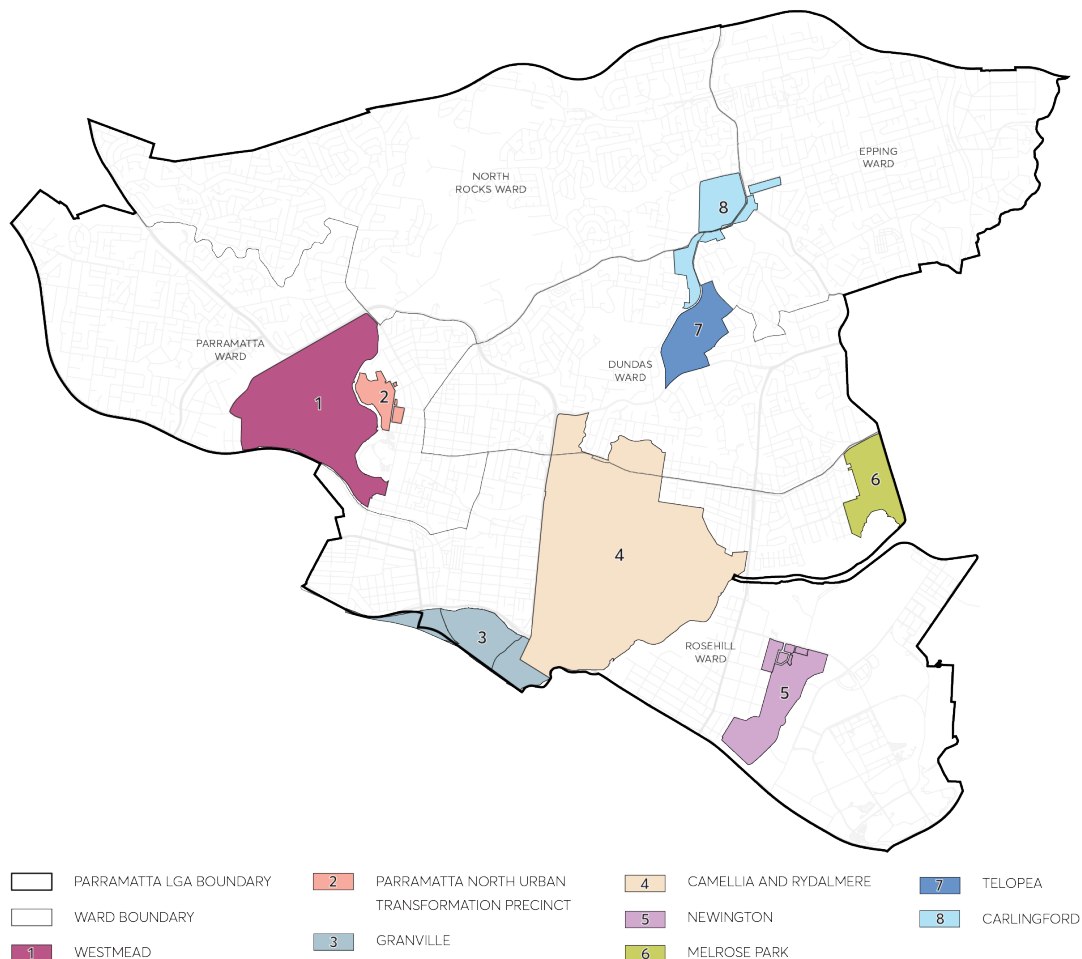


Figure 8.2.1 – Local centres

8.2.6 MELROSE PARK URBAN RENEWAL PRECINCT

8.2.6.1 INTRODUCTION

The Melrose Park precinct is made up of two sub-precincts, Melrose Park North and Melrose Park South. The development controls of this Section apply to certain land in Melrose Park as shown in Figure 8.2.6.1.1.1 – Land Application Map and must be read in conjunction with any relevant Parts of the Parramatta DCP 2023. Where there are inconsistencies between the controls contained within this Section and any other controls within this DCP, the Melrose Park Urban Renewal Precinct provisions will prevail to the extent of the inconsistency. Furthermore, Section 8.2.6.6 SITE SPECIFIC CONTROLS prevails over other controls within this Section to the extent of any inconsistencies.

Section 8.2.6 – Melrose Park Urban Renewal Precinct is to be used in conjunction with the *Parramatta Local Environmental Plan 2023* (PLEP 2023) and in consideration of the following documents:

- Melrose Park North Structure Plan
- Melrose Park South Structure Plan
- Council's Standard Construction details
- Melrose Park Public Domain Guidelines

While a DCP generally does not apply to Development Applications lodged prior to its commencement, given this DCP was endorsed by Council on 11 October 2021 but came into effect on 1 December 2023, this DCP therefore applies to Development Applications lodged prior to its commencement.

8.2.6.1.1 DESIRED FUTURE CHARACTER

City of Parramatta Council aims to foster the development of a lively, diverse, and healthy Local Government Area, one which celebrates a sense of place and local character.

Situated to the east of the Parramatta City Centre, the Melrose Park precinct is being developed on rezoned industrial land located between Victoria Road and the Parramatta River. The precinct falls south to the river and is surrounded by low-density detached housing on the east and the west.

The DCP is underpinned by and relates to the Melrose Park Structure Plan. The Structure Plan has been prepared by City of Parramatta Council and responds to the topography and the street context of the precinct.

The streets are organised to optimise connectivity for people and vehicles, minimise perceived density, 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 detailed design plays an important part in the creation of a stimulating pedestrian environment.

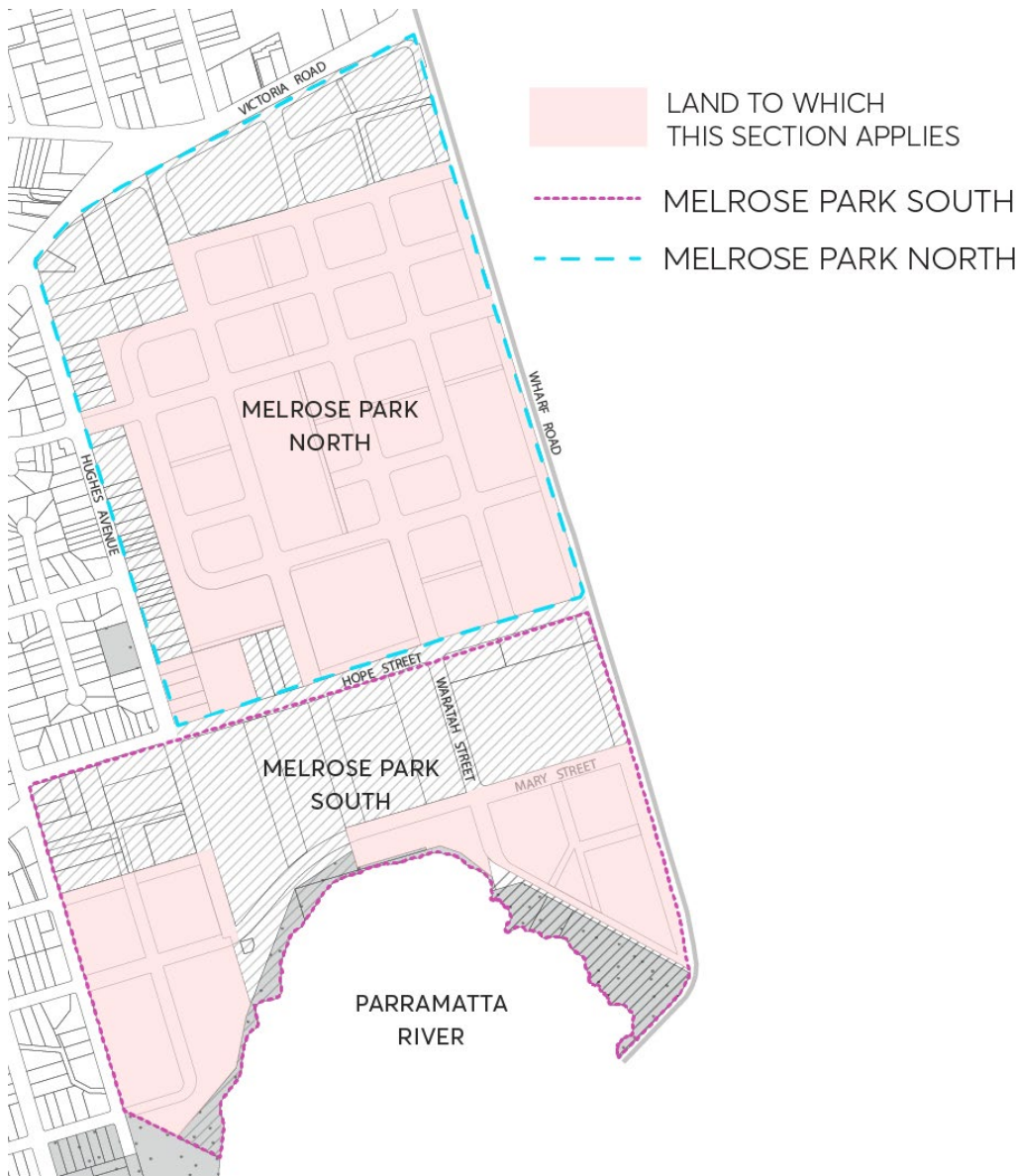


Figure 8.2.6.1.1.1 – Land Application Map

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 stormwater through the site and broader precinct, and design buildings and landscape accordingly.
- O.08 Ensure that infrastructure is delivered in accordance with the staging plan and TMAP Implementation Plan.

Controls

- C.01 An infrastructure Development Application (Development Application) is required to be lodged for the entire precinct upfront prior to individual Development Applications being lodged on a site-by-site basis, detailing the following:
 - a) The proposed lot boundaries.
 - b) Site levels, including cut and fill and retaining wall locations.
 - c) The design of the roads, including drainage.
 - d) Public open space provision.
 - e) Demonstrate how the obligations under the Planning Agreement will be addressed.

8.2.6.1.2 DESIGN EXCELLENCE

The promotion of good design in the built environment is an objective of the *Environmental Planning and Assessment Act 1979*, and good design is a central aim for all development in the Local Government Area.

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 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 Local Government Area.

Melrose Park is a predominantly high-density environment and design quality is therefore paramount. Careful definition of the spaces between the buildings in plan and section, and 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 detailed architectural resolution.

Controls

- C.01 All Design Competition briefs must contain a reference to the objectives and controls in this DCP and be prepared in accordance with Council's Design Excellence Competition Manual.
- C.02 Architectural Reference Designs developed as part of a Design Competition brief should use this DCP as the basis for building envelopes.
- C.03 This DCP should form the primary basis of assessment of all Design Excellence Competition winning schemes.
- C.04 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 façades and external areas to form part of the consent documents. These should include fully annotated 1:20 scale cross-sections and partial plans of façades, details of typical and important junctions, and details and materials specification of all external works.
- C.05 The Landscape Architect and Civil Engineer for all Development Applications must provide fully coordinated Public Domain Alignment Drawings (refer to Section 8.2.6.3 – Public Domain).
- C.06 A variety in the detailed design of individual buildings shall be provided.

8.2.6.1.3 WATER MANAGEMENT

As a result of 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, it is 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 (and from north-west to south).

Principles

- P.01 The pre-development (natural) overland flow paths and flow regimes are to be acknowledged in water management planning, while recognising this is a substantially changed urban environment requiring complex water management systems.
- P.02 Post-development run-off must not result in a harmful impact on surrounding properties or the environment.
- P.03 Water management practices must be sustainable.
- P.04 The Water Management Control Plan governs water aspects of development and infrastructure, and landscape and environment in the precinct, and includes:
- a) Flooding and overland flow management;
 - b) Road and public domain piped drainage;
 - c) Flood reduction using public and private water detention systems;
 - d) WSUD - Environmental management of private and public low flows with Water Sensitive Urban Design to reduce pollutant loads and create habitats; and
 - e) 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 space areas.
- 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.
- O.04 Acknowledge and safely accommodate with design, the overland flow flooding and stormwater conveyance in residential and ground floor frontage treatments.

Controls

- C.01 A Water Management Control Plan shall be submitted in accordance with the Principles, Objectives and Controls contained in this section and Section 8.2.6.7 – Water Management Control Plan. It must address:
- a) Flooding and overland flow management;
 - b) Road and public domain drainage;
 - c) Flood reduction using public and private water detention systems;
 - d) WSUD – environmental management of private and public low flows with Water Sensitive Urban Design to reduce the pollutant loads and create habitats; and
 - e) Rainwater harvesting and use.
- C.02 For a building that is part of or adjacent to an overland flow path or flood storage area:

- a) 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.03 For a building that 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 a building is not part of or adjacent to 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.04 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.05 Excess peak flows are to be detained in both on-site and collective detention systems.
- C.06 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.07 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.08 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.09 On-site detention (OSD) systems are to be integrated into a sustainable overall water management plan for the site, where possible.
- C.10 Subject to maintaining environmental flows and irrigation of the public domain landscapes, rainwater must be captured and used on site wherever feasible.

8.2.6.2 BUILT FORM

Objectives

The following principles apply to all development in Melrose Park:

- O.01 The floor space is generally consistent with the Gross Floor Area (GFA) as derived from the Floor Space Ratio (FSR).
- O.02 The street network and building locations shall be consistent with the Masterplan to be designed to enable deep soil planting, reinforce the human scale of the streets, and enable views to the sky in streets and public places.
- O.03 Building depth, bulk, and separation protects amenity, daylight penetration, and privacy between adjoining developments, and minimises the negative impacts of buildings on the amenity of the public domain.
- O.04 Buildings should align with the streets so that positive spaces are formed within the streets and the lots.
- O.05 Towers are to be appropriately proportioned and maximise their slender form.
- O.06 The design and materials selection of buildings and the public domain are to contribute to a high quality, durable, and sustainable urban environment.
- O.07 Buildings are organised to create spatially defined streets and courtyards that are well proportioned, comfortable, safe, functional, and attractive.
- O.08 The collective built form should reinforce the variety evidenced in the topography and the spatial organisation of the streets and open spaces.
- O.09 Variety within the precinct is to be derived from the detailed resolution of the buildings and not from excessive differences in the form of the buildings and/or the selection of materials.

8.2.6.2.1 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 2023.
- 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 be generally consistent with the GFA as shown in Figure 8.2.6.7.2.1 – Maximum Gross Floor Area.
- C.02 The GFA attributed to each lot results from the FSR controls in the PLEP 2023 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 Masterplan 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 development.
- 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 setback, building height, and street hierarchy figures. The 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 2023 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 where there are minor variations, that amount of GFA may potentially be 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.

8.2.6.2.2 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, block layout, and location of buildings shall be generally consistent with Figure 8.2.6.6.1 – Masterplan, Figure 8.2.6.7.8.1 – Street Hierarchy, and Figure 8.2.6.7.9.1 – Public Domain Plan.
- C.02 All streets are to be at ground level and public streets are to be dedicated to Council.
- C.03 Pedestrian connections that are above basements and privately owned should be publicly accessible 24/7.

8.2.6.2.3 THE BUILDING ENVELOPE

The building envelopes resulting from the setbacks, floor plate, and height constitute a three-dimensional volume within which, together with all other applicable controls, should result in a coherent built form. The envelope heights in the Masterplan 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 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 Figure 8.2.6.6.1 – Masterplan are to form the basis of the architectural resolution.
- C.02 All view corridors as defined by the streets and pedestrian connections in Figure 8.2.6.6.1 – Masterplan are to be retained.
- C.03 The floor space is to be distributed as shown in Figure 8.2.6.7.2.1 – Maximum Gross Floor Area.

- C.04 The perimeter block residential buildings up to 6 storeys must extend for the full frontage of lots within the nominated street setbacks and except where there are courtyards of pedestrian connections.
- C.05 The maximum length of all residential buildings 10 storeys and above must be no greater than 50 metres.

8.2.6.2.4 STREET SETBACKS

The purpose of establishing street setbacks is to ensure an appropriate 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/commercial 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 residential privacy as well as engagement with the street. The setback provides the necessary space for deep soil, and landscaping and amenity, both for residents and the street.

Due to the sloping topography of the precinct, issues of residential 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 on tower buildings.
- O.05 Create a clear delineation between public and private space.
- O.06 Provide a landscape interface between residential buildings and streets, with 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 shown in Figure 8.2.6.7.6.1 – Street Setbacks.
- C.02 A 400mm articulation zone is permitted forward of the setback, in which building elements such as bay windows, balconies, and 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.03 Setbacks should be measured perpendicular to the boundary to the outer faces of the building. Elements in the articulation zone are excluded.
- C.04 Above the 4-6 storey component and the Town Centre podium, buildings are to be set back as shown in Section 8.2.2.6.10 – Indicative Application of Building Envelopes.
- C.05 The ground floor, first and second floors of the NSR 2 and EWR 4 intersection and the NSR 3 and EWR 4 intersection may extent into the front setback a maximum of 3 metres measured form the front building line. Refer to Figure 8.2.6.2.4.1 – Street Wall Heights at Key Intersection. In plan the decreased street setback can extend for a distance of up to 25 metres along each street. Refer to Figure 8.2.6.2.4.2 – Indicative Corner Activation at Key Intersections, Plan (NSR 2 and EWR 4 Highest Priority and EWR 4 Second Highest Priority).
- C.06 All buildings with the decreased setback at the NSR 2 and EWR 4 intersection and the NSR 3 and EWR 4 intersection are to relate to each other and define the space of the intersection up to a height of 3 levels. The corner design is to incorporate a building form such as a splayed setback, orthogonal recess to address the intersection. The levels above the ground floor are to relate to the ground floor resolution.
- C.07 Setbacks should be measured perpendicular to the boundary to the outer faces of the building. Refer to Figure 8.2.6.2.4.3 – Street Wall Height in Town Centre. Elements (such as awnings and signage) in the articulation zone are excluded.

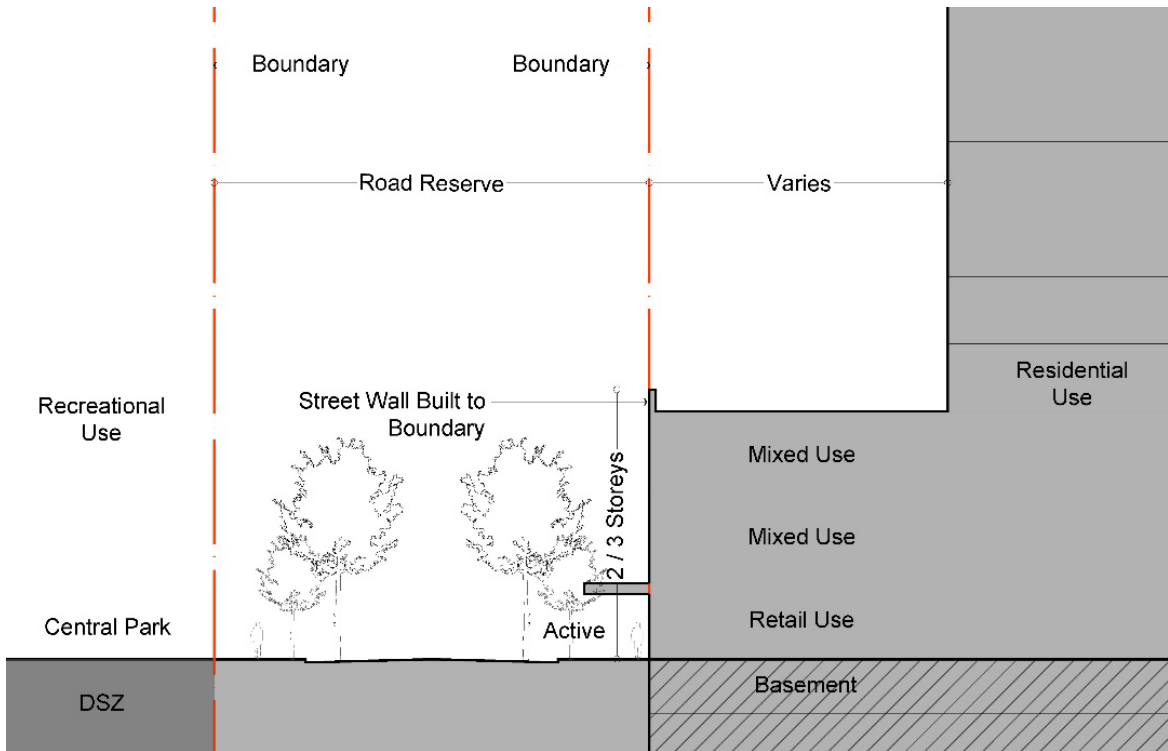


Figure 8.2.6.2.4.1 – Street Wall Heights at Key Intersection

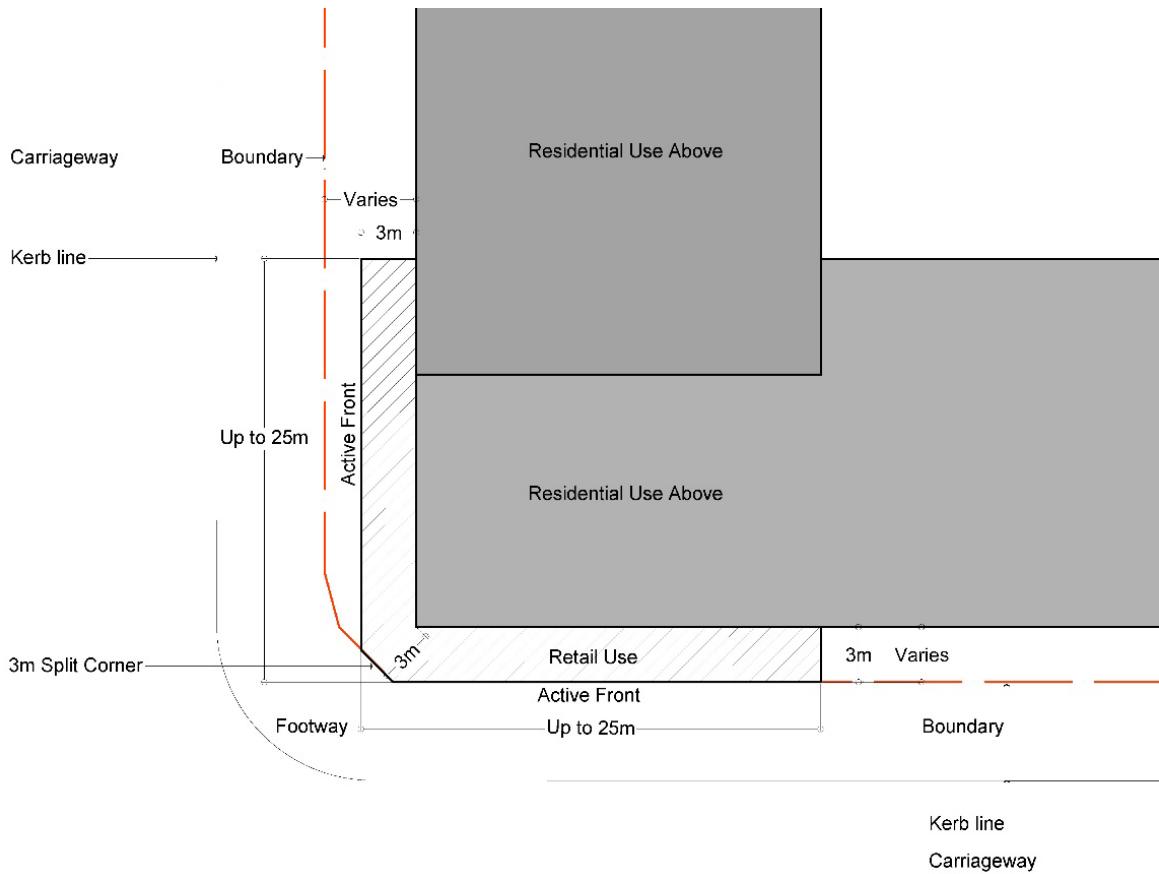


Figure 8.2.6.2.4.2 – Indicative Corner Activation at Key Intersections, Plan (NSR 2 and EWR 4 Highest Priority and NSR 3 and EWR 4 Second Highest Priority)

- C.02 The separation distances of buildings across any pedestrian connections shall be 12 metres building to building. Within this space, a straight pedestrian path of a minimum 4 metres in width is to be located. Private gardens and entrances to apartments are permitted from these pedestrian paths. Refer to Figure 8.2.6.2.5.1 – Pedestrian Connections.
- 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.

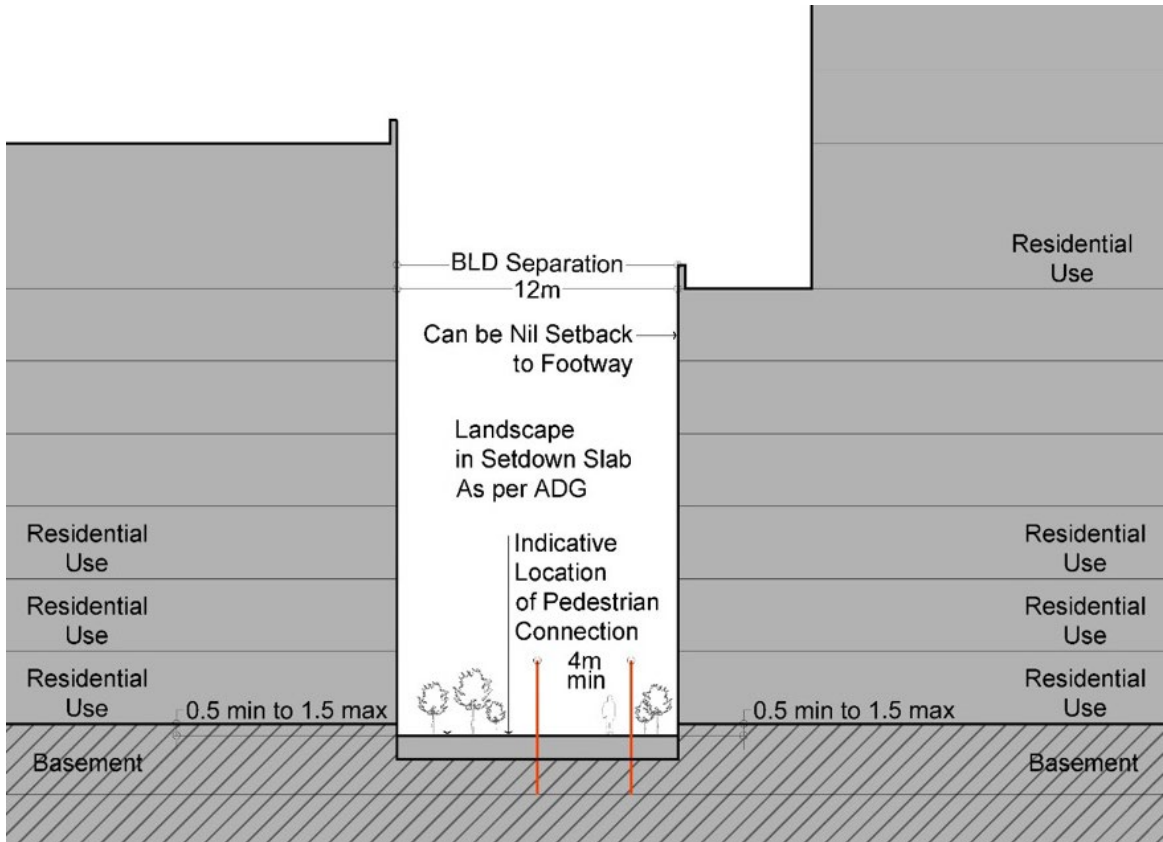


Figure 8.2.6.2.5.1 – Pedestrian Connections

8.2.6.2.6 TOWER DESIGN AND SLENDERNESS

The slenderness of towers is important both to achieve elegance of form as well as to minimise the perceived density and 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 1,000m² (the floorplate shall be measured to the outside face of the building inclusive of balconies, vertical and horizontal circulation, internal voids, and external walls).
- C.02 The maximum length of the part of a building above 8 storeys should be 50m. In Melrose Park South the tower component height should be approximately double the height of the podium component (e.g. an 18-storey building where 12-storey minimum tower sits on 6-storey maximum podium).
- C.03 No tower forms should be 'L' shaped in plan.
- C.04 Upper levels of towers should not extend over the lower levels and create under-croft spaces.
- C.05 The higher building forms are to be integrated with the lower levels and should define positive spaces for streets, open spaces, and courtyards.
- C.06 Towers should meet sustainability measures.
- C.07 Tower design should respond to context, climate, and views.

8.2.6.2.7 BUILDING HEIGHTS

Objectives

- O.01 Recognise the variation of podium heights in perimeter-block buildings that respond to topographical features.
- O.02 Minimise adverse wind, reflectivity, glare, and urban heat impacts.
- O.03 Minimise solar impacts to streets, open spaces, and neighbouring buildings.
- O.04 Form a balanced composition of built form when viewed from within the street, neighbouring areas, and the river.

Controls

- C.01 The number of storeys must be consistent with the number of storeys shown in the number of storeys in Figure 8.2.6.7.4.1 – Building Storeys.
- C.02 The perimeter-block residential buildings are to be 8 storeys maximum.

8.2.6.2.8 FLOOR TO FLOOR HEIGHTS

Objectives

- O.01 Provide adequate amenity for buildings.
- O.02 Ensure that floor heights support a range of uses and enable a change of use over time.

Controls

- C.01 Minimum floor to floor heights shall be provided in accordance with Table 8.2.6.2.8.1 – Minimum floor to floor heights.

Table 8.2.6.2.8.1 – Minimum floor to floor heights

Use	Minimum Floor to Floor Height
Commercial	3.6m
Residential floor to floor heights from level 1 and above. Floor to ceiling heights greater than the minimum 2.7 metres are encouraged.	3.1m
Ground floor active street frontage	4.5m
Residential floor to floor heights for ground floor	3.6m
Residential floor to floor heights for ground and first floor	7.6m

8.2.6.2.9 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 buildings that are lower in height 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.

For 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 allow for a reading of the built form and 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 podiums.
- 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 façade design that enhances the walking experience.
- O.05 Optimise active frontages in the Town Centre and at key intersections.

Controls

- C.01 The perimeter-block buildings and the podiums should:
 - a) Be built to align with the street along their full frontage as generally shown on the Masterplan. Minor recesses in the profile for modulation and articulation, and to accommodate building 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 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.
 - g) 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) Detailed façade plans/sections at 1:20 scale including ground floor active frontage and awning details.
- C.04 Above ground car parking is only permitted for 3 levels in the Town Centre. It is to be sleeved by other uses on the East/West frontages EWR 6 and Hope Street. On the North/South frontages, it is to be screened.

8.2.6.2.10 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.
- O.04 Enable retail uses along the streets in the Town Centre and at key intersections.

Controls

- C.01 Ground floor commercial uses should be located to activate the public domain.
- C.02 Service frontages should be minimised.
- C.03 The internal tenancy widths, foyers, and lobbies should create a fine grain frontage.
- C.04 Ground floor commercial uses 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 disability access.
 - g) Legible entrances.
 - h) Awnings in accordance with Section 8.2.6.3.5 – AWNINGS & AWNING DESIGN.
- C.05 An appropriate freeboard at ground floor level is to be provided, where required.
- C.06 Fire escapes and service doors should be designed to complement the commercial frontage and be seamlessly incorporated into the façade with quality materials.
- C.07 Colonnades are not encouraged.
- C.08 All required major services should be incorporated in the design of the ground floor frontage at Development Application stage, refer to Section 8.2.6.2.21 – 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.

8.2.6.2.11 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 and other public places.
- O.02 Enable a landscape setting where buildings are set back from the public domain.

- O.03 Provide appropriate amenity for all residential apartments, including:
 - a) Apartments that are located below street level.
 - b) Apartments that have no setback 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.

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 to Figure 8.2.6.2.11.2 – Apartment below street level.
- C.02 Generally, ground floor apartment levels should be a minimum of 500mm and maximum of 1500mm above the adjacent footpath 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 8.2.6.2.11.1 – Residential ground floor.
- C.03 Where apartment have individual entries from the street, a front door with a distinct entry space within the apartment should be provided. Individual apartment entries 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 AS 1428.
- C.05 Apartments cannot be located below the street level except in the following situations at Council's discretion (refer to Figure 8.2.6.2.11.1 – Residential ground floor):
 - 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) Where 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 adjacent street.
- C.06 The head height of the windows is not to be more than 300mm from the underside of the slab above.
- C.07 The ground floor design is to:
 - a) Address privacy and articulation (refer to Figure 8.2.6.2.5.1 – Pedestrian Connections) for an example)
 - b) Provide a sense of address and passive surveillance along the edge of the development.

- C.08 The setback area should be designed to relate to the footpath and as common property for landscaping.
- C.09 Canopy trees can be provided within setbacks that are 5 metres or greater, contributing to the landscape character of the street and residential amenity. 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.10 Establish lower scale planting including hedges at street boundary for a minimum of 1 metre in street setback zone.
- C.11 Establish canopy planting in courtyards to achieve amenity and privacy for residents as well as contributing to the street.
- C.12 Co-locate the deep soil planting with the courtyard planting where the courtyards face the street setback.
- C.13 Minimise impervious surfaces at ground level in the setback areas.
- C.14 All required major services should be incorporated in the design of the ground floor frontage at Development Application stage, refer to Section 8.2.6.2.21 – Servicing and Utilities.
- C.15 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 that 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.

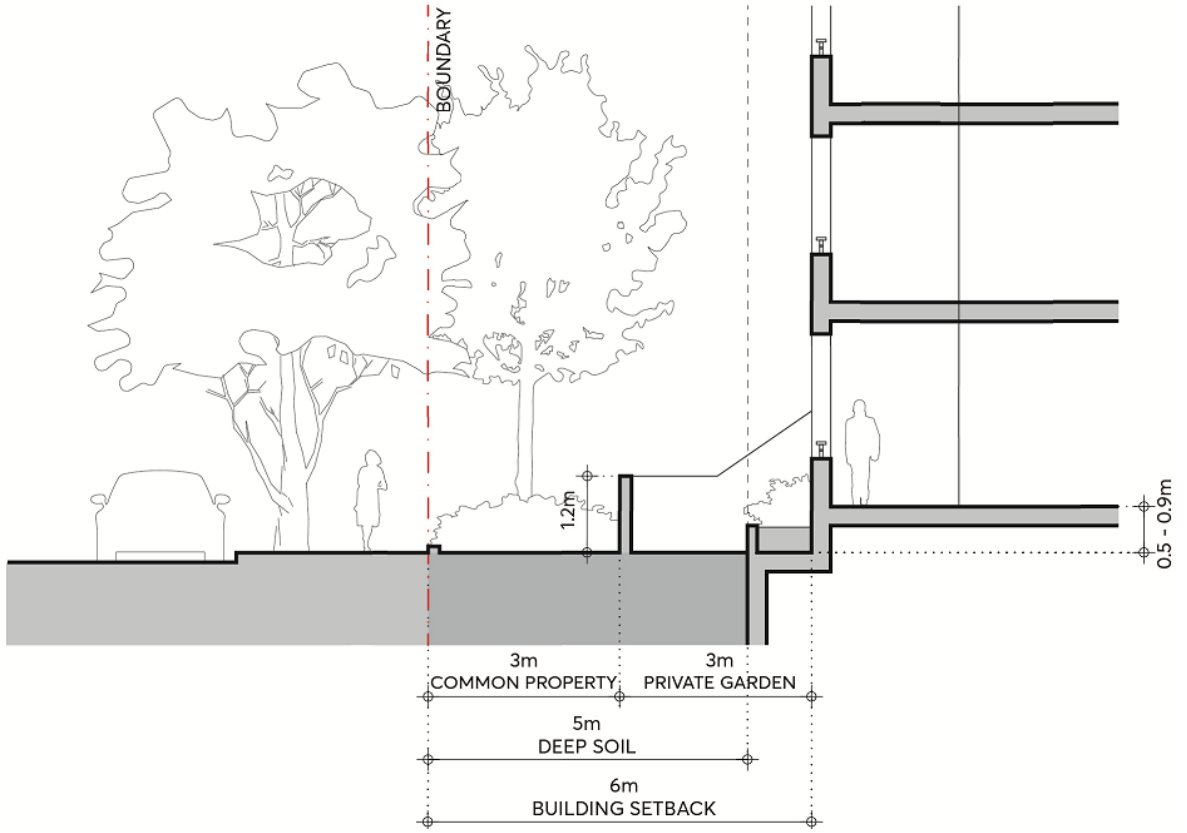


Figure 8.2.6.2.11.1 – Residential ground floor

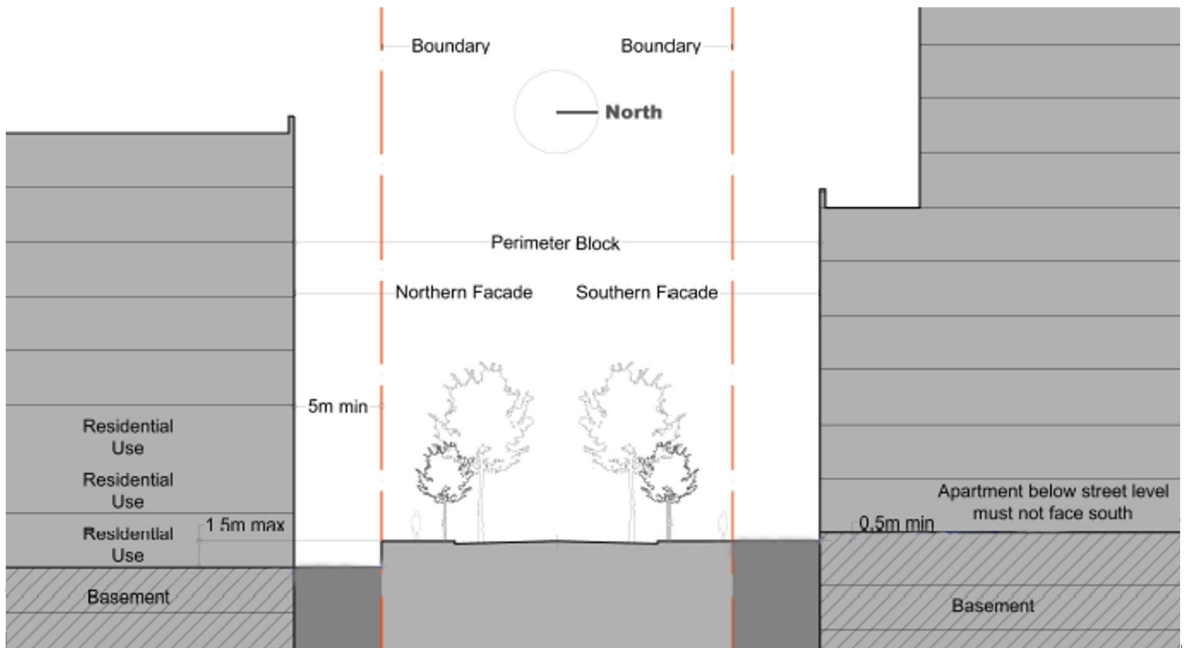


Figure 8.2.6.2.11.2 – Apartment below street level

8.2.6.2.12 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 floor plates 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.09 The following details should be resolved in principle and shown on drawings at Development Application 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 rooftops. If HVAC equipment is located on rooftops 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 (and associated pipework) should 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 Apartment Design Guide (ADG) minimums should be provided.
 - e) Rainwater downpipes should be integrated into the building fabric and coordinated with stormwater drawings.
- C.10 Apartment design should consider incorporating suitable spaces that can be utilised as a work from home space.

8.2.6.2.13 SOLAR ACCESS (RESIDENTIAL)

Objectives

- O.01 Development should be designed to maximise the solar access of neighbouring properties.

Control

- C.01 Where residential development cannot strictly comply with the design criteria of the ADG, it should demonstrate how solar access is maximized to the living rooms and private open space of neighbouring properties taking account the site constraints and orientation of the site.

8.2.6.2.14 WINTERGARDENS

Objectives

- O.01 Improve amenity of balconies in high-rise apartments above 8 storeys and apartments fronting noisy environments.
- 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 walls (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 all 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 façades of a wintergarden should have a solar absorption of less than 10% glass so as not to have solar heat absorption greater than what a clear float glass might be 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 a depth of 3 metres.

8.2.6.2.15 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 façades so it is essential that climate control measures are included on the façades.

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

Objectives

Climate control devices are to:

- O.01 Enhance the:
 - a) Amenity of the balcony and interior spaces.
 - b) Design of the building façades.
- 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 acoustic privacy.

Controls

- C.01 Climate control devices such as louvres or blinds should:
 - a) Have the ability to act as visual, wind and noise privacy screens.
 - b) Be used on balconies.

- c) Be used where apartment façades are subject to solar loads and there are no other mechanisms that assist in climate moderation, such as green walls.
- d) Be designed as an integral part of the building façade.
- e) Have the capacity to be adjusted to suit sun access angles and allow the passage of air.
- f) Be constructed in materials that meet the sustainability objectives.
- g) Be able to be cleaned from within the individual apartment boundary.

8.2.6.2.16 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 8.2.6.2.16.1 – Dwelling Mix is to be used as a guide for the apartments in Melrose Park:

Table 8.2.6.2.16.1 – 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 (which are considered to be one apartment for the purpose of dwelling mix). In all combinations the size and amenity of each dual key apartment should be consistent with the ADG.
- C.03 Dual key apartments are to be under one strata title.
- C.04 Consider the provision of apartment designs in sole occupancy units that are fully serviced but that have internal moveable walls, subject to compliance with the Building Code of Australia (BCA).

8.2.6.2.17 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 excessive differences 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 that one building does not stand out one from another building.
 - 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.

8.2.6.2.18 RETAINING WALLS

Melrose Park is located on sloping terrain. The retaining walls may occur adjacent to the street boundary of a lot or within 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 Public Domain Guidelines 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.

8.2.6.2.19 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 solidity and porosity.
 - c) Reveal the slope by introducing a horizontal element such as a masonry plinth.
 - d) Be of an appropriate height and detail that reflects the scale of 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 The height of fences can vary but be no greater than 2 metres.

8.2.6.2.20 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 in public areas.
- O.06 Have generous planting.
- O.07 Assist with reducing urban heat.
- O.08 Assist with flood management.
- O.09 Provide visual separation between buildings.

Controls

- C.01 Courtyards are to be located as shown in Figure 8.2.6.7.3.1 – Courtyard Locations and have a minimum width (east – west) of 24 metres.
- C.02 Courtyards should:
 - a) Be visually and physically linked with streets, open spaces, and pedestrian connections.

- b) Be usable outdoor spaces that provide good amenity, having regard to aspect and configuration.
 - c) Include vegetation and canopy planting.
 - d) Generally, be the same level as the street to facilitate access and integration with the public domain. Where they are not level, access stairs and ramps are to be located on the private lot.
- C.03 Courtyard levels are to be designed to appropriately address flood risk management.
- C.04 Where courtyards are located over basements, canopy planting is to be set down in the slab.
- C.05 Courtyards are to be designed to respond to the street interface (Refer to Figure 8.2.6.2.20.1 – Courtyard Basement – Interface with Street).

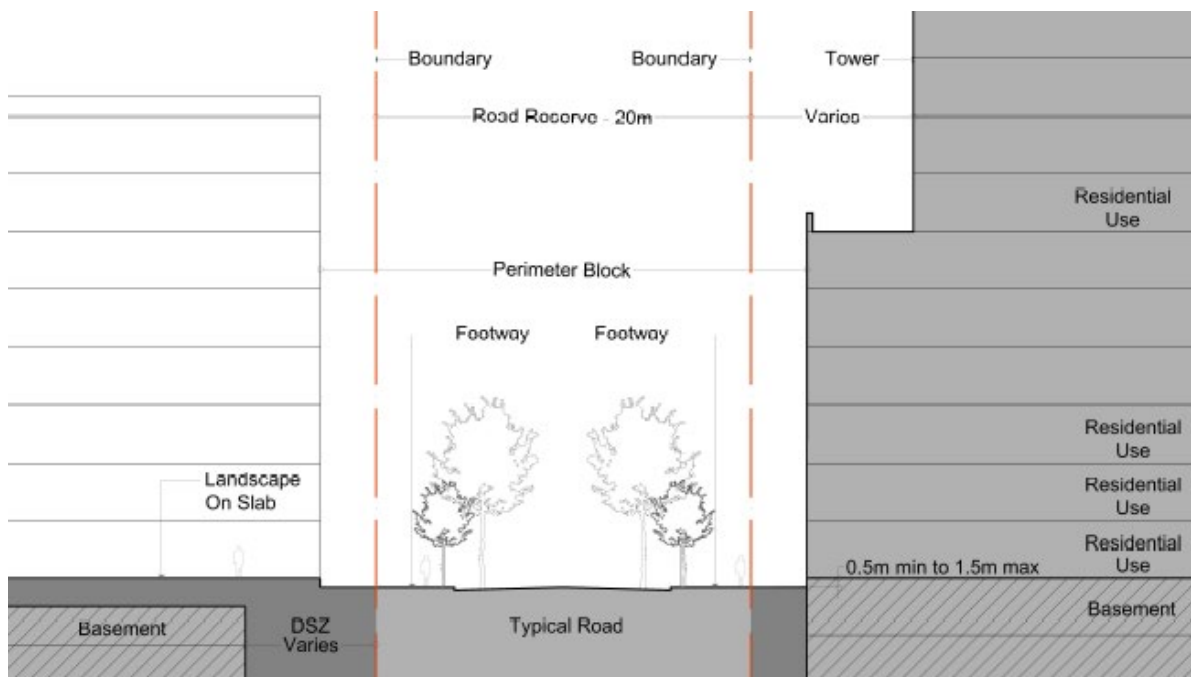


Figure: 8.2.6.2.20.1 – Courtyard Basement – Interface with Street

8.2.6.2.21 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.03 Services and utilities should be designed and located to minimise the length of ground floor frontage occupied.

8.2.6.2.22 TOWN CENTRE MALL INTERFACE

Objectives

- O.01 Link the external spatial network with the internal spatial network in the Town Centre.
- O.02 Improve connectivity.
- O.03 Encourage walkability.
- O.04 Maintain the number of safe routes of travel throughout Melrose Park North as shown in the Masterplan.

Controls

- C.01 Provide direct access and sight lines from the 6 metre north/south pedestrian path from the EWR2 to the Parramatta River through the Town Centre.
- C.02 Define the access internally to reflect the external space.
- C.03 Allow for pedestrian access to Hope Street during the hours of operation of the Light Rail through the Town Centre.

- C.04 Provide an east/west connection through the Detention Basin open space to the Mall. This is to be located to relate to any proposed entrances on the western site of the Mall or if entrances are not proposed to connect to the corner of EWR5 and NSR2. This connection is to ultimately connect to Hughes Avenue.

8.2.6.3 PUBLIC DOMAIN

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.

This section details aspects of the design of the public domain and should be read in conjunction with the Melrose Park Public Domain Guidelines. These set out the process, design guidelines, and submission requirements for all new public domain assets in the City of Parramatta Local Government Area.

Street tree location shown in the public domain cross sections, Figures 8.2.6.3.1.1 to 8.2.6.3.1.9 are indicative. For final street tree arrangements refer to Figure 8.2.6.7.9.1 – Public Domain Plan – Melrose Park South, Figure 8.2.6.7.9.2 – Public Domain Plan – Melrose Park North, and the Melrose Park Public Domain Guidelines.

8.2.6.3.1 STREET NETWORK AND FOOTPATHS

The streets and footways in Melrose Park are accessible to the public. The elements in the street such as footpaths and paving widths, parking lanes, tree planting, and cycleways 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 Figures 8.2.6.7.1.1 – Masterplan and 8.2.6.7.8.1 – Street Hierarchy.
- C.02 Streets, footways, and footpath layout and widths vary for each street type and should be laid out as per the street cross sections in this section, and Figure 8.2.6.7.9.1 – Public Domain Plan – Melrose Park South, and Figure 8.2.6.7.9.2 – Public Domain Plan – Melrose Park North.
- C.03 Materials for the footpath shall be as per the Melrose Park Public Domain Guidelines.
- C.04 Street trees are to be planted as per Figure 8.2.6.7.9.1 – Public Domain Plan – Melrose Park South, Figure 8.2.6.7.9.2 – Public Domain Plan – Melrose Park North and Melrose Park Public Domain Guidelines.
- C.05 Street trees are to be planted in the parking lanes and the footway as per the Public Domain Plans. The spacing of trees in the parking lanes should aim to achieve a closed tree canopy at tree maturity – selected tree species as per Melrose Park Public Domain Guidelines.
- C.06 Street tree planting is 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 minimum car parking bay width, preferably larger, and the soil profile will be as per the Melrose Park Public Domain Guidelines and should be detailed prior to Development Application 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

Table 8.2.6.3.1.1 – Legend for all Street Cross Sections

F	Footpath	L	Landscape
V	Vehicular Lane	LR	Parramatta Light Rail 2
B	Bike Path	B/V, BL	Lane Able to Accommodate Buses
P	Parking	SHP	Shared Path

Note:

- i) Level changes to be managed within the building footprint.
- ii) Light poles are indicative and for locations only. Lighting is subject to specialist design. Light pole and type to be confirmed.
- iii) All street cross-sections noted below should be read in conjunction with Figure 8.2.6.7.8.1 – Street Hierarchy.

TYPE 1A – MAJOR ROAD – TWO WAY (NSR 2 – TYPICAL)

- 25m-wide road corridor as typical.
- 3.2m lanes.
- 2.6m for parking both sites.
- 3.5m wide footpaths both sides.
- Trees in parking Lanes.

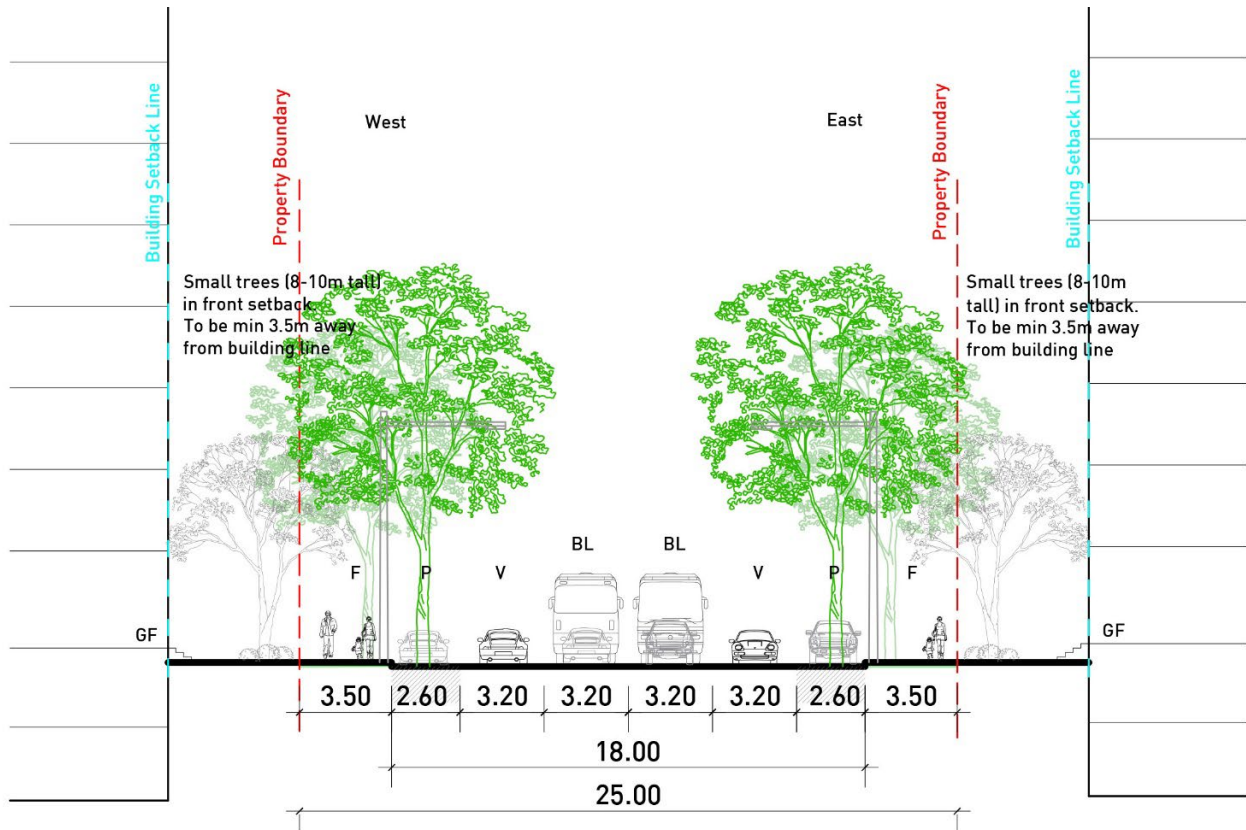


Figure 8.2.6.3.1.1 – Type 1A Major Road Building to Building (NSR 2)

TYPE 1B – MAJOR ROAD – TWO WAY (NSR 2 – BETWEEN EWR 4 & EWR 6)

- 22m-wide road corridor.
- 2.5m lanes.
- 2.6m for parking both sides.
- Minimum 2.4m wide footpaths both sides.
- Trees in footpath and/or verge.
- WSUD details to be applied.
- Trees in deep soil in the 5m front setbacks.

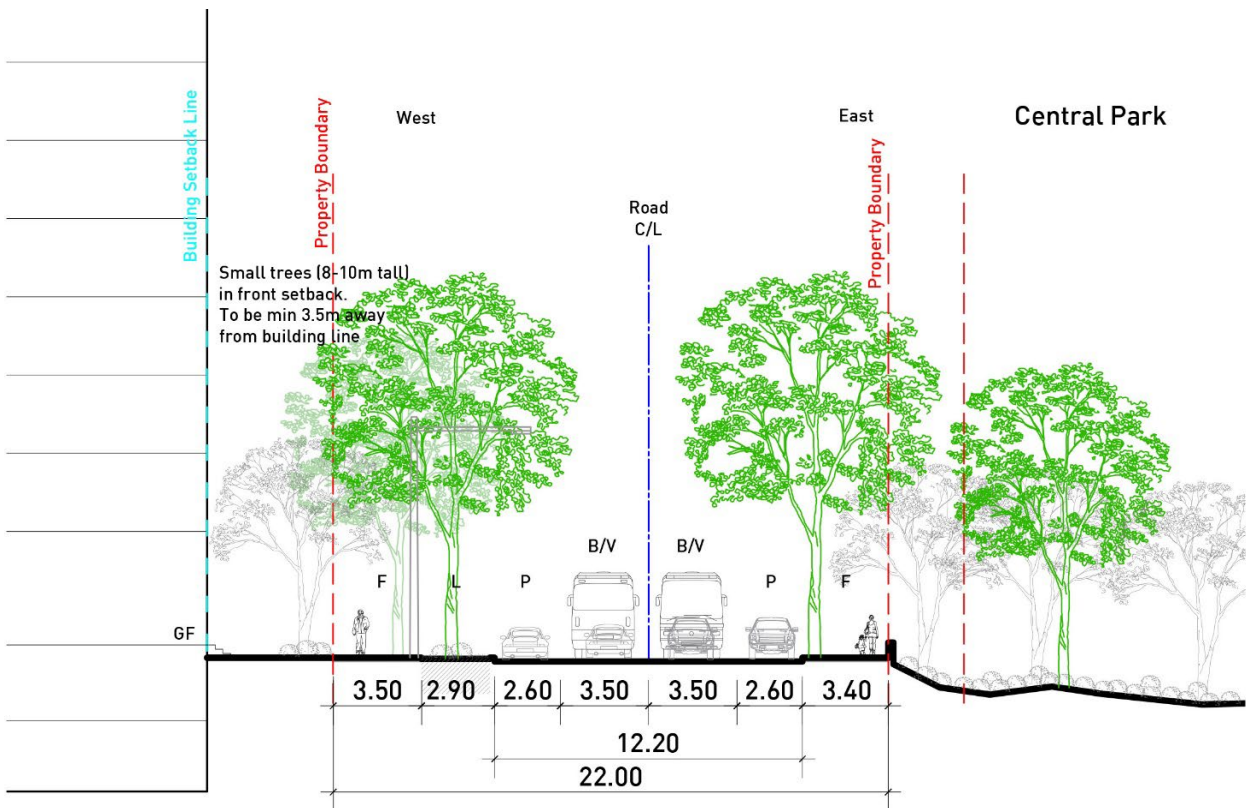


Figure 8.2.6.3.1.2 – Type 1B Major Road Central Park Interface (NSR 2 between EWR 4 and EWR 6)

TYPE 1C – MAJOR ROAD (NSR 2 – TOWN CENTRE AND WESTERN PARK INTERFACE)

- 25m-wide road corridor.
- 3.2m lanes.
- 2.6m for parking both sides.
- Minimum 3.5m wide footpaths both sides.
- Trees in footpath and/or verge.
- WSUD details to be applied.

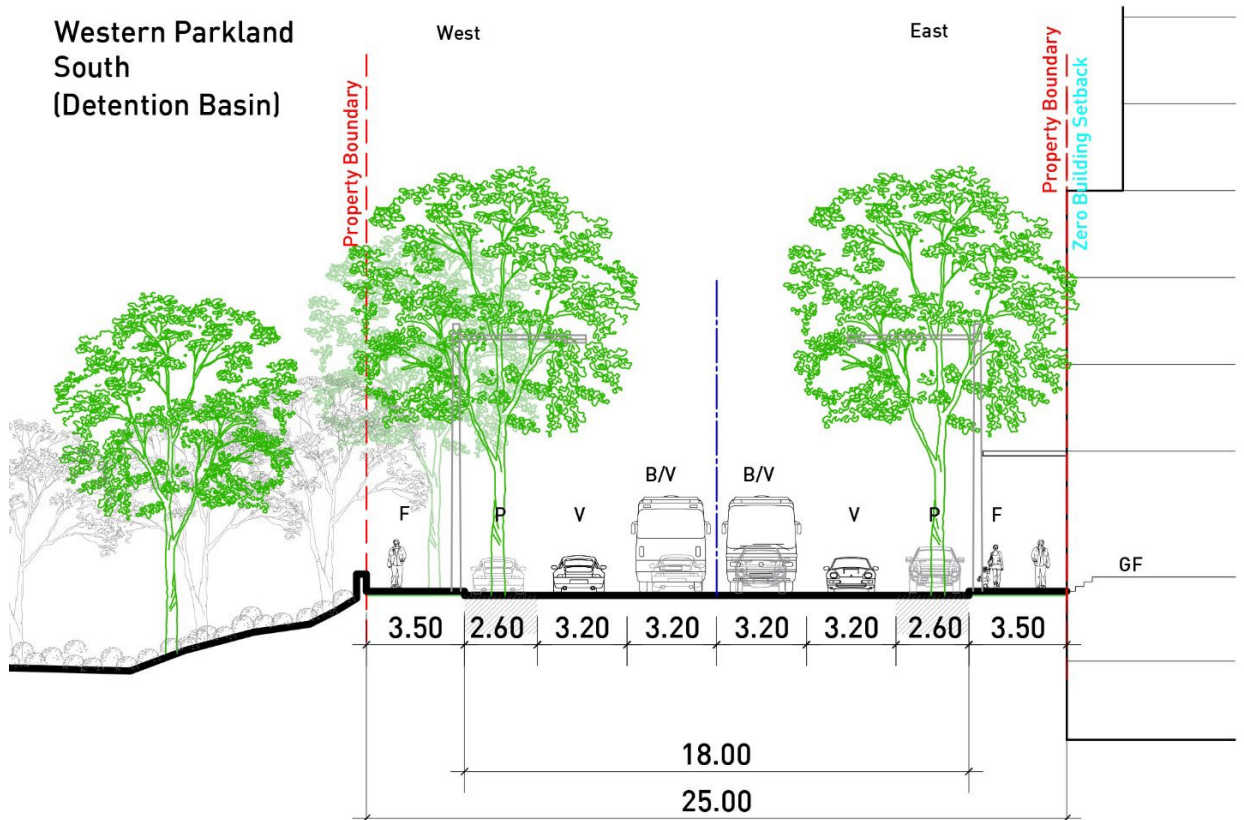


Figure 8.2.6.3.1.3 – Type 1C Major Road Town Centre and Western Park Interface (NSR 2)

TYPE 2A – MAIN ROAD – TWO WAY WITH CYCLE TRACKS (NSR 3 – TYPICAL)

- 23.5m-wide road corridor.
- 3.2m lanes.
- 2.3m parking both sides.
- 1.8m wide footpaths both sides.
- One-way paired, separated bicycle paths: 1.5m wide with an additional 1m buffer with parking lane, on both sides (2.5m corridor each side).
- Trees in parking lanes.
- WSUD details to be applied.
- Trees in open planted beds between the footpath and cycle track.
- Trees in 5m front setback.

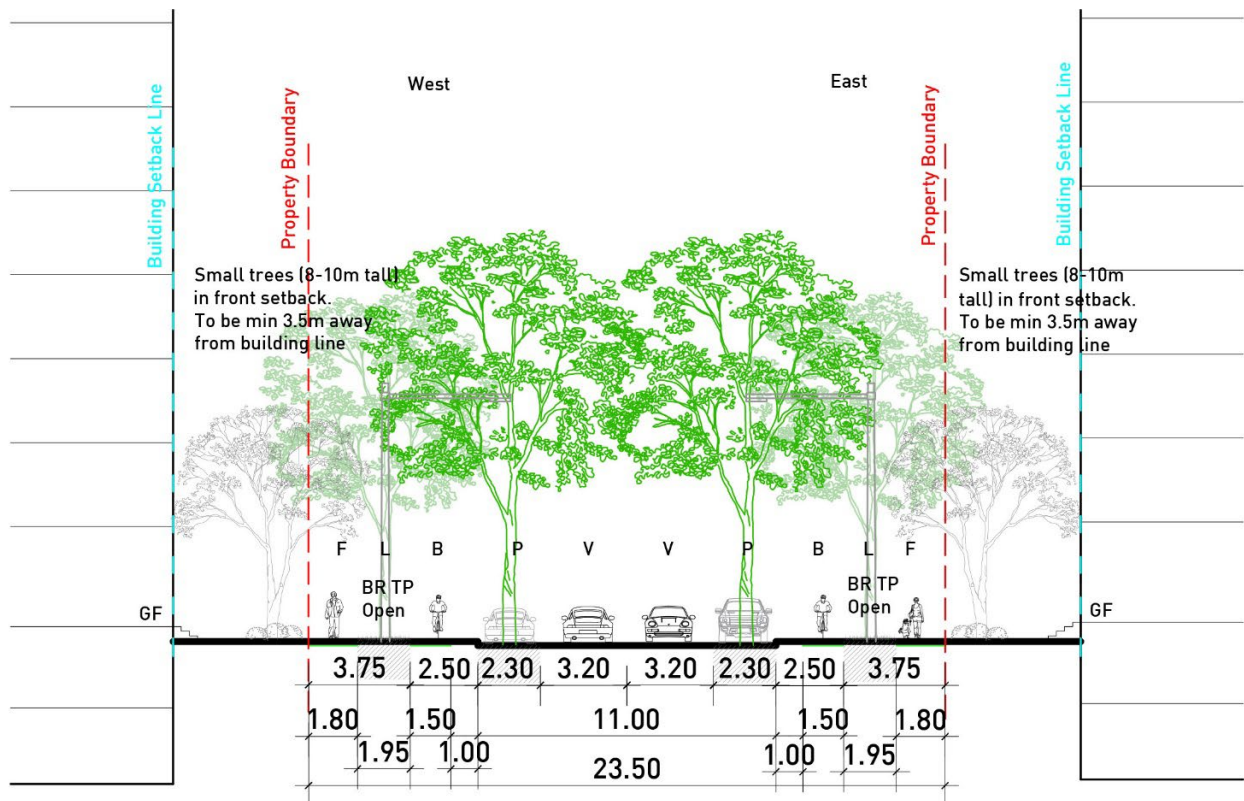


Figure 8.2.6.3.1.4 – Type 2A Main Road with Cycle Tracks (NSR 3)

TYPE 2B – MAIN ROAD WITH CYCLE TRACKS (NSR 3 – BETWEEN EWR & EWR 6)

- 26.5m-wide road corridor.
- 2m wide footpath on western side and 1.8m wide on eastern side.
- One-way Paired, separated bicycle paths: 1.5m wide with an additional 1m buffer with parking lane on both sides (2.5m corridor each side).
- Trees in parking Lanes.
- WSUD details to be applied.
- Trees in open planted beds between the footpath and cycle track.
- Vegetated area in the wider public domain on western side.
- Trees in 5m front setback.

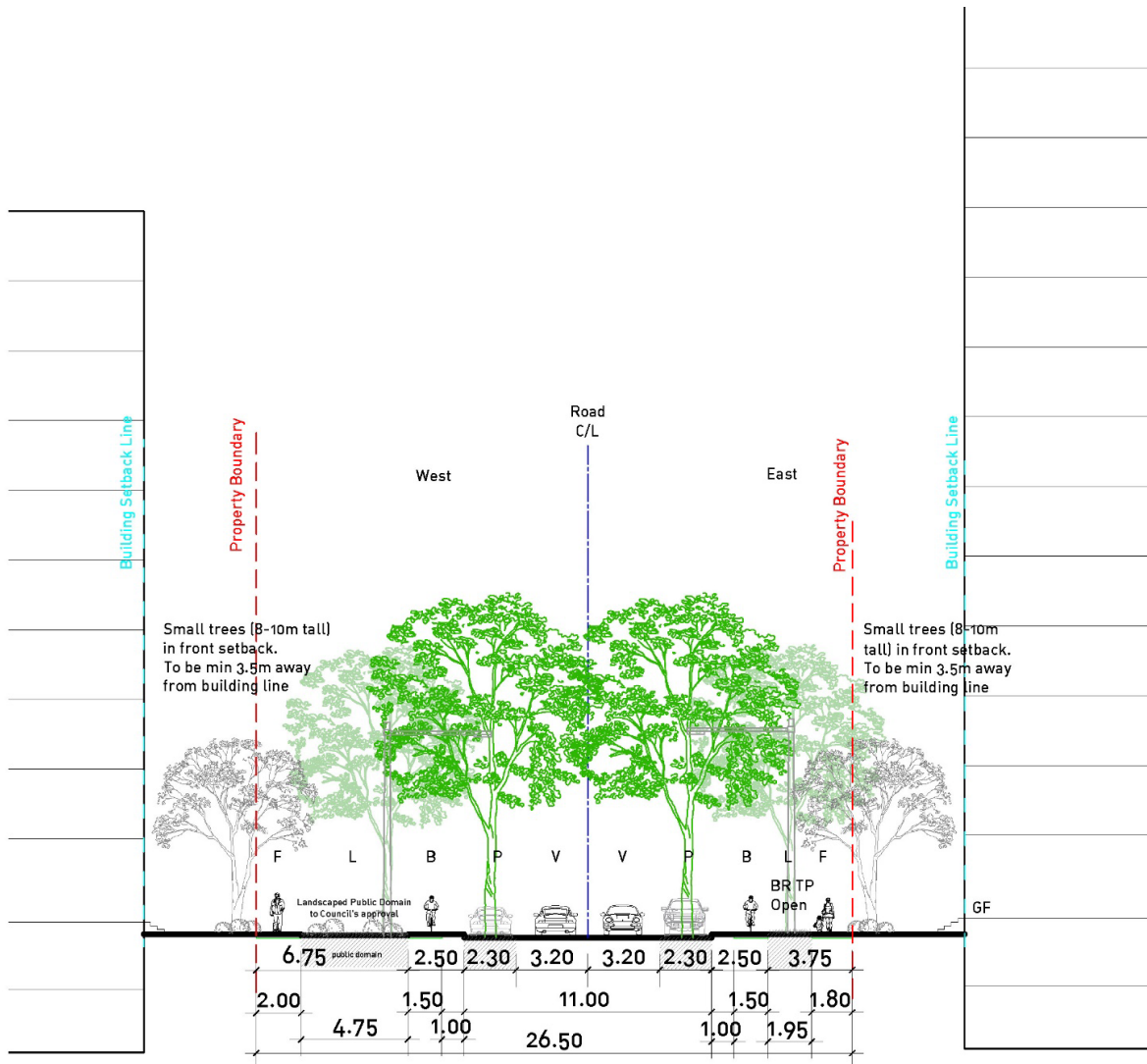


Figure 8.2.6.3.1.5 – Type 2B Main Road with Cycle Tracks between EWR 4 and EWR 6 (NSR 3)

TYPE 2C – MAIN ROAD TWO WAY WITH CYCLE TRACKS (NSR 3 – TOWN CENTRE INTERFACE)

- 23.5m-wide road corridor.
- 3.2m lanes.
- 2.3m parking both sides.
- 1.8m-wide footpaths both sides.
- One-way Paired, separated bicycle paths: 1.5m wide with an additional 1m buffer with parking lane on both sides (2.5m corridor each side).
- Trees in parking lanes.
- WSUD details to be applied.
- Trees in open planted beds between the footpath and cycle track.
- Trees in 5m front setback.

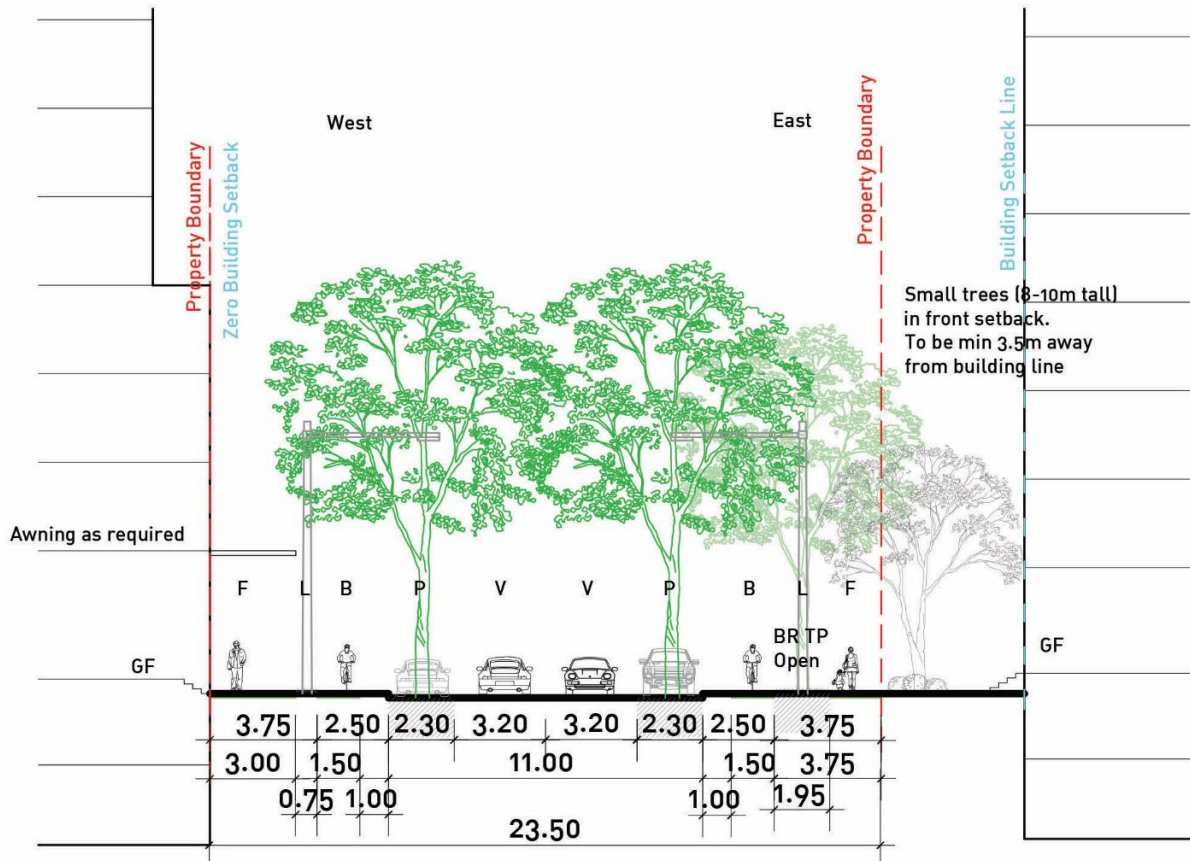


Figure 8.2.6.3.1.6 – Type 2C Main Road with Cycle Tracks Town Centre Interface (NSR 3)

TYPE 3 – MAIN EAST/WEST CONNECTOR ROAD (EWR 4 – TYPICAL)

- 20m-wide road corridor.
- 3m-wide shared path on northern side of the road.
- 2m-wide footpath on south side next to swale/rain garden.
- WSUD treatment via the continuous swale/rain garden.
- Trees in parking lanes.
- WSUR details to be applied.
- Trees in deep soil, in the 5m front setback on southern side of the road.

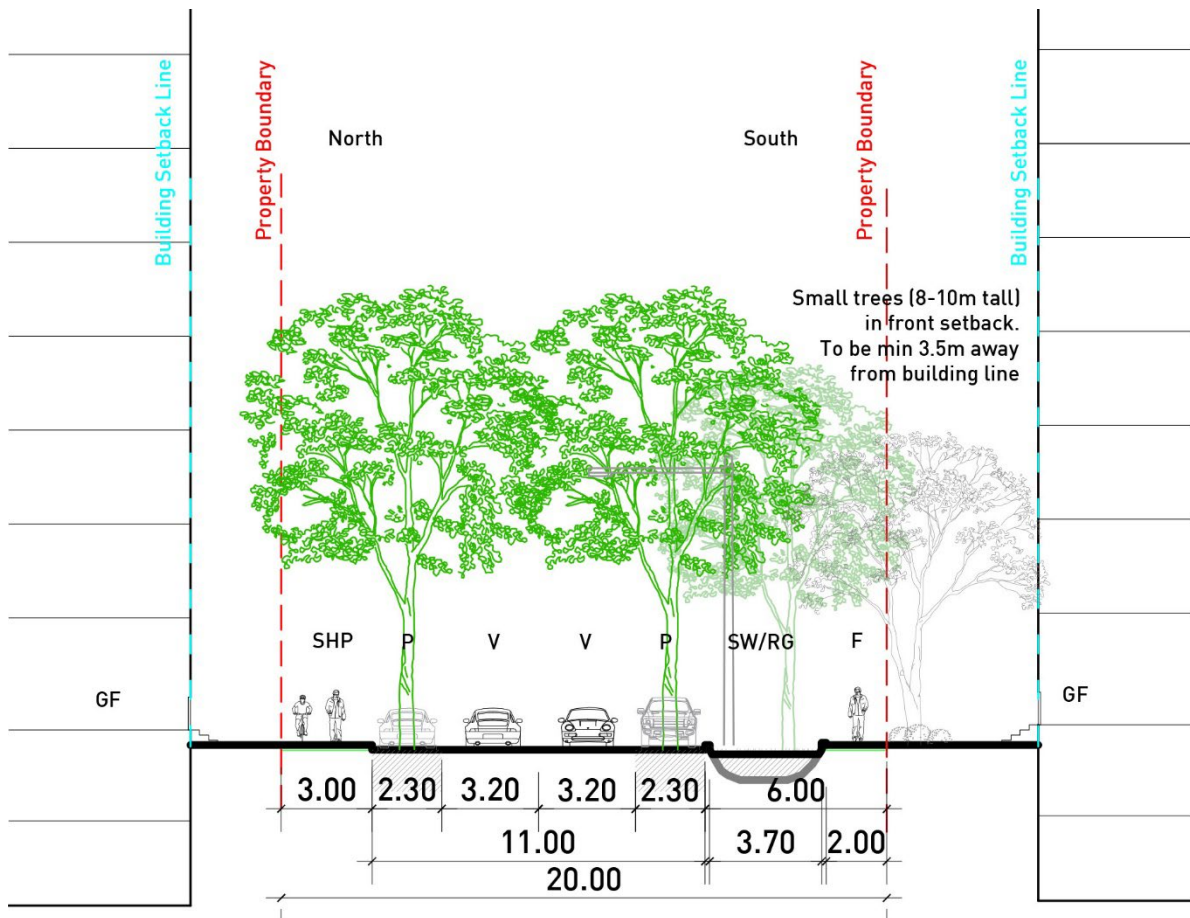
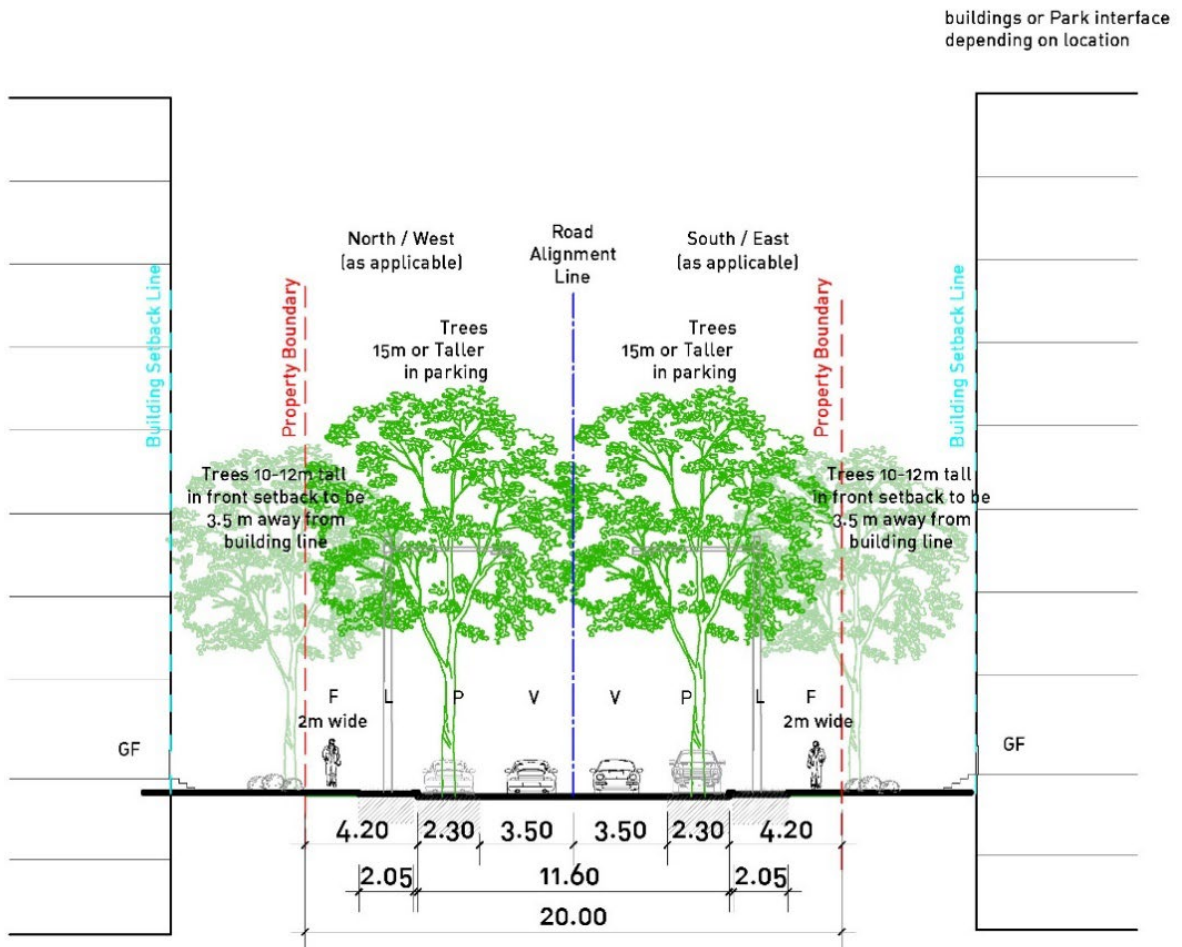


Figure 8.2.6.3.1.7 – Type 3 Main East West Connector road

TYPE 4 – LOCAL STREET, TWO-WAY (NSR 1, NSR 4, EWR 2, EWR 3, EWR 6 & EWR 8)

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



TYPICAL 20m 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 has the river park interface on the southern side

Figure 8.2.6.3.1.8 – Type 4 Local Street (Hughes Avenue & EWR 8/Mary Street)

TYPE 5A – LOCAL STREET, TWO-WAY (NSR 5, NSR 5A, EWR 10)

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

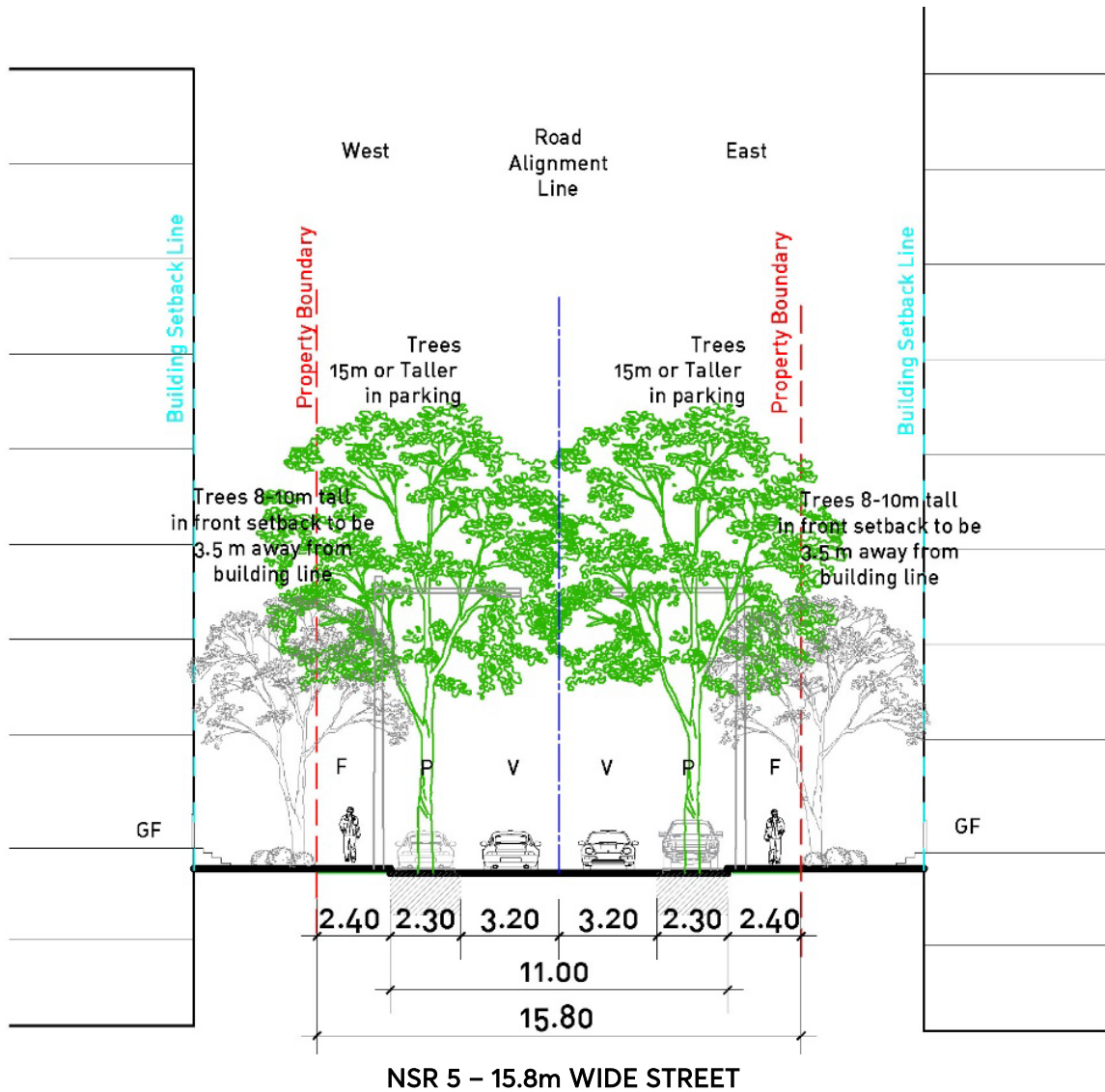
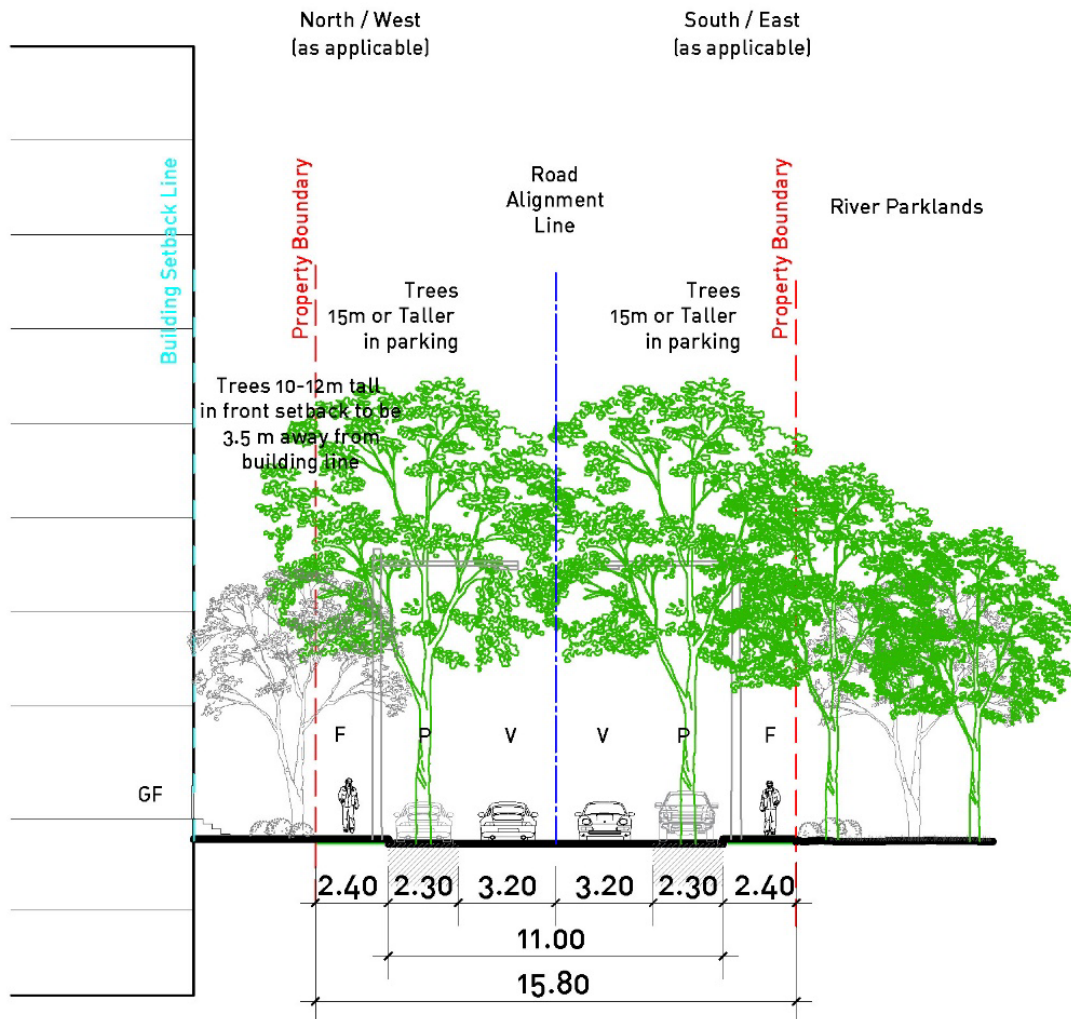


Figure 8.2.6.3.1.9 – Type 5A Local Street (NSR 5)

TYPE 5B – LOCAL STREET, TWO-WAY, INTERIM CONFIGURATION (UNTIL PRECINCT IS BUILT COMPLETELY)

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

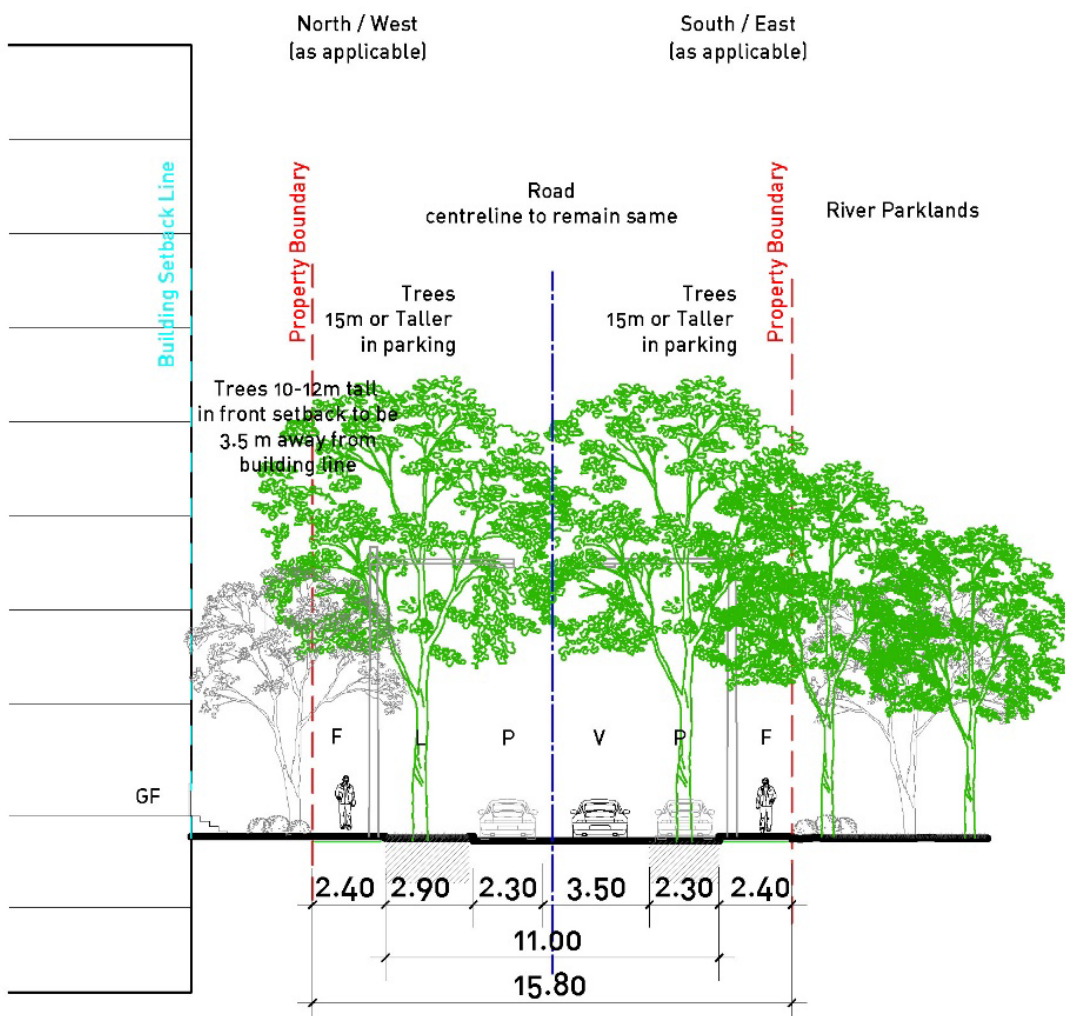


NSR 5A & EWR 10 – 15.8m WIDE STREET TWO WAY – INTERIM CONFIGURATION

Figure 8.2.6.3.1.10 – Type 5B Local Street Interim Configuration (NSR 5A and EWR 10)

TYPE 5B – LOCAL STREET, ONE-WAY, FINAL CONFIGURATION (AFTER PRECINCT IS BUILT COMPLETELY)

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



NSR 5A & EWR 10 – 15.8m WIDE STREET ONE WAY – FINAL CONFIGURATION

- Eastern/Southern edge of the street to remain unchanged.
- Tree locations and footpath locations to remain unchanged.
- Road alignment to be maintained, vehicular lane shall be widened to 3.5m northward/westward,

- New parking lane to be line marked, kerb shifted out, and older parking lane to be converted to a planted verge.

Figure 8.2.6.3.1.11 – Type 5B Local Street Final Configuration (NSR 5b & EWR 10)

TYPE 6 – LOCAL STREET, TWO-WAY (NSR 6)

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

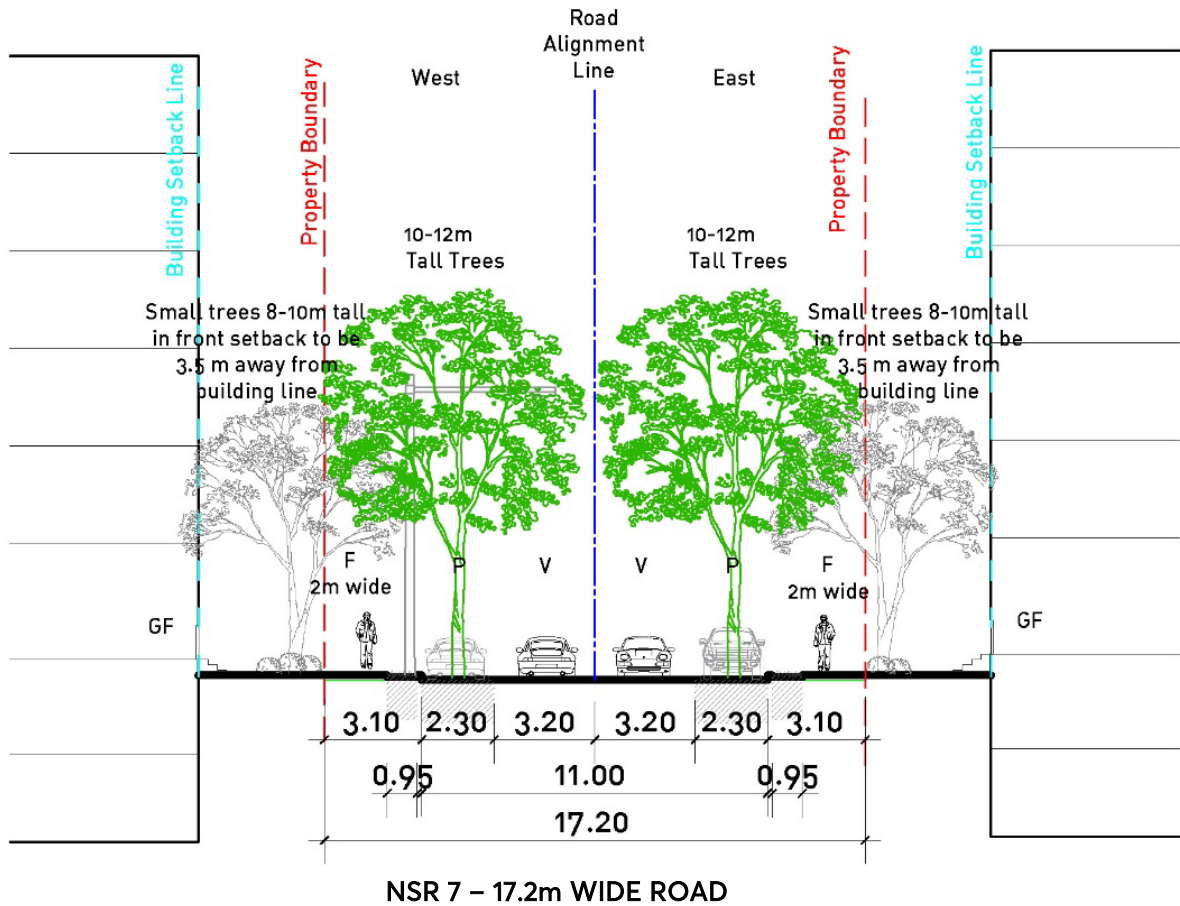
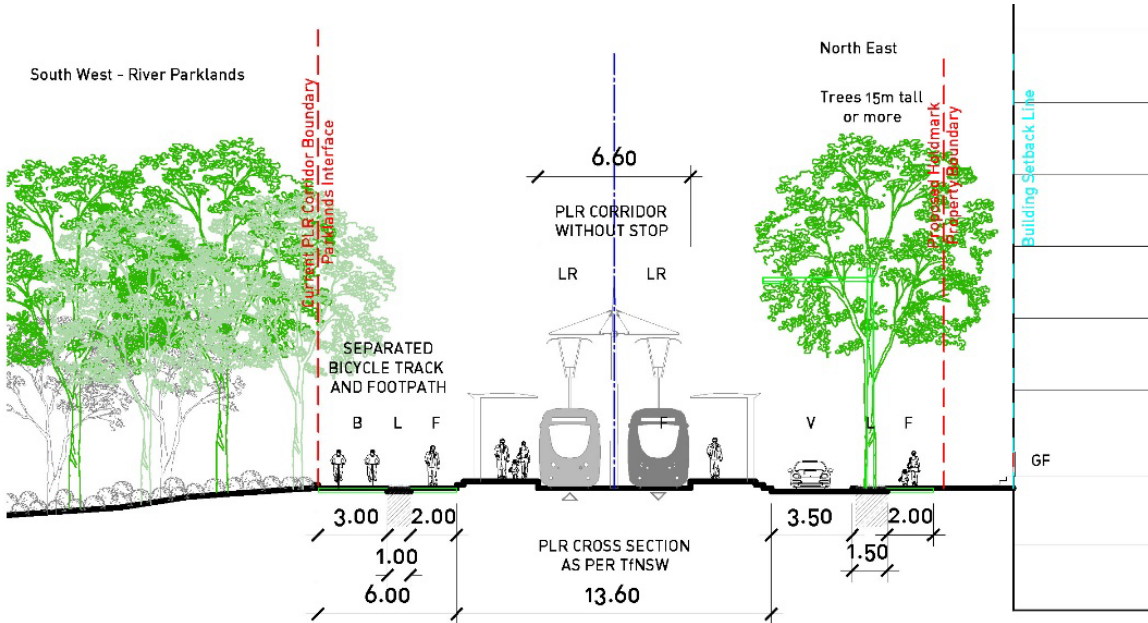


Figure 8.2.6.3.1.12 – Type 6 Local Street (NSR 6)

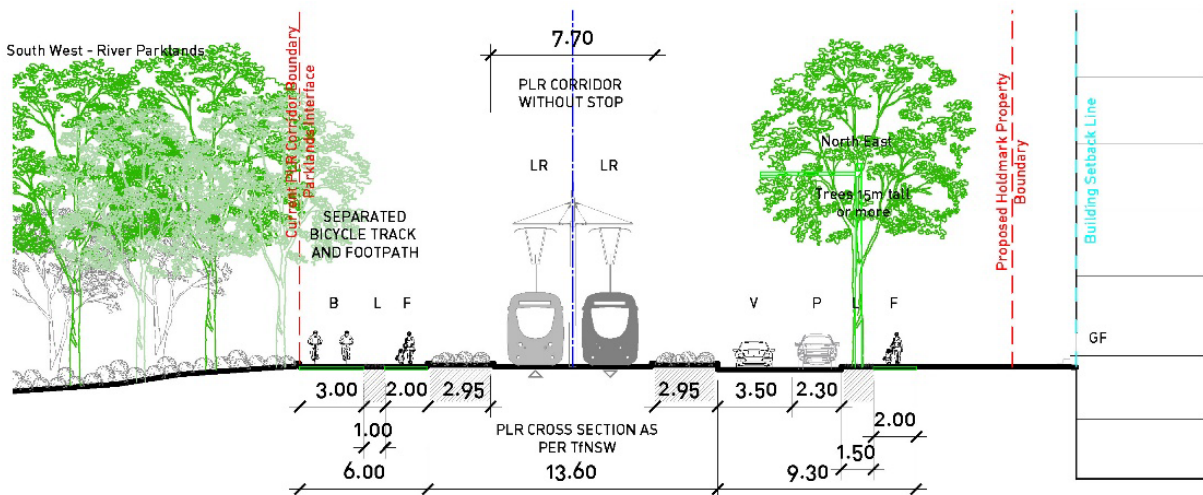
TYPE 7 – LOCAL STREET, ONE-WAY (NSR 3B)

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



WARATAH STREET / NSR 3B – Interface with PLR with stop (South of Mary Street)

Figure 8.2.6.3.1.13 – Type 7 Local Street (NSR 3B with Stop)

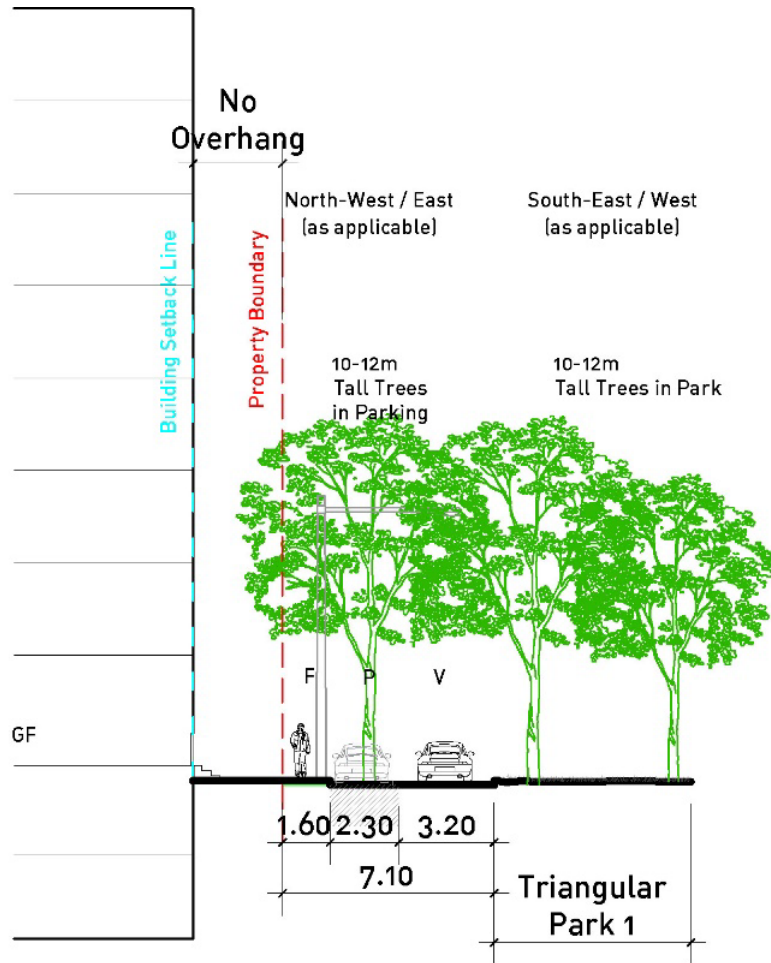


WARATAH STREET / NSR 3B – Interface without PLR stop (South of Mary Street)

Figure 8.2.6.3.1.14 – Type 7 Local Street (NSR 3B in areas without Stop)

TYPE 8 – LOCAL STREET, ONE-WAY (EWR 9A & NSR 6A)

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

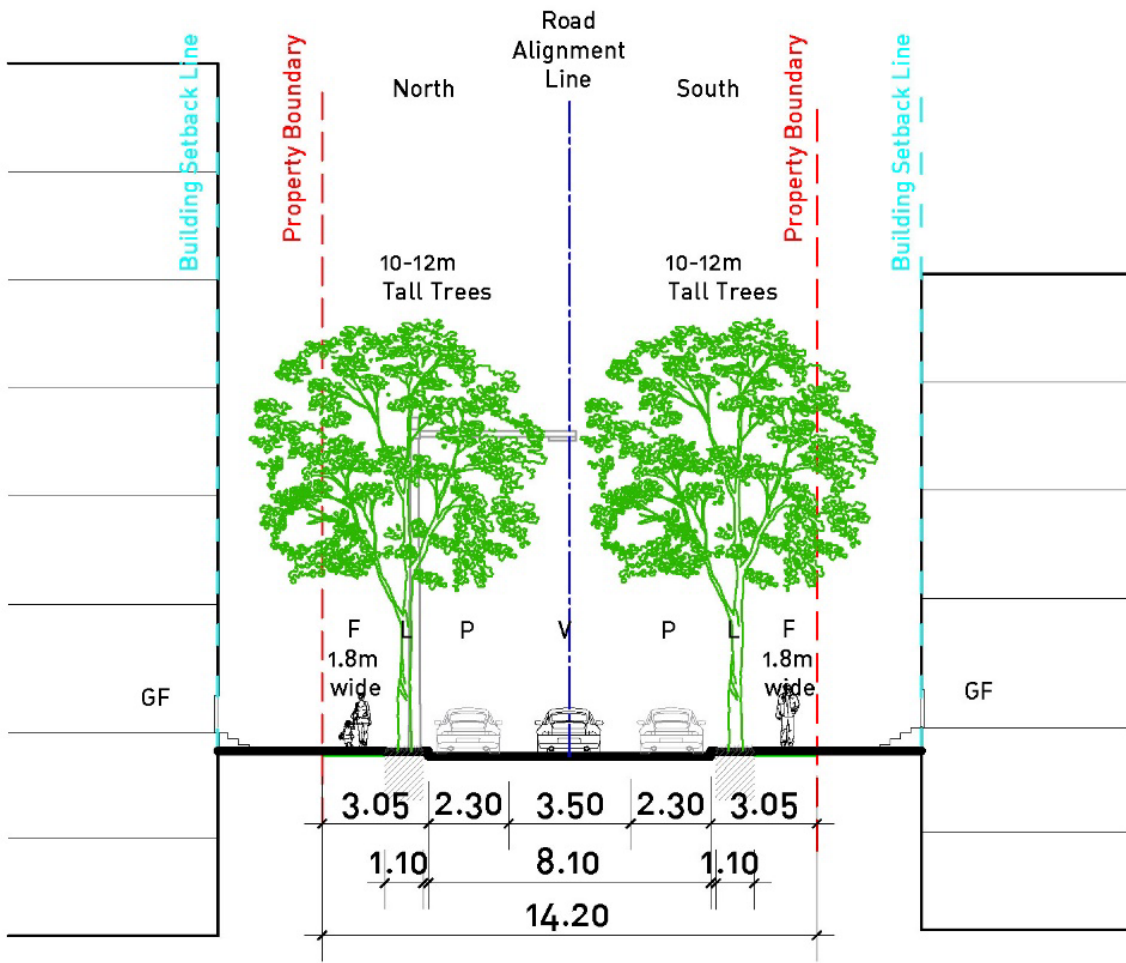


**7.1m WIDE LOCAL ONE WAY STREET with parking on one side –
NSR 6A (southbound) & EWR 9A (northeast-bound)**

Figure 8.2.6.3.1.15 – Type 8 Local Street (NSR 6A & EWR 9A)

TYPE 9 – LOCAL STREET, ONE-WAY (EWR 9)

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



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

Figure 8.2.6.3.1.16 – Type 9 Local Street (EWR 9)

8.2.6.3.2 PEDESTRIAN CONNECTIONS – TYPE 10

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

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

Refer to Council's Melrose Park Public Domain Guidelines 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 and 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 design characteristic equivalent to the public domain.

Controls

- C.01 The pedestrian connections should be:
 - a) Consistent with the Masterplan.
 - 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 lightweight 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 the *Disability Discrimination Act 1992*;
 - 24/7 clearly visible and publicly accessible lift service within the building structure; or
 - alternative options for approval.
- C.02 The pedestrian connections should have:
 - a) View lines that align across all blocks.
 - b) Building to building separation generally as 12m. A public path with a minimum width of 4 metres within the separation between buildings.

- c) 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.
 - d) Pedestrian lighting to provide safe 24/7 access without creating nuisance to residential properties.
- C.03 Materials as per the Melrose Park Public Domain Guidelines.
- C.04 The pedestrian connections can provide secondary entry to the buildings and courtyards.
- C.05 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.
- C.06 Central Park north/south connection, refer Figure 8.2.6.3.2.1 – Pedestrian connection – interface with Central Park, is to have:
- a) A minimum 6m wide path.
 - b) A low wall located on the park edge, with a 6m boundary.
 - c) The wall is to be masonry or similar durable material a minimum of 300mm high and up to 1000mm high and suitable for sitting.
 - d) Canopy trees within the path corridor.

8.2.6.3.3 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.

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 streets in accordance with Figure 8.2.6.7.9.1 – Public Domain Plan and Melrose Park Public Domain Guidelines.
- C.02 Street trees in the footway should be 12-15 m (or higher) in mature height, at 8-10m centres and planted generally in accordance with the Melrose Park Public Domain Guidelines and Council Design Standards.

- C.03 Street trees in the street parking lanes should have a mature height of more than 15m and are to be installed as per Figure 8.2.6.3.1.9 Public Domain Plan and street cross sections above, and the Melrose Park Public Domain Guidelines. Spacing of the trees should ensure tree crown touching at maturity.
- C.04 Development applications should be consistent with the Melrose Park Public Domain Guidelines.
- C.05 Public domain documentation indicating the street tree locations as detailed in the Melrose Park Public Domain Guidelines should be submitted with Development Applications and at Construction Certificate Applications approval stage.

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

8.2.6.3.5 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.

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

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 and along activated street frontages.

Objectives

- O.01 Increase amenity in areas of high pedestrian volume.
- O.02 Design awnings to provide protection from rain, sun, and wind down draft.
- O.03 Maintain complementary architectural detail between awnings.

Controls

- C.01 Awnings in Melrose Park should be used at activated retail frontages.
- C.02 New awnings should align with adjacent existing awnings and complement building façades.
- 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 consistent with Figure 8.2.6.3.5.1 – Typical Awning Condition with Street Trees, and:
- Minimum soffit height of 3.3 metres, maximum of 4.2 metres.
 - Low profile, with slim vertical fascias or eaves (generally not to exceed 300mm height).
 - Setback a minimum of 600mm from the face of the kerb.
 - Minimum of 2.0 metres deep unless street trees are required.
 - Where street trees are required, the entire length of the awning should be set back from the kerb by a minimum of 1.9 metres. Cut outs for trees and light poles in awnings are not permitted.
- C.05 Double height awnings are not permitted except where emphasis is required for entries and the like.
- C.06 All awnings are to have non-reflective surfaces.
- C.07 Glass in awnings should be used where climatically appropriate and should comply with the controls outlined in Section 8.2.6.5 – Sustainability.
- C.08 The awning roof should be designed so that all gutters are concealed, and downpipes incorporated in the building fabric.
- C.09 Lighting and other fixtures should be recessed and integrated into the design of the soffit.

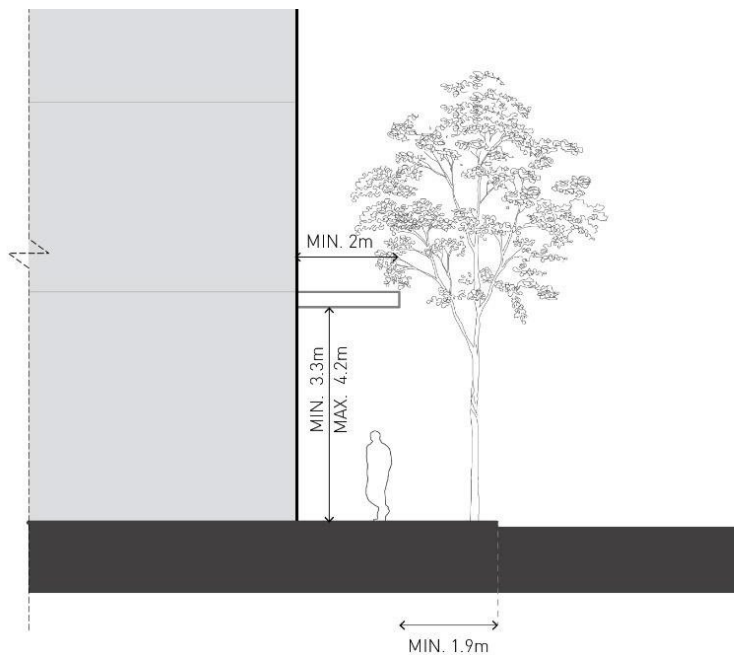


Figure 8.2.6.3.5.1 – Typical Awning Condition with Street Trees

8.2.6.3.6 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 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*.

8.2.6.3.7 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 another essential ingredient for public open space, to ensure the necessary conditions for the health of trees and vegetation. Public spaces have been identified in the Masterplan (Figure 8.2.6.7.1.1), which provide valuable opportunities to maintain and maximise use of solar access at ground level.

Objectives

- O.01 Maximise solar access to public parks, 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 as identified in Figure 8.2.6.7.1 – Public Open Space

8.2.6.3.8 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 Masterplan, Public Domain Plan, and Public Open Space Plan, to support the new residential community to meet, walk, and recreate.
- O.02 The public open spaces are:
- Southern Parklands West OS4 (Melrose Park South).
 - Southern Parklands East OS3 (Melrose Park South).
 - Wharf Road Gardens OS1 and OS2 (Melrose Park South).
 - Wharf Road Gardens OS3 - OS6 (Melrose Park North).
 - Central Park OS1 (Melrose Park North).
 - Playing Field OS2 (Melrose Park North).
 - Western Parklands OS7 and OS8 (Melrose Park North).
 - The Wetlands (Melrose Park North).
- O.03 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) Accommodating the needs of key user groups including children, young people, the elderly, low-income earners, and people with a disability.
 - d) Provide public open spaces that are attractive and memorable with high levels of amenity that consider safety, climate, activity, circulation, seating, lighting, and enclosure.
 - e) Contribute to the management of stormwater and enhancement of ecological values.

Controls

- C.01 Public open space is to be provided in accordance with this section and as identified in the Masterplan (Figure 8.2.6.7.1.1), Public Domain Plans (Figures 8.2.6.7.9.1 – 8.2.6.7.9.2), and Table 8.2.6.8.1 – Public Open Space Key Characteristics.
- 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, and 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 and community gatherings.
 - e) Maximise the safety and security of users consistent with 'Safety by Design' principles.
 - f) Provide deep soil throughout, with 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 The 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 Section 8.2.6.2.18 – Retaining Walls.
- 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 to 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 8.2.6.8.1 – Public Open Space Key Characteristics

Site	Purpose(s)	Use(s)
Southern Parklands West OS4 (Melrose Park South)	Foreshore Park	Active informal recreation, passive recreation, community events, and gatherings
Southern Parklands East OS3 (Melrose Park South)	Foreshore Park	Passive recreation, gatherings
Wharf Road Gardens OS1 and OS2 (Melrose Park South)	Landscape Buffer	Passive recreation
Wharf Road Gardens OS3 – OS6 (Melrose Park South)	Landscape Buffer	Passive recreation
Central Park OS1 (Melrose Park North)	District Park	Play, passive recreation, community events and gatherings
Playing Field OS2 (Melrose Park North)	Sport, WSUD	Active recreation, wetland
Western Parklands OS7 and OS8 (Melrose Park North)	Green Link, WSUD	Pedestrian/cycle connections, dog off-leash, multi-use courts, stormwater detention
The Wetlands (Melrose Park North)	Stormwater Management	Passive recreation

Southern Parklands East OS3 and Southern Parklands West OS4 (Melrose Park South)

The Southern Parklands East OS3 and Southern Parklands West OS4 will assist in creating one continuous foreshore park along the Parramatta River once the entire south precinct is developed. The Southern Parklands East OS3 and Southern Parklands West OS4 will have an area of approximately 22,126m² and:

- function as the principal gathering space for the Melrose Park South precinct,
- be edged by the existing Parramatta River cycleway 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, shade structures, and 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, and
- achieve direct sunlight to a minimum of 50% of Southern Parklands East OS3 and Southern Parklands West OS4 between 10am and 2pm on 21 June in accordance with Figure 8.2.6.7.5.1 – Solar Access Plan.

Wharf Road Gardens OS1 and OS2 (Melrose Park South)

A linear park with a minimum width of approximately 17 metres and minimum area of 3,907m² should be provided along the eastern boundary of the precinct as identified in the Masterplan, and should:

- explore opportunities to integrate references to the agricultural or 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, and
- achieve direct sunlight to a minimum of 50% of Wharf Road Gardens OS1 & OS2 between 10am and 2pm on 21 June in accordance with Figure 8.2.6.7.5.1 – Solar Access Plan – Melrose Park South.

Wharf Road Gardens OS1 and OS2 (Melrose Park South)

A linear park with a minimum width of approximately 17 metres; 13 metres adjacent to the playing field and an approximate area of 7,500m² should be provided along the eastern boundary of the precinct as identified in the Masterplan 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, and
- achieve direct sunlight to a minimum of 40% of the park between 10am and 2pm on 21 June in accordance with Figure 8.2.6.6.5.2 – Solar Access Plan – Melrose Park North.

Central Parklands OS1 (Melrose Park North)

A district park with a minimum size of approximately 84.89 metres by 207 metres and an approximate area of 17,600m² is to be provided in the location identified in the Masterplan and should:

- function as the key open space and principal gathering space for the Melrose Park precinct,
- accommodate a range of experiences and activities, including space for outdoor performances and temporary events,
- be edged by a 6m north/south pedestrian walkway on the eastern edge between the park and the development,
- have a diverse mix of hard and soft landscaping and deep soil planting utilizing 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, and drinking fountains,
 - a district level playground for children that is to:

- physically and visually integrate into the surrounding park,
- maximise play value, accessibility, and inclusiveness for children of all ages and abilities,
- incorporate nature play to provide opportunities for exploration, imagination, and creativity.
- 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,
- provide new street trees to define the boundary of the park, and
- achieve direct sunlight to the minimum standards in accordance with Figure 8.2.6.6.5.2 – Solar Access Plan – Melrose Park North.

Playing Field OS2 (Melrose Park North)

An active recreation park with a minimum size of approximately 75 metres by 108 metres and an approximate area of 8000m² is to be provided in the location identified in the Masterplan and should:

- achieve an appropriate balance between active recreation and stormwater detention functions,
- provide a multi-use field,
- incorporate appropriate:
 - floodlighting to maximise capacity, and
 - perimeter fencing to minimise potential conflict with pedestrians and vehicles Flood Lighting
- achieve direct sunlight to a minimum of 50% of the playing field between 10am and 2pm on 21 June in accordance with Figure 8.2.6.6.5.2 – Solar Access Plan – Melrose Park North, and
- integrated stormwater and floodwater management.

Western Parklands OS7 and OS8 (Melrose Park North)

A linear park with a minimum dimension of approximately 20 metres and an approximate area of 15,180m² should be provided along the western boundary of the precinct in the location identified in the Masterplan and should:

- provide for passive and active recreation including multi-use courts, outdoor fitness equipment and skateable elements,
- incorporate a north-south shared pedestrian/cycle connection,
- include soft landscaping and deep soil planting utilising indigenous, native and exotic species,

- incorporate shade and some formal and informal seating,
- provide fenced dog off-leash exercise area,
- dual recreation and stormwater detention function, and
- achieve direct sunlight to a minimum of 50% of the park between 11am and 3pm on 21 June in accordance with Figure 8.2.6.6.5.2 – Solar Access Plan – Melrose Park North.

Western Parklands South (Tomola)

An extension of the linear Western Parklands South OS8, the Western Parklands South (Tomola) will provide a linear park connection between Hope St and Victoria Rd.

- Provide pedestrian access from the park to a residential lobby in the neighbouring development,
- Provide suitable boundary treatments to ensure an appropriate transition of levels between neighbouring sites and the Tomola site, and
- The setback area between the neighbouring development and the Park should comprise soft landscaping that complements the design of the park.

Wetlands (Melrose Park North)

A triangular park with an approximate area of 2,260m² should be provided along the eastern boundary of the precinct as identified in the Masterplan and should:

- assist in the management of stormwater,
- increase the provision of deep soil,
- be accessible to the public 24/7 through a formalised path separated from the stormwater management function,
- designed to safe guarded against in appropriate use, and
- not have underground structures, such as car parking, unless approved by Council.

8.2.6.3.9 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 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 Figure 8.2.6.7.9.1 – Public Domain Plan and the Melrose Park Public Domain Guidelines.
- C.03 Ensure that A-grade soil profile is appropriate for the planting in the deep soil zones.
- C.04 Deep soil depth should be provided as per Figure 8.2.6.2.11.1 – Residential ground floor.
- C.05 Landscape requirements should be as per Section 3.3.1 – Landscaping, and 3.3.2 – Private and Communal Open Space of the Parramatta DCP 2023. Where there is any inconsistency the Melrose Park provisions of this part will prevail.

8.2.6.3.10 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 rooftops 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 on structures in urban areas.
- 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.

Controls

- C.01 Design for optimum growing conditions and sustained plant growth and health by providing minimum soil depth and soil volume as per Table 8.2.6.3.10.1 – Minimum soil depth for plant establishment (in addition to drainage layer), 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 requirements for the proposed planting, for 1 metre 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 of 1 metre, plus drainage for trees, and a lesser amount appropriate for other planting.
- C.06 The minimum number of trees to be provided in landscaped areas is 1 tree per 80m² or as agreed by Council's Landscape Management Officer.

Table 8.2.6.3.10.1 – 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	150m ³
Medium trees (8-12m high, up to 8m crown spread at maturity)	1m	35m ³
Small trees (6-8m high, up to 4m crown spread at maturity)	800mm	9m ³
Shrubs and ground cover	500mm	n/a

8.2.6.4 VEHICULAR ACCESS, PARKING, SERVICING

8.2.6.4.1 VEHICULAR ACCESS

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 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.
- O.03 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, and traffic patterns.
 - c) Minimising potential conflict with pedestrians.
 - d) Limiting street crossings.
- O.04 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.
- O.05 Enable pedestrian movement to have priority when vehicles crossing the public domain.
- O.06 Minimise the width of any vehicular crossing at the footpath.

Controls

- C.01 Where practicable, provide one entry point to each lot for service vehicles and residential vehicles.
- C.02 Where practicable, vehicle access is to be from less busy streets and streets on the low side of lots where possible, rather than busy streets or streets with major pedestrian activity.
- C.03 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.04 Vehicle access ramps parallel to the street frontage will not be permitted.

- C.05 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.06 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.
- C.07 Driveways should be:
- Provided from less busy streets rather than the primary street, wherever practical.
 - Located taking into account any services within the road reserve, such as power poles, drainage inlet pits and existing or proposed street trees.
 - Located a minimum of 10 metres from the perpendicular of any intersection of any two roads.
 - Located on the less busy streets.
- C.08 The number of street crossings and entrances to basement car parking should be minimised.
- C.09 Where possible, limit basement vehicle entries to one per development lot.
- C.10 Vehicle access should be designed to:
- Minimise the visual impact on the street, site layout, and the building design,
 - Integrated into the building design.
- C.11 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.12 Pedestrian and vehicle access should be separate and be clearly differentiated.
- C.13 Vehicle access should be a minimum of 3 metres from pedestrian entrances.
- C.14 Vehicular access should not ramp along boundary alignments edging the public domain, streets, lanes parks, water frontages, and the like.
- C.15 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.16 Driveway entries and vehicle crossings should be in accordance with AS 2890.1.
- C.17 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.18 Loading docks and waste collection should be incorporated within the basement with one entry where possible.
- C.19 Driveway grades, vehicular ramp width/grades, passing bays, and sight distance for driveways should be in accordance with the relevant Australian Standard (AS 2890.1).
- C.20 Vehicular ramps less than 20 metres long within developments and parking stations should be in accordance with AS 2890.
- C.21 Access ways to underground parking should not be located adjacent to doors of the habitable rooms of any residential development.

- C.22 Semi-pervious materials should be used for all uncovered parts of driveways/spaces to provide for some stormwater infiltration.
- C.23 Entrances to basement facilities should not terminate the view at the ends of any streets or pedestrian connections.
- C.24 Entrance doors to basements should be:
- Located behind the façade of the building by a minimum of 500mm, or
 - Designed to be recessive.
 - Be of materials that integrate with the design of the building and that contribute positively to the public domain.
- C.25 Vehicle slip lanes in public streets for private use are not permitted.
- C.26 Vehicular access, egress, and manoeuvring should be provided in accordance with the NSW Fire Brigades Code of Practice – Building Construction – NSWFB Vehicle Requirements.
- C.27 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 Figure 8.2.6.7.9.1 – Public Domain Plan – Melrose Park South and Figure 8.2.6.7.9.2 – Public Domain Plan – Melrose Park North.
- C.28 Vehicle landings should comply with the relevant Australian Standards to maximise visual contact with oncoming pedestrians.
- C.29 Vehicle crossings shall use Council's current standard vehicle crossing detail, as agreed by Council.

8.2.6.4.2 ON-SITE PARKING

Car parking should be provided on-site in discreetly located basements for all development.

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 maximise the 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 Table 6.2.1 of the Parramatta DCP 2023. While these rates in the table refer to minimums, these rates are to be applied as maximum rates in Melrose Park and should not be exceeded.

- C.02 Car parking should generally be 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 area for deep soil planting in setbacks.
- C.04 Maximise the efficiency of car park design with predominantly orthogonal geometry and consideration of 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 motorcycle parking is to be provided at the rate of 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.11 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, and oriented away from windows of habitable rooms and private open spaces areas.

8.2.6.4.3 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 is provided in residential and town centre buildings.
- C.02 Secure bicycle parking facilities are to be provided in accordance with Council's Bike Plan.
- C.03 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 the basement or first level above ground and in proximity to entry and exit points.
- C.04 Bicycle parking access and facilities are to be provided in accordance with Australian Standard AS2890.3.
- C.05 Visitor bicycle parking shall be located at-grade near the entry point to the building, and be undercover and accessible at all times.
- C.06 Where visitor bicycle parking cannot be provided at-grade it is to be provided on the first level of the basement or first level above ground adjacent to the visitor car parking and be accessible at all times.
- C.07 The area required for bicycle parking is to be calculated in addition to storage areas required as per the ADG.
- C.08 End of trip facilities for non-residential development (excluding the town centre) are to be provided at the following rates:
- a) 1 personal locker per bicycle parking space.
 - b) 1 shower and change cubicle for up to 10 bicycle parking spaces.
 - c) shower and change cubicles for 11 to 20 or more bicycle parking spaces are provided.
 - d) Additional shower and cubicles for each additional 20 bicycle parking spaces or part thereof.
- C.09 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.10 End of trip facilities are to:
- a) Be located within the basement or above ground levels. Where located in a basement it is to be located on the first level of the basement. Where located above ground it is to be located on the first level above ground and in proximity to entry and exit points.
 - b) Provide for a clear and safe path of travel to minimise conflict between vehicles and pedestrians.
 - c) Be in close proximity to bicycle parking facilities and the entry and exit points.
 - d) Be within an area of security camera surveillance, where there are such building security systems available.
 - e) Development proposing multiple commercial tenancies must demonstrate how all tenancies will have access to the end of trip facilities and employee bicycle parking.

8.2.6.5 SUSTAINABILITY

8.2.6.5.1 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.
 - c) Provide photovoltaics to each of the buildings if sufficient roof space is available.

8.2.6.5.2 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.

Controls

- 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 changeover 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.

8.2.6.5.3 ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

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 Development Application 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 to include 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.

8.2.6.5.4 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 increasing demand for electricity and water, and resulting in a less comfortable public domain for pedestrians, with associated health impacts. On average, Melrose Park experiences more frequent hotter days than the Sydney average (Australian Bureau of Meteorology).

As more development takes place within 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 façades; 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 8.2.6.5.9 SOLAR LIGHT REFLECTIVITY (GLARE).

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

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 incidental 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 material's ability to reflect solar radiation (solar reflectance) and emit heat which has been absorbed by the material. For example, a 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 Local Government Area
- P.02 Improve user comfort in Melrose Park, in private open space and the public domain.

8.2.6.5.5 ROOF SURFACES

Objectives

- O.01 Reflect and radiate heat from roofs and podium top areas.
- O.02 Improve user comfort in 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 in Section 8.2.6.5.8 – Green Roofs or Walls;

- 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, or for solar panels or heat rejection plant, the development must demonstrate the following:
- a) Materials used have a minimum solar reflectivity index (SRI) of 82 for 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 should be covered by vegetation; or
 - c) A combination of (a) and (b) for the total roof surface.

8.2.6.5.6 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, and 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 8.2.6.5.6.1 – Minimum Percentage Shading 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
 - west facing façade at 4pm

Table 8.2.6.5.6.1 – 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 8.2.6.5.6.2 – Shading Sun Angles for sun angles corresponding to shading reference times.

Calculation of RSR for each relevant façade must also be submitted with the Development Application.

Table 8.2.6.5.6.2 – Shading Sun Angles

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

C.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 8.2.6.5.6.3 – Minimum tower percentage shading 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
- west facing façade at 4pm.

Table 8.2.6.5.6.3 – 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:

- External feature shading with non-reflective surfaces;
- Intrinsic features of the building form such as reveals and returns; and
- Shading from vegetation such as green walls that is consistent with the controls in Section 8.2.6.5.8 GREEN ROOFS AND WALLS.

- C.04 Non-reflective surfaces of vertical façades 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 8.2.6.5.6.4 – Maximum solar reflectance of Reflective Surfaces is generally acceptable.

8.2.6.5.6.4 – 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.06 Where multiple reflective surfaces or convex geometry of reflective surfaces introduce the risk of focusing 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 the extent of reflected solar heat radiation.

8.2.6.5.7 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 uppermost roof.
- C.02 Where the heat rejection source is located on the uppermost roof, these should be designed in conjunction with controls in this section of the DCP relating to Roof Surfaces and the controls in Section 8.2.6.5.8 – Green Roofs and 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 façades 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 HVAC system must demonstrate:

- a) Heating, ventilation, and cooling systems exceed 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.

8.2.6.5.8 GREEN ROOFS AND WALLS

Objectives

- O.01 Ensure that green roofs and walls are considered for integration into the design of new development.
- O.02 Design green roofs and walls to maximise their cooling effects.
- O.03 Ensure green roofs and walls are designed and maintained to respond to local climatic conditions and ensure sustained plant growth.

Controls

- C.01 Green roofs and wall structures are to be assessed as a part of the structural certification for the building. Structures designed to accommodate green walls should be integrated into the building façade.
- C.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 ADG for 'Planting on Structures'.
- 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.

8.2.6.5.9 SOLAR LIGHT REFLECTIVITY (GLARE)

Objectives

- O.01 To ensure that buildings in Melrose Park restrict solar light reflected from buildings to surrounding areas and other buildings.
- O.02 To minimise the risk of bird collision due to high transparency, through treatment of external windows and other glazed building surfaces.

Controls

- C.01 New buildings and façades 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.02 Solar light reflectivity from building materials used on façades must not exceed 20%.
- C.03 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.04 Buildings greater than 40 metres in height require a Reflectivity Report that includes the visualisation and photometric assessment of solar light reflected from the building on the surrounding environment. Analysis is to include:
 - a) The extent of solar light reflections resulting from the development for each day in 15-minute intervals;
 - b) A visual and optometric assessment of view aspects where solar light reflections may impact pedestrians, or drivers, occupants of other buildings or users of public spaces including assessment of visual discomfort and hazard.
- C.05 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.06 A report is to be prepared by a suitably qualified consultant at Development Application stage to determine appropriate treatments of building surfaces for buildings within close proximity to open space and water bodies.

8.2.6.5.10 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 enable full development of street tree canopy.

Controls

- C.01 Wind Effects Report is to be submitted with the Development Application for all buildings greater than 32m in height. For buildings over 50m in height, results of a wind tunnel test are to be included in the report.
- C.02 Report recommendations cannot rely on or include street trees to assist to mitigate wind downdraft effects on the public domain.
- C.03 Site design for tall buildings (towers) should:
- a) Protect pedestrians from strong wind downdrafts at the base of the tower.
 - b) Ensure that tower buildings are well spaced from each other to allow breezes to penetrate city centre.
 - c) Consider the shape, location, and height of buildings to satisfy wind criteria for public safety and comfort at ground level.
 - d) Ensure usability of open terraces and balconies.
- C.04 Buildings and public and private open spaces are to be designed in response to wind testing outcomes.
- C.05 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.06 **NOTE:** 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.

8.2.6.5.11 ECOLOGY

Objective

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

Controls

- C.01 A survey of all buildings and landscaping is to be undertaken to identify any species occupying existing buildings/land.

8.2.6.6 SITE SPECIFIC CONTROLS

8.2.6.6.1 TOMOLA

The old Tomola Motors site on the corner of Hope Street and Hughes Avenue is a high-quality mixed-use site that integrates with and enhances the surrounding Melrose Park area.

The site will play an important role in contributing to additional supply for diverse housing and commercial development, capitalising on its proximity to the future Melrose Park Light Rail stop, the nearby development of the Melrose Park North Town Centre and proximity to the Western Parklands.

8.2.6.6.2 GENERAL CONTROLS (TOMOLA)

Objectives

- O.01 The desired future character of Hughes Avenue is predominantly residential, and the desired future character of Hope Street is a mixed commercial and residential strip related to the Light Rail line.
- O.02 Achieve an appropriate built form scale along Hughes Avenue and Hope Street that contributes to the prevailing streetscape and the existing and future character of the locality.
- O.03 Create a transition of building heights stepping down to the existing R2 low-density fabric along Hughes Avenue to the north of the site.
- O.04 Buildings are sited to reinforce the street network and to frame pedestrian links within the site.
- O.05 Provide a legible and permeable movement network for pedestrians.

Controls

- C.01 Built form should be consistent with Figures 8.2.6.7.1.1 to 8.2.6.7.9.1.
- C.02 Notwithstanding C.01, the building setbacks are to be as follows:
 - a) Northern setback - 3 metres to the pedestrian link boundary (i.e. the RE1 zone boundary).
 - b) Eastern setback - 6 metres to the parkland/pedestrian link boundary (i.e. the RE1 zone boundary).
 - c) Hope Street setback – 12 metres to road reserve with no light rail (0 metres to Hope St with light rail).
 - d) Hughes Avenue setback – 6 metres to the residential frontage, or 0 metres to any ground floor commercial/retail.
- C.03 Pedestrian through-site links are to be in accordance with Section 8.2.6.3.2 PEDESTRIAN CONNECTIONS, Figure 8.2.6.7.7.1 Public Open Space and Figure 8.2.6.7.8.1 Street Hierarchy.
- C.04 The East- West pedestrian link is to be 4 metres wide and setback 2 meters from the 67 Hughes Avenue boundary.

- C.05 Design of the public open space should be in accordance SECTION 5.6.3.8 PUBLIC OPEN SPACE - Western Parklands South (Tomola).

8.2.6.6.3 VEHICULAR PARKING AND ACCESS (TOMOLA)

Objectives

- O.01 To facilitate an appropriate level of on-site parking at the Tomola Site.
- O.02 Ensure provision of parking minimises any potential visual impacts through appropriate design and use of materials and finishes.

Controls

- C.01 Above ground parking may be provided within the podium subject to implementation of appropriate sleeving and/ or screening.
- C.02 Any driveway entry or vehicular loading zone is to be located off Hughes Avenue.

8.2.6.6.4 HOPE STREET AND HUGHES AVENUE INTERFACE (TOMOLA)

Objectives

- O.01 Ensure street activation by promoting pedestrian activity at the corner of Hope Street and Hughes Avenue, and through a north-south and east-west through site pedestrian link connecting to the Western Parklands South.

Controls

- C.01 Provide an active frontage with commercial uses and residential entry lobbies at street level along Hope Street and corner of Hughes Avenue.
- C.02 Extend the footpath paving materials and urban landscape character from Hope Street around the corner into Hughes Avenue.
- C.03 Provide at least one residential entry lobby from Hughes Avenue at ground level. A landscaped setback is to be provided adjacent to the residential entry, including low level planting and ground covers.

8.2.6.7 APPENDIX A – MELROSE PARK FIGURES

8.2.6.7.1 MASTERPLAN

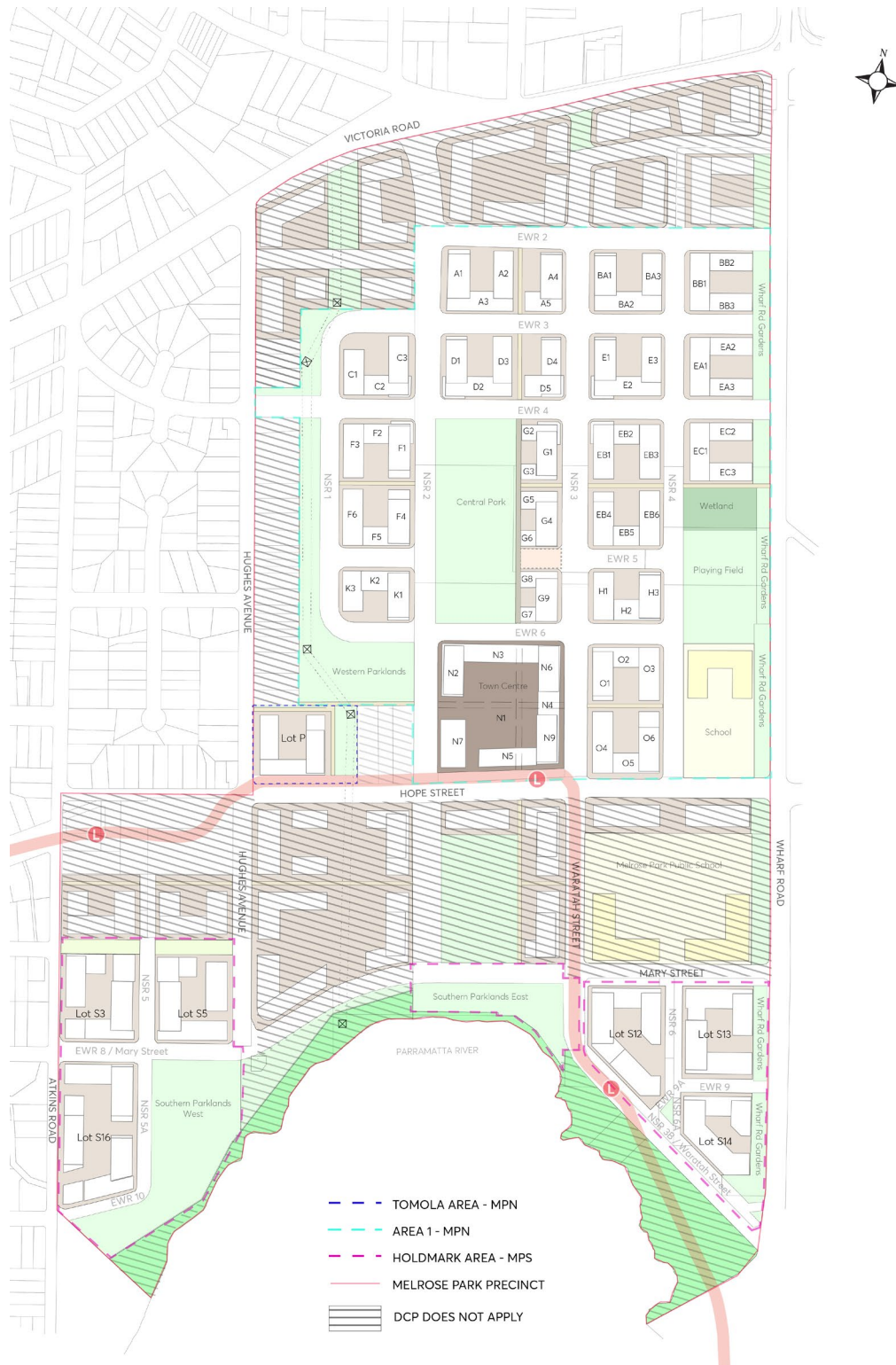


Figure 8.2.6.7.1.1 – Melrose Park Masterplan

8.2.6.7.2 MAXIMUM GROSS FLOOR AREA



Figure 8.2.6.7.2.1 – Maximum GFA Plan per Lot

8.2.6.7.3 COURTYARD LOCATIONS

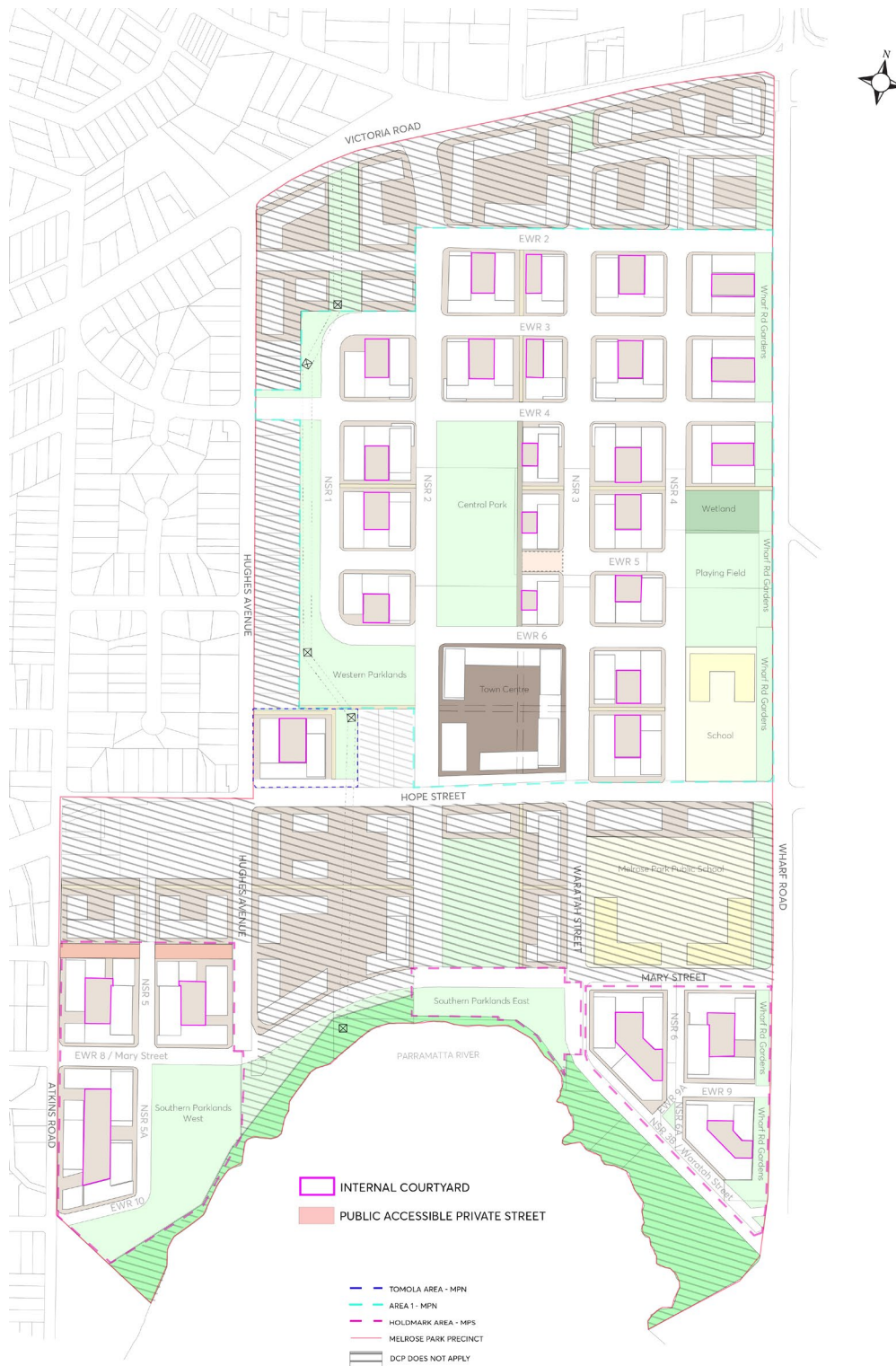


Figure 8.2.6.7.3.1 – Courtyard Locations

8.2.6.7.4 BUILDING STOREYS

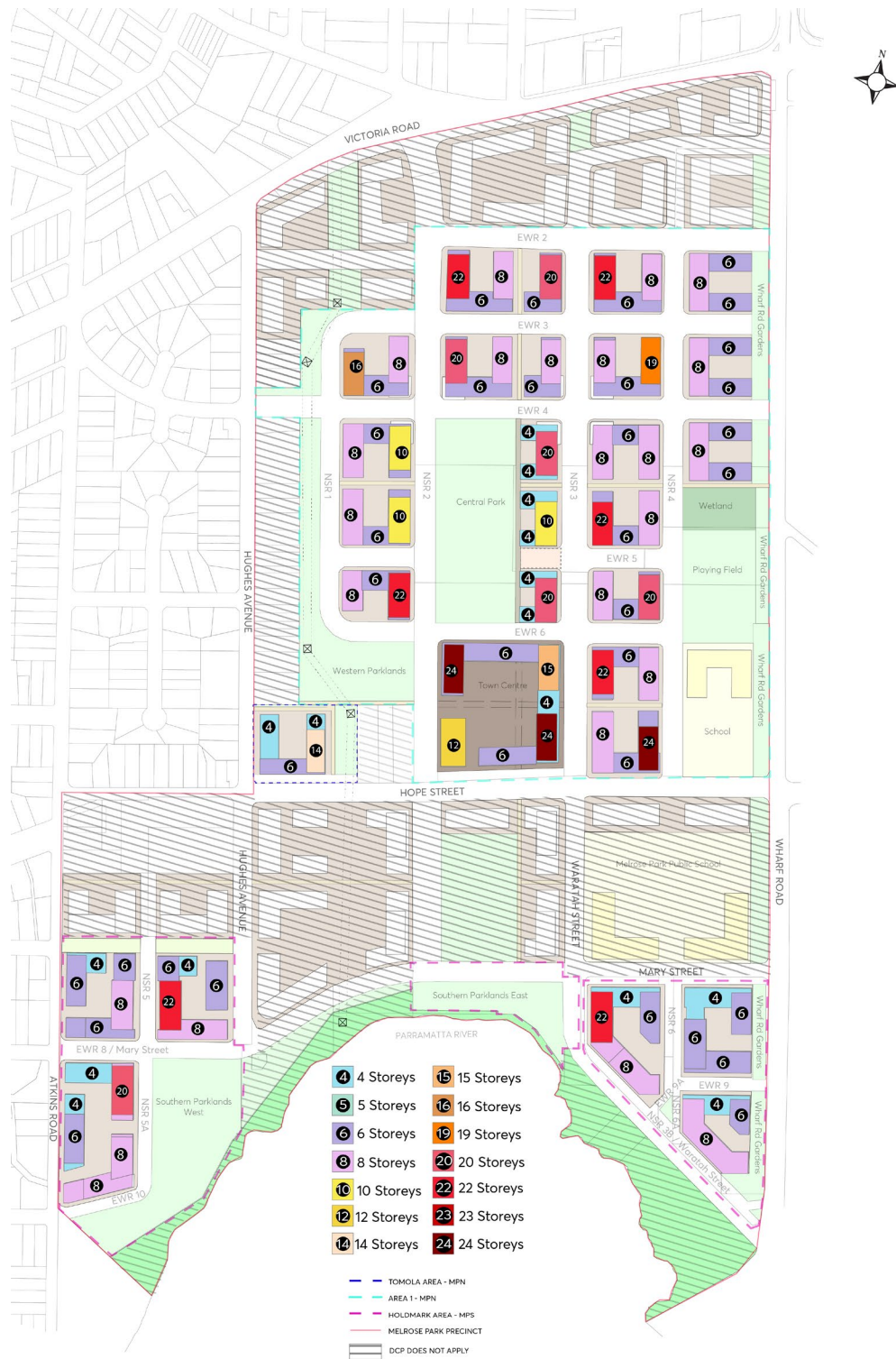


Figure 8.2.6.7.4.1 – Building Heights

8.2.6.7.5 SOLAR ACCESS PLAN



Figure 8.2.6.7.5.1 – Solar Access Plan - Melrose Park South



Figure 8.2.6.7.5.2 – Solar Access Plan – Melrose Park North

8.2.6.7.6 STREET SETBACKS

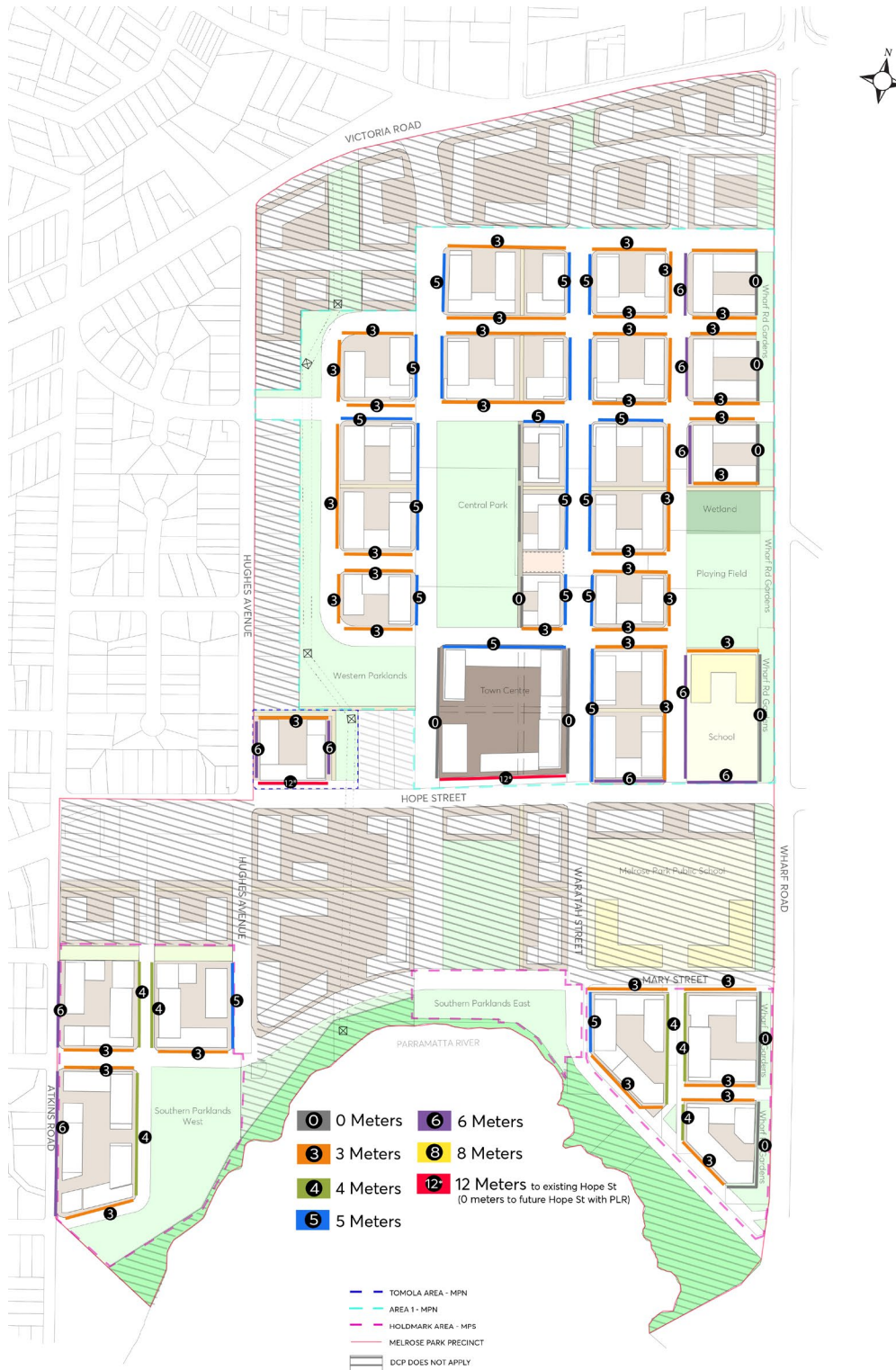


Figure 8.2.6.7.6.1 – Street Setbacks

8.2.6.7.7 PUBLIC OPEN SPACE

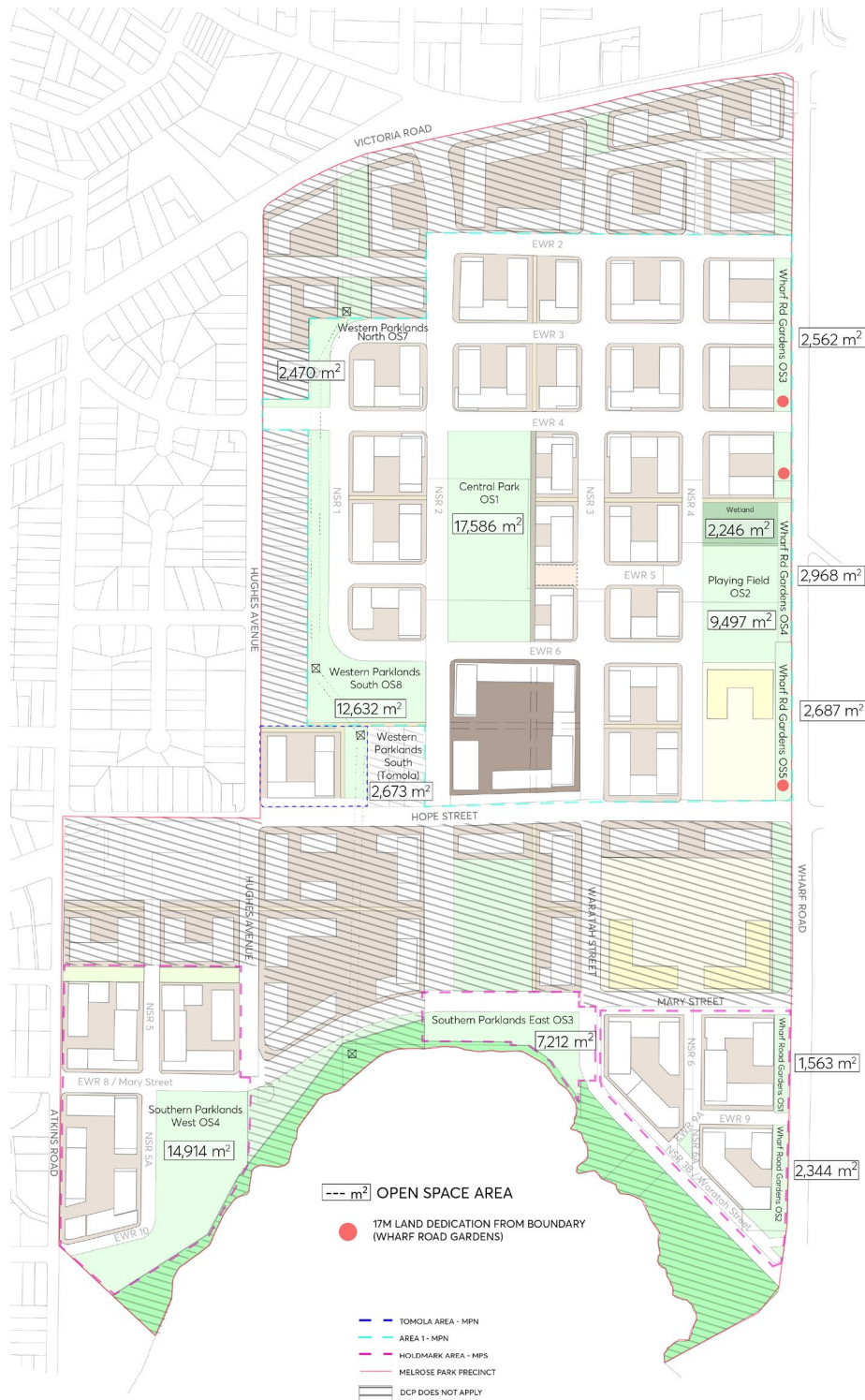


Figure 8.2.6.7.7.1 – Public Open Space

8.2.6.7.8 STREET HIERARCHY

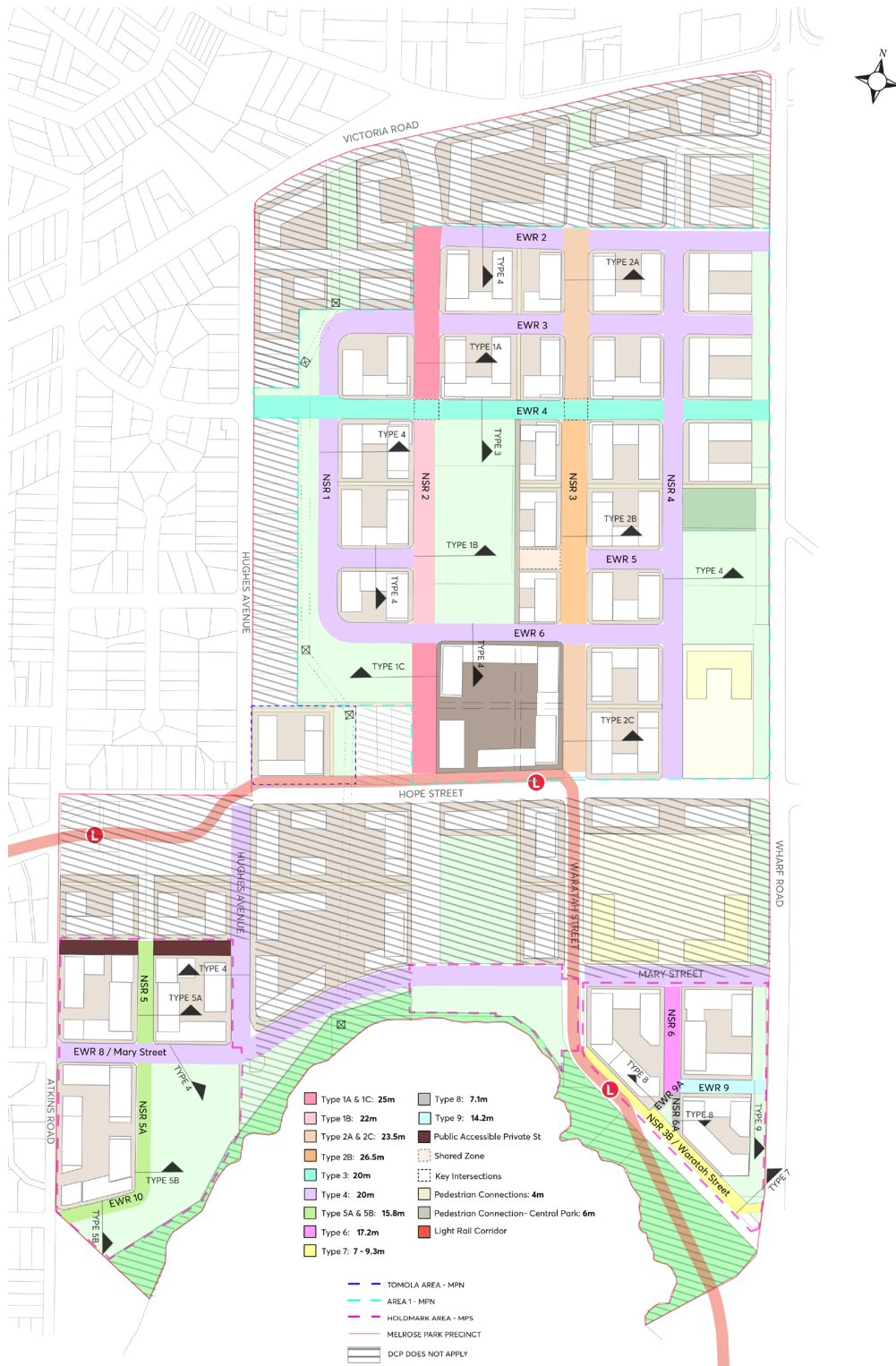


Figure 8.2.6.7.8.1 – Street Hierarchy

8.2.6.7.9 PUBLIC DOMAIN PLAN



Figure 8.2.6.7.9.1 – Public Domain Plan - Melrose Park South

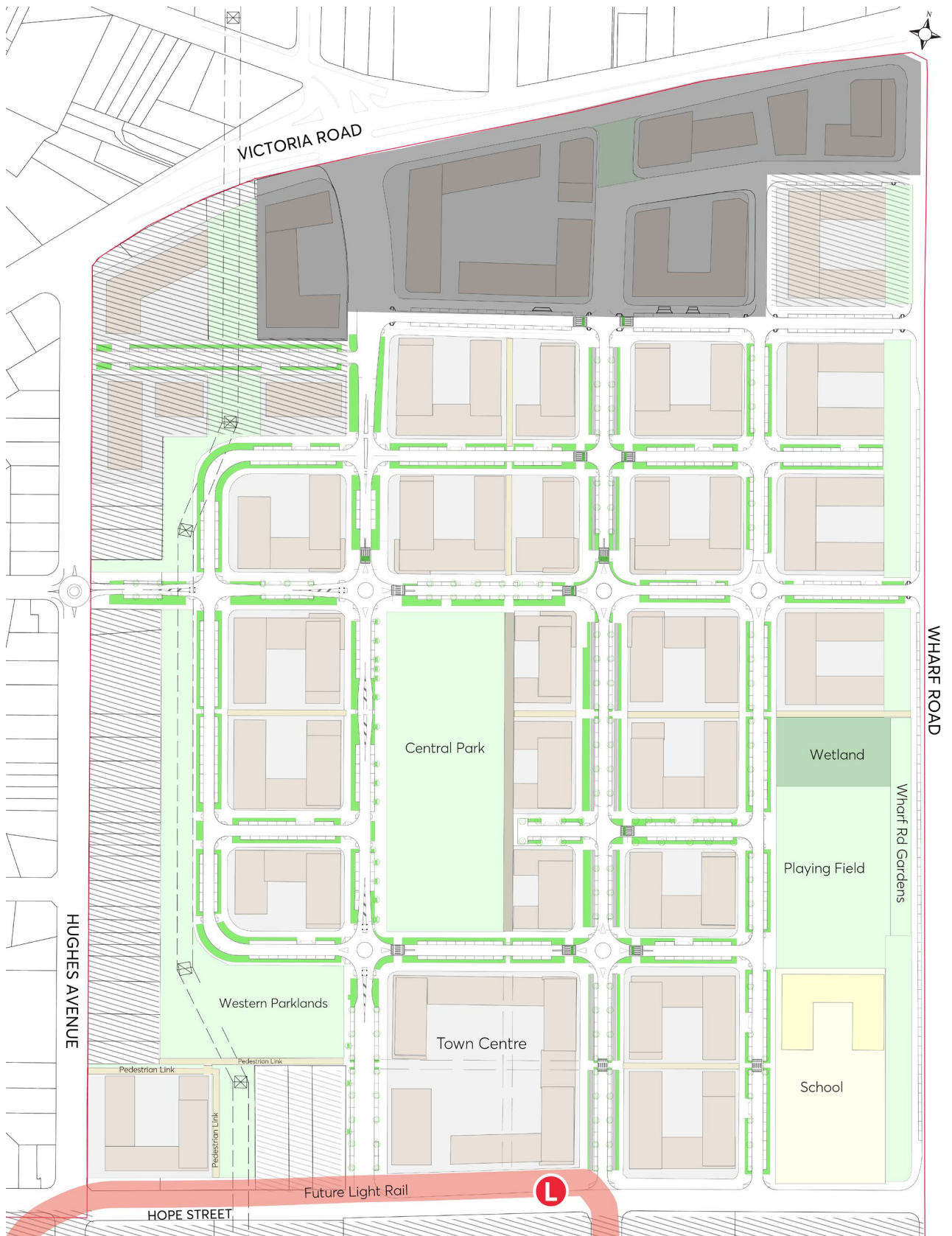


Figure 8.2.6.7.9.2 – Public Domain Plan - Melrose Park North

8.2.6.7.10 INDICATIVE APPLICATION OF BUILDING ENVELOPES

The purpose of this information is to clarify for the architects and assessment officers how the masterplan and the setback controls are to be interpreted.

Part 1 – Setbacks provides information and a table of how the upper-level setbacks to all buildings above are determined on each block.

Part 2 – Illustrated Examples provides drawings of how the height and setbacks are to be applied. The lots selected are D, G and EA because they show different building types and different topography.

PART 1 SETBACKS

Assumptions

Base Building Element

- The perimeter block height is generally 6 storeys.
- Block G is 4 storeys.
- The Town Centre is 2 retail + 3 car parking levels sleeved with residential.
- The 6 storey and 4 storey elements of all buildings must extend to the required street setbacks and align with the streets.
- The podium of the Town Centre must extend to the street setbacks.

Length and Width of Buildings

- The length of buildings that are 10 storeys and above are drawn at 50 metres.
- The width of buildings aligned East-West are drawn at 20 metres.
- The width of buildings aligned North - South without tower are drawn at 20 metres.
- The width of buildings aligned North -South with tower are drawn at 22 metres.

Changes to the length and width in the detail design of buildings may alter some of the setbacks and heights but these differences will only be minor.

Alignments

The Masterplan has organised the building envelopes at ground and above to define a series of spaces. For example:

- a) Buildings C1, D1, D3, D4, E1 align on the southern side.
- b) Buildings A1, A2, A4, BA1, BA3 align on the southern side.
- c) Buildings C3, F3 and EA1 align on the southern side.

- d) Buildings C3, F3 align on the northern side.
- e) Buildings F3, G1, EB1, EB3 align on the southern side.
- f) Buildings F6, F4, G4, EB4, EB6 align on the southern side.
- g) Buildings K1, G7, H1, H3 align on the southern side.
- h) Buildings O4, O6 align on the southern side.
- i) Buildings O1, O3 align on the northern side.

Minor discrepancies in the Masterplan drawings are evident because of scale of the drawing and where streets are slightly non orthogonal.

Table 8.2.6.7.10.1 – Building Setbacks Above Perimeter Block and Podium

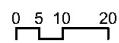
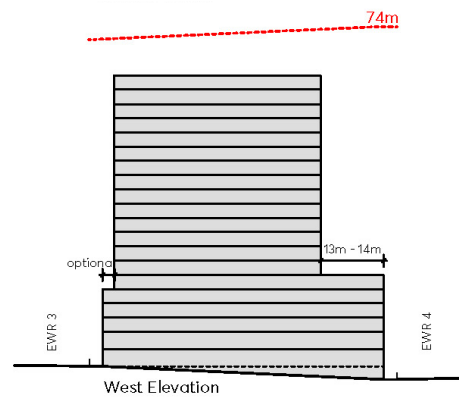
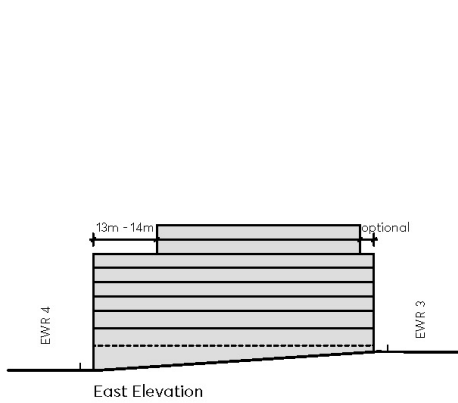
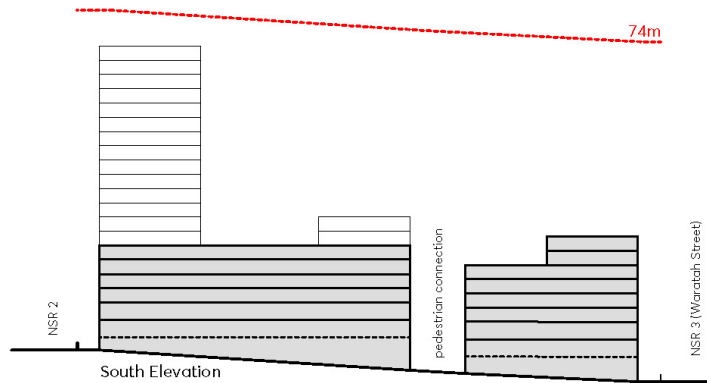
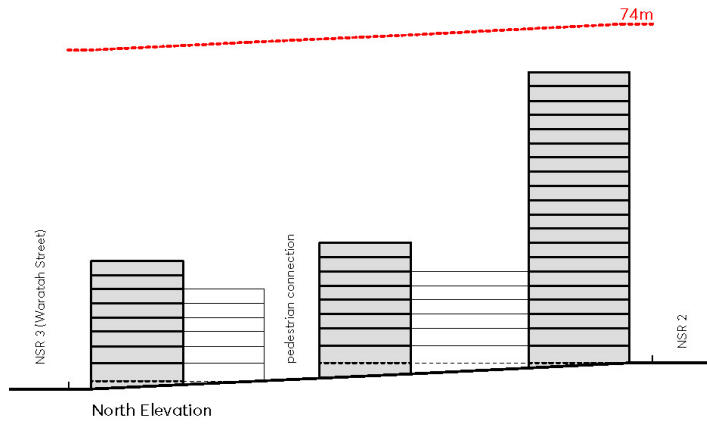
Lot	Building Number	No. of Storeys	Setback Above Perimeter Block Height		
			North	East + West	South
X	X1	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	X2	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	X3	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	X4	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
A	A1	22	Optional	Nil	Mandatory - Approx. 13-14m
	A2	8	Optional	Nil	Mandatory - Approx. 13-14m
	A4	20	Optional	Nil	Mandatory - Approx. 13-14m
BA	BA1	22	Optional	Nil	Mandatory - Approx. 13-14m
	BA3	8	Optional	Nil	Mandatory - Approx. 13-14m
Y	Y2	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
BB	BB1	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
C	C3	16	Nil	Nil	Nil
	C1	8	Nil	Nil	Mandatory - Approx. 13-14m
D	D1	20	Optional	Nil	Mandatory - Approx. 13-14m
	D3	8	Optional 1 or 2 Storeys	Nil	Mandatory - Approx. 13-14m
	D4	8	Optional 1 or 2 Storeys	Nil	Mandatory - Approx. 13-14m
E	E1	8	Optional 1 or 2 Storeys	Nil	Mandatory - Approx. 13-14m
	E3	19	Remainder	Nil	Mandatory to align with EA1 and C3
EA	EA1	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	EA4	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	EA5	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
F	F3	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	F1	10	Nil	Nil	Remainder
	F6	8	Optional 1 or 2 Storeys		
	F4	10	Remainder	Nil	Nil
G Base Perimeter Block of 4 storeys					

Lot	Building Number	No. of Storeys	Setback Above Perimeter Block Height		
			North	East + West	South
G	G1	20	Block Dimension minus length of tower	Nil on West Block Dimension minus width of tower on East	Nil
	G4	10	Block Dimension minus length of tower	Nil on West Block Dimension minus width of tower on East	Nil
	G7	20	Block Dimension minus length of tower	Nil on West Block Dimension minus width of tower on East	Nil
EB	EB1	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	EB3	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	EB4	22	Block Dimension minus length of tower	Nil	Nil
	EB6	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
K	K3	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	K1	22	Nil	Nil	Nil
H	H1	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	H3	20	Block Dimension minus length of tower to align with G7	Nil	Nil
O	O1	22	Block Dimension minus length of tower	Nil	Nil
	O3	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	O4	8	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys	Optional 1 or 2 Storeys
	O6	24	Block Dimension minus length of tower	Nil	Nil
TOWN CENTRE Setbacks to the podium are flexible but buildings are to align with the streets. 12 metres between N6 + N9; 12 metres between N2 + N7					
N	N2	24	N2 to align with N6 North Side		
	N6	15	N6 to align with N9 East Side and West Side		
	N7	12	N7 to align with N2 West Side		
	N9	24			

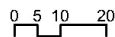
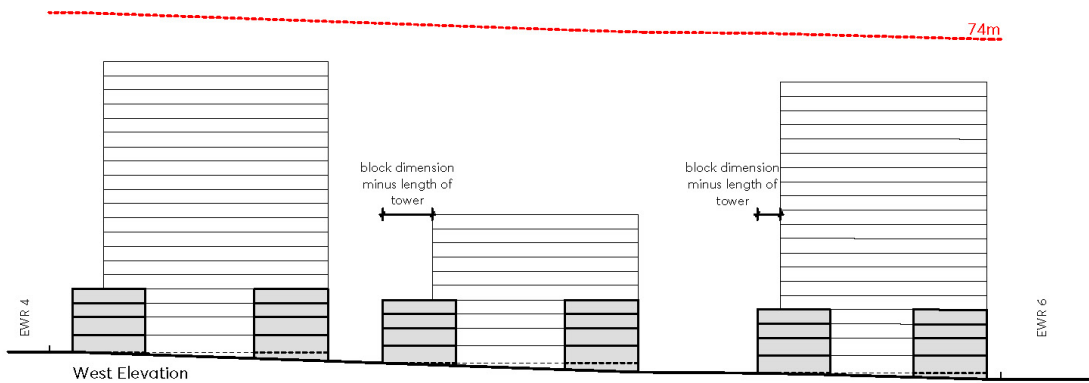
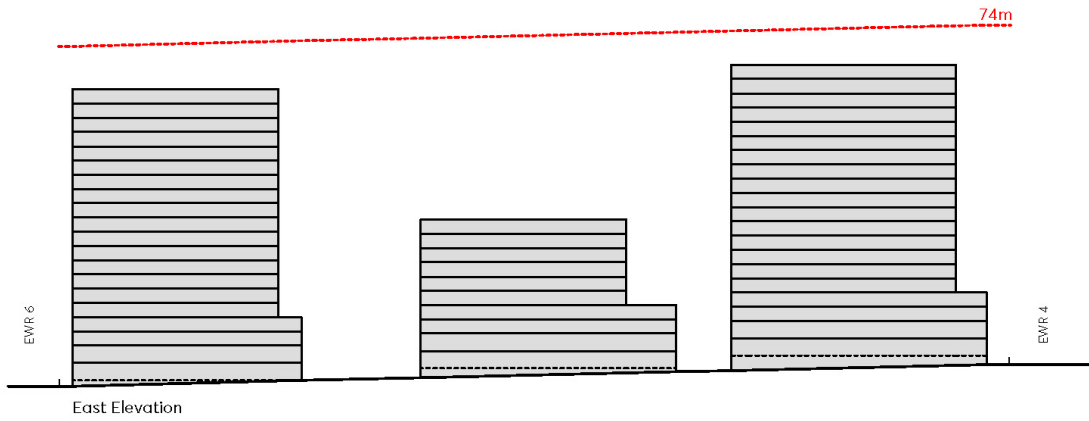
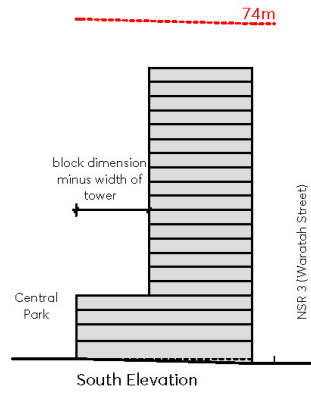
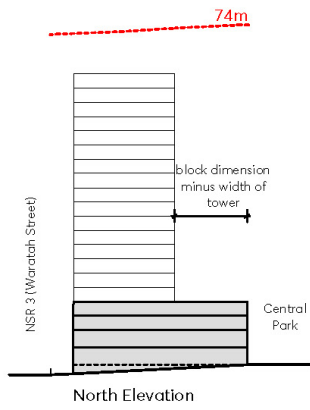
PART 2 ILLUSTRATED EXAMPLES

Examples of Blocks D, G and EA have been prepared to illustrate how the height and setback controls are interpreted. These illustrated that:

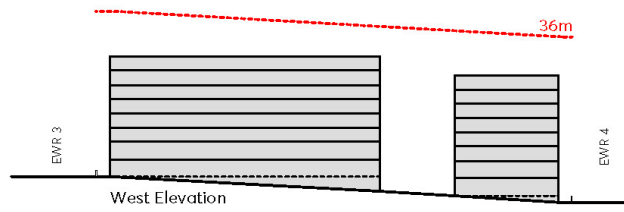
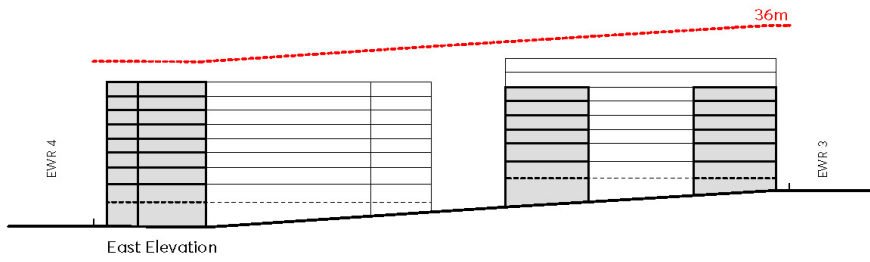
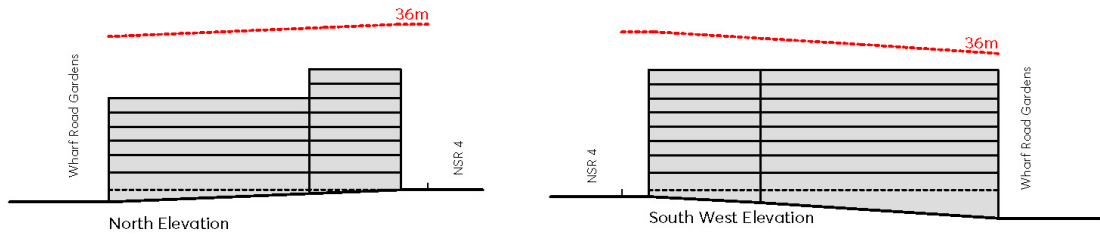
- The different topographical levels are to be taken up in the lower levels, so the upper levels of buildings are not stepped.
- The height nominated on the Building Height Drawing Appendix 2 for the base building (4 and 6 storeys) is to be located on the high side of the lot and the additional height on the lower side of the lot.



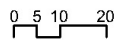
BLOCK D



BLOCK G



Optional setbacks of 1 or 2 storeys on 8 storey component



BLOCK EA

8.2.6.8 APPENDIX B – WATER MANAGEMENT CONTROL PLAN

8.2.6.8.1 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 VRS and Melrose Park precinct during severe storms. There is a catchment above Victoria Road that contributes to this overland flow.

At present, overland flow and drainage across Melrose Park is informal but allows overland stormwater to be delayed on its passage through the site into the two key discharge points – Wharf Road, near Jennifer Park, and Hope Street.

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.

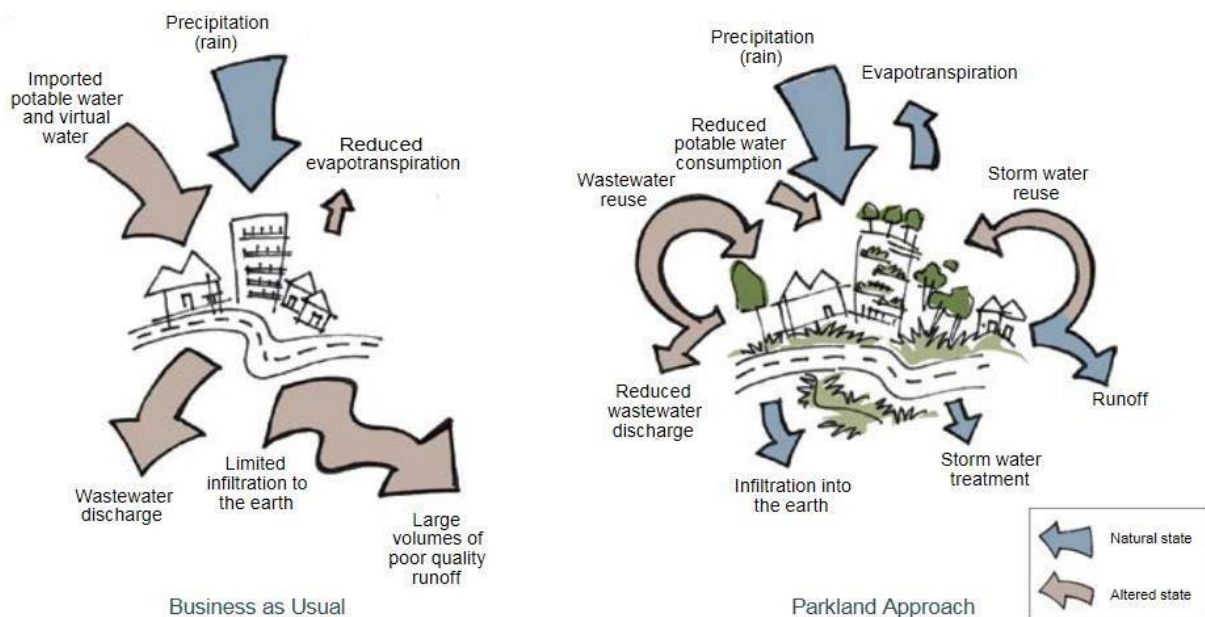


Figure 8.2.6.7.1.1 – Business as Usual’ and ‘Parkland Approach (Source: Urban Typologies and Stormwater Management – achieving a cool green liveable Western Parkland City, Sydney Water, Bligh Tanner and Architectus 2020)

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 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.

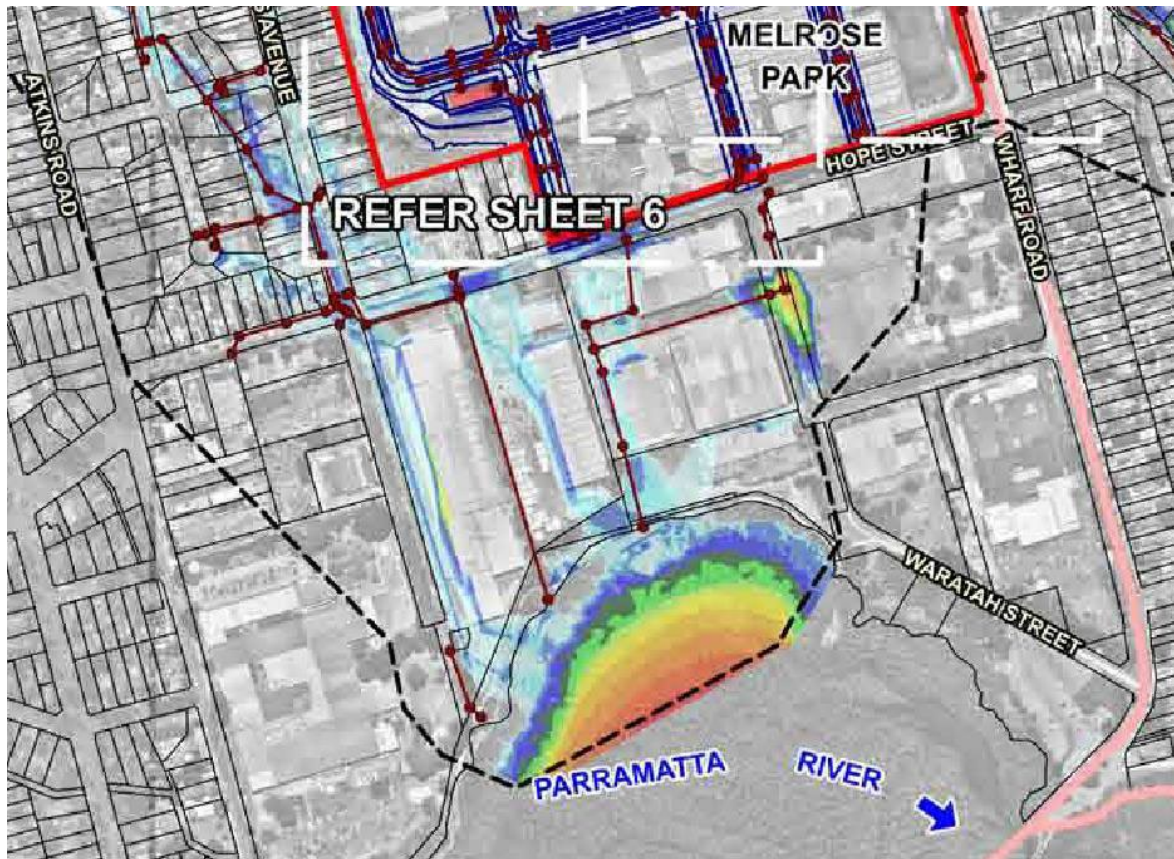


Figure 8.2.6.7.1.2 – Overland flow 1% AEP fully blocked condition. Indicative only. Not adopted by Council

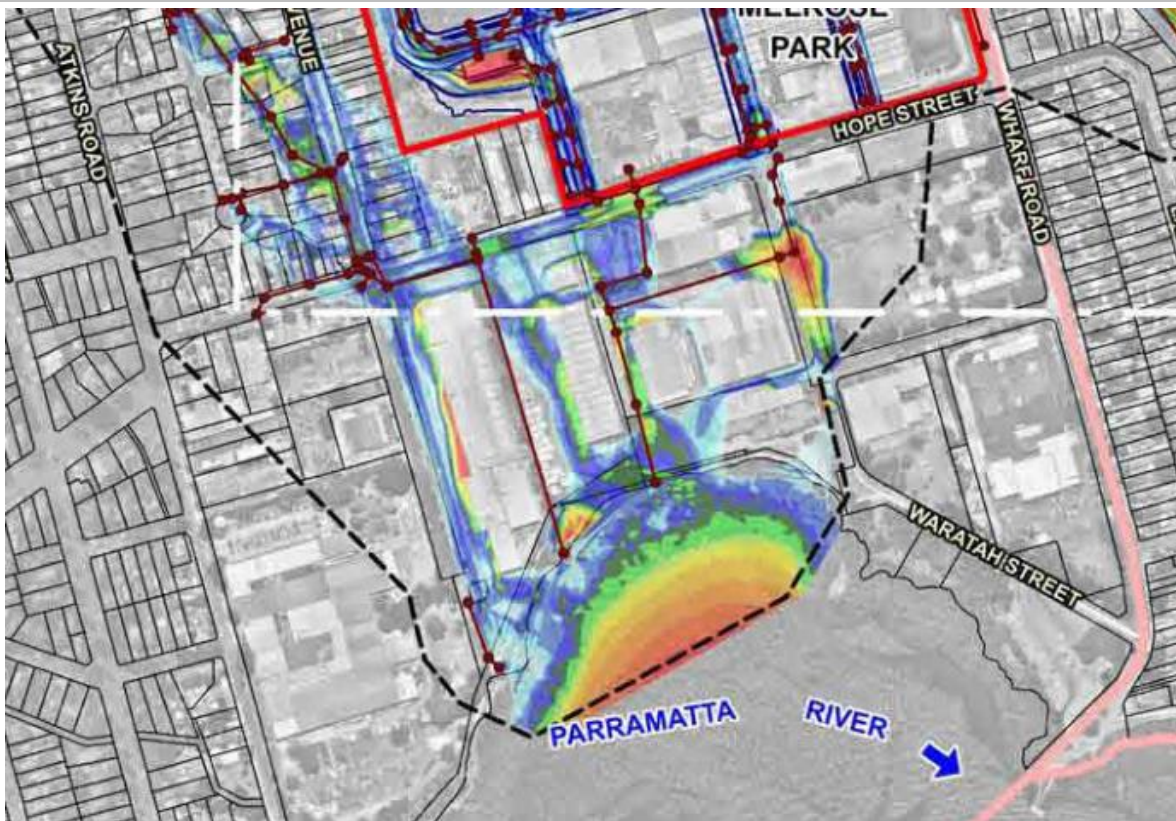


Figure 8.2.6.7.1.3 – Overland flow. PMF Indicative only. Not adopted by Council

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 DCP.

The development of the Parramatta Local Government Area 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 Precinct. It applies to water management as follows.

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

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

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

8.2.6.8.2 FLOODING AND OVERLAND FLOW MANAGEMENT

Principles

- 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.

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.

Controls

- C.01 A set of hydrologic and hydraulic models are to be developed of the catchments within which the Melrose Park 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 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 0.5 metre 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.

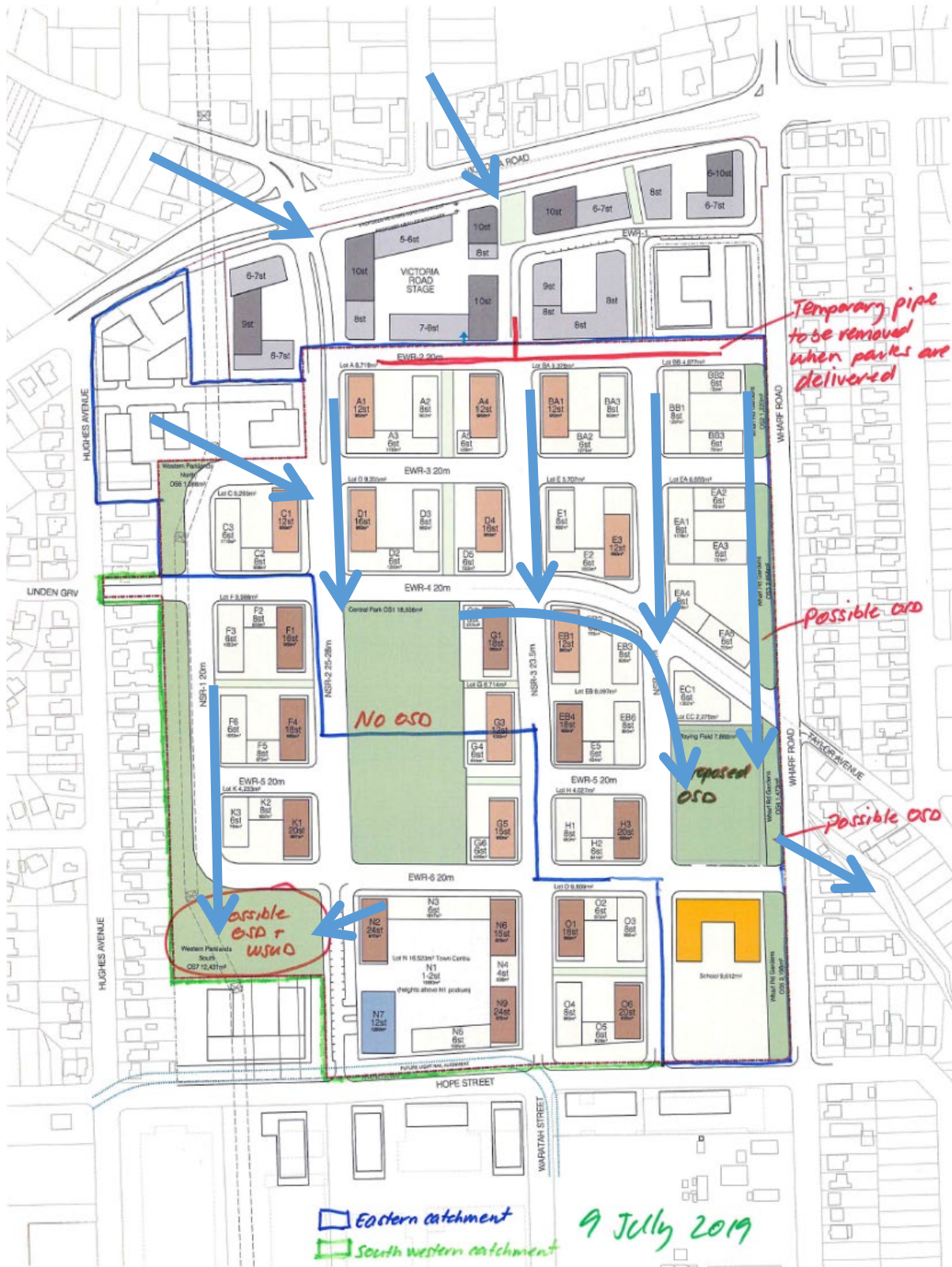


Figure 8.2.6.7.2.1 - Sketch of Melrose Park North approximate overland flow paths and public detention basins. For details refer Lyall and Associates drawings dated 5 November 2020 - Figure 6: Indicative Extent and Depth of Inundation - Post-VRS and PP Development and Complete Blockage Conditions – 1% AEP (9 sheets) (Included as attachment)

8.2.6.8.3 ROAD AND PUBLIC DOMAIN DRAINAGE

Principles

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

Objectives

- 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

- 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.

8.2.6.8.4 FLOOD REDUCTION USING PUBLIC AND PRIVATE STORMWATER DETENTION SYSTEMS

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 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 private OSD will be waived.

Principles - private stormwater detention

- P.01 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:
 - a) 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.
 - b) To reduce post-development peaks throughout the catchment in a 50% AEP storm event to be as close to natural levels as practical and
 - c) To encourage the integration of OSD with other water quality WSUD measures.
 - d) 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

- 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:
- Increase flood losses.
 - Damage public assets.
 - Reduce property values.
 - 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

- C.02 The private lot stormwater drainage system (including surface gradings, gutters, pipes, surface drains and overland flow paths) for the property must:
- 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
 - 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.
 - direct all site runoff to the Private OSD. That is the storage is 'on-line'.
- C.03 The Private OSD is to have two orifices (or other) outlets and a non-piped overflow spillway.
- C.04 The primary or lower orifice or controlled discharge must have a SRDL of 40 L/s/ha. This must be located as close as possible to the storage invert.
- C.05 A secondary orifice must be provided located at the base of a discharge control pit (DCP) providing HED with a SRDU of 150 L/s/ha.
- C.06 SRDL (40 L/s/ha) and SRDU (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.07 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 (SSRL) reaches 245 m³/ha.
- C.08 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.09 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 m³/ha).
- C.10 The SSRT and SSRL 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.11 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.12 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.13 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.14 In general, the maximum depth of ponding in above ground storages is 600 mm.
- C.15 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.16 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.17 Balustrades (fences) must comply with the BCA (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.

Table 8.2.6.7.4.1 – Private OSD System Glossary

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)
SRDL	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 SRDL. In the case of the Melrose Park North Precinct, the SRDL has been set at 40 L/s/ha.
SRDU	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 SRDU has been set at 150 L/s/ha.
SSRL	33 the minimum volume (in m ³ /hectare or in m ³ 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 SSRL has been set at 245 L/s/ha.
SSRT	3 the total volume (in m ³ /hectare or in m ³ 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 SSRT has been set at 396 L/s/ha.

8.2.6.8.5 PUBLIC STORMWATER DETENTION SYSTEMS

Principles

- 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 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 public OSD will be waived.

Objectives

- 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

- 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. Basins must not pose a safety hazard or affect overall usability of the playing field under normal weather conditions.

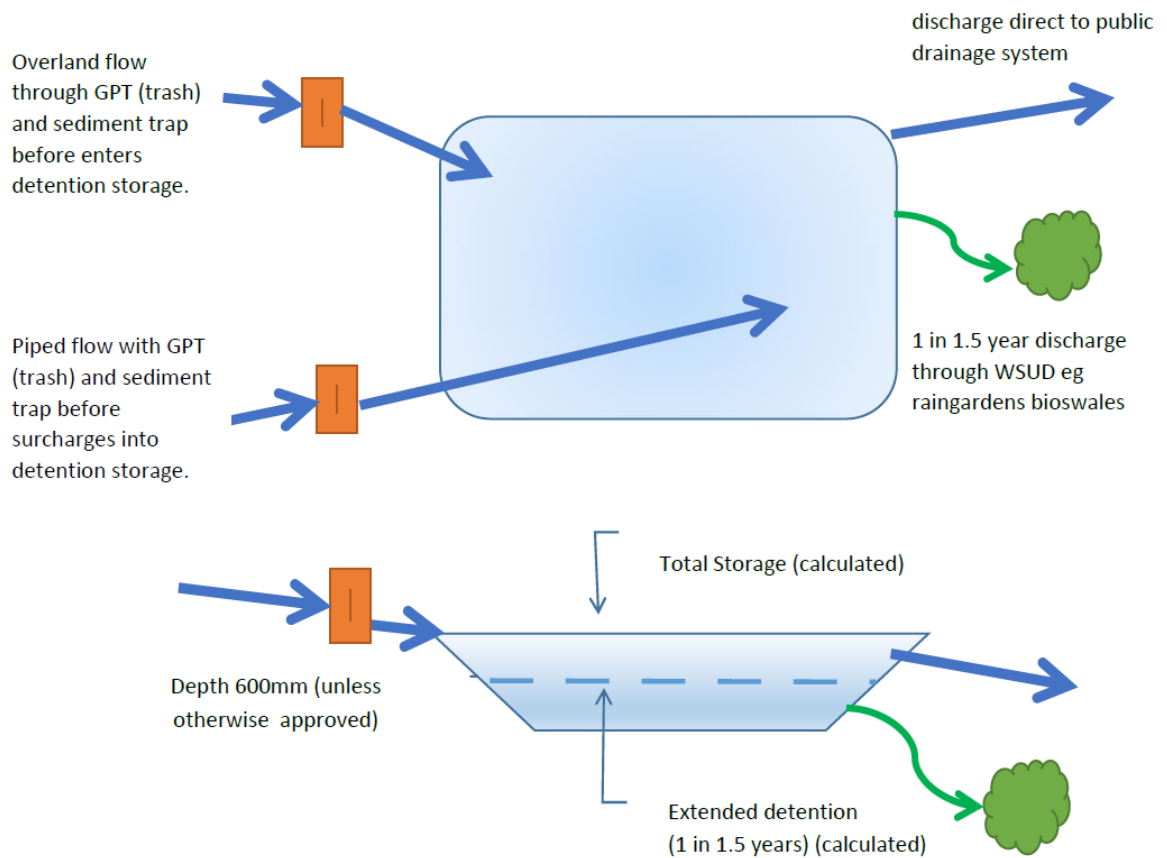


Figure 8.2.6.7.5.1 – Melrose Park - Typical above-ground overland flow detention 1% AEP (1 in 100 year)

8.2.6.8.6 WSUD - ENVIRONMENTAL MANAGEMENT OF PRIVATE AND PUBLIC LOW FLOWS WITH WATER SENSITIVE URBAN DESIGN

Principles

- 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 Protect and enhance natural water systems (creeks, rivers, wetlands, estuaries, lagoons, groundwater systems etc.).

Objectives

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

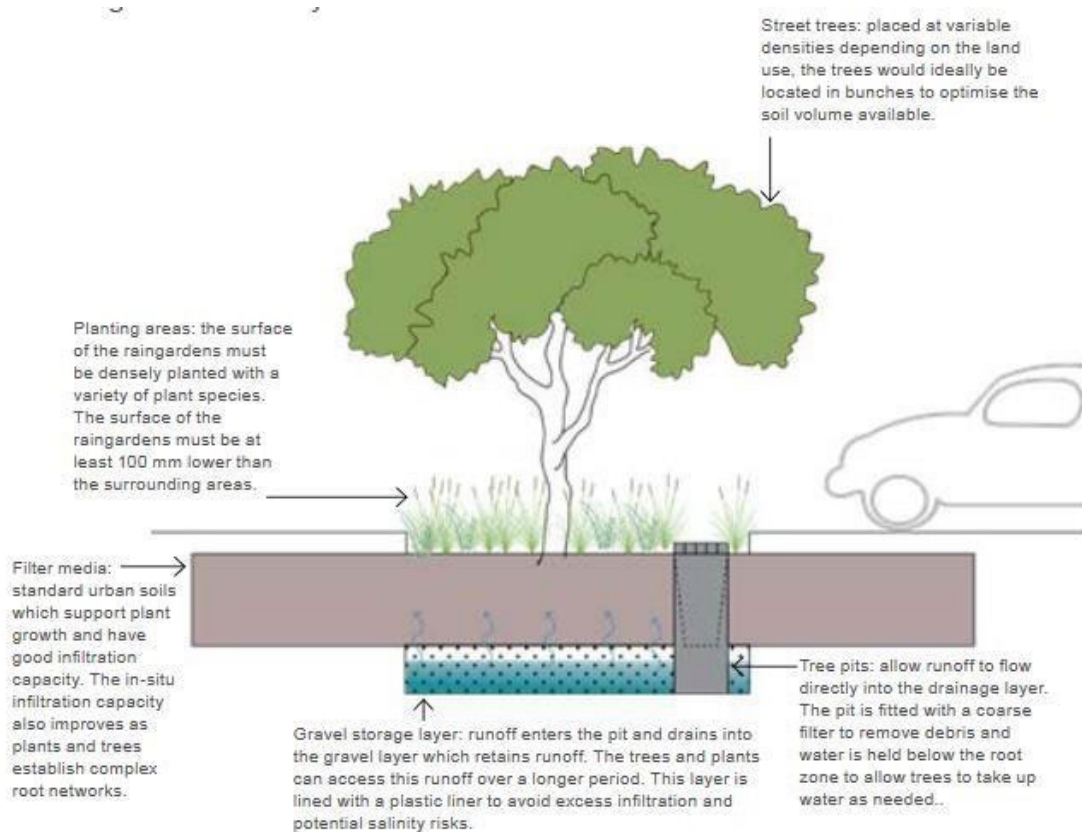


Figure 8.2.6.7.6.1 – Street Trees using WSUD – design and benefits (Source: Urban Typologies and Stormwater Management – achieving a cool green liveable Western Parkland City, Sydney Water, Bligh Tanner and Architectus 2020)



Figure 8.2.6.7.6.2 – Stormwater Swales (Source: Sydney Water – ‘Water Sensitive Urban Design’ SW277 03/18)

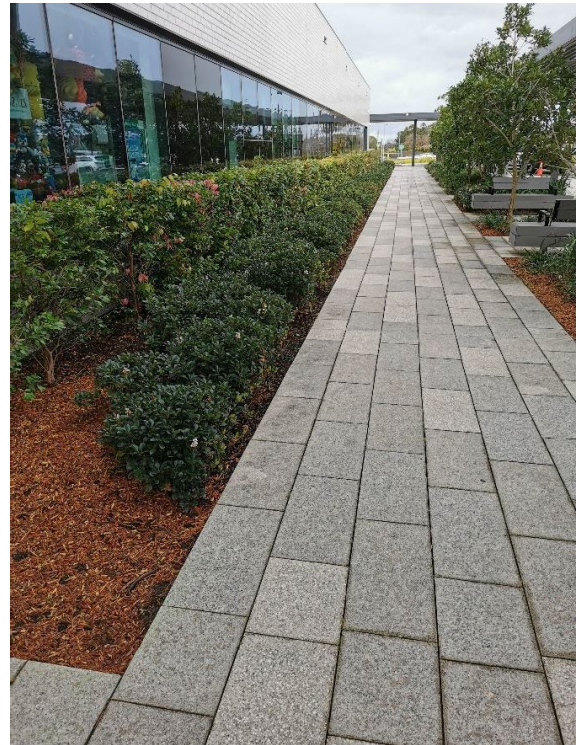


Figure 8.2.6.7.6.3 – WSUD at Northern Beaches Hospital

Controls

- 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).
 - o) 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.
- C.06 WSUD must be adopted for the following development types:
- a) Residential on lots greater than 1500m² or with 5 or more dwellings.
 - b) 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.)

- c) Subdivisions of Industrial/commercial properties.
 - d) Subdivision of residential properties where the existing lot is greater than 1500m² or 5 or more lots are being created.
 - e) Other development >\$50k in value which exceeds either of the following criteria:
 - Development which alters and/or adds more than 150m² of impervious area.
 - Development which results in an increase in gross floor area of more than 150m².
- C.07 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.08 WSUD must achieve the following pollution reduction targets:

Table 8.2.6.7.5.1 – WSUD Pollution Reduction Targets

Pollutant NOTE: Reductions in loads are relative to the pollution generation from the same development without treatment.	Performance Target (% 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.09 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.10 Rainwater is a valuable water resource to be harvested and used if possible.
- C.11 The receiving waterway must be protected and enhanced.
- C.12 Where water sensitive urban design measures are required, Development Application 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.

- d) Council requires simple WSUD landscape designs that achieve water management objectives without unusual or complicated maintenance demands.
 - e) The Development Application 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.
 - f) The Development Application must be accompanied with a Management and Maintenance Plan for the WSUD proprietary treatment devices (such as GPT's, filters etc).
 - g) 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.13 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 1997* and its Regulations, or a pollution control approval issued by the NSW Environment Protection Authority for Scheduled Premises.



Figure 8.2.6.7.6.4 – WSUD at Northern Beaches Hospital

8.2.6.8.7 RAINWATER HARVESTING AND USE

Principles

- P.01 Rainwater harvesting and use is encouraged in any water management system for individual lots and for the public domain.
- P.02 Rainwater captured 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 8.2.6.5 – Sustainability of this DCP; Section 8.2.6.5.1 – Energy and Water Efficiency; and Section 8.2.6.5.2 – Recycled Water.

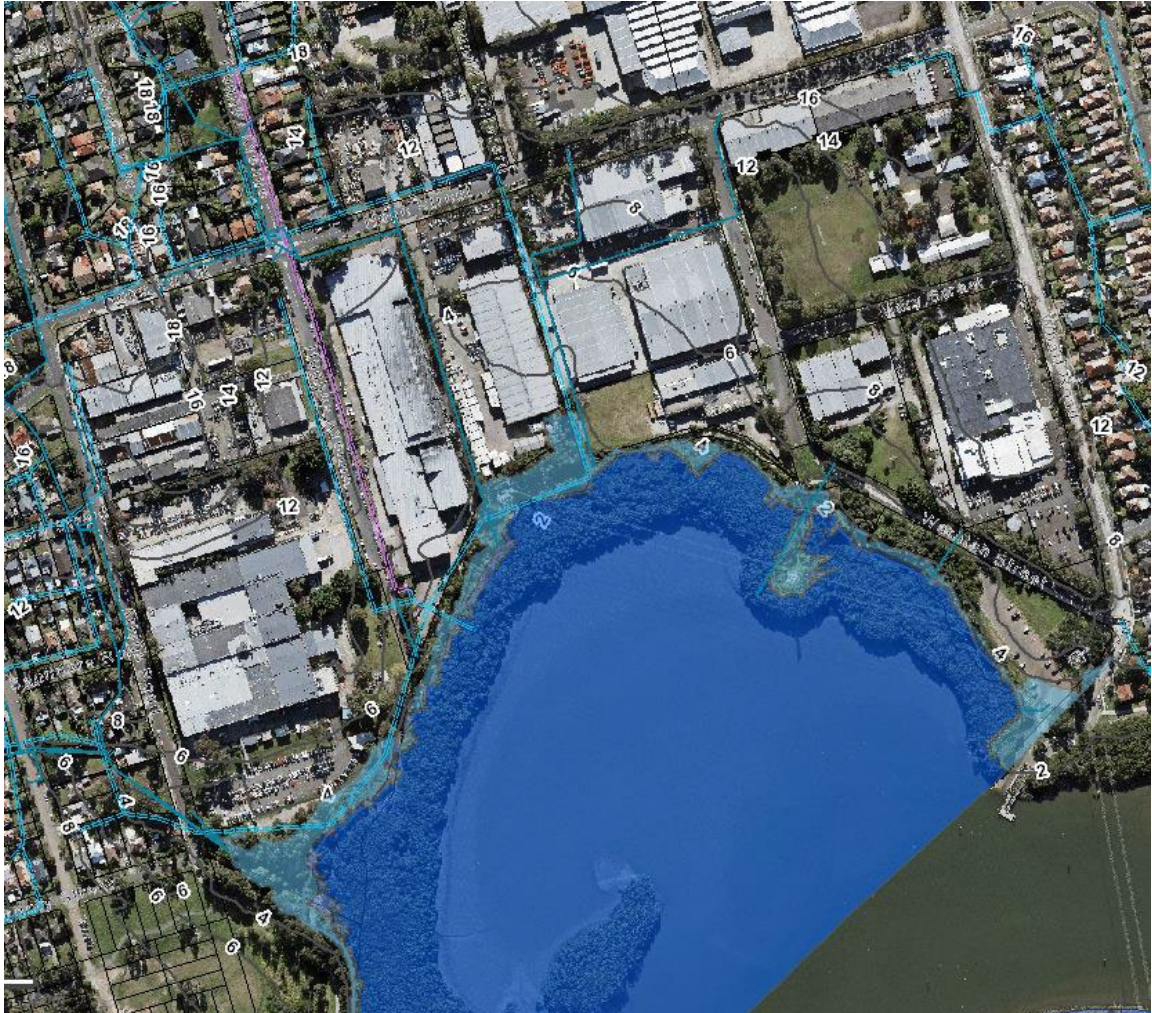


Figure 8.2.6.7.7.1 – Council GIS Parramatta River: PMF, 1% AEP and 5% AEP river flood extents as adopted by Council

Principles

- 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.

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

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://www.watersensitivecities.org.au>

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

Flood Risk Management Manual NSW 2023, <https://www.environment.nsw.gov.au/research-and-publications/publications-search/flood-risk-management-manual>

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)

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://www.waterbydesign.com.au>

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

Water Sensitive Planning Guide, <http://www.wsud.org>

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

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

8.2.6.9 APPENDIX C – MELROSE PARK NORTH FLOODING MAPS

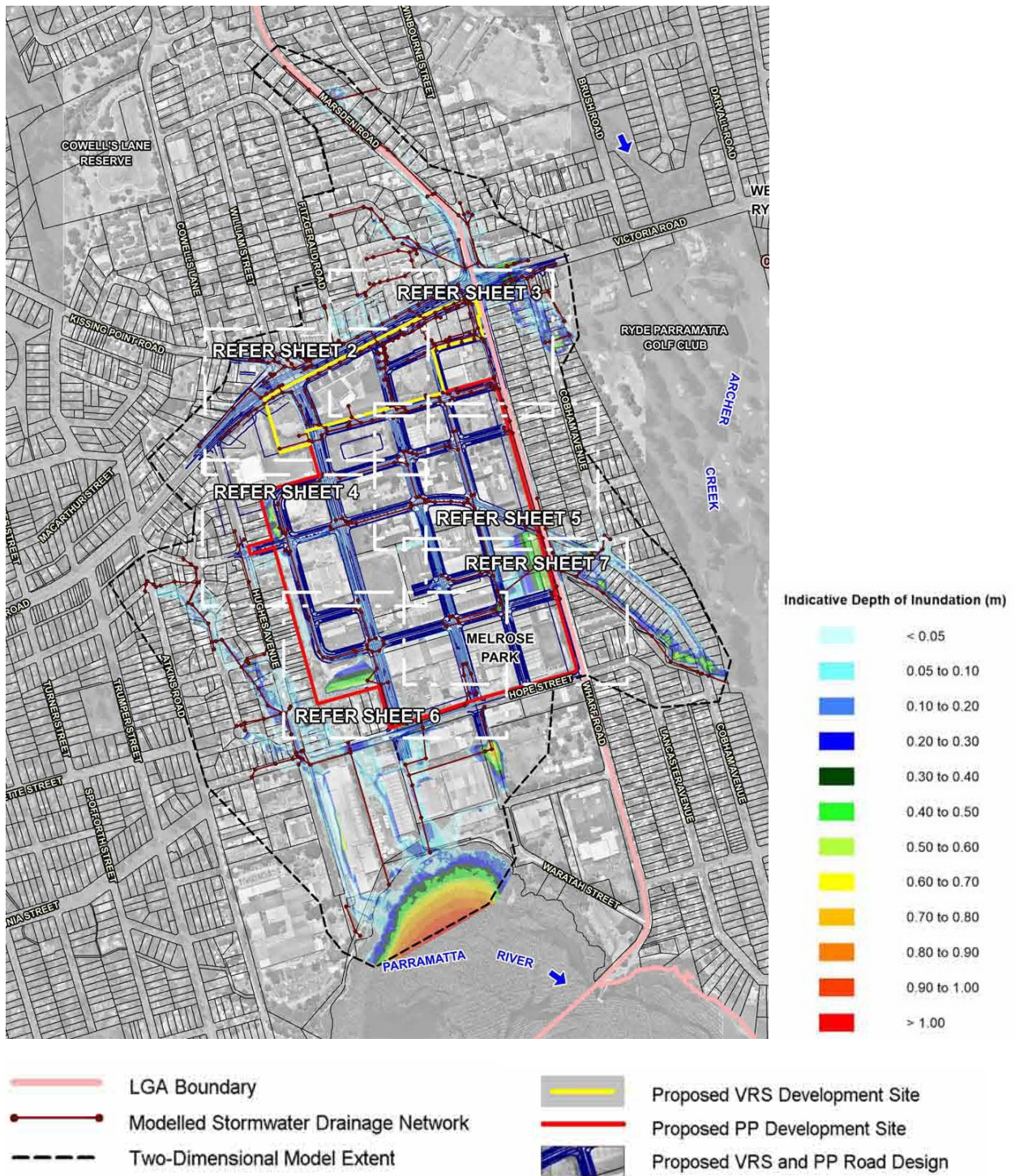


Figure 8.2.6.8.1 – Melrose Park Stormwater Sheet 1 (Source: Lyall & Associates)

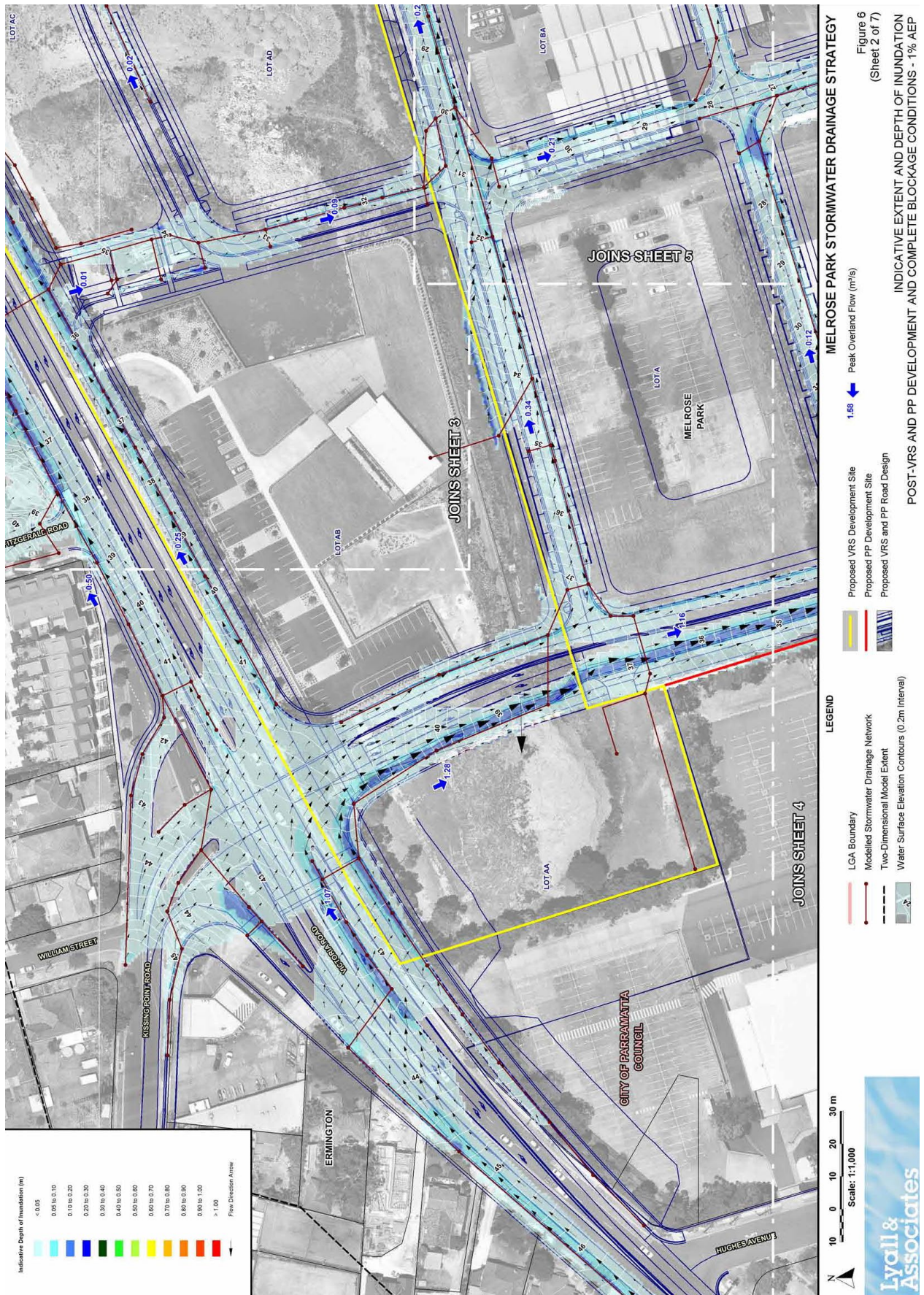


Figure 8.2.6.8.2 – Melrose Park Stormwater Sheet 2 (Source: Lyall & Associates)

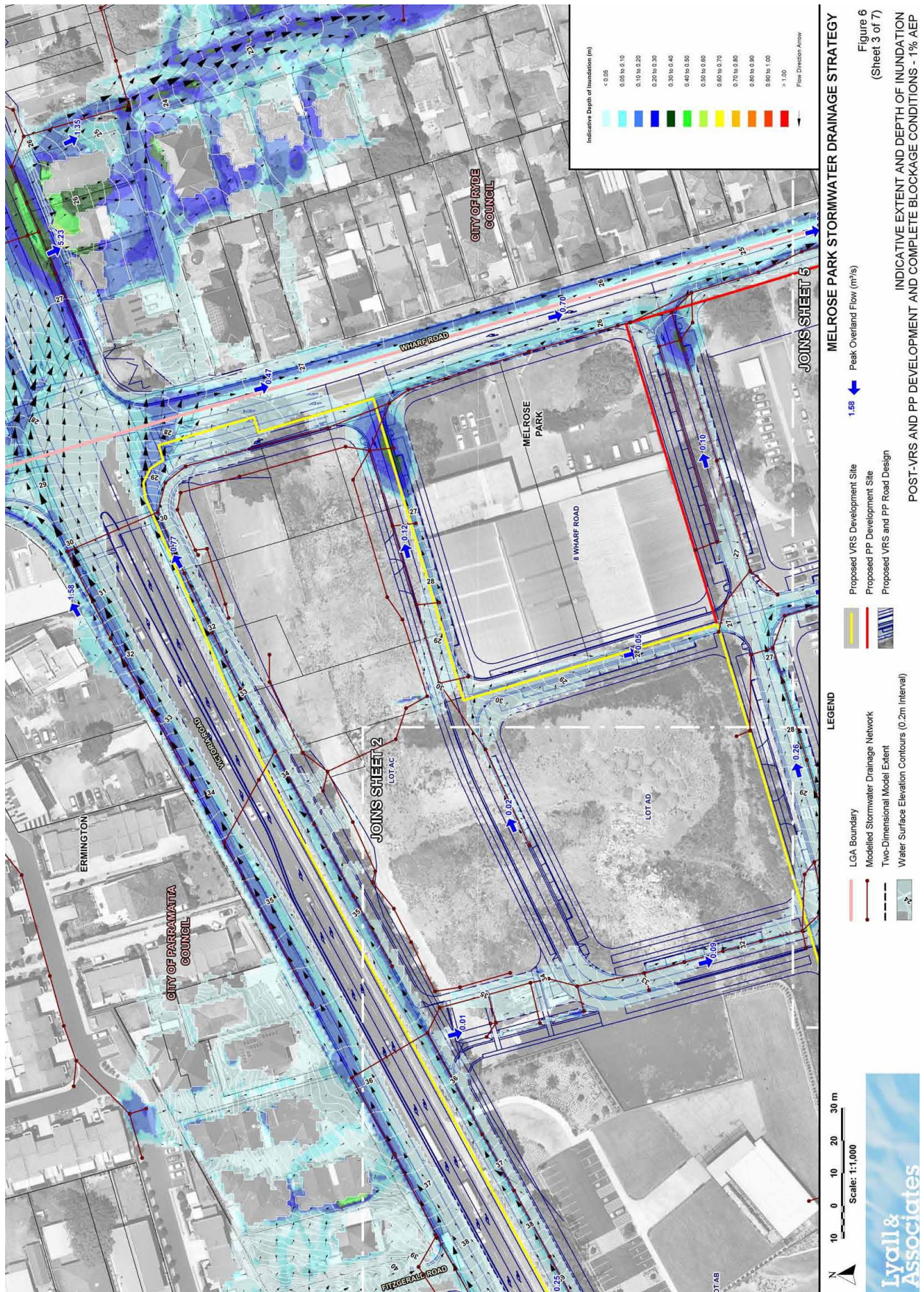


Figure 8.2.6.8.2 – Melrose Park Stormwater Sheet 3 (Source: Lyall & Associates)

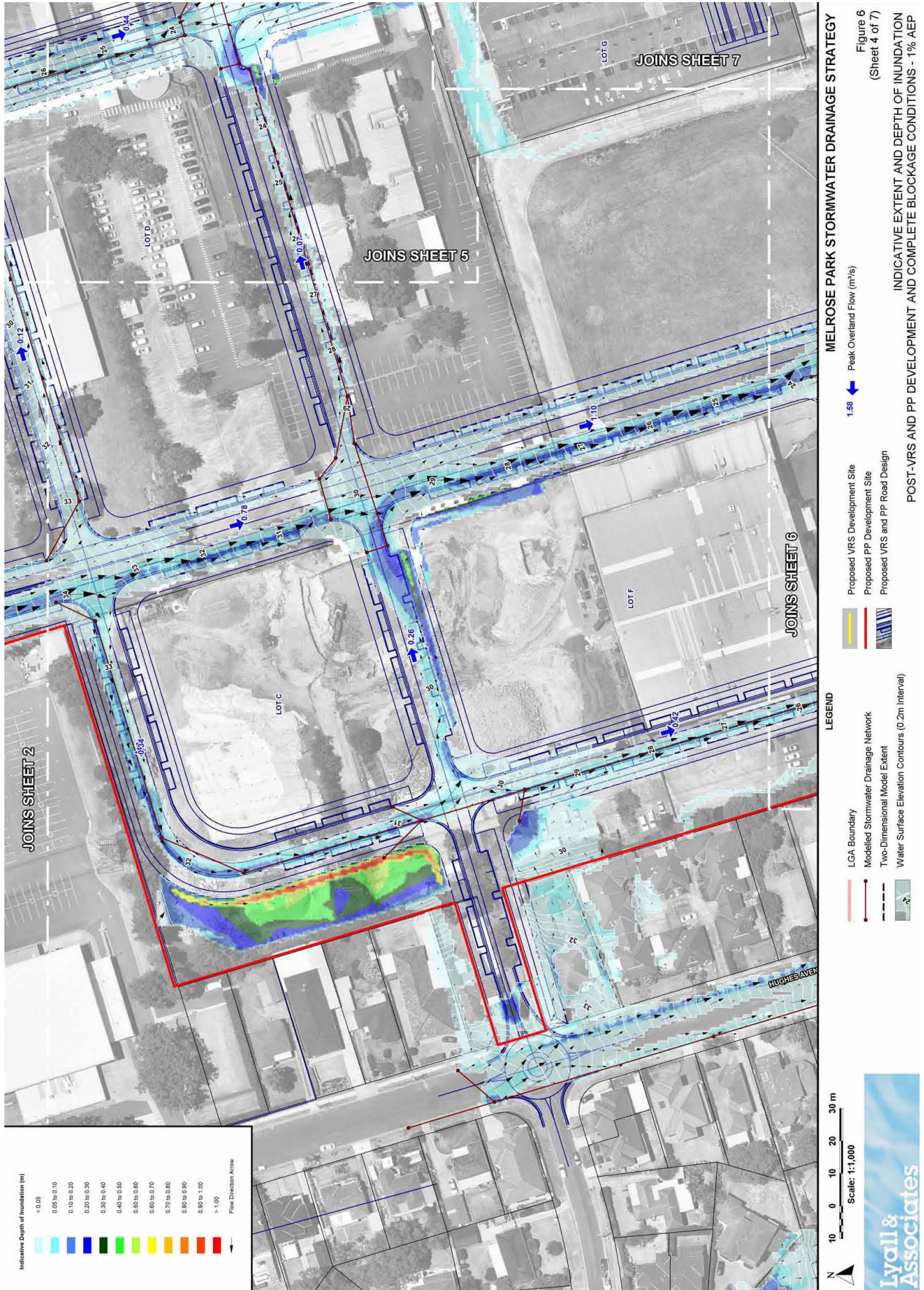


Figure 8.2.6.8.4 – Melrose Park Stormwater Sheet 4 (Source: Lyall & Associates)

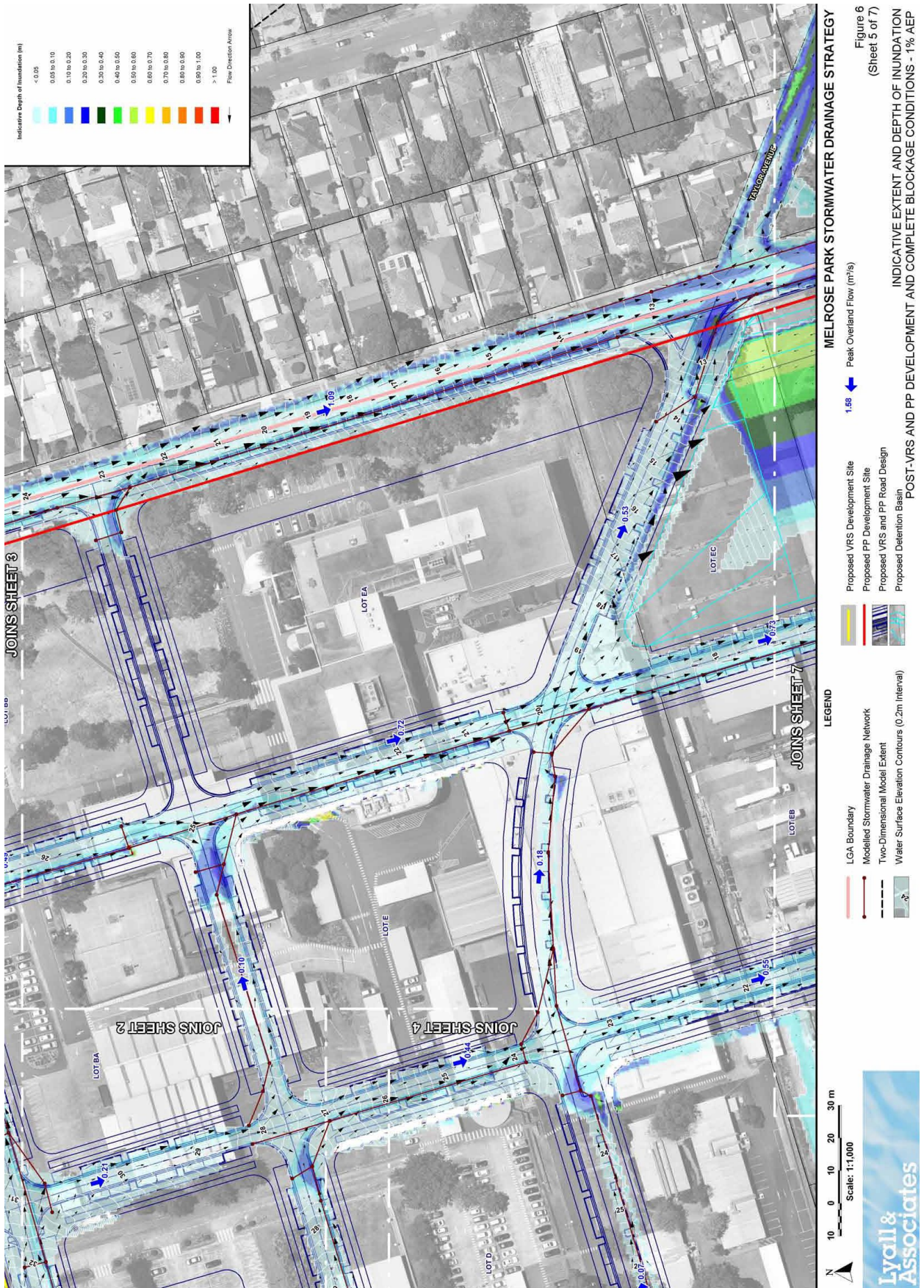


Figure 8.2.6.8.5 – Melrose Park Stormwater Sheet 5 (Source: Lyall & Associates)

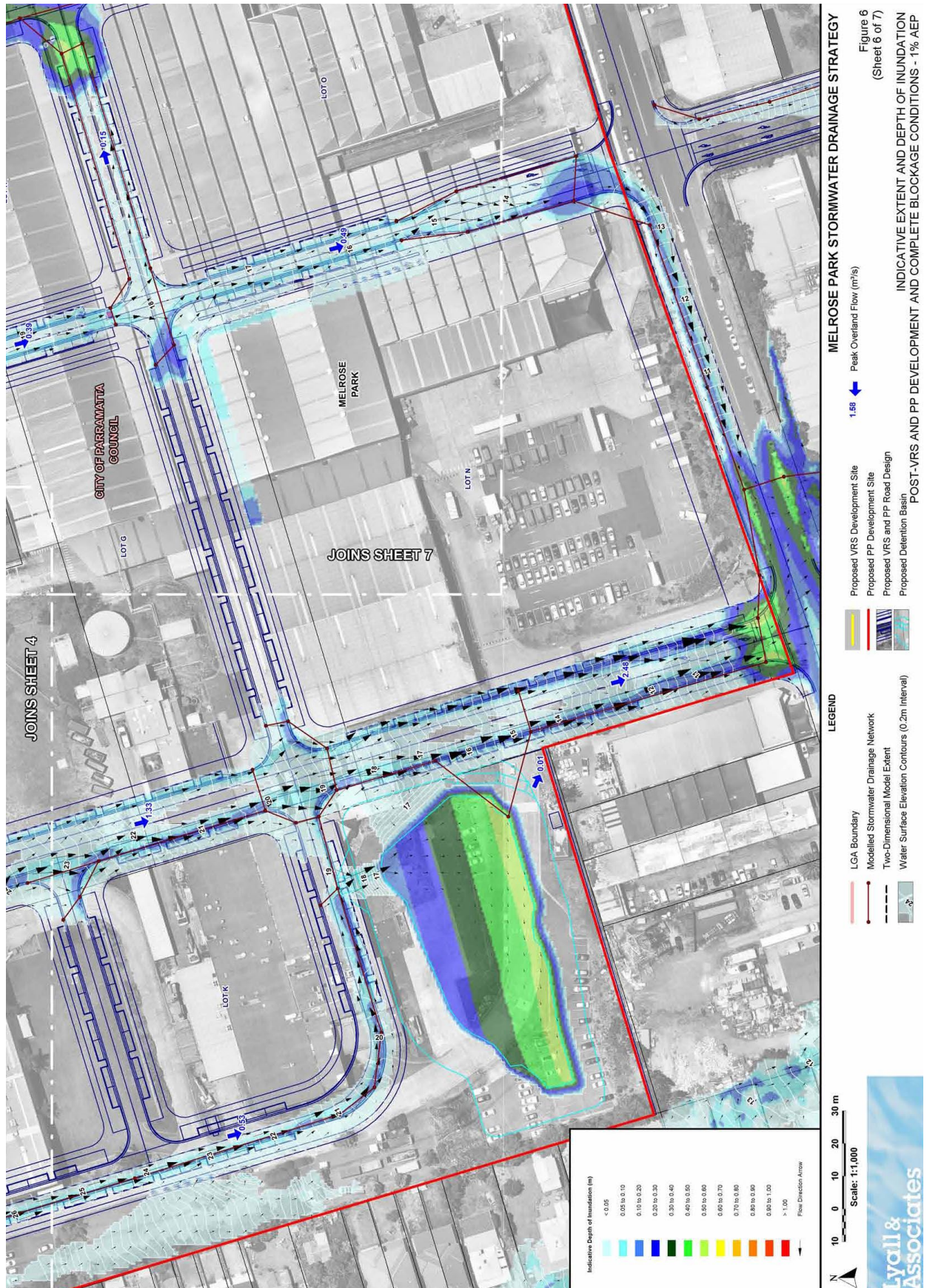


Figure 8.2.6.8.6 – Melrose Park Stormwater Sheet 6 (Source: Lyall & Associates)

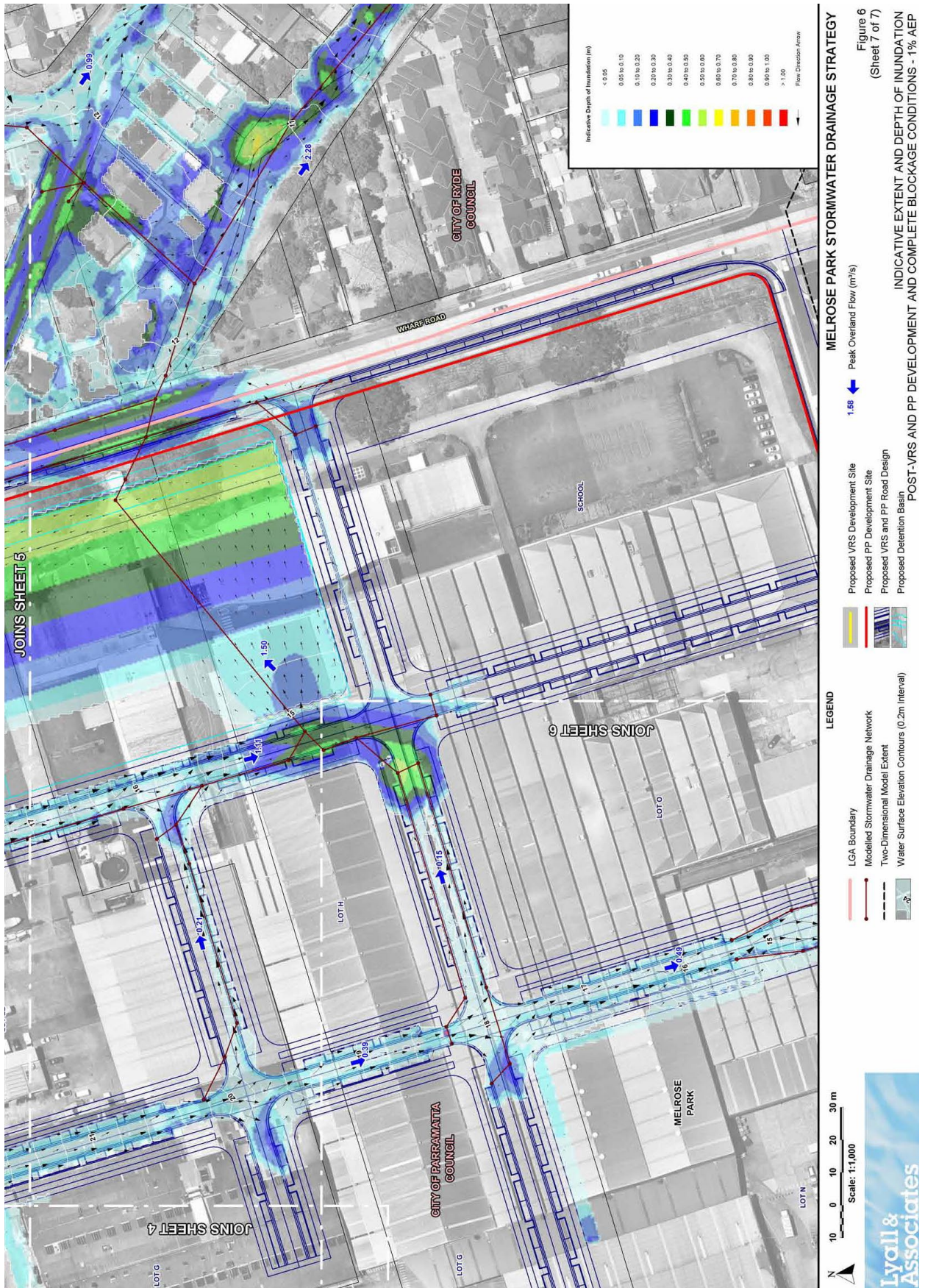


Figure 8.2.6.8.7 – Melrose Park Stormwater Sheet 7 (Source: Lyaill & Associates)