CITY OF PARRAMATTA

NOTICE OF LOCAL PLANNING PANEL MEETING

PUBLIC AGENDA

An Ordinary Local Planning Panel will be held via audio-visual means on Tuesday, 24 August 2021 at 1:30pm.

Brett Newman
CHIEF EXECUTIVE OFFICER

CITY OF PARRAMATTA

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TABLE OF CONTENTS

ITEM	SUBJECT	PAGE NO

INNOVATIVE

24 AUGUST 2021

INNOVATIVE

ITEM NUMBER	5.1
SUBJECT	Exhibition Outcomes - Amended Melrose Park North Planning Proposal and Draft Site-Specific Development Control Plan
REFERENCE	RZ/1/2016 -
APPLICANT/S	Payce MP DM Pty Ltd (38-42, 44 & 44A Wharf Road, Melrose Park and 27-29 Hughes Avenue, Ermington), Ermington Gospel Trust (15-19 Hughes Avenue & 655 Victoria Road, Ermington), Jae My Holdings Pty Ltd (8 Wharf Road, Melrose Park)
OWNERS	Payce MP DM Pty Ltd, Ermington Gospel Trust, Jae My Holdings Pty Ltd
REPORT OF	Senior Project Officer Land Use Planning

DEVELOPMENT APPLICATIONS CONSIDERED BY SYDNEY CENTRAL CITY PLANNING PANEL Nil

PURPOSE:

To detail submissions received during the public exhibition of the amended Melrose Park North Planning Proposal and draft Site-Specific Development Control Plan (DCP) and respond to issues raised. The report recommends that the amended Planning Proposal and draft Site Specific DCP be forwarded for Council's consideration. The Planning Agreement will be considered by Council at a later date.

RECOMMENDATION

The Local Planning Panel recommend to Council:

(a) **That** Council receives and notes the submissions (summarised in Attachment 1) made during the concurrent public exhibition of:
- the Melrose Park North Planning Proposal.
- the proposed draft objectives and controls to be included the Parramatta Development Control Plan 2011, noting that further refinements will be made to the controls prior to reporting to Council relating to the management of development applications following finalisation of the Planning Proposal and requirements for the lodgement of a concept or infrastructure development application.
- the Draft Planning Agreement associated with the Planning Proposal.

(b) **That** Council endorse the Melrose Park North Planning Proposal for finalisation (provided at **Attachment 2**) that seeks to amend *Parramatta Local Environmental Plan 2011* as follows*:*

1) Rezone 38-42, 44 & 44a Wharf Road, Melrose Park Avenue from IN1 General Industrial to part R4 High Density Residential, part B2 Local Centre, part RE1 Public Recreation and part SP2 Infrastructure (Educational Establishment).

2) Rezone 27-29 Hughes Avenue, Ermington from R2 Low Density Residential to R4 High Density Residential.

3) Rezone 15-19 Hughes Avenue and 655 Victoria Road from part R2 Low Density Residential and part SP1 Special activities (Place of Public Worship) to part R4 High Density Residential and part RE1 Public Recreation.

4) Amend the height of buildings map to increase the maximum building heights from part 9m and part 12m to multiple heights ranging from 36m to 95m (approx. 6-8 storeys to approx. 26 storeys).

5) Amend the floor space ratio (FSR) from part 0.5:1 and part 1:1 to 1.85:1.

6) Amend the Land Reservation Acquisition Map to reflect areas of public open space to be dedicated to Council and land for the new school site to the State Government.

7) Amend Schedule 1- Additional Permitted Uses to permit 'Residential flat buildings' in the B2 Local Centre zone.

8) Amend the Additional Local Provisions map to include the site and insert a site-specific provision in Part 6 *Additional local provisions – generally* of PLEP 2011 to ensure:

   8.1) That Design Excellence Competition provisions be inserted applicable to development lots E, EA and G (identified in **Figure 8**) without the provision of floor space and height bonuses

   8.2) Appoint a Design Excellence Panel to provide design advice for all development applications within the northern precinct. Floor space and height bonuses are not to be awarded on any development lot.

   8.3) A total residential gross floor area within the planning proposal site does not exceed 508,768m^2.

   8.4) A minimum of 30,000m^2 of non-residential floor space is to be provided within the site to serve the retail and commercial needs of the incoming population.

(c) **That** Council forward the Melrose Park North Planning Proposals to the Department of Planning, Industry and Environment for finalisation.

(d) **That** Council endorse for finalisation the exhibited amendments to the Parramatta Development Control Plan 2011 that are included at **Attachment 3.**

(e) **Further, that** Council authorises the Chief Executive Officer to make any minor amendments and corrections of a non-policy and administrative nature that may arise during the plan amendment process relating to the Planning Proposal and Development Control Plan.

PLANNING PROPOSAL TIMELINE

SUMMARY

1. This report seeks the Local Planning Panel's (LPP) endorsement for Council to consider the outcomes of the public exhibition of the amended Melrose Park North Planning Proposal and draft Site-Specific DCP. A draft Planning Agreement was also publicly exhibited in conjunction with the Planning Proposal and draft DCP. The Planning Agreement is subject to a re-exhibition, the outcomes of which will be reported separately to Council.

2. The Planning Proposal seeks to amend the Parramatta Local Environmental Plan (PLEP) 2011 to enable non-industrial development on the abovementioned sites in the form of high density residential, public open space, retail/commercial and education uses. This proposal is generally in accordance with the Northern Structure Plan adopted by Council in December 2016. Should the Planning Proposal and draft DCP be endorsed then approximately 5,500 new dwellings could be delivered on this site.

3. The Planning Proposal, draft DCP and Planning Agreement (the latter not subject to this report) were placed on public exhibition from 26 April 2021 to 25 May 2021during which time seventy-five (75) submissions were received comprising sixty-five (65) from the community, with the remaining ten(10) from public agencies and other organisations. A summary of the key issues raised in the submission is provided in this report, with further details and responses provided at **Attachment 1** to this report. Overall, 11% of submissions supported the proposal in full, 68% of all

submissions objected to the proposal in full. A total of 8% stated partial support or objection and the remaining 13% neither stated objection or support.

4. A number of changes are proposed to the draft DCP in response to a comprehensive review of the controls following the public exhibition period. These changes are detailed in **Table 2** in this report. However, no changes to the exhibited Planning Proposal are proposed and it is recommended that it be forwarded to DPIE for finalisation.

5. The draft Planning Agreement also exhibited with the Planning Proposal and draft DCP is not subject to this report as it is required to be re-exhibited due to an amendment to the clauses in the Planning Agreement relating to the applicable development contributions. This is the result of a Council resolution related to the Parramatta (Outside CBD) Contributions Plan which was endorsed by Council in July 2021. As a result, the Planning Agreement will be considered by Council at a future Council meeting.

SITE DESCRIPTION

6. The Melrose Park North precinct identified by the yellow outline in **Figure 1** is loosely bound by Wharf Road, Hope Street, Hughes Avenue and Victoria Road and surrounded by low density residential development to the east and west with industrial development to the south and the Victoria Road Site to the north, which is in the final stages of redevelopment for high density residential and mixed-use development.

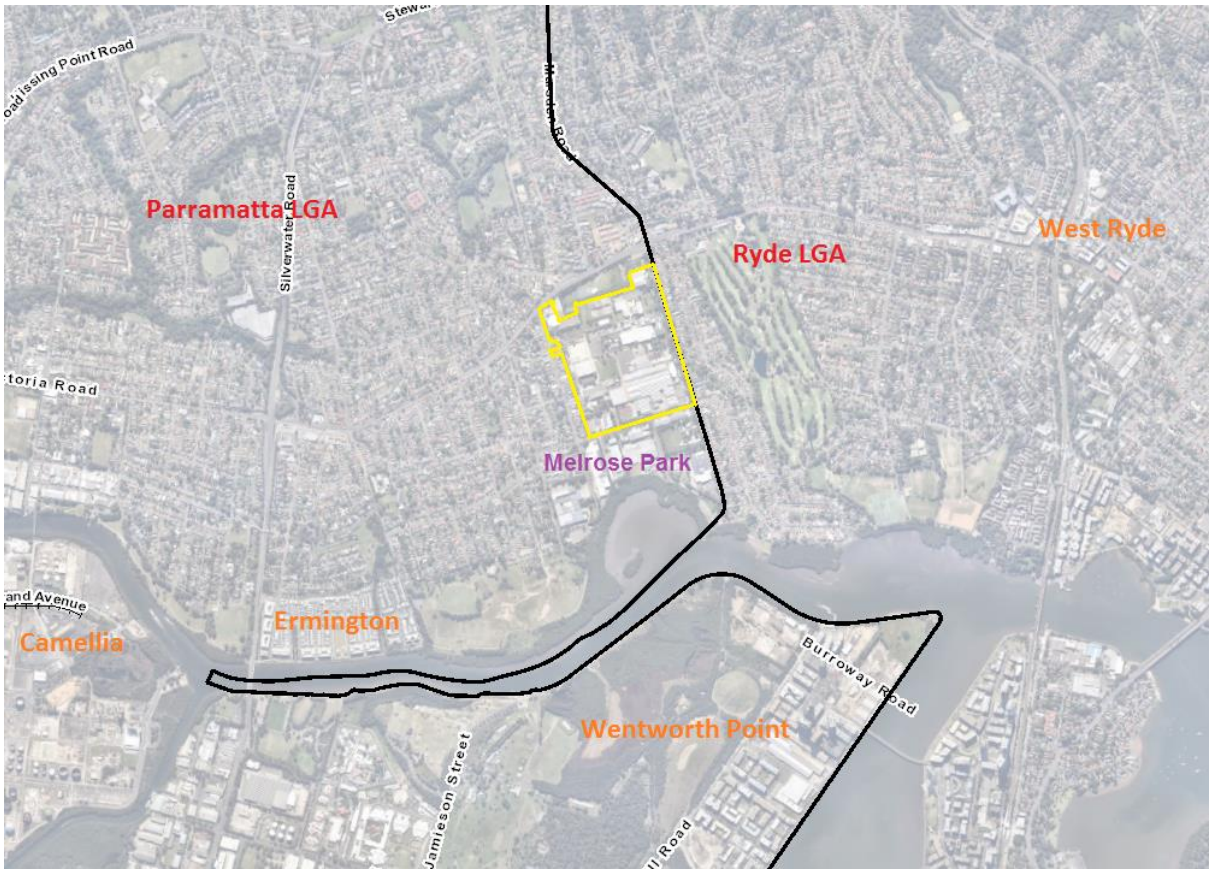


Figure 1. Melrose Park North precinct

7. The land subject to the Melrose Park North Planning Proposal and draft site-specific DCP is outlined in **Figure 2** and is approximately 28ha in size. It comprises three separately owned sites with Payce owning approximately 90% of the overall area covered by the draft DCP. The majority of the land is occupied by industrial uses with the exception of the north-west corner which is occupied by a place of public worship.

8. The site is adjacent to the City of Ryde Local Government Area (LGA), with Wharf Road on the eastern edge of the precinct being the boundary between the City of Parramatta and the City of Ryde LGAs.

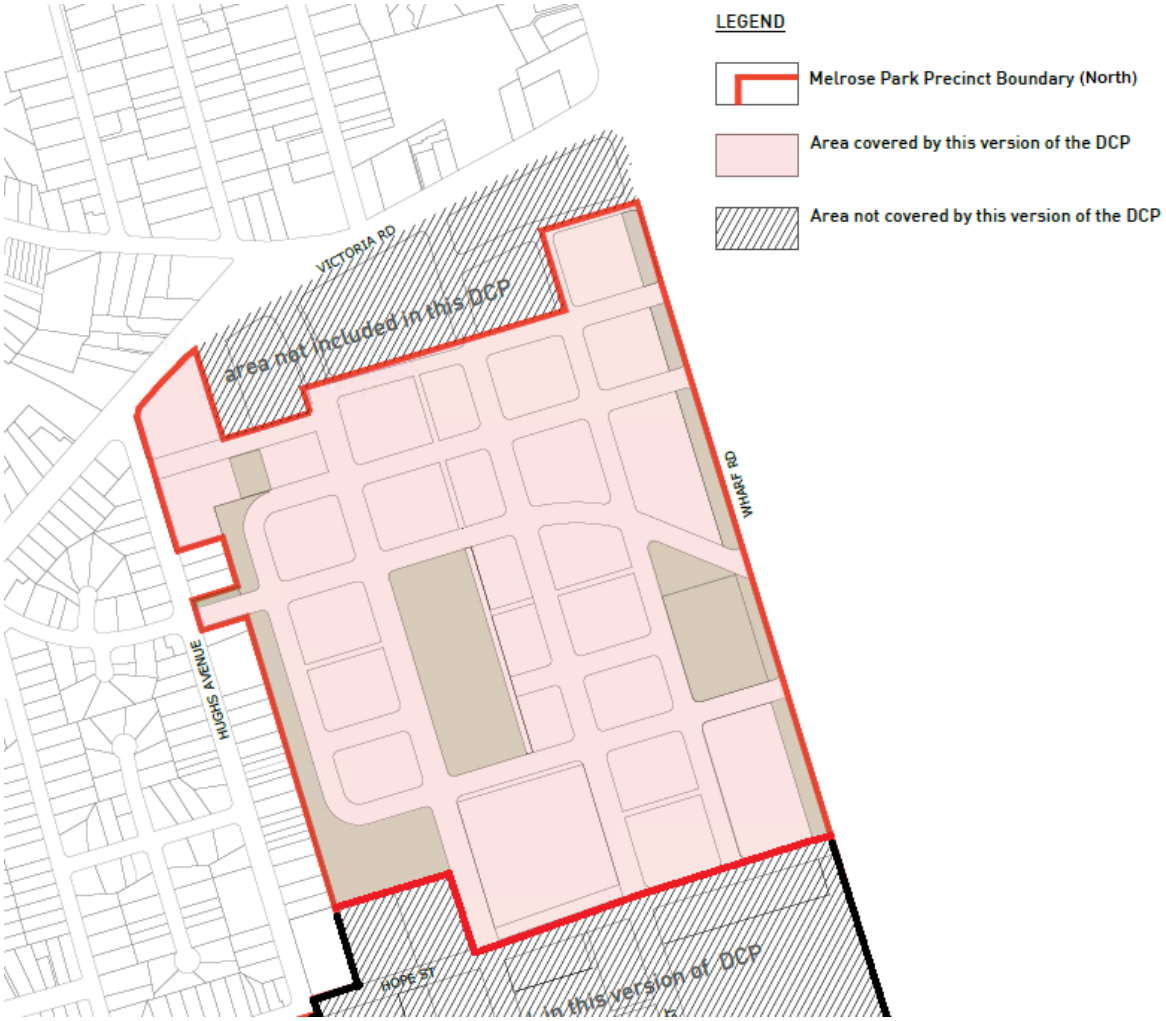


Figure 2. Land subject to this Planning Proposal and draft DCP bounded by red line and shaded pink

BACKGROUND

9. The Melrose Park Precinct is divided into northern and southern parts, with Hope Street the boundary between the two. To ensure compliance with the Parramatta Employment Lands Strategy, structure plans been prepared for both parts of the precinct, with the Northern Structure Plan adopted by Council December 2016 and the Southern Structure Plan adopted by Council in December 2019. The Northern Structure Plan provides a high-level guide for density, road network and open

space, while the Southern Structure Plan provides floor space ratio (FSR) allocations and building heights for each development block in addition to identifying areas of new public open space and road network. The northern and southern parts are being progressed as part of separate planning processes. One Planning Proposal has been lodged with Council for two sites under single ownership within the southern precinct and is currently with the State Government for Gateway determination. Refer to **Figure 3** for an image showing the two parts.

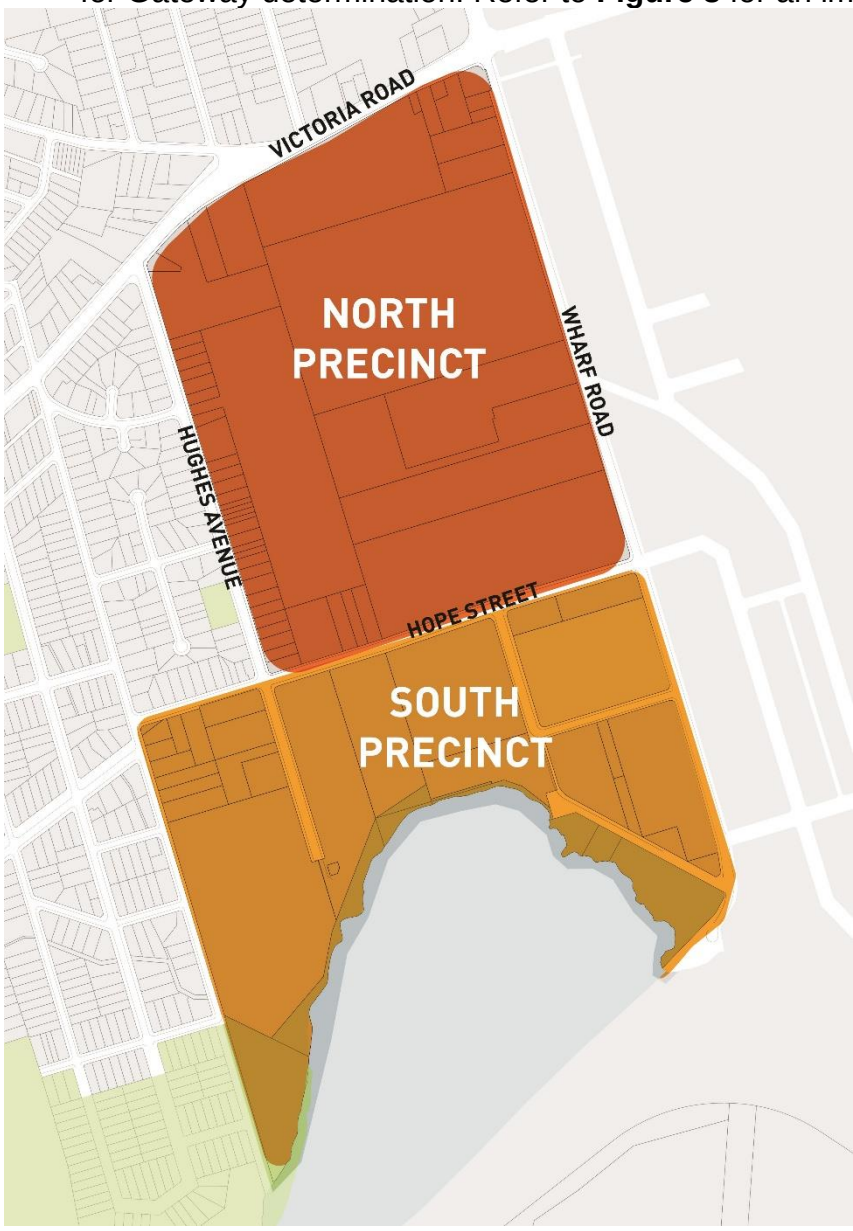


Figure 3. Map showing north and south parts of the precinct

10. The three separate planning proposals that were lodged for sites in the northern precinct were consolidated into one large planning proposal, the Melrose Park North Planning Proposal, in 2017 and is the subject of this report. This planning proposal was considered by the (then) Independent Hearing and Assessment Panel (IHAP) in June 2017, where the proposed zoning changes were endorsed to proceed to Council. Council considered this Planning Proposal in July 2017, where it was resolved to seek a Gateway determination. This Planning Proposal did not

propose specific amendments to the building height and floor space ratio (FSR) provisions on the site.

11. A Gateway determination was issued by the (then) Department of Planning and Environment (DPE) on 27 September 2017, subject to a number of conditions including the preparation of a Transport Management and Accessibility Plan (TMAP) and further urban design testing, both of which would be used to inform the appropriate density for the precinct. The TMAP was completed in early 2019 and urban design testing in mid-2019.

12. A revised Melrose Park North Planning Proposal including proposed building heights ranging from 34m (approx. 6 storeys) to 90m (approx. 26 storeys) and a gross FSR of 1.85:1 across the site was considered by Council at its meeting of 12 August 2019. Council resolved to proceed with the revised Melrose Park North Planning Proposal and for it to be forwarded to the Department of Planning, Industry and Environment (DPIE) for approval for public exhibition. The revised Planning Proposal was forwarded to DPIE in September 2019.

13. During the course of the remaining year and throughout 2020, Council and the applicants progressed with the drafting of the site-specific DCP for the northern precinct to deliver the envisaged density and ensure appropriate built form outcomes would be achieved. Refer to **Attachment 3** for the exhibited draft site-specific DCP.

14. In 2020, a Project Control Group (PCG) was formed by DPIE which included Council officers and representatives from multiple DPIE teams, Transport for NSW (TfNSW) and School Infrastructure NSW. The purpose of the PCG was to ensure that matters requiring State agency input such as infrastructure provision and the proposed new school could be addressed in an efficient manner.

15. During this time, an infrastructure needs list (INL) was prepared and identified the infrastructure requirements to support the proposed density of development within Melrose Park. This was used as a basis for the planning agreement negotiations between Council officers and the applicants. Conversations were also undertaken regarding the future State Planning Agreement to fund and deliver items identified as State infrastructure, such as the new school, Victoria Road upgrades and future bridge to Wentworth Point.

16. Given the size of the Melrose Park Precinct and the potential for it to deliver in the order of 11,000 dwellings (including both the north and south precinct), certain key infrastructure such as a new school site and bridge to Wentworth Point to link to the West Metro is required to be delivered as part of a State Planning Agreement. Negotiations with the applicant and State Government are continuing and any State Planning Agreement will be subject to a separate public consultation period. Notwithstanding, the maximum development potential of Melrose Park is contingent upon the provision of this key infrastructure.

17. The refinement of the built form controls as part of the development of the draft DCP led to the applicant requesting an amendment to the Design Excellence provisions contained in the Planning Proposal previously endorsed by Council for

the purposes of public exhibition. In addition, the area subject to the Planning Proposal was amended to include an additional property on Hughes Avenue needed to facilitate a new road connection through the site, and the applicant also requested that residential flat buildings be included as an additional permitted use within the B2 Local Centre zone**.**

18. The Planning Proposal was amended to reflect these changes and, along with the draft Melrose Park DCP and Planning Agreement, and these documents were then endorsed by Council for exhibition at its meeting of 22 March 2021. The exhibited Planning Proposal document is contained at **Attachment 2.**

19. The Gateway determination also required DPIE concurrence for the exhibition to commence and this was received on 22 March 2021 and included a direction for the Planning Proposal to commence exhibition prior to the end of April 2021.

PLANNING PROPOSAL

20. **Table 1** below summarises the existing controls under the PLEP 2011 that apply to the subject properties and the proposed provisions contained within the Melrose Park North Planning Proposal.

Table 1. Melrose Park North Planning Proposal – Summary of current planning controls and proposed amendments

Subject Sites	PLEP 2011 – Current Controls	Planning Proposal – Proposed Controls
38-42, 44 & 44A Wharf Road and 27-29 Hughes Avenue	• IN1 General Industrial and R2 Low Density Residential • 12m • 1:1 and 0.5:1	• R4 High Density Residential B2 Local Centre RE1 Public Recreation SP2 Infrastructure (Educational Establishment) • Height controls across the site vary from 36m to 95m (approx. 6-8 storeys to approx. 24-26 storeys) • 1.85:1 (gross) • Additional permitted use to permit 'Residential flat buildings' in the B2 Local Centre zone • Insert a local provision relating to Design Excellence for development lots E, EA and G (refer to **Figure 8**).
8 Wharf Road	• IN1 General Industrial • 12m • 1:1	• Part R4 High Density Residential & part RE1 Public Recreation • 36m (approx. 6-8 storeys • 1.85:1 (gross)
15-19 Hughes Avenue & 655 Victoria Road	• Part IN1 General Industrial, part R2 Low Density Residential, part SP1 Place of Public Worship • Part 12m & part 9m	• Part R4 High Density Residential & part RE1 Public Recreation • 36m (approx. 6-8 storeys)

	• Part 1:1, part 0.5:1	• 1.85:1 (gross)

21. A Design Excellence Panel will be appointed to provide design advice for all development applications within the northern precinct. Floor space and height bonuses are not to be awarded on any development lot. There will be design competition processes required for the three key sites identified by a blue outline in **Figure 8**.

22. The maximum residential GFA on the site is not to exceed 508,768m^2. Each development lot has been assigned a maximum GFA which is represented in the GFA map within the draft DCP.

23. **Figures 1 to 7** below illustrate the proposed amendments to the zoning, height of buildings, floor space ratio and additional local provisions as part of the Melrose Park North Planning Proposal.

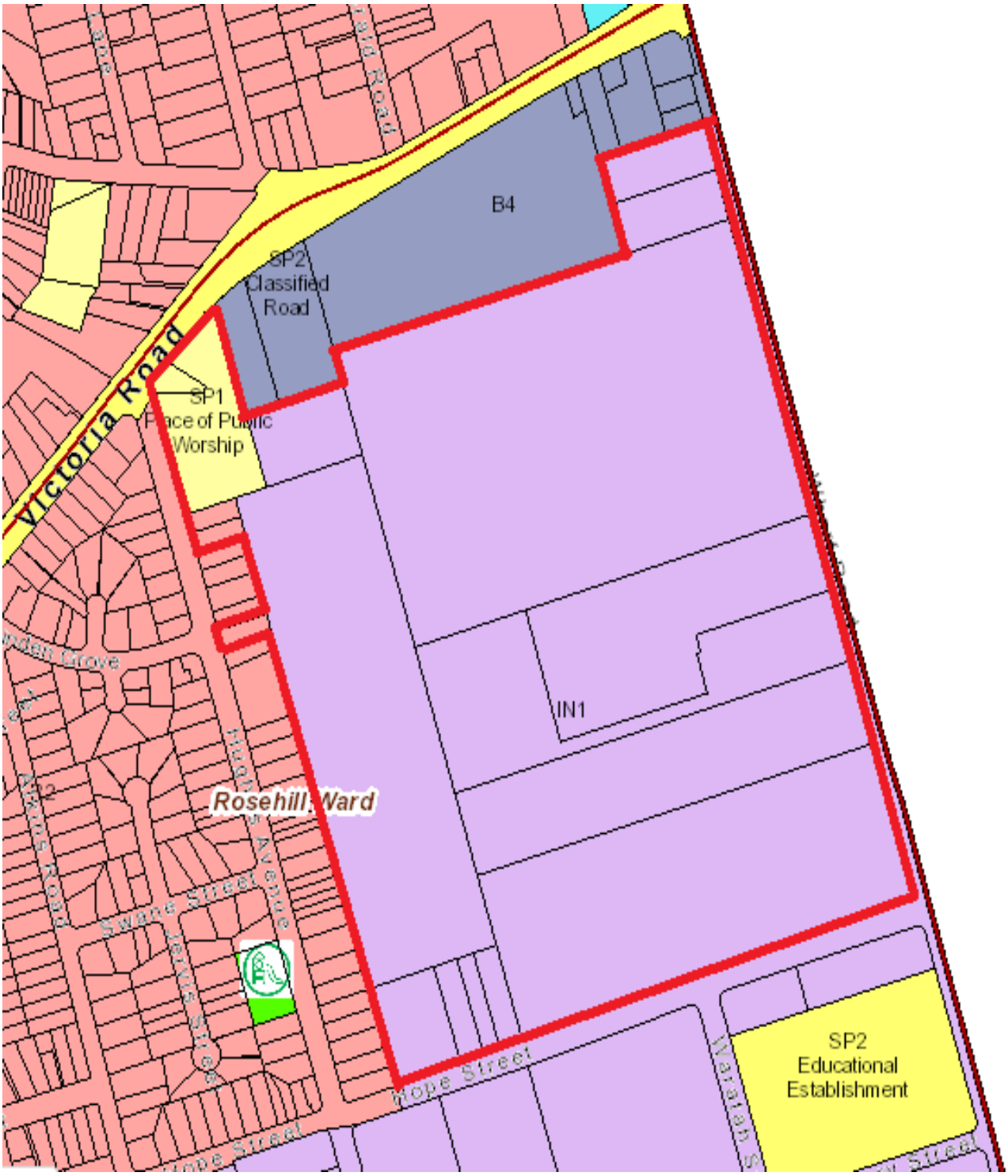


Figure 1. Current land use zoning

Figure 2. Proposed land use zoning

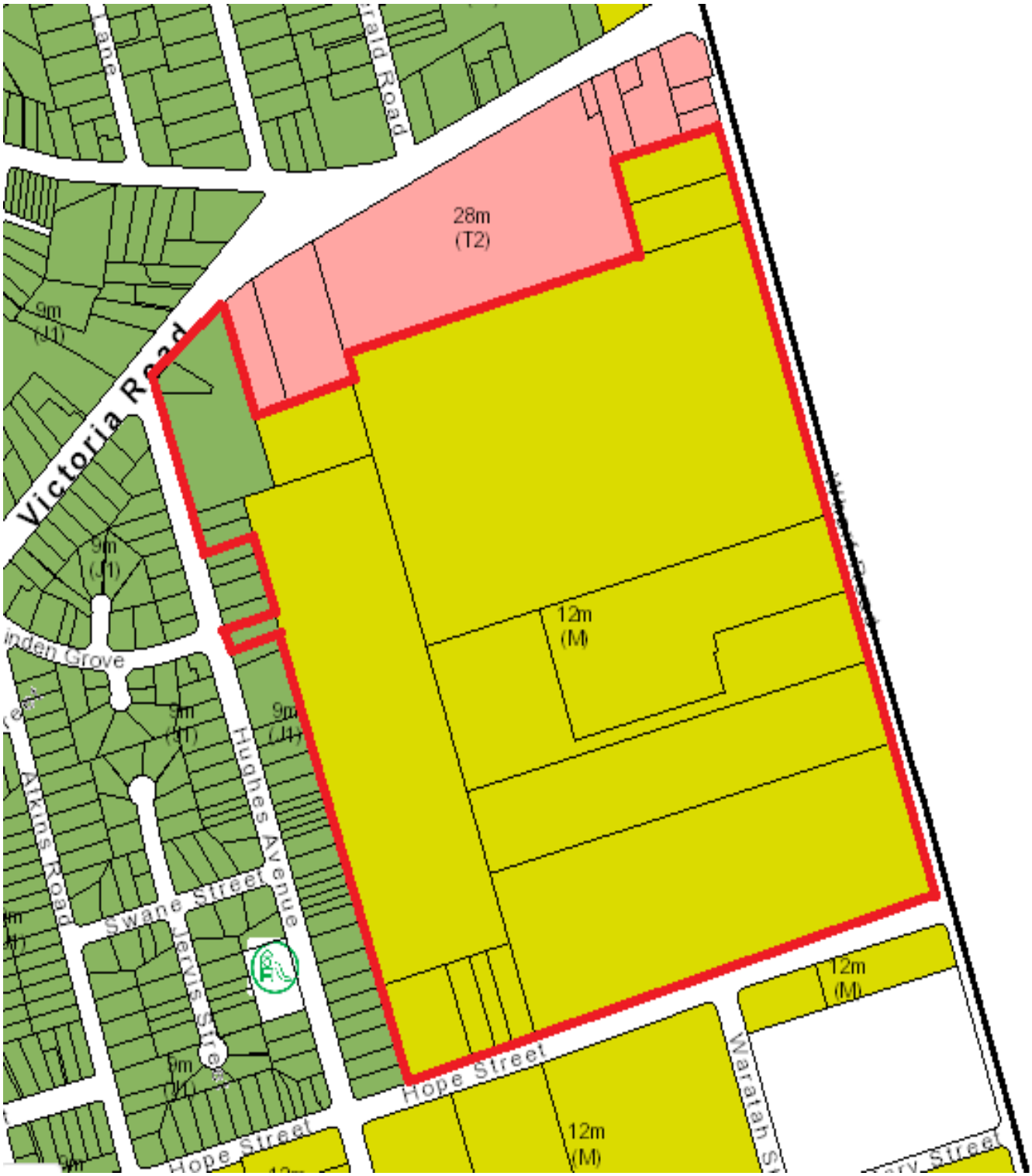


Figure 3. Current height of buildings

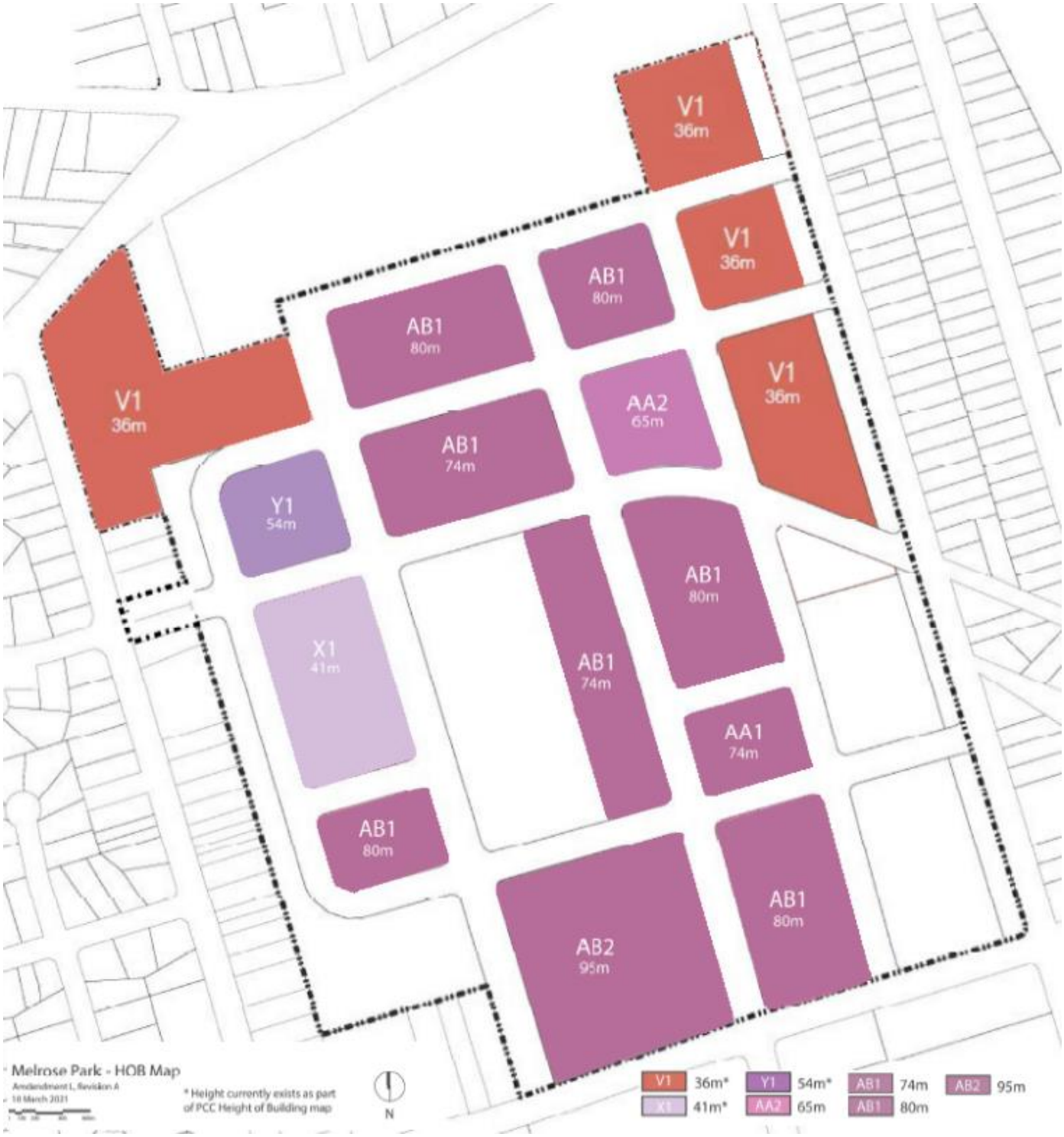


Figure 4. Proposed height of buildings

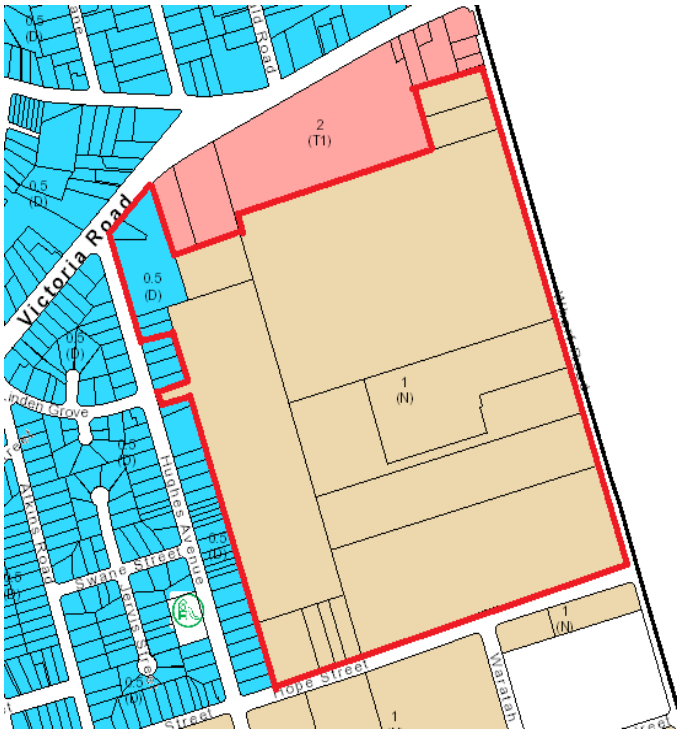


Figure 5. Current height of buildings

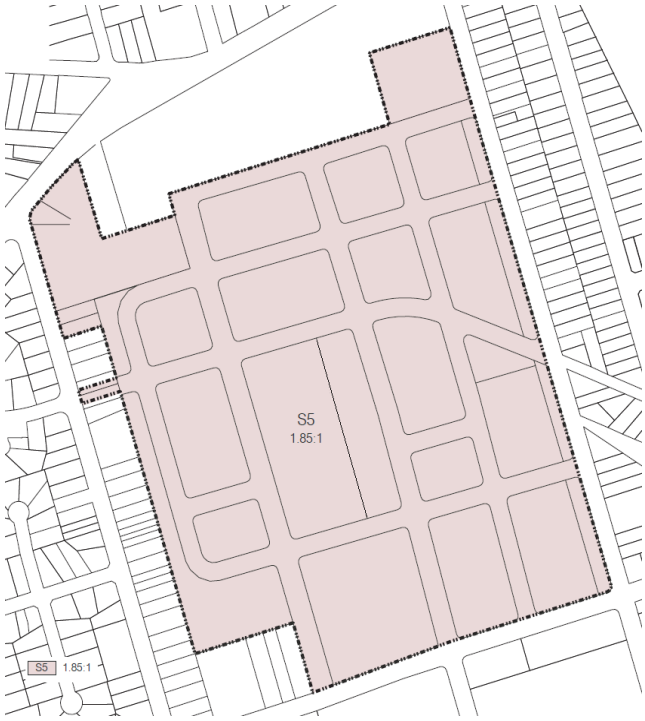


Figure 6. Proposed height of buildings

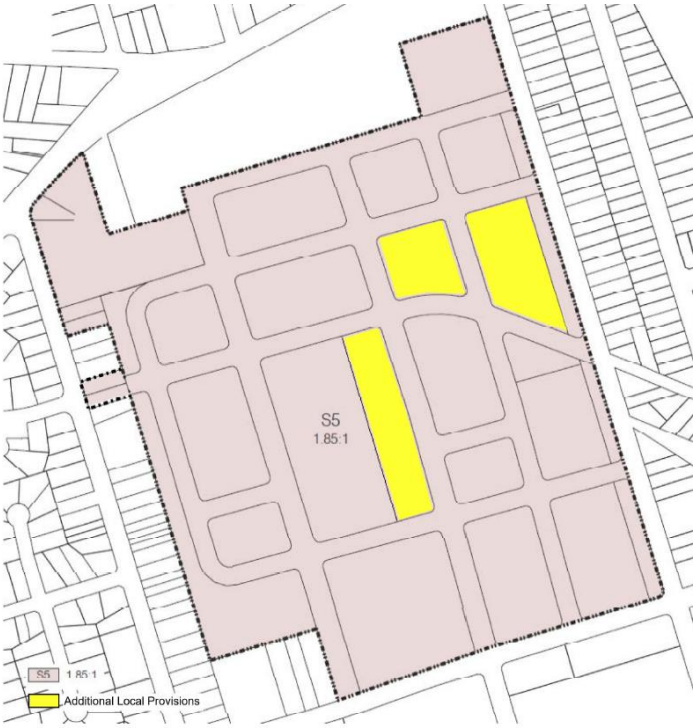


Figure 7. Proposed additional local provisions

Figure 8. Lots subject to Design Excellence Competition outlined in blue

DRAFT AMENDMENTS TO PARRAMATTA DEVELOPMENT CONTROL PLAN 2011

24. A draft site-specific Development Control Plan (DCP) for Melrose Park North (**Attachment 3**) has been prepared to accompany the Planning Proposal. The draft DCP intends to support the provisions in the Planning Proposal and includes

controls specifically written for the high-density context proposed for Melrose Park and includes section on:

- Built Form
- Public Domain
- Vehicular Access, Parking and Servicing
- Sustainability

25. A number of changes have been made to the draft DCP as a result of the public exhibition and a further review to ensure it can be applied in a manner that achieves the intended outcomes. These changes are detailed later in this report.

CONSULTATION

26. The amended Planning Proposal, draft DCP and Planning Agreement and supporting documents were publicly exhibited from 25 April to 26 May 2021. During this time, the community was invited to comment on the draft documents. Notification methods used in the exhibition included:
    - Letters to landowners within a 1km radius of the site, including those within the Ryde LGA (approximately 5,000 letters in total)
    - Dedicated exhibition page on Council's Participate Parramatta website
    - Advertisement on Council's website
    - Hard copies of the draft documents and supporting information available at Council's Customer Contact Centre, Parramatta Library and Ermington Branch Library
    - Geo-targeted social media campaigns on Council's Facebook and Instagram platforms
    - Advertisement in Council's ePULSE newsletter
    - Signage on perimeter fencing of the site

27. Public agencies were also notified in writing of the public exhibition, with the following agencies consulted:
    - Department of Planning, Industry and Environment (DPIE)
    - School Infrastructure NSW
    - Fire and Rescue NSW
    - Western Sydney Local Health District
    - NSW Ministry of Health
    - Office of Environment and Heritage/Environment, Energy and Science Group
    - Sydney Water
    - Transport for NSW
    - Viva Energy
    - City of Ryde Council

    In addition, the State members of Parliament, Dr Geoff Lee, Member for Parramatta and Victor Dominello, Member for Ryde were notified of the exhibition in writing.

28. A total of seventy-five (75) submissions were received comprising sixty-five (65) from the community, with the remaining ten (10) from public agencies and other organisations (breakdown provided in **Table 2**). Overall, 11% of submissions supported the proposal in full, 68% objected to the proposal in full. A total of 8%

stated partial support or objected and 13% remained neither stated objection nor support.

29. This total does not include multiple submissions made by the same person, which occurred in three instances through the use of the online submission form accessible through the Participate Parramatta website. Although no contact or other personal identification details were provided, the IP address of each submission was identical indicating they were made from the same computer and therefore only included as one submission. The content of these submissions was not considered to be providing constructive feedback on the proposal and inappropriate for listing in the report as they were defamatory in nature.

Table 2. Breakdown of submissions received

	Number	**Breakdown**
Community/landowners	65	Various landowners and other stakeholders
Public Agencies	6	• School Infrastructure NSW (2 submissions) • Western Sydney Local Health District • Environment, Energy and Science Group (part of DPIE) • Sydney Water • Transport for NSW
Other Organisation	4	• City of Ryde Council (2 submissions) - Council officer submission - Jerome Laxale, Mayor • Viva Energy • Northern Sydney District Council of Parents and Citizens Association
Total	**75**	

COUNCIL OFFICER RESPONSE TO KEY ISSUES RAISED IN SUBMISSIONS

30. Below are the key issues raised in the majority of the submissions. A response and recommendation is provided for each. Details of all the issues raised in submissions, and Officer responses are provided in **Attachment 1** to this report.

Density, Building Heights and Amenity

31. A number of submissions raised concern over the proposed density of the development, the proposed building heights and the resulting amenity impacts on the area generally should this proposal be finalised.

<u>Council Officer Response</u>

Density

32. The Proposal identifies a range of land uses on the site including high density residential, public open space, retail and commercial uses and education facilities. The proposed density was endorsed by Council at its meeting of 12 August 2019 and has also been acknowledged as having planning merit by the Department of

Planning, Industry and Environment through the Gateway determination. The densities proposed have been informed by both the Transport Management and Accessibility Plan (TMAP) and extensive urban design testing to ensure that an appropriate outcome could be achieved on the site which was an endorsed approach by Council and the State Government. Council officers acknowledge that concern has been raised by the community regarding the proposed density and that it is a significant change to the scale of development that is currently on the site. However, it is not considered that sufficient justification has been provided in the submissions to warrant a reduction in the proposed density on the site, especially as extensive urban design testing has been undertaken to demonstrate that the proposed density can be achieved without extensive and unmanageable impacts being experienced by future or surrounding residents.

33. The TMAP identifies that up to 11,000 dwellings can be accommodated across the precinct (both north and south) from a traffic and transport perspective on condition that Sydney Metro West, light rail (or bus equivalent) and a bridge to Wentworth Point be provided. Without these three infrastructure items, the TMAP concludes that the overall dwelling number across the precinct will need to be capped at 6,700 units which equates to a 40% reduction in the overall dwelling yield. Further analysis on the TMAP is included below.

34. Similarly, a number of other infrastructure upgrades are required by the TMAP to achieve the 6,700 dwelling yield including:
    - Widening of Wharf Road south of Victoria Road
    - Upgrade of the existing intersection with Victoria Road/Kissing Point Road with a new north-south road from within the precinct required to support the redevelopment,
    - Victoria Road/Wharf Road intersection upgrades- new lanes and realignment
    - Additional through-lane on Marsden Road
    - Additional turning lanes onto Kissing Point Road
    - Signalised pedestrian crossing on norther, western and southern intersection legs
    - Widening of Victoria Road between Kissing Point Road and Wharf Road
    - New shuttle bus service between Melrose Park and Meadowbank Station until PLR Stage2 or bus equivalent is operational
    - Staged improvements to bus services along Victoria Road
    - Staged delivery of new internal roads

35. It is noted that the State Government has made a commitment to deliver Sydney Metro West and recently announced the commitment of funding towards further planning and investigation work for Parramatta Light Rail (PLR) Stage 2. With this comes greater certainty that a bridge will be delivered connecting Melrose Park to Sydney Metro West at Sydney Olympic Park. Notwithstanding, funding for the bridge will be subject to the State Planning Agreements noted above and will require similar agreements with other property owners/applicants for the remaining development areas within Melrose Park.

36. From an urban design perspective, a master plan has been developed to ensure that the density can be accommodated on the site in an appropriate manner and responds to a number of principles that achieves the following outcomes:

- Locating tower buildings in the centre of the site along the major north-south spine roads and locating them so that the tunneling effect of tall buildings is minimised.
- Orientating buildings to achieve maximum solar access and views over open space
- Limiting buildings to a maximum of 6-8 storeys around the perimeter of the site where it interfaces existing low-density residential development.
- Consolidation of open space to ensure maximum use and access.
- Maintaining key view lines, especially along roads to outside the precinct to minimise the perception of density.

37. To support the intentions of the master plan, a site-specific development control plan (DCP) has been created that is proposed to be incorporated into Parramatta DCP 2011. The draft DCP includes objectives and controls relating to built form, which specifies requirements such as building setbacks, building separation, the distribution and allocation of floor space on a block-by-block basis, and tower design and slenderness. These controls are intended to ensure that the perception of density within the precinct is minimised by pedestrian at street level and from residents within the buildings.

<u>Recommended Action</u>

38. Retain provisions as exhibited

Building Heights and Amenity

39. Multiple submissions raised concern over the proposed building heights on the site, stating they are excessive and inappropriate given the existing character of the area, and that it would result in poor amenity of residents within and surrounding the development.

40. It is acknowledged that the proposed heights are not consistent with existing surrounding development, however the heights identified in the Planning Proposal and refined in the master plan and in the draft DCP are required in order to accommodate the residential gross floor area that has been endorsed by Council and the State Government. To minimise impacts on residents, extensive design testing has been undertaken in a collaborative approach between Council's urban design officers and the applicant's architects to achieve the best possible outcome. The master plan locates the tallest buildings away from the perimeter of the precinct to help reduce the perception of density and visual impact on surrounding residents.

41. Council officers acknowledge that concern has been raised by the community regarding the proposed buildings heights and potential impacts on amenity. However, it is not considered that sufficient justification has been provided in the submissions to warrant a reduction in the proposed building heights on the site, especially as extensive urban design testing has been undertaken to demonstrate that the proposed heights can be achieved without extensive and unmanageable impacts being experienced by future or surrounding residents.

42. The proposed buildings heights have been formulated based on the topography of the site, public open space locations, proximity to existing low density residential development and the desire to concentrate the tallest buildings on the main north-south road corridors within the middle of the site and lower heights on the perimeter to provide a transition from the existing low density residential development adjacent to the site. In addition, a landscape strip has been located along the length of Wharf Road between 17m and 20m wide to increase the separation and proximity between residents on the eastern side of Wharf Road and the proposed development.

43. Concerns were raised that these heights would create a poor amenity and that it will potentially create privacy issues for residents adjacent to the site on the western boundary along Hughes Avenue. The issue of overlooking and privacy impacts on these residents was taken into consideration during the creation of the master plan, however, is not anticipated to be a significant issue due to the maximum height of buildings being 8 storeys along the majority of this boundary, with a buffer provided of approximately 40m between the development lots (lots C, F and K) and the existing houses. Refer to **Figure 9**. This buffer comprises the Western Edge Parklands which has a width of approximately 20m and NRS1 (refer to **Figure 9** for location), which has a proposed width of 20m. In addition, the buildings on these lots are required to have a setback of 3m from the property boundary. As a result, it is not anticipated that overlooking will be a significant impact.

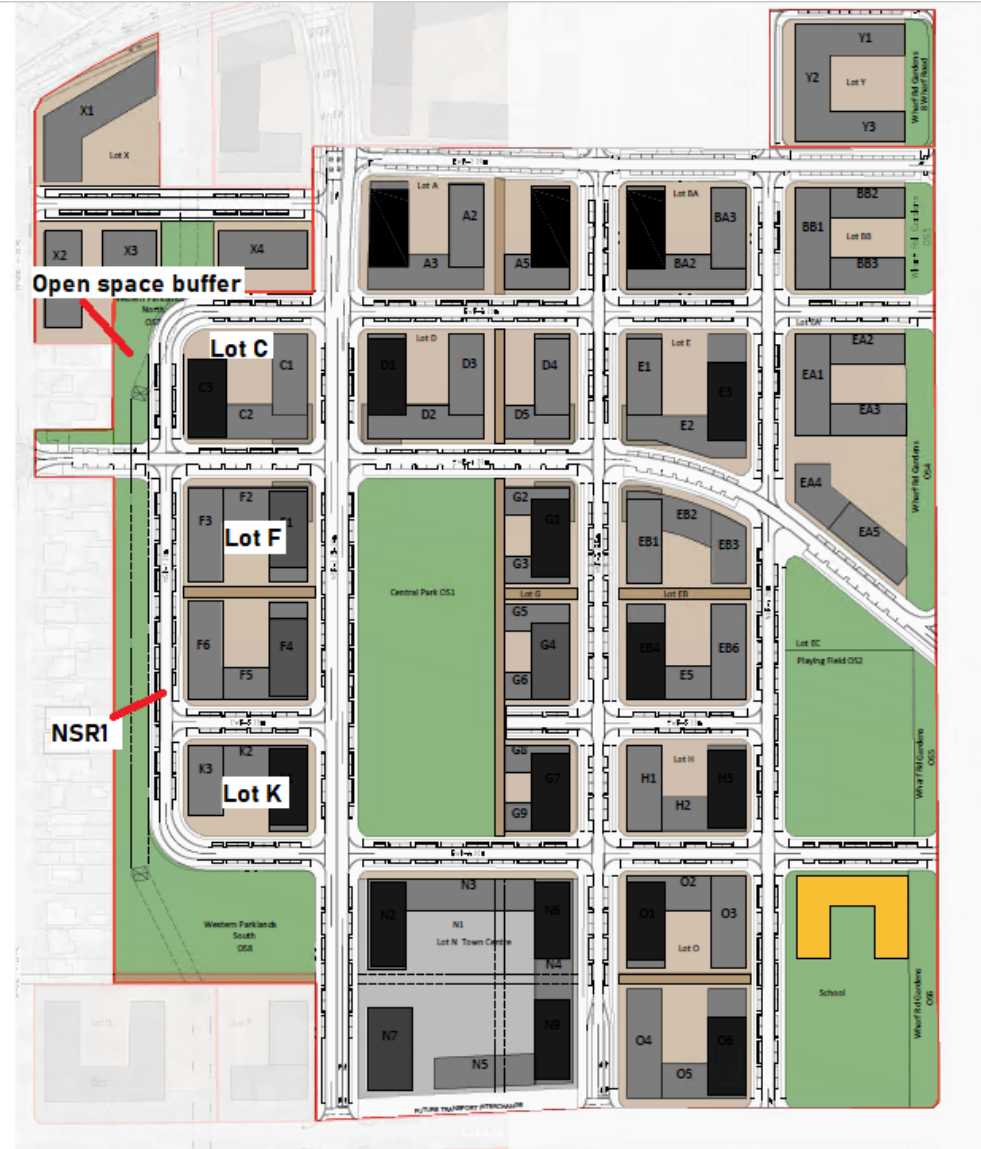


Figure 9. Lots C, F & K and NSR1 and open space buffer

44. It is acknowledged that Lot C at the northern end of the parklands has a proposed maximum building height of 16 storeys, however it is considered that the 40m separation between this lot and the Hughes Avenue residences will be sufficient in preventing any overlooking of properties from the new development. Controls within *Part 1. Built Form* of the draft DCP also address privacy and overlooking, which are in addition to the requirements of the State Government's Apartment Design Guide (ADG). These matters can be addressed in full detail at the development application stage.

<u>Recommended Action</u>

45. Retain provisions as exhibited.

Traffic Impacts and Transport Management and Accessibility Plan (TMAP)

46. Multiple submissions raised concern regarding the potential traffic impacts on the existing road network and questioned the TMAP's (**Attachment 4**) assumptions, methodology and its relevancy to current conditions.

Council Officer Response

47. It is acknowledged that any redevelopment within the Melrose Park precinct will have some impact on the local road network and to a lesser extent, the wider regional network. The TMAP was prepared in response to a Gateway Determination condition for this Planning Proposal and was subject to extensive review and consultation by the TMAP reference group which comprised stakeholders from Council and State Agencies, including Transport for NSW (TfNSW), DPIE, and applicants from the northern and southern precincts of Melrose Park. The TMAP was signed off and endorsed for exhibition by TfNSW.

48. The TMAP is an informing document to the Proposal and provides a comprehensive analysis of the potential traffic and parking impacts and includes required mitigation measures for future redevelopment to deliver to ensure the traffic and transport network can accommodate the proposed increase in density on the site. It also provides a Staging Plan for the delivery of required road upgrades and public transport infrastructure to service the precinct as well as recommended parking rates. Refer to **Table 3** for a summary of the staging plan and dwelling thresholds. As development progresses, the applicant will need to demonstrate that the required infrastructure will also be delivered as identifies in the TMAP's staging plan.

Table 3. TMAP infrastructure staging plan

Stage	Infrastructure Trigger Point (dwellings)	Yield supported (dwellings)	Key Infrastructure required
Existing network	NA	1,100	Nil
Stage 1A	1,100	1,800	Wharf Road widening south of Victoria Road Left in/left out access from Victoria Road to NSR2
Stage 1B	1,800	3,200	Upgrades of Victoria Road/Wharf Road intersection including additional turning lanes Additional through-lane on Marsden Road
Stage 1C	3,200	6,700	Further upgrades of Victoria Road/Wharf Road intersection - Full signalisation - Additional R turn lanes on Victoria Rd

			- 3 new lanes on southern Kissing Point Road approach - 4 new lanes on northern approach KP Road approach - New signalized pedestrian crossings Widening of Victoria Rd between KP Road and Wharf Road - Shuttle bus service to Meadowbank Station and increased frequency of public services throughout Stage 1
Stage 2	6,700	11,000	New bridge to Wentworth Point and PLR Stage 2 or bus equivalent Staged delivery of internal road network Increased public transport services

49. The methodology and the assumptions and inputs used in the TMAP were presented to and endorsed by the project reference group in the early stages of the project and were considered appropriate to ensure the results would be an accurate reflection of the potential changes to the use and density of the Precinct. The outcomes of the TMAP testing were also supported by the project reference group prior to finalisation of the TMAP report.

50. With regard to the relevancy and accuracy of the TMAP given it was prepared in 2017, advice from TfNSW considered that the relatively recent completion date of the TMAP is not likely to be an influencing factor to its relevancy and ability to provide direction for the precinct. Technical studies relating to large projects such as Melrose Park North are prepared at varying stages throughout the project's life and it is not uncommon for the studies to precede the project's exhibition date given that they are used to inform the content that is ultimately placed on exhibition. In this instance, any change in inputs used for the modelling and assumptions is likely to not be significant and would have a negligible impact in the TMAP's results.

51. In response to the concern that the TMAP's study areas was not sufficient, the study area was endorsed by the project working group, which comprised of representatives from Council, northern and southern landowners and Stage Agencies including TfNSW. The study area is identified in **Figure 10** below and is considered to be of a scale that is appropriate for a redevelopment of this extent.

52. Notwithstanding, TfNSW advised in their submission that should any changes to the proposed development be proposed from what was exhibited as a result of the exhibition of changes at development application stage, then the TMAP may need to be reviewed to ensure the outcomes and recommendations remain appropriate.

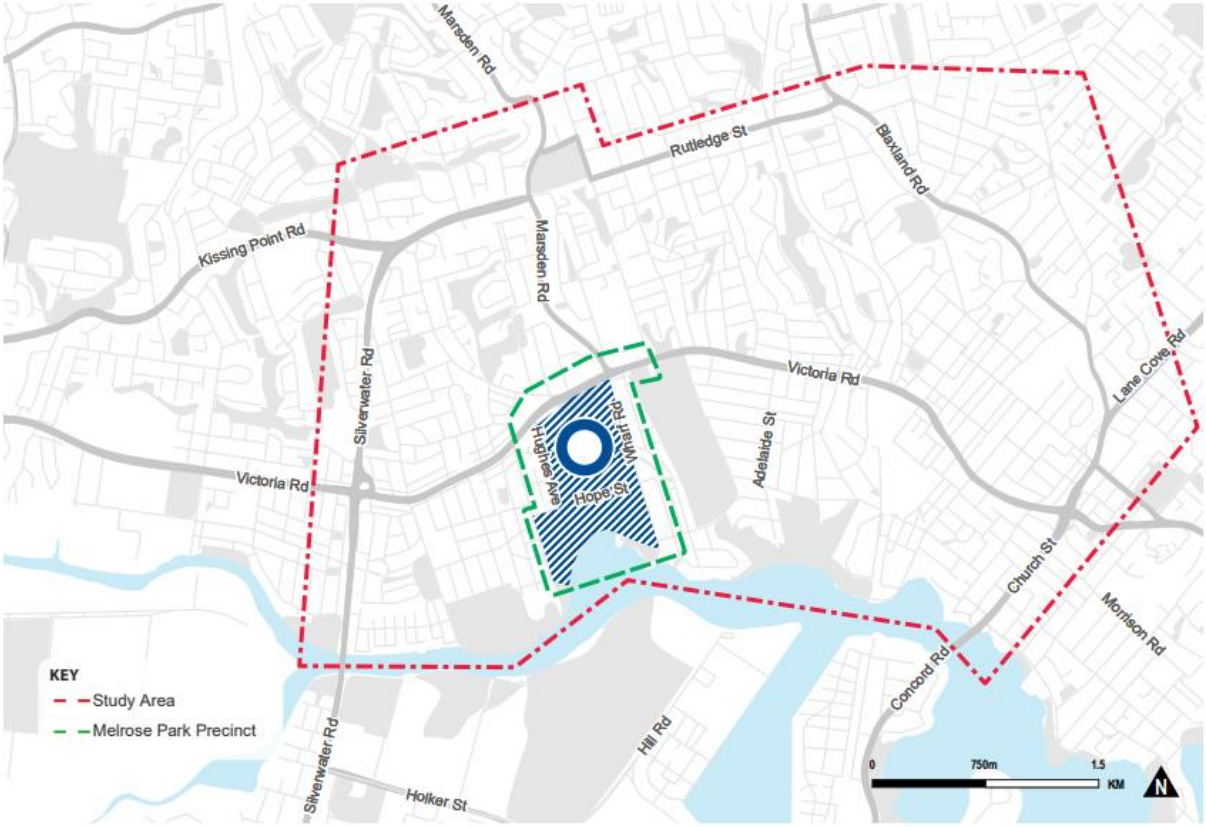


Figure 10. TMAP study area

Recommended Action

53. The assumptions and modelling used in the TMAP are considered to still be relevant and accurate. Therefore, the infrastructure upgrades required to meet the density thresholds in the TMAP are considered to be sufficient and therefore no change is required.

Open Space

54. A number of submissions commented on the provision of open space, stating the amount proposed to be provided is insufficient for the projected population as a result of the potential development in Melrose Park.

Council Officer Response

55. The total area identified as public open space within the subject site is just over 20% of the total site area which meets the minimum requirements of Council for high density residential redevelopment. This requirement is specified in Council's Community Infrastructure Strategy (CIS) adopted by Council in July 2020. This rate is also consistent with the United Nations' recommendation of 15%-20%. These spaces include a large central park, a playing field, a parkland area along the length of the western boundary of the site and a landscaped area along the Wharf Road

frontage. These spaces are envisaged to meet the active and passive recreation needs of the incoming population. In addition, the existing George Kendall Riverside Park is within close proximity to the precinct which will support the active recreation needs of the community. These open space areas are in addition to the required private open space areas that must be provided as part of each development on each lot.

Recommended Action

56. The proposed provision of public open space is considered sufficient, and no changes are proposed.

Additional Permitted Use

57. A submission was received from the landowner of 15-17 Hughes Avenue and 655 Victoria Road, Ermington which is part of the Planning Proposal area. The submissions requested that consideration be given to amending *Schedule 1 – Additional permitted uses* of PLEP 2011 to permit Place of Public Worship on the site. The site is currently occupied by the Ermington Gospel Church.

58. This site is proposed to be rezoned to part R4 High Density Residential and part RE1 Public Recreation. Although a place of public worship is a permitted land use in the R4 High Density Residential zone, it is a prohibited land use in the RE1 Public Recreation zone. Currently a car park ancillary to the church is located on the land proposed to be rezoned RE1 Public Recreation with the high voltage power lines running overhead. Should the site be rezoned, the current church operations will be able to utilise existing use rights, however the Ermington Gospel Trust is reluctant to rely solely on this provision in the short-medium term given the complications in land use permissibility.

Council Officer Response

59. This request has been considered by Council officers and acknowledge the concerns raised by the landowner. However, this site is included in the Planning Proposal area and therefore the long-term use of the site is not envisaged to remain as a Place of Public Worship, with the proposed zones of the site to R4 High Density Residential and RE1 Public Recreation intended to be the long-term land use. It is not considered necessary to permit a Place of Public Worship across the site for the following reasons:
    - Given the current operations on the site, it would be able to utilise existing use rights provisions, which would permit the current use to continue operating after the rezoning has occurred, providing it does not cease for a period of 12 months of more.
    - Permitting an additional permitted use on the site compromises the intended long-term use of the land. The proposed R4 High Density Zone permits Place of Public Worship and therefore it is not possible to place an additional permitted use on this portion of the site. The land proposed to be zoned RE1 Public Recreation is the location of the high voltage power lines and it would

be unlikely that any built structures would be permitted in this area, even if it were subject to an additional permitted use.

- By applying an additional permitted use on the site, or part of the site, it would require an amendment to *Schedule 1 – Additional permitted* uses within PLEP 2011. Such an amendment to the Planning Proposal would require a re-exhibition and therefore compromise the ability of the Planning Proposal to meet the State Government's deadline of 31 December 2021 for finalisation of this proposal.

60. As a result, it is not considered necessary to apply an additional permitted use on this site.

Recommended Action

61. No amendment to *Schedule 1 – Additional permitted uses* to permit a Place of Public Worship on the site.

AGENCY SUBMISSIONS

62. A total of eight (8) Government or Public Agencies were notified on the public exhibition with submissions received from seven (7). A summary of the issues raised is provided below, with further detail provided in **Attachment 1.**

School Infrastructure NSW

63. Council has been liaising with School Infrastructure NSW (SINSW) throughout the planning process in relation to the projected education needs of the incoming population and the required supporting infrastructure. SINSW made two submissions on the draft proposal, first of which outlined four (4) matters relating to the Planning Proposal and one (1) to the draft Planning Agreement. The initial submissions by SINSW stated an objection to the Planning Proposal. They are as follows:

    a) Issue: Clarification was sought regarding the use of the road between the new school site located on the corner of Hope Street and Wharf Road and the playing field to the north of the site (refer to **Figure 9**).
    Response: This section of road referred to as EWR6 (east-west road number 6) is identified as a road on the masterplan, however during previous discussions between Council and SINSW, Council indicated that this land could instead be used as an extension of the school grounds providing no built structures were located on this land to ensure view lines were maintained, and that public pedestrian and cyclist connection is maintained outside school hours. Council confirmed that this portion of land was not required to be a road as its removal would have minimal impact on the operation of the overall road network and that it can be used as a pedestrianised link between the school and playing field. This matter is considered resolved.

    b) Issue: The matter of school capacity was raised, and that relevancy of population data used by SINSW to forecast future school demands. It was noted that the proposed dwellings in Melrose Park were not included in the

Government's current dwelling projection data. SINSW advised that the demand generated by the proposed development in the precinct required the equivalent of a new primary school and a new high school. As a result of ongoing communication with SINSW, both Council and SINSW are aware of the projected demand on school facilities in the precinct, despite the dwelling numbers not being formally included in the State Government's projections.

Response: Working with SINSW, a new primary school will be provided in the precinct and conversations are continuing regarding the provision of secondary school facilities within the precinct. Potential site options are being discussed, however SINSW and Council are not in the position to release further details to the public at this stage. The status of this matter is not considered by SINSW to be justification for preventing the planning proposal from progressing and is therefore considered to be resolved for the purposes of this report.

c) Issue: Overshadowing of the school and playing fields from adjacent buildings was raised as a concern. The Department of Education (DoE) and SINSW guidelines aim to ensure that at least 70% of school spaces receive direct sunlight between 9am and 3pm in mid-winter.
Response: The shadow diagrams placed on exhibition were not based on the varying topography of the site and therefore did not depict an accurate reflection of the extent of overshadowing on the school site. As a result, the shadow diagrams have been revised to take into account the site's topography and it can be demonstrated that the site will receive the required amount of direct sunlight. This matter is considered to be resolved.

d) Issue: The master plan identifies building heights of up to 80m directly to the west of the site and 36m directly to the north which raised concern relating to privacy from overlooking from balconies onto the school.
Response: To ameliorate these concerns, a control has been added to section *1.15 Residential Apartment Design Quality* of the draft DCP which requires consideration of privacy onto other apartment and to special uses such as the school. It is considered that this can be addressed at the development application stage.

e) Issue: A further matter relating to the draft Planning Agreement and the provision of the playing field and associated fencing has been raised by. SINSW, who would like to have the open space fenced by their standard 2.1m palisade fence to secure the site during school hours. Council officers do not support this style of fencing as although it serves a purpose during school hours, this playing field is proposed to be a shared space and be available for the public to use outside of school hours. The palisade fence style is associated with schools and may convey the perception to the public that the grounds can't be used out of school hours. Council officers and SINSW are currently considering alternate fencing styles that will serve its purpose both for the school and Council.
Response: -At the time this report was being prepared this matter was in the process of being resolved and the outcome will be addressed in further detail in the report to Council.

64. Council officers and SINSW discussed the matters raised in the submission and were able to form an agreed position on all planning matters. As the matter of the fence is not a planning matter, it was agreed by SINSW and Council officers that this should not be considered an objection to the planning proposal and delay its progression to the LPP. As a result, SINSW provided a further letter stating that it no longer raised objection to the Planning Proposal and draft DCP.

Western Sydney Local Health District

65. The submission received from the Western Sydney Local Health District raised no objection to the proposal. It made mention of a number of matters for Council's consideration relating to the design of apartment buildings, provision of open space and parking, but raised no objections to the overall proposal. It is considered that these suggestions can be considered at development application stage.

Environment, Energy and Science (part of DPIE)

66. This submission from Environment, Energy and Science (EES) raised no objection to the proposal, with concerns mostly relating the consideration of planted tree species on the site and potential overshadowing which may inhibit their longevity, and the identification and protection of any possible Microbat colonies. It is considered that all these considerations can be addressed at the development application stage, including street tree species, overshadowing of existing trees and the presence of Microbats.

Sydney Water

67. This submission raised no objection to the proposal. The submission mentions a number of requests regarding the provision of water related services for the site. These related to water-related infrastructure requirements and integrated water cycle management. The majority of these matters are addressed at the development application stage, however, the draft DCP does include controls relating to dual piping and other sustainability measures such as water sensitive urban design (WSUD).

Transport for NSW

68. The submission from Transport for NSW (TfNSW) acknowledges the preparation of the TMAP and that it is based on a number of key assumptions including development yield and future travel behaviour. The submission states that should there be any changes to these assumptions then the suitability of the infrastructure and services proposed in the TMAP may need to be reassessed. This is noted by Council officers who will action this if required. The submission also sought clarification on whether the needs of active transport within the precinct have been adequately considered. Input from Council's Transport Planning section throughout the process has ensured that cyclist and pedestrian facilities have been incorporated into the design of the precinct. This includes multiple dedicated bike paths on identified streets and connections to existing cycleways in accordance with Council's Bike Plan.

69. Some concern was raised regarding the angles of two proposed intersections in the master plan and the safety outcomes. TfNSW recommends that a safety assessment be done of these intersections prior to adoption of the proposal. This is noted and will be addressed by the applicant through further analysis and testing prior to reporting to Council.

Mayor Jerome Laxale, City of Ryde

70. This submission raised objection to the proposal based on the proposed building heights and floor space ratios (FSR), increased traffic and increased burden on infrastructure within the City of Ryde LGA. Concerns relating to height and FSRs are noted and have been addressed in this report. In relation to the impact on infrastructure, including open space, in the Ryde LGA, this is not considered to be a significant issue. The draft Planning Agreement proposes to provide over $96 million worth of new infrastructure to meet the needs of the incoming population. This includes five (5) new areas of public open space design to meet the active and passive recreation needs new retail/commercial floor space, new roads, and a shuttle bus service to Meadowbank Station. It is acknowledged that there may be some increase in usage of facilities within Ryde LGA that are close to Melrose Park, but this is not expected to be so large that it will have impacts on the usability of the facilities by residents within the Ryde LGA. It is considered that the draft Planning Agreement will provide sufficient infrastructure for the incoming population and that new residents will not be reliant on infrastructure within the City of Ryde LGA

City of Ryde Council – Council Officer Submission

71. This submission raised concern relating to the number of new intersections proposed on Wharf Road and potential impact on traffic, flexibility and utilization of FSR across development lots, general traffic impacts and ‘rat-running’ and issues with the TMAP. It also raised concerns regarding infrastructure provision and the ability of the proposal to proceed without commitment to Parramatta Light Rail Stage 2.

    These matters have been addressed in full in **Attachment 1** and those related to infrastructure will be addressed as part of the future Council report. Nonetheless, the draft Planning Agreement has a value of over $96 million and will provide numerous community benefits to new residents and those living nearby. This includes items such five (5) new open space areas, new and improved roads and intersections, and a shuttle bus service to Meadowbank Station. In addition, as other sites within the precinct redevelopment, appropriate infrastructure contributions will also be made. Therefore, for it is considered that the identified infrastructure can support the proposed density.

PROPOSED CHANGES TO THE DRAFT DCP

72. In response to the exhibition process and further review of the draft DCP, several changes are proposed to be made to ensure the intended development outcomes

can achieved on the site. The changes range from rewording of some controls to reflect their initial intent and to provide clarification, minor typographical corrections, removal of two sections to avoid repetition and inconsistency with the Parramatta DCP 2011 and insertion of a new section relating to ecology. Refer to **Table 4** for a comprehensive list of all proposed changes. These changes are not considered to be of nature that would require the draft DCP to be re-exhibited.

73. A version of the DCP is included at **Attachment 3** with the changes detailed in **Table 4.** However, it will be subject to further refinement prior to reporting it to Council. These changes relate to the management of development applications following finalisation of the Planning Proposal and requirements for the lodgement of a concept or infrastructure development application. Again, these changes are not anticipated to require a re-exhibition of the DCP.

Table 4. List of Proposed DCP Changes

Section	Proposed Change
General Objectives	Corrected wording to clarify explanation and location of Wharf Road precinct. Reference to property owner removed.
Design Quality	Changed heading to Design Excellence and corrected the number of Design Competitions and the sites to which the competitions apply
Site Planning	Removed section as it is covered by Parramatta DCP 2011.
Demolition	Removed section as it is covered by Parramatta DCP 2011.
Built Form	Rewording of Guiding Principles section to improve clarity and interpretation.
1.2 Allocation of Gross Floor Space	Minor rewording of controls C.01 and C.02 to improve clarification of the ability to redistribute ‘left over’ GFA from one block to another. Any transfer of GFA between development lots must to still ensure that the overall development objectives are achieved.
2.3 Street, Block, Open Space and Building Layout	Minor rewording of all Objectives for this section.
	Minor rewording of control C.06 to make requirements clear.
1.4 Building Envelope	Addition of objectives and controls.
1.5 Street Setbacks	Removal of duplicate controls.
1.6 Building Separation	Minor rewording to improve clarity of controls
1.7 Tower Design and Slenderness	Incorporation of View Corridors controls.
	Deletion of duplicate controls
1.9 Floor to Floor Heights	Adjustment of ground floor, floor to floor height requirement from 3.6m to 3.3m.
1.10 Street Wall Podia and Perimeter Block Buildings	Minor rewording of controls to improve clarity

1.11 The Ground Floor	Revised overland flow management controls for ground floor dwellings
1.12 Active Ground Floor Frontage	Deletion of obsolete controls and clarification of required wall depth.
1.13 Town Centre Mall	Deletion of duplicate controls
1.14 Residential Ground Floor Frontage	Reworded Objectives and removal of redundant section on Fences.
1.19 Dwelling Mix and Flexible Housing	Reworded control on dual key apartments to improve functionality and flexibility by not restricting these to 3-bedroom apartments. This will help ensure that the number of required 3-bedroom apartments is still provided.
1.21 Retaining Walls	Deletion of references to fencing. These are now in a separate section.
2.6 Pedestrian Access and Mobility	Deletion of controls that don't reference an Australian Standard to avoid inconsistency.
2.8 Public Open Space	Dimensions of Central Park, Western Parkland and Wharf Road Gardens corrected.
3.4 Bicycle Parking	Controls updated/inserted to ensure consistency with Council's Bike Plan.
Public Domain Figures	Minor label adjustments on all figures for clarification purposes

74. All proposed changes were undertaken in consultation with the applicant and involved detailed input from Council technical officers. Some further refinements to the DCP provisions are still being considered and these will be addressed in detail in the report to Council seeking to progress this matter to finalisation. These further refinements if required will not have a material impact on the content of the Planning Proposal and recommendation of this report.

PLANNING AGREEMENT

75. A draft Planning Agreement between Payce and Council was exhibited concurrently with the Planning Proposal and Draft DCP. This planning Agreement was not subject to Council's Planning Agreements Policy adopted in November 2018 which required the value of a Planning Agreement offer to be benchmarked against the value up lift of the land. This was due to the extent of negotiations that had already been undertaken at the time the Policy was adopted by Council in November 2018, so this Agreement was therefore exempt from this requirement.

76. However, to assist with determining an appropriate offer, an external valuer was jointly appointed by Council and Payce to determine the value uplift of the land owned by Payce that was part of the planning proposal. As a result, a draft Planning Agreement with Payce was successfully negotiated and was concurrently exhibited with the Planning Proposal and draft DCP. The Planning Agreement has a total value of $96,745,226 and includes contributed items relating to open space, social and community benefits and road infrastructure. This amount is in addition to

any application section 7.11/7.12 contributions payable at development application stage. Planning Agreements with the remaining two landowners have not yet been finalised.

77. However, during this time, the City of Parramatta (Outside CBD) Development Contributions Plan was also exhibited. Under this draft Plan, the applicable contributions rates are significantly higher than those prescribed under the now superseded contributions plan. As a result, Payce made a submission during the exhibition of the draft City of Parramatta (Outside CBD) Development Contributions Plan seeking an exemption from the increased rates in the draft Plan being applied to their proposed development in Melrose Park North. This request was considered by Council at its meeting of 12 July 2021 and endorsed, as was the new City of Parramatta (Outside CBD) Development Contributions Plan.

78. As a result, Payce will, if the amended Planning Agreement is ultimately endorsed by Council, only be required to pay the 1% levy as prescribed under the former Parramatta section 94A Development Contributions Plan 2017 which was in place at the time the draft Planning Agreement was negotiated instead of the higher rates prescribed in the recently adopted Outside CBD Development Contributions Plan. This exemption, however, has impacts on the recently exhibited Planning Agreement and requires an amendment to the clauses relating to which development contributions are required to be paid by the developer at the development application stage. As a result of this change a re-exhibition of the amended Planning Agreement is required.

79. The majority of submissions raised concerns relating to infrastructure provisions generally, in addition to concerns about the Planning Proposal and draft DCP, however two (2) submissions were received during the exhibition of the relating only to the draft Planning Agreement. The concerns raised relate to the staging of infrastructure delivery, the inclusion of roads required to support development and queries relating to the certainty of the delivery of the school. These matters are not addressed in this report and will be detailed in the report to Council following the re-exhibition of the Planning Agreement. However, it is still considered that the Planning Agreement is providing infrastructure to meet the needs of the prosed increase in density. In addition, there will be further planning agreements relating to the remaining sites within the northern and southern parts of the precinct as these begin to be redeveloped, further supporting the infrastructure requirements of the precinct.

80. Planning Agreements with the remaining two landowners at 8 Wharf Road and 15-19 Hughes Avenue & 655 Victoria Road within the Planning Proposal area are in the process of being negotiated and have not been exhibited. The landowners of these two sites did not seek an exemption from the new City of Parramatta (Outside CBD) Development Contributions Plan. The outcomes of the re-exhibition of the Planning Agreement with Payce and the exhibition of the two remaining Planning Agreements will be considered by Council at a later date.

81. A separate Planning Agreement is currently being negotiated between Payce and other landowners and the State Government for the funding and delivery of State

infrastructure and any agreement arising from those processes will be exhibited by the State Government at a later date.

FINANCIAL IMPLICATIONS FOR COUNCIL

82. Any work to progress the finalisation of the Planning Proposal would be prepared by Council Officers and therefore within the existing City Planning budget. Should this matter progress, a Planning Agreement delivering open space, social and community infrastructure and road infrastructure and improvements to the value of $96,745,226 will be entered into between and the applicant. Further, at development application stage, development contributions in keeping with the current rates contained in the Parramatta Section 94A Development Contributions Plan (Amendment No. 5) 2017 will be applied to the development.

CONCLUSION AND NEXT STEPS

83. It is recommended that the Local Planning Panel support the Council Officer recommendation that the Melrose Park North Planning Proposal (as exhibited) be referred to the Department of Planning, Industry and Environment for finalisation.

84. Council Officers recommend that the Local Planning Panel support the Council Officer recommendation to finalise the proposed DCP amendments which provide detailed design controls in support of the Planning Proposal and are intended to improve interpretation of controls and better reflect the intended outcomes detailed in the objectives.

85. Following Local Planning Panel consideration of the recommendations of this report, the outcomes of the exhibition period for the Planning Proposals and Draft DCP amendments as well as the re-exhibited Planning Agreement will be reported to an upcoming Council meeting along with the Panel's advice.

Amberley Moore
Senior Project Officer Land Use Planning

Michael Rogers
Land Use Planning Manager

David Birds
Group Manager, City Planning

Jennifer Concato
Executive Director City Planning and Design

ATTACHMENTS:

1	Table of Issues and Responses	
2	Exhibited Melrose Park North Planning Proposal	80 Pages
3	Draft Melrose Park North Site-Specific DCP	90 Pages
4	Transport Management and Accessibility Plan (TMAP)	117 Pages

REFERENCE MATERIAL

Council Officer Responses to Issues Raised in Submissions
Melrose Park North Planning Proposal and Draft Site-Specific Development Control Plan
Associated with D08142867

COMMUNITY SUBMISSIONS

ISSUE RAISED	COUNCIL OFFICER RESPONSE
1. DENSITY / DWELLING MIX	
Objection to more high-density residential development. The proposal represents an overdevelopment of the site. Redevelopment of the site should include a mix of housing options comprising houses, townhouses, and apartments. Urban renewal of the precinct is supported but concerns raised regarding the scale of proposed development and process by which the scale was determined. The local area is currently overdeveloped noting existing high-density precincts at Meadowbank, Rhodes, and Wentworth Point. The development of Melrose Park in addition will result in too many people in the area. Support the renewal of the Melrose Park precinct and benefits it will bring to the community but not to this extent. Suggest that the precinct be redeveloped for low and medium density residential development with a cap on the number of people allowed.	The density identified in the proposal has been endorsed by Council and the State Government and is informed by the outcomes of the Transport Management and Accessibility Plan (TMAP) which indicates that the site can be redeveloped at the proposed scale and density providing the required road upgrades and infrastructure are delivered to support the growth. Extensive urban design testing has also been undertaken to help ensure the best outcome can be achieved in the precinct regarding liveability and amenity. It is acknowledged that these areas are already redeveloped for high density residential, however this does not prevent other sites from also redeveloping to a similar nature. The Melrose Park precinct is considered a sufficient distance from other high-density areas to not create any significant conflicts. In addition, infrastructure to support the redevelopment has been considered as part of the planning proposal. It is not possible to place a cap on the number of people allowed in an area, however a cap has been placed on the amount of residential floor space allowed to be developed, which is 508,768m^2 and is allocated across the precinct on a per lot basis. This is an indirect way of managing apartment numbers and therefore resident numbers.

Concern that new developments seek to meet minimum standards only and are constantly seeking to and increase density. No further growth should occur. Concern that additional density will be sought following rezoning resulting in more towers.	The proposed development will be constructed in accordance with Australian and State buildings requirements such as the Apartment Design Guide and all development lots will be subject to the review of a design excellence panel or a design excellence competition. The Planning Proposal includes a cap of 508,768m^2 residential gross floor area that can be achieved across the site and the draft DCP allocates this floor area on a per lot basis. This has been done to prevent "density creep" by which floor space is attempted to be increased on each lot as the respective development applications are submitted. In addition, the master plan for the site has been carefully formulated and specifies maximum building heights for each development lot. These heights will not be able to be varied without significant justification by the developer at the development application stage. The proposed redevelopment aligns with Council's local strategic planning documents which identifies Melrose Park as an urban renewal precinct.
Concern that should Melrose Park North be approved, it could act a precedent for inappropriate development of the Holdmark site (south of Hope Street).	The site owned by Holdmark is not part of this proposal and is subject to a separate planning proposal process. However, a similar approach has been taken in terms of urban design testing including density controls, traffic and transport capacity assessment and social infrastructure needs analysis. Further information will be provided at the public exhibition stage of this proposal.
Council should seek to redistribute development density across a broader area outside of the current Planning Proposal area.	This redevelopment proposal has been initiated by the landowners and not Council, and therefore the density is proposed to be redistributed to other areas. It is noted

	that Melrose Park is also identified as an urban renewal precinct within Council local strategic planning framework.
Should Parramatta Light Rail stage 2 not be constructed (as it is currently only in a planning stage and that no funding commitment has been made) how will the proposed densities be reduced?	Should the bridge to Wentworth Point and light rail or bus equivalent not be delivered then the dwelling yield in the entire precinct (north and south) is capped at 6,700 units.
The development will act as a precedent to justify high towers and poor FSR arrangements. Why is the proposed development higher than the existing development on the site?	Each planning proposal is assessed on its merits to determine whether the land is suitable for the proposed development. The proposed redevelopment of Melrose Park North may encourage other landowners to seek a similar density on their sites, but it will not necessarily be approved by Council. The FSR allocations and tower locations have been carefully considered as part of the master plan and will require significant justification by the developer should they wish to be varied at development application stage. The site is currently zoned for industrial purposes and is occupied by buildings of a scale appropriate for this use. The landowners have submitted a proposal to Council for this land to be rezoned to accommodate a mix of high density residential, public open space, retail/commercial and education uses. This type of development is very different to the proposed development and as a result will be higher than what is currently on the site.
2. BUILDING HEIGHTS / DESIGN	
Apartment buildings should ideally provide shared common areas for social networks to emerge and a sense of community and for easier community services access.	Noted. Apartment design will be refined at the development application stage.
24 storeys max height is a substantial increase over the initial development proposal and will result in change to the character of the area. The current proposal is ill considered given the local context and infrastructure constraints will change character of the area.	The increase in building heights from earlier iterations of the proposal was a result of further urban design testing. The increased height of some buildings is considered to

	produce a better design outcome for the precinct overall as it enables larger street setbacks and shorter buildings in some locations in response to amenity concerns. It is acknowledged that the proposed redevelopment will change the exiting character of the precinct. However, there will be benefits to the broader community including more public open space, a new school and a new retail and commercial centre.
Major concerns regarding the 22 storey tower noted as 'K1' adjacent to approximately 55 Hughes Avenue (in the complex of 6, 8 and 22 story buildings), when other similar towers to the north also along Hughes Avenue are in a complex of 6,8 and 10 stories. 22 storeys appears excessive in this location and should be reduced to match the other complexes of 6, 8 and 10, given the vicinity of existing communities and residences in Ermington.	The locations of the taller towers in the precinct have been determined based on urban design principles and the desire to situate them on the major north-south roads towards the middle of the site. Their locations were also informed by overshadowing testing and proximity to open space.
The completed buildings on Victoria Road and the near finished next stage are crammed ugly buildings all looking into each other. Enclosed verandas have no aesthetic finish.	The buildings on Victoria Road were assessed under the Parramatta DCP 2011 and were subject to different requirements to those that the future building of this proposed redevelopment will be required to consider. The draft Melrose Park North DCP includes controls to prevent the full enclosure of balconies. Further, all redevelopment proposals for each lot will be subject to review of a design panel to ensure design integrity is achieved.
Submission author proposes a max height of 8 storeys for the whole development. Lot A and Lot BA are too close to the housing on the north side of Victoria Rd to be this high. The current proposed height within the proposal creates privacy issues for existing dwellings on the north side of Victoria Road.	Noted. Lot A and BA are not located on Victoria Road and are a considerable distance from the existing houses on the northern side of Victoria Road to be considered a privacy concern.
Questions the quality and design of the precinct.	Noted. The design of the precinct has been subject to extensive consultation and review by Council's urban design staff and external architects to produce the master plan.

3. TRAFFIC / ROAD NETWORK / TMAP	
Proposal will result increased traffic but no new roads. Existing streets cannot cope.	The proposed development identifies a number of new roads to be delivered in the precinct, including four new north-south roads and five new east-west roads. In addition, extensive upgrades are proposed to be undertaken on Hope Street, Wharf Street and Victoria Road to enable the existing road network to support the increased vehicle traffic. These upgrades have been identified as a result of extensive traffic modelling that was undertaken during the preparation of the Transport Management and Accessibility Plan (TMAP) to support planning proposals in the Melrose Park precinct.
Concern that proposal is significantly increase congestion within a location that is already highly congested and will create amenity and health impacts on surrounding residents. Hughes Ave will experience a significant increase in traffic as a result of the proposal.	It is acknowledged that traffic congestion on Victoria Road is currently an issue. As part of the planning work for this proposal, a Transport Management and Accessibility Plan (TMAP) was prepared which is a high detailed traffic and transport investigation that considered current public transport services, existing function of the road network and provides requirements on the changes that need to occur to ensure public transport services and road network are able to tolerate the additional demand. As a result, a number of intersections, including Victoria Road/Kissing Point Road and Victoria Road/Wharf Road are identified to be upgraded. The traffic modelling undertaken during the preparation of the TMAP indicates that the service level of Victoria Road will be acceptable with these upgrades. It is not anticipated that the local street network will be significantly impacted as a result of the proposed development providing the upgrades identified in the TMAP are undertaken.

	Proposed road works on Victoria Road include intersection upgrades at Wharf Road and a new 4-way intersection with Kissing Point Road and the new north-south road into the precinct. As Victoria Road is a classified road, the final design of these upgrades will be determined by the RMS in consultation with Council at the relevant stages.
Concern that all environment plans, traffic impact studies, rail capacity etc will not take into account the holistic impact of this development combined with all other developments in the area (Meadowbank, Shepherds Bay, Melrose Park southern precinct).	Existing development is taken into consideration when assessing a proposed to significantly change the use of land and this was specifically done during the preparation of the TMAP. The TMAP was prepared for the future redevelopment of the entire Melrose Park precinct, including the south, and had a large study area which factored in the road network well beyond the Melrose Park precinct. Despite the existence of high-density development at Meadowbank and Shepherds Bay, these combined with the anticipated traffic generation from Melrose Park are not considered to have significant impacts to the overall road network as development will be subject to traffic and public transport infrastructure upgrades.
What traffic control/calming measures will be implemented on Trumper St given it is the main intersection with Victoria Rd other than Wharf Rd? The turn off is already a rat run and the slope of the road means cars regularly speed up and down over the limit. There's a park and community garden on Trumper St and kids are regularly out on this section of the road. There have been multiple crashes the Ferris/Trumper St intersection as it's a blind turn at the top of the hill.	No changes are proposed in Trumper Street in relation to the proposed development. Regarding the issues raised at the Trumper Street/Ferris Street intersection and the community garden, a Service Request has been created for these matters to be investigated separately.
Traffic management/infrastructure has not been appropriately considered. Road width of Hope and Wharf Streets will need to change.	The widths of both Hope Street and Wharf Road were investigated as part of the TMAP to determine what upgrades and work would need to be undertaken to ensure these roads could tolerate the additional traffic.

	Wharf Road will require some widening at the intersection with Victoria Road and the widening of Hope Street has been assessed in relation to the proposed future Parramatta Light Rail Stage 2 requirements.
There are no plans on how the traffic flow along Andrew Street and Victoria Rd is going to be addressed. It is suggested that City of Parramatta work with Ryde Council to enable people from Cobham Avenue and Lancaster Ave enter onto Andrew street with the increased traffic flow due to the extra units.	The TMAP reviewed the streets surrounding the precinct and determined that the increased traffic generation from the proposed redevelopment would not have significant impact on these roads within the Ryde Council LGA.
Concern that the streets are not wide enough and will create both a traffic and pedestrian hazard.	Street widths in the proposed redevelopment have been carefully considered and are detailed in Appendix 6 of the draft DCP. All streets are a minimum of 20m wide, with the major north-south streets ranging between 22m and 26.5m. These are considered appropriate for the scale of the proposed redevelopment. The streets will also incorporate footpaths on both sides, active transport links and pedestrian crossings to enhance pedestrian and cyclist safety.
Is Council or the developer proposing to also upgrade Marsden Road to support the increased traffic arising from the proposal? Will Council be limiting the number of off-street cars spaces within Melrose Park like they do in the CBD?	The Implementation Plan within the TMAP identifies an upgrade of Marsden Road in the form of an additional through-lane. This identified to be delivered at Stage 1B of the redevelopment when the dwelling yield reaches 1,800 dwellings. There are no provisions proposed which restricting off street car spaces associated with development. Parking rates per unit are specified in the draft DCP. It is acknowledged that restricting the number of car spaces can potentially reduce car ownership and private vehicle reliance however it is important to consider the precincts location adjacent lower density residential areas which could be adversely impacted by overflow parking if off-street car spaces was to be significantly restricted in Melrose Park.

The volume of people and traffic that will be facilitated by the proposal is unsafe. Major concern is that there is no road management plan.	The TMAP that has been prepared has comprehensively analysed the existing road network and traffic movements. A further traffic study will be required at the development application stage to address specifics relating to the redevelopment of the individual lots.
What is being done to mitigate traffic flow along Cobham Ave and Lancaster Ave. Proposed new road from Taylor Ave that feeds into Cobham Ave will increase traffic and likely make it a rat run towards constitution Rd. This will have negative traffic and amenity impacts.	Any turn restrictions in Taylor Avenue to reduce through traffic in this area would be a matter for City of Ryde Council.
TMAP's assumption that only 500 more cars on Wharf Rd as a result of the development is flawed. 10,000 new units with at least 1 car space per unit, at least 10% will drive to work so that means at least another 10,000 cars on the roads and a large proportion will be heading east and using Wharf Rd. Submission author is a local resident and can assure that the level of traffic on Wharf Rd is more than what the outdated TMAP states. Concerns that the traffic study methodology is based on weekday AM/PM peaks and does not account for weekend travel. Weekend travel can vary significantly from weekdays.	Noted. The assumptions used in the TMAP, and the TMAP itself have been endorsed by TfNSW and the RMS and the broader project group that was established to manage the progress of this project. This group included representatives from Council, applicants on the north and south precinct, and Government Agencies. and are considered appropriate.
Request for a new traffic study to be submitted before developers can commence construction.	In addition to the TMAP, a traffic study will need to be submitted by the applicant with any development application lodged with Council that addressed potential impacts related to the redevelopment of individual lots.
The TMAP has been conducted by an independent contractor but the key issues have not been addressed. There will be increased traffic from the new site travelling eastward. Many current residents prefer using Andrews Street & Constitution Road to avoid congestion on Victoria Rd at West Ryde. Meadowbank Train Station precinct has also become a major congestion area at peak times. The narrow bridge over the rail line, the number of disembarking passengers crossing roads on both the east and west sides of the train station and the development of Meadowbank & Shepherds Bay have all contributed to congestion. This issue is recognised and resolved.	Noted. The TMAP's assumptions and methodology have been endorsed by TfNSW and the RMS and are considered appropriate.
The proposed left in and left out at Wharf Rd opposite Taylor Ave will mean that there will be no right hand turn out of Taylor Ave as currently exists. How do existing residents then access Wharf Rd to travel north?	There are no proposed changes to the existing access from Taylor Avenue onto Wharf Road. The proposed left in/left out is from the new east-west road within the Melrose Park precinct onto Wharf Road.

There is no mention of the Kissing Point Rd Victoria Rd intersection and/or its expected construction date relative to the construction works. All construction traffic should be made to use this not Melrose Park residential streets as is currently occurring.	This intersection upgrade will be undertaken in conjunction with the RMS as Victoria Road is a classified road and not within Council's area of responsibility. Further details on the proposed design and construction date will be made available at a future date and will be managed by the RMS.
How will Constitution Road cope with the traffic generated by this development?	Noted. The TMAP's study area, assumptions and methodology have been endorsed by TfNSW and the RMS and are considered appropriate.
The TMAP recommends a total off-street parking supply of 9,441. A total on-street parking supply of approximately 700 and 500 spaces is being proposed for the northern and southern precincts respectively. It is proposed to initially provide levels of parking in accordance with CoP DCP, and gradually decrease parking provision as the public transport initiatives are implemented. There are 11,000 dwellings proposed in the Northern and Southern precincts. The latest Census figures showed that most residential properties in Sydney have more than one vehicle (1.7 cars). This would mean that while you are only providing 9441 plus 700 spaces on-street totalling 10,141, the expected number of cars will be somewhere between 16,000 and 20,000 vehicles. The consequence of this will be that the residential streets such as Taylor Ave, Cobham Ave, Lancaster St, and the rest of the residential streets in Melrose Park will be a carpark every evening. TMAP is outdated, does not deal with what happens if there is no Light Rail, needs an independent review and close consultation with Ryde Council. The other documents placed on exhibition all show an intersection opposite Taylor Ave however has no mention of this or the effect it will have on the existing street network.	It is anticipated that the parking demand for this precinct will be less than the Sydney average. It is expected that generally residents that need a greater amount of parking would choose to live elsewhere. Initiatives such as car share and a public transport bridge over the Parramatta River should lead to reduced car ownership. Management of parking in Taylor Avenue and nearby streets are a matter for Ryde City Council.
Road access into the Melrose Park precinct off Victoria Rd is limited. At the moment, there is only Wharf Rd and Hughes Ave (where cars need to travel to Hope Street to access an entry point onto the Northern Site). This will result in additional 'rat running' within and around the precinct.	The traffic modelling undertaken during the preparation of the TMAP indicates that the service level of Victoria Road will be acceptable with these upgrades. It is not anticipated that the new streets proposed in the precinct or existing streets will experience a significant increase in 'rat-running' due to their design.
There needs to be a significant improvement to road access, including new additional turning lane from Wharf Road, that allows a driver to turn anytime into Victoria road as there is now significant congestion due to the Melrose Park North development. Larger turning bay to turn right into Wharf	The TMAP identifies upgrades to the Victoria Road/Wharf Road intersection, including additional turning lanes, and will be delivered at the required stage of redevelopment

Road from Victoria Road. A new roundabout at the intersection of Wharf Road, Hope Street and Lancaster. There is a school close by and it is now dangerous and highly congested. More street parking is required to encourage more of a community feel.	relative to the number of dwellings being delivered, as identified in the TMAP. Any upgrades to the Wharf Road/ Hope Street intersection will be undertaken in conjunction with the planning and design of PLR Stage 2 given the overall implication on Hope Street generally. All streets within the precinct will provide on-street parking.
Melrose Park should not be compared to other riverfront areas that have been redeveloped (Meadowbank, Rhodes, Wentworth Point). These areas have better public transport access, are not surrounded by existing low density residential or have an established high-density character. Melrose Park has limited existing public transport and is surrounded by low density residential development. The TMAP notes issues with travel times on the existing trunk bus routes and rail/ferry services that will require additional connection links. Despite this, the proposal intends to allow a population increase of approximately 25,000 people which will effectively double the existing population of the Ermington, Melrose Park and West Ryde district.	Each redevelopment proposal is assessed on its merits. In the instance of Melrose Park, it is considered that the traffic and transport issues can be resolved through upgrades to public transport services and identified roads and intersections as detailed in the TMAP.
Concern that the TMAP was not made publicly available until this late stage in the process given it is a critical document. Further the TMAP has been prepared by a private consultant who is likely to be funded by the developer and therefore warrants an independent peer review. City of Ryde should have been represented in the TMAP project control group meetings given 2/3 of the study area is within the Ryde LGA.	Noted. It was also the intention to exhibit the TMAP in conjunction with the Melrose Park North Planning Proposal in order to provide context to the results of the TMAP. This position was supported by the project group that was formed to oversee the progress of this proposal. The trip generation rates used in the TMAP were agreed to by TfNSW and Council. It is this trip generation that is important in the traffic modelling. The trip generation was set at 0.25 trips per dwelling per hour in the AM and PM peaks. It is considered that over the life of the project and with proposed public transport upgrades that this is an appropriate value. Also, it is noted that many of the trips such as to shops or schools will be contained within the precinct. The shift away from eastern Sydney as a destination in the modelling over time is supported.

Peer review is important due to untested nature of many assumptions underlying the modelling and changes to the proposal since the TMAP was completed. Assumptions relating to projected changes in transport mode share are problematic. The anticipated target increases of 50% for non-car trips are more than double the current rate. This magnitude of change is unlikely to be achieved in the short term. Public transport usage in Sydney is increasing but this rate of change is far less than that envisaged by the TMAP. Between 2011 and 2016, PT usage in Greater Sydney increased by only 3%. Largest increases in GPOP region were Concord-North Strathfield (7%), Parramatta-Rosehill (6%) and Meadowbank (5%). Therefore, assumptions that non-car share in Melrose Park will increase by 27% and reach a level almost double that of Greater Sydney appears unrealistic. Other TMAP assumptions are also unproven such as a decrease in the proportion of eastern city destinations from 62% (2016) to 49% (2036). Even with these assumptions, traffic volumes along Andrew St are predicted to increase by several hundred v/hour. Failure to reach these projections would result in traffic levels substantially higher than those predicted by the TMAP.	Noted. The TMAP was prepared by specialist traffic consultants, with the assumptions, methodology ad outcomes all approved by the project group which comprised of representatives from Council, landowners, and State Agencies. It is not considered necessary to undertake a peer review as a result noting that there have been no further changes to proposed densities since the TMAP was completed.
Since the TMAP was last revised in 2019, there have been changes to the proposal including street layout and addition of a school. These changes are not included in the TMAP. Change in alignment of EWR4 has significant implications for traffic volume and flow particularly into Taylor Ave. TMAP has no recognition or analysis of transport implications of the new school and potential upgrades to existing school. They are likely to generate considerable traffic movements.	Noted, however it is not considered that these changes will have a significant impact on the outcomes of the TMAP. Any potential traffic implications as a result of the school will be assessed at the time of seeking planning approval by the Department of Education from the Department of Planning, Industry and Environment. Further there is a demonstrated need to ensure that the education needs of the incoming community are met and provided for within the precinct. This will ensure local vehicle trips are minimised as the alternative should a school not be provided would result in additional trips to access schools outside of the precinct.
Parramatta Light Rail Stage 2 (PLR2) is described as a key assumption for the modelling. No commitment to funding or business case. Appears increasingly unlikely that it will eventuate. Addition of an 'equivalent bus service' is an afterthought as there is no analysis in the TMAP as to what constitutes 'equivalent'.	The inclusion of an 'equivalent bus service' has been supported by TfNSW as a viable alternative to light rail and has therefore been factored into the assumptions.

TMAP indicates that PLR2 will have capacity of 2500 passengers/hour and is predicted to carry about 2000 passengers/hour toward SOP in AM peak with 1670 outbound boardings from MP alone. Given the standard STA buses have a maximum capacity fewer than 100 passengers, at least 20 buses would be required to carry this number of passengers, equating to 1 bus/3 minutes. Few peak hour services in Sydney achieve this capacity of service. Even if the service was a pre shuttle between SOP and MP then it would require a fleet of at least 10 buses plus staff which would require significant funding. There is no evidence of a commitment to such funding.	
The transport plan is 5 years out of date and does not reflect the current situation.	This is not considered an issue by TfNSW. Technical studies relating to large projects such as Melrose Park North are prepared at varying stages throughout the project's life, and it is not uncommon for the studies to precede the project's exhibition date given that they are used to inform the content that is ultimately placed on exhibition. In this instance, any change in inputs used for the modelling and assumptions is likely to not be significant and would have a negligible impact in the TMAP's results as residential densities set out in the Planning Proposal have been considered as part of the preparation of the TMAP.
Concern that the development may not align with the Future Transport Strategy 2056.	The planning proposal aligns with the Future Transport Strategy 2056 outcome of successful places as the site connects into existing and provides additional cycleway and pedestrian pathways. It aligns with the outcome of a strong economy as it is within 30-minute public transport access to the metropolitan cluster of Parramatta. The proposed development also aligns with outcome of accessible services as the site is within walking distance of the Victoria Road transport corridor and can be integrated with the Parramatta Light Rail Stage 2 Corridor.

What specific projects are proposed to mitigate the impact of additional traffic caused by the development. Victoria Rd during peak time is already at saturation levels. Based on current queue lengths there will be limited space for right turns into Wharf Rd. Of the surrounding road network to the east, only Andrews Street allows traffic to go east via the local street network. This is because of the physical barriers presented by the Ryde/Parramatta Golf Club to the north of Andrews St and Meadowbank Park and the Parramatta River to the south. How is the future do minimum scenario relevant, what are its impacts compared to the current state of traffic prior to the development? What is proposed by way of mitigation measures to encourage vehicles to access the main arterial network rather than the constrained local street network that exists to the east of the network?	There are major upgrades proposed on Victoria Road at Wharf Road and Kissing Point Road. These upgrades will encourage traffic to use the main road network. Improvements to public transport are also proposed including a bus service to railway stations to the east of the site. The impacts of the development are detailed in the TMAP. The new roads within the precinct will be speed limited and also contain traffic safety measures to encourage slow movement. It is expected that these will provide a deterrent for people intending to use these streets to avoid Victoria Road and other main roads.
Regarding transport infrastructure who will be funding solutions to the challenges and supporting impacts in the meantime?	The proposed road works will be funded through the Planning Agreements between Council and the developers and for upgrades to State infrastructure, Planning Agreements between the developers and the State Government. The infrastructure is required to be delivered according to the number of dwellings delivered, which is detailed in the TMAP and Planning Agreement.
What metrics have been used to come to the conclusion that the additional traffic demands of a development of this magnitude are acceptable? Has council developed an overall traffic management plan for future developments to the west or are they to be on a needs basis?	The TMAP has been undertaken to consider the impacts of the proposed development. If there are future planning proposals for the area to the west of the site then these would require additional traffic studies to be undertaken at that time.
Given the additional travel distance to the Metro Station at Sydney Olympic Park what is the attraction of such a service given the fact that West Ryde Station and Meadowbank Station are far closer in both time and distance? What is the attraction at Sydney Olympic Park's transport infrastructure? Sydney Olympic Park has a lot of urban uplift of its own, going there for transport would mean competing with those residents for transport. If there is an increase in frequency of the T1 Northern Line is this not a disincentive to want to travel to Sydney Olympic Park Station?	The Sydney Metro West station at Sydney Olympic Park will support the existing heavy rail services at West Ryde and Meadowbank Station, providing an alternative transport option for future residents.

Has the poor alignment and already constricted alignment of the local street network that links Ryde Bridge to Wharf Rd been considered in the development of the "integrated package of measures" for the local street network as more local trips will also impact on Ryde's local street network.	The local street network between Melrose Park and Ryde Bridge was considered as part of the TMAP. It is not considered that there will be a significant increase in traffic given the relatively indirect rout that these local roads provide.
Why has the travel time of a car been provided (15 minutes) and not the others of, bus, bicycle, walking, ferry, train possibly Light Rail as these are forms of transport the development is also intending to promote.	For the purposes of the TMAP, the impacts of vehicular traffic and usage were the key focus. Pedestrian and active transport connectivity throughout the precinct such as key destination including the school, town centre, and open space have been considered as part of the development of the masterplan.
What is proposed by way of traffic management to address the 40% peak increase to the link between Cobham and Adelaide St?	Any upgrades to roads within the Ryde LGA will need to be assessed and undertaken by City of Ryde Council.
4. PARKING	
What amount of vehicle parking spaces are provided for under plan A and plan B for both residential and commercial new residents?	The car parking rates are governed by the draft Site-Specific Development Control Plan (DCP) and are provided based on number of dwelling and dwelling mix i.e. the number of 1, 2 and 3+ bedroom apartments per development regardless of plan A or B. These will be calculated at the development application/assessment stage. Nonetheless, all new streets in the precinct will provide on-street car parking which will be in addition to the required off-street parking provided for each development.

Parking will become an issue on the street. The parking provision is insufficient and will result in parked vehicles in local and surrounding streets, resulting in more restrictions for existing residents and potentially paid parking.	Noted. All streets within the precinct will provide -on-street parking in addition to the off-street parking required with each development. Off-street parking rates are included in the draft DCP and are consistent with those required in other high-density areas in the Parramatta LGA. It is anticipated that there will be a high percentage of people using public transport in the precinct and therefore reduce the strain on available parking. The implementation of parking schemes will be considered if required but at this stage, Council does not propose implementing paid parking on Council-owned streets within the development or in surrounding streets.
What amount of vehicle parking spaces are provided for under plan A and plan B for both residential and commercial new residents?	The car parking rates are governed by the draft Site-Specific Development Control Plan (DCP) and are provided based on number of dwellings and dwelling mix i.e. the number of 1, 2 and 3+ bedroom apartments per development regardless of plan A or B. These will be calculated are the development application/assessment stage. Nonetheless, all new streets in the precinct will provide on-street car parking which will be in addition to the required off-street parking provided for each development.
There is a lack of detailed comment on the parking proposed by the development. There is no detail on the number of places provided, provision of on street parking and the effect overflow parking will have on the surrounding streets. There should be at least two car spaces per unit, as well as space for visitors cars.	The required parking rates applicable to this proposal are as per the rates for Town Centres in the Parramatta DCP 2011. This is specified on page 62 of the draft DCP.
Appendix 5 Public Open Space shows the playing field on Wharf Rd but no provision of parking to service the field when being used for active recreation purposes. The resultant visitors to the site will therefore park on Wharf Rd or surrounding streets such as Taylor Ave with added traffic, noise, and loss of amenity. No analysis has been provided to understand the increase in visitors to the site and associated parking impacts.	The playing field is intended before use by local residents within the precinct or within walking distance of the precinct. Therefore, additional designated parking for playing field users is not considered necessary. Notwithstanding, it is noted that new street will be

	provided as part of the development which will include additional on street car parking.
5. AMENITY / LIVING STANDARDS	
Will become overcrowded and reduce peoples' living standards. Design is an eyesore. Towers will darken the area and kill existing views. Plan will bring unwanted and sustained noise, overcrowding and traffic. This will ruin the peaceful nature of Melrose Park and surrounding suburbs. Your high rises are changing the beauty of the area and making it look like concrete jungles that are found overseas. Ruining the area and the community spirit in the area by creating pockets and a horrible atmosphere.	Extensive urban design modelling and planning has been undertaken to help ensure a liveable and desirable development can be delivered on the site for future residents and visitors. Considerable detail has gone into the design of streets, the location of the building heights and orientation, their setback from the street and ensuring that enough space is provided to allow large trees to be planted. Any future development applications on the site will need to comply with the applicable planning controls prescribed in documents such as the site-specific Development Control Plan and Apartment Design Guide to ensure amenity impacts to neighbouring properties are minimised though adequate building design, separation and landscaping.
Does not provide any benefit or amenity to existing Melrose Park or Ryde residents.	The proposal includes the provision of 5 new open space areas, including a playing field, a new town centre with retail/commercial facilities, a shuttle bus service to Meadowbank and West Ryde train stations. These are considered to be benefits to the community. All streets will also contain large canopy trees to help reduce urban heat and create a pleasing atmosphere for pedestrians and residents.
6. SCHOOLS	
Concerned that there are no new schools in Melrose Park or Parramatta or sufficient school infrastructure.	As part of the planning preparation work for this proposal, consultation was undertaken with the NSW Department of Education (DoE) and School Infrastructure NSW (SINSW) to identify the education facility needs of the incoming population. As a result, it has been

	identified that an additional primary school is required in the precinct and a secondary school. A new primary school and playing field is proposed in the northern precinct on the corner of Hope Street and Wharf Street and is identified on the Master Plan for the precinct. Consultation with SINSW is continuing regarding the provision of a high school.
Concerned that there is no detail in terms of the new school design and that the current school will be relocated. What will happen to the existing school site? What impact statement has been done on this change and how is this influencing the longer-term planning for the area? What about the heritage of Melrose school site given its history? Do we not value that? Why would the current site not be redeveloped for swimming pools and paying fields? Is the proposed school a relocation of Melrose Park Public or a new high school?	Design details of the new school are the responsibility of School Infrastructure NSW and are not yet finalised. The new school is being provided in addition to the existing Melrose Park Public School which will remain in its current location. Melrose Park Public School is not currently identified an item of local or State heritage significance. Any future upgrades or works to the existing school will be managed by the State Government are not within Council's area of control.
Concerned that the proposed school won't provide sufficient space per student. The site would have provided an ideal service as a high school Winbourne St Marsden High School campus are being decommissioned as a school. The Meadowbank precinct will not be able to absorb the high school population from this site.	The design of the school is being facilitated by School Infrastructure NSW (SINSW), who are responsible for ensuring the new school facility meets the needs of students and staff. The school will be designed in accordance with the requirements of SINSW and the NSW Department of Education.
No consideration to providing more high schools for the area that aren't a 30-minute bus ride away in peak hour, yet more development seemingly using the dated idea that no has children in apartments.	As part of the planning preparation work for this proposal, consultation was undertaken with the NSW Department of Education (DoE) and School Infrastructure NSW (SINSW) to identify the education facility needs of the incoming population. As a result, it has been identified that an additional primary school is required in the precinct and a secondary school. A new primary school and playing field is proposed in the northern precinct on the corner of Hope Street and Wharf Street and is identified on the Master Plan for the precinct.

	Consultation with SINSW is continuing regarding the provision of a high school. The location of education facilities is ultimately the responsibility of the NSW Department of Education and SINSW. Council
The removal of Marsden High School to be relocated to Meadowbank, but then Melrose Park precinct now requires new High School and Primary Schools indicates to me a lack of planning and communication between governments. Surely this should have be realised during planning circa 2016.	Noted. Council has raised concern with the State Government regarding the Marsden High School site and implications this will have on secondary school facilities in the area. However, the future of this school and school site is ultimately beyond Council's control.
No future planning for high schools in the area. Will a 1,000 place primary school be enough? Short sighted by government.	Consultation with SINSW is continuing regarding the provision of a high school.
What guarantee is there that the new school will be built, and the developer won't close before it's complete?	The delivery of the new school and land for the new school will be addressed in the Planning Agreement between the developer and State Government.
Questions why a new school is proposed when there are already 2 public schools with capacity to grow. Would like to see the history maintained at the current site with development of a pool and the prefab classrooms converted into multi story classrooms. Does not understand why a new primary school is being proposed, when there is already an existing primary school. The developer and State Government should be made to be transparent around their plans here.	Consultation with School Infrastructure NSW and the NSW Department of Education identified the need for an additional primary school in the precinct and a secondary school. Council is unable to influence the future of Marsden High School although has raised concern regarding its status to the State Government on multiple occasions. Any future expansion or works to the existing Melrose Park Public School is at the discretion of the State Government.
Do not support the new school site.	The location of the proposed school site is a result of testing done relating to accessibility, overland water flow management and relationship to the remainder of the precinct.
Council needs to not close Marsden High if this development goes ahead.	This is not within Council's control. Council is unable to influence the future of Marsden High School although has

	raised concern regarding its status to the State Government on multiple occasions.
With the existing population, within the marked area there are currently 1,500 Primary School places and 1,000 Secondary School places. With the proposed two new schools of only 1,000 students each (I am assuming one Primary and the other Secondary) there is only a net increase of school places by 1,800. Increasing the size of Melrose Park Primary to 1,000 students from the current approximately 200 students on that tiny piece of land would require a multistorey school that would overshadow the residents on the other of Wharf Rd. However, this school is only included in the Melrose Park South redevelopment should it go ahead. If it does not go ahead, then there is only a net increase of 1,000 school spaces for 6,000 dwellings. There is no provision for tertiary students at all within this development.	The provision or planning of tertiary education facilities is not within the scope of Council to manage. Design details of the new school are the responsibility of School Infrastructure NSW and are not yet finalised. Any amenity impacts will be addressed at the time of development assessment by the State Government.
More information should be provided on the educational requirements for the development such as increase in student numbers and consideration given to tertiary or TAFE students.	Noted. Consideration to tertiary and TAFE students is difficult to measure given that these facilities draw from a larger catchment and there isn't necessarily a nexus between place of residence and place of study.
The plans show a site of approximately 1 hectare that comprises a playing field of and a wetland. These are designated 'Public Open Space'. Neither can be included as part of "a new 2 hectares school site" as previously advised. A 1 hectare site will accommodate 1,000 students not the 2,000 that our forecasts predict. Allowing for school buildings, teacher's car parks, etc then the accommodation drops to just 500 students. Councillors were advised that it was 2 hectares subsequent plans showed that the school would be only one hectare and the other hectare would be provided to Parramatta Council for a playing field. The plans show that the playing field now includes an adjoining wetland will be only 7,888sqm. An examination of the plans shows that the school site is also only approximately 8,000sqm too; perhaps less. Will the school be 8,000sqm or 10,000sqm? Allowing for school buildings, teacher's car parks, etc then at only 8,000sqm the proposed site at Melrose Park is suitable for a school of only 300 students. People need high quality homes to live in and these extra students need good schools. The Department of Education has discovered that high rise schools do not work because students need to move over multiple storeys between periods.	The proposed wetland is not included in the school site area. The design of the school is being facilitated by School Infrastructure NSW (SINSW), who are responsible for ensuring the new school facility meets the needs of students and staff. The school will be designed in accordance with the requirements of SINSW and the NSW Department of Education. Council is guided by the information provided by SINSW as to the requirements for the site to facilitate a school. Advice from SINSW is that a new school can be accommodated on the site.

Department has set a minimum standard for unencumbered outdoor space of 10 square metres per student to ensure that students get enough exercise for physical and mental health. The provision of education facilities at Melrose Park will be inadequate. One solution is to scale back the development to match the available schools. In which case where will the extra homes be moved to and will there be adequate schools in those locations? Another solution will be to reverse the decision to turn the existing Marsden High School site into a netball centre.	
Simplified Demographics demonstrate the requirement for schools The consultants paid by the developers told Parramatta Council that they would need only 438 additional pre-school places, 680 additional primary school places and 499 high school places. Melrose Park is within the Parramatta local government area. We have worked the calculations for 11,000 new homes in Parramatta using data from the 2016 ABS Census for the Parramatta LGA16260. We have taken the number of people in Parramatta and divided by the number of dwellings. This tells us that 11,000 new homes will have 29,055 residents. We can calculate that there will be 2,465 primary school age kids. This means that the Department of Education needs to have permanent school facilities near Melrose Park for extra public primary school students as a result of housing development at Melrose Park. We can calculate that there will be 2,113 secondary school age students. This means that the Department of Education needs to have permanent school facilities near Melrose Park for extra public secondary school students as a result of housing development at Melrose Park.	Council officers are continuing discussions with SINSW regarding the provision of secondary schooling facilities.
Understanding the Demographic Errors in the Precinct Plans Considers the numbers to be incorrect. They prepared their analysis in 2016 before the 2016 Census information was available and used 2011 Census data because it was the best available at that time. The analysis should have been updated with 2016 Census data. Parramatta Council could have insisted on this update. They also assumed suburb of Meadowbank was typical of the future suburb of Melrose Park. In our opinion it's not. A better comparison would be Wentworth Point or Rhodes but these are new suburbs are still under construction. Using their chosen methodology, the consultants have told Parramatta Council that 11,000 new homes at Melrose Park requires facilities for 2,332 extra primary students and 1,503 extra secondary students to be accommodated in government schools and non-government schools.	Notwithstanding the supporting education needs analysis provided with the proposal, Council officers have been working closely with SINSW regarding student numbers and school capacities, which is this information that has been relied upon to inform the proposal more recently. Council has been advised that they do not use 2011 Census data and current discussions regarding school capacities are based on 2016 Census data.

Council Officer Responses to Issues Raised in Submissions
Melrose Park North Planning Proposal and Draft Site-Specific Development Control Plan
Associated with D08142867

At the December 2019 meeting of Parramatta Council, Councillors proposed to ask the Minister of Education for a timeline and explanation of how schools would accommodate the growth as a result of the Melrose Park development. Unfortunately, the majority of Councillors felt that 'the plan was sound, and the council staff recommendations were sound' so this important correction was not obtained.	
Demographics Challenges for pre-schools Concerns were expressed regarding sufficient provision for childcare/pre-schools in Melrose Park. It was noted as an important issue for parents and should be further investigated. There were concerns that the proposed 438 childcare places will not be sufficient to meet the demand.	The provision of childcare places will be subject to ongoing review as Melrose Park develops. It will be possible for further places to be accommodated within the proposed Town Centre if required.
Melrose Park Public School Concerns were expressed regarding the modelling assumptions used for potential primary school student numbers noting discrepancies with those used in Rhodes based upon the 2016 Census. It was noted that the developer's model makes the lowest provision for primary students at 690 students whereas 2,085 students should be accommodated based on the Rhodes model. It is undesirable to accommodate 2,085 extra students in addition to the existing 220 students at Melrose Park Public School. Melrose Park Public School should be increased to accommodate 1,000 students. There also needs to be plans to increase capacity of adjoining schools Ermington Public School, Rydalmere East Public School and Ermington West Public School. It was noted that new residential development results in a temporary boom in students that may need to be accommodated in portable buildings but there will be significant long-term increase that will require permanent construction.	Notwithstanding the developer's analysis provided with the proposal, Council officers have been working closely with SINSW regarding student numbers and school capacities, which is this information that has been relied upon to inform the proposal more recently. Council has been advised that SINSW uses current 2016 Census data to model all school capacities and they will be used to ensure the educational needs of the incoming population to Melrose Park can be adequately met.
Timing of School Infrastructure Provision School infrastructure should be provided in anticipation of the incoming population, not after it has become established. It will be difficult for schools to cope with full capacities upon their opening. Demographics are dynamic due to 'baby boom' peaks.	Council officers are in regular communication with SINSW regarding the overall timing for school infrastructure in the precinct. It is anticipated that upgraded school facilities will be in place well before development within Melrose Park is completed, therefore there will be scope to accommodate increases in student numbers as the precinct develops further. Any future upgrades to the

It was noted that a school in a well-established area such as Ermington, has predictable student numbers that vary little from year to year., however this is not the case for a suburb like Shepherd's Bay or Melrose Park where there are a large number of new homes being constructed. Separate modelling undertaken by the Northern Sydney District Council of P&Cs shows that there will be an increase in demand for primary school places in Ermington from 2026 with a peak at 1,359 students in 2031. This exceeds the 950 students that the Department of Education may have forecast. The model shows that there will also be an increase in demand for secondary school places from 2031 with a peak at 1,251 students in 2037 and is more than the 750 students that the Department of Education may have forecast. Over time the school population falls to a very low level, but numbers will eventually recover to the average. These enrolments are subsequently lower than the long-term projection and is a difficulty that the NSW Department of Education has when forecasting new school expansions. Many existing schools were built in the early 1960s and by the mid-1980s enrolments were very low and many schools were closed. Only a few years later the same schools started to be crowded again and are now overcrowded.	existing Melrose Park Public School are ultimately the responsibility of SINSW. Council is guided by SINSW on the provision of education facilities and their capacities. They are aware of the potential student numbers and are planning for these capacities accordingly. These numbers are also subject to review and further steps can be taken to address student numbers if required. The provision of school infrastructure is the responsibility of SINSW and they are satisfied that sufficient mechanisms are in place to address student demand.
Suggested Steps to be undertaken by School Infrastructure NSW A submission proposed the following be provided by SINSW: i. Review the range of estimates of the likely requirement for school capacities required for 11,000 new residential dwellings at Melrose Park in particular and in context of the district plans of the Greater Sydney Commission. ii. Place a hold on plans to permanently transfer current school sites such as the existing site of Marsden High School and Meadowbank Public School to other departments, agencies and other organisations pending a full understanding of the district plans of the Greater Sydney Commission. iii. Identify a plan with an outline timeframe to upgrade the primary schools and secondary schools likely to be affected by 11,000 new residential dwellings at Melrose Park in particular. iv. Advise Ryde Council and other affected agencies of a potential requirement for school sites to be retained for education purposes and that any development or interim use should not preclude future use for education purposes.	SINSW are aware of these issues and are planning accordingly. Council officers have made repeated representations to SINSW regarding existing school assets in the area, but what is ultimately done with these assets is a matter for the State Government. SINSW have not raised a concern with Council that the educational requirements of the incoming population to Melrose Park cannot be met.
Detailed School Infrastructure Requirements A submission also suggested the following re: school infrastructure	These issues have been discussed with SINSW and they aware of these concerns. The provision of sufficient educational requirements for all children within NSW is

a. Availability of Sites for Future Schools. The Department of Education has closed a number of schools and in some cases, those sites are now available for future schools, and in other cases the sites are no longer available. b. Meadowbank Education Precinct (MEP). It is expected that the 1,620 secondary places at the new Marsden High School will be filled from 2023 or soon after. MEP will also be affected by significant residential development elsewhere within the school catchment such as at Melrose Park. c. Melrose Park Development - PAYCE. A hold needs to be placed on plans to permanently transfer the existing site of Marsden High School pending further demographic analysis of the projected residential development in the Gladesville to Parramatta areas. d. Education Site at Melrose Park. Concerns that the site is not large enough and may result in the need for a multi-level school with inadequate outdoor space for sport and recreation. Melrose Park Public School, Rydalmere East Public School, Ermington Public School and Ermington West Public School need upgrades to accommodate the additional primary age students. e. Rydalmere Education Precinct. Additional schools have been announced on the former site of Macquarie Boys High School. There is potential to relieve pressure caused by Melrose Park but in the absence of an integrated plan there are concerns that Rydalmere Education Precinct will be primarily filled by residential development in closer proximity.	the responsibility of the State Government and Council will continue to liaise with SINSW to ensure they are meeting their responsibilities.
7. PUBLIC TRANSPORT / PARRAMATTA LIGHT RAIL STAGE 2	
It was suggested that development in Melrose Park should not proceed without commitment from State Government to deliver PLR Stage 2. There isn't currently sufficient transport infrastructure to support the development.	Consideration has been given to the provision of public transport to the precinct and the relative number of dwellings that can be delivered according to the level of services provided. The Transport Management and Accessibility Plan (TMAP) that was prepared for the precinct identifies existing transport services and, the required increase to support the proposed population. As a result of the uncertainty around the delivery of Parramatta Light Rail (PLR) Stage 2, two development scenarios are included in the proposal. These scenarios

	identify the maximum number of dwellings that can be achieved relative to the level of public transport services and the delivery of the bridge over Parramatta River to Wentworth Point. Should no bridge and PLR Stage 2 or equivalent public transport service be provided then the total dwelling number that can be achieved in the precinct is capped at 6,700 as opposed to approximately 11,000 dwellings. Nonetheless, the State Government has recently announced a funding commitment towards progressing the planning of PLR Stage 2.
There is no heavy rail line to provide mass public transport.	The provision of heavy rail services is the responsibility of the State Government and is not identified as a future infrastructure service for this area. The State Government has recently announced a funding commitment towards progressing the planning of PLR Stage 2. Council will continue to work with the State Government regarding the delivery of this important infrastructure. As noted above, the TMAP identifies the required transport infrastructure to support the proposed development. State infrastructure transport provisions will be provided as part of a future State VPA. The site is within walking distance of the Victoria Road transport corridor and will be supported by the proposed Parramatta Light Rail Stage 2 Corridor. There are a number of bus routes on Victoria Road which connect Melrose Park to West Ryde Station. In addition, there will be shuttle buses operating to transport residents to these railway stations until such time as light rail (or equivalent) is operational.
Concerns that the State Government is not proceeding with PLR Stage 2, therefore development should not proceed. Buses are not sufficient to deal with the transport demand.	The State Government has recently announced a funding commitment towards progressing the planning of PLR

	Stage 2. Council will continue to work with the State Government regarding the delivery of this important infrastructure.
Have train capacities been considered in this (and all other) developments?	Train capacities were assessed and included as part of the TMAP. The TMAP has been endorsed by DPIE and TfNSW.
Concerns were expressed that the M52 service to the City has been replaced with a service that takes longer. Buses along Victoria Road do not cater for the current demand and there is no direct service to the City.	The provision of public transport services is a matter for TfNSW. They are aware of this issue and will make service adjustments based on operational demands.
It was noted that high density developments should only be allowed around existing transport hubs with rail connection and should not add extra burden onto residential streets.	Noted. This redevelopment is located along the announced Parramatta Light Rail Stage 2 corridor and is in proximity to Victoria Road. There will also be shuttle buses provided for to Meadowbank and West Ryde Stations until light rail or equivalent is delivered.
The development has noted close proximity to West Ryde and Meadowbank stations and Meadowbank wharf as selling points but according to a June 2019 report from Infrastructure Australia (Urban Transport Crowding and Congestion- the Australian Infrastructure Audit 2019 Supplementary Report), Victoria Rd is already one of the most congested roads in Sydney and public transport, including rail, from this area is already close to capacity.	Road and public transport capacities were assessed as part of the TMAP and are considered to have capacity providing the identified road and public transport upgrades are undertaken at the required stages.
It was noted that the change in the PLR Stage 2 alignment from Wharf Rd to Waratah St is not reflected in the proposal.	This will be updated.
Melrose Park presents significant but manageable challenges for transport infrastructure and services for both the road and public transport network. A question was raised as to what management options are going to be put in place to cope with these challenges?	The TMAP identifies the road and intersection upgrades required to address the anticipated increase in traffic and provides an implementation plan to ensure the necessary infrastructure is delivered at the appropriate stages of redevelopment.
A question was raised as to why would people use the proposed light Rail stage 2 when the existing bus/train network would be quicker to get to the CBD?	The proposed PLR Stage 2 will connect with the new Sydney Metro West station at Sydney Olympic Park and therefore provide an alternative to existing services.
8. OPEN SPACE	
Concerns were raised that there is not sufficient green space provided as part of the proposal.	The proposal identifies five new public open space areas within the precinct, including a large central park and

	playing field providing for active and passive recreation. In total, over 20% of the site will be public open space which is consistent with Council's requirement for high density residential development.
A comment was made that a lack of green space limits recreational activities and will lead to significant heating in the area.	It is acknowledged that the urban heat effect is an issue in not just the Parramatta area but Western Sydney generally. As a result, the site has been designed to enable a high number of large canopy trees to be planted not only in the public open space areas but on the development lots and along all streets which will help assist in mitigating this effect.
It was noted that the map of the site does not show the existing development site fronting Victoria Road and exaggerates the perception of open space.	The redevelopment of the former Bartlett Park and putt putt sites (commonly known as the VRS) is not part of this proposal and has therefore not been included in the aerial perspectives provided. This was to help avoid confusion to the public as to whether this site was included in the proposal. All existing development surrounding the precinct and visible in the aerial imaging has been coloured green. However, all open space provided as part of the development is clearly articulated in the proposal.
Concern was expressed regarding shading due to heights on East and Northern faces of the site. Open public spaces on western corridor are directly under existing Transmission Line. This will not be appealing or attractive for public or families to spend time in, yet it is still conveyed as public open space. The real usage and occupancy of this space will be limited and should therefore be excluded from any 'open spaces' or park land areas.	A shadow analysis has been undertaken of the proposed development and complies with the solar access requirements in the Apartment Design Guide. This will be further considered at the development assessment stage. The space underneath the high voltage power lines has limited capacity as open space but is considered to still provide valuable green space for the community. It has the ability to provide for active recreation uses at the southern end and is therefore considered usable open space.

Concern was expressed that the green space is not sufficient with one section in the middle of the precinct and a strip under the transmission lines.	Over 20% of the site is identified as public open space which is consistent with Council's requirements. The spaces will provide for both the active and passive recreation needs of the community and includes a playing field in addition to the central park and green areas along the east and west boundaries.
It should be compulsory to provide gardens, green open space, and activity centres such as play areas for kids, gyms, and a pool. I know of much smaller complexes that provide these amenities for their residents.	Facilities such as these are typically provided within the developments themselves for private use by residents of the buildings. However, public open space areas will be provided as part of the redevelopment of the site and will include a range of active and passive recreational opportunities for the public.
9. SUSTAINABILITY	
Due to the lack of ferry, train public transport and access to food retails at West Ryde and Ermington, to be viable, the development would need State and Federal transport commitment including electric vehicle EV charge points.	Currently the State Government does not mandate the provision of electric vehicle (EV) charge points, however the draft DCP for the precinct does include a number of controls relating to their incorporation into basement car parks of future developments.
10. PRIVACY	
Concerned about overlooking onto existing Hughes Avenue properties and why high rise apartments being so close to existing residential development.	It is considered that the 40m separation between this lot and the Hughes Avenue residences will be sufficient in preventing any overlooking of properties from the new development. Should privacy concerns remain, it is considered that these can be addressed at the development application and assessment phase. Notwithstanding, the draft DCP contains controls relating to minimising any potential overlooking privacy concerns and this can be addressed in full detail at the development application stage.
11. OVERSHADOWING	
The shade/solar access diagrams provided in the site specific DCP are illegible as the scale on the paper is too small.	Noted. These will be amended before the proposal is finalised.

Concerned about overshadowing of Hughes Avenue residents and that solar panels will be useless. Heights proposed will have adverse overshadowing on the local housing.	The shadow diagrams indicate that at 10am some properties will be overshadowed at the northern and southern ends. However, this improves greatly from 11am onwards.
Concerned that the tower building at the bottom of the site will block the sunrise and won't receive direct sunlight until several hours later.	Noted. Some overshadowing will be experienced but will not be an issue from 11am onwards.
Concerned about submitter's property in Cobham Avenue will lose afternoon sunlight at least an hour earlier. This is in addition to negative visual impact from the increased height.	Some overshadowing may be experienced but this has been reduced by locating lower building heights on the perimeter of the site. The properties are expected to still receive direct sunlight for the majority of the day.
12. GENERAL / OTHER	
The development is not in the best interests of the residents and there is no thought as to what residents think or want.	This planning proposal has been subject to extensive review by the State Government and is considered to have planning merit. Consideration has been given towards reducing the impacts on existing residents adjacent to the precinct through careful urban design testing, extensive traffic modelling and the placement of increased separation between existing houses and the proposed development through the provision of landscape buffers and additional setbacks to reduce visual, privacy and overshadowing impacts.
The property owner requested an additional permitted use to be included in Schedule 1 of the LEP to make permissible 'place of public worship' on the site applicable to 15, 17 & 19 Hughes Avenue and 655 Victoria Rd. Request further amendment to ensure current operations on the site (place of public worship) are not affected by any zoning changes. The Site is proposed to be rezoned to part R4 High Density Residential and part RE1 Public Recreation. Area proposed to be zoned RE1 is currently car paring associated with the church. A 'place of public worship' is a prohibited use in the RE1 zone. Acknowledge long term vision for the site but need to ensure current operations aren't affected. Don't want to rely on existing use rights.	The concerns are noted; however, it is considered that existing use rights will be sufficient in this instance.

Concern that there is no mention of population increases in the application.	The proposal is not required to state the population increase as this is dependent on a number of factors and is refined during the development assessment process. However, it is anticipated that the population could increase by approximately 20,000 new residents.
There is not enough public housing twenty (20) units out of 5,000 is insufficient.	Under Council Planning Agreements Policy, this proposal is not required to provide Affordable Rental Housing as part of the redevelopment. This is due proposal and planning agreement negotiations being significantly progressed at the time the Policy was adopted in 2019. Nonetheless, there are twenty (20) affordable rental housing units proposed to be delivered as part of this redevelopment and dedicated to Council in perpetuity. Six (6) of these units will be provided in the town centre and fourteen (14) units will be provided outside the town centre. The distribution of the units is to ensure best practice is followed in regard to integrating the units amongst privately-owned units.
Concern that the proposal does not consider the southern precinct	The southern precinct is subject to a separate planning process.
Concern that the small parcel of industrial is needed to support local business and that rezoning it would push businesses further away causing a loss of businesses and employment in the area. What job opportunities and improved social outcomes are proposed by Council to support the development?	This precinct is identified in Council's Employment Lands Strategy (2016) as being suitable for redevelopment for non-industrial uses. This is due to the decline in pharmaceutical manufacturing on the site and subsequent redundancy of the purpose-built buildings. As part of this proposal, it is expected that between 1,538 – 1,932 new jobs could be provided in the northern precinct which is up to 75% of the overall job target for the entire precinct. This is considered acceptable by Council.

Considers that it would be wiser to build infrastructure and then rezone land.	For precincts that are undergoing a master plan process at this scale, it is not uncommon for infrastructure and dwellings to be delivered concurrently.
Considers this a backward process given the buildings have already been erected. Why is Council only now processing the development controls?	No new development has occurred on the site subject to this proposal. The development along Victoria Road on the former putt putt site is part of a separate planning process not related to this one.
High Voltage PL and Stanchions Considers it unfortunate that the high voltage power lines (HVPL) are not going to be undergrounded as part of the redevelopment. This was done in Homebush as part of the Olympics site redevelopment to improve usability of the site. It has been stated that the power lines would be undergrounded, and the land used as open space as part of the developer's sales presentations. Bridge crossing should provide an opportunity and reason to underground the lines. Are the 330KV power transmission lines being relocated underground?	At this stage, the high voltage powerlines on the western boundary of the precinct will not be relocated underground. Numerous discussions have taken place with infrastructure owner to resolve this issue, however it is logistically complex and would require an extensive section of the system to be relocated. There may be an opportunity to use the proposed future bridge however this is outside the scope of the planning proposal. The open space within this corridor will remain beneficial to the community.
Page 16 of the UD study should a cycleway in Lancaster Ave. This is incorrect and misleading.	Noted. This will be amended.
Unhappy with exhibition process.	The exhibition process exceeded the statutory requirements for planning proposals and is considered sufficient.
Factors such as distance from major arterial transport corridors and the close proximity to residential areas means that the precinct is no longer considered suitable for industrial uses and therefore presents a good opportunity for urban renewal. These very reasons for NOT putting industrial back into that area, are in fact the MAJOR reasons these developments should not go ahead.	This is noted. This precinct was first identified as being suitable for non-industrial development in Council's Employment Lands Strategy (2016). The proposed development is considered to have strategic merit due to the infrastructure and community benefits it will deliver.
Questions why 21 Hughes Avenue isn't included in the rezoning. This property will now be surrounded by units. Submitter and neighbouring landowners at 23 & 25 Hughes Avenue consider that the zoning of their properties should be changed to R4.	In order for these properties to be rezoned, a Planning Proposal application and application fee will need to be submitted and paid to Council.
P.18 of The Planning Proposal it states that 'Infrastructure delivery' will be provided through Council and State government requirements, 'to be funded via a variety of mechanisms such as developer contributions. However, in the Alteration of Gateway Determination Planning proposal (Department	State infrastructure provision and delivery will be enabled through a State Planning Agreement between the landowner and State Government. This is a separate

Ref: PP_2017_COPAR_009_00) the Minister for Planning and Public Spaces states that Council must, 'Delete the requirement for a satisfactory arrangements provision for contributions toward designated state public infrastructure.' Considers that if there is such uncertainty regarding major transport and funding decisions and there is no provision for the vast population growth that will occur, then Council must not proceed with these plans until they are adjusted appropriately.	process to this exhibition and will be facilitated by the State Government.
Questions the mechanisms will be used to secure 'State and local infrastructure to support the intended growth required,'	State infrastructure provision and delivery will be enabled through a State Planning Agreement between the landowner and State Government. This is a separate process to this exhibition and will be facilitated by the State Government.
There needs to be consideration for more native habitats to encourage endangered local species into the area.	An Ecological report accompanied the proposal which didn't identify any significant fauna on the site. There will be significant native trees species planted throughout the site which will support any nearby species.
There is no timeline for construction in the attached documents.	A construction timeline has not been finalised. A staging plan is provided in the Planning Agreement and delivery of the precinct in full is expected to 10-15 years.
Considers the lack of consultation with Ryde Council as disrespectful to residents and Council.	Council officers have communicated with Ryde Council staff throughout the planning process to ensure they were made aware of the proposed changes.
Considers the planning proposal documents to be difficult to understand for the general public.	The planning proposal and supporting documents include a number of technical studies which are needed to make an informed assessment. Council staff are available to discuss any issues which are difficult to understand.
Concerned that Parramatta Councillors may not have been properly informed on a number of matters related to the proposal.	Council representatives were comprehensively briefed on the proposal prior to it being considered by Council at its meeting of 22 March 2021 and the exhibition period.
A detailed analysis of the proposed bridge connecting the area with Wentworth Point needs to be undertaken.	The proposed bridge connecting to Wentworth Point will be State infrastructure and any required technical analysis will be undertaken by the State Government.
Concerned about over development without the supporting infrastructure.	There are a number of new infrastructure items proposed to be delivered as part of the redevelopment which are

	identified in the draft Planning Agreement. These include new public open space, community space, retail and commercial space, a new school and numerous upgrades to the road network. In addition, the State Government has recently announced a funding commitment towards progressing the planning of PLR Stage 2. Council will continue to work with the State Government regarding the delivery of this important infrastructure. Full responses to Planning Agreement matters will be included in the future Council report.
Suggests delivering the town centre in an earlier stage so early residents have the convenience of the new facilities and to attract people to move to the precinct. Suggests stage 3.	Noted. This is a Planning Agreement matter and will be responded to in the Council report.
13. NON-PLANNING MATTERS	
Concerned that the proposed density will devalue property and potentially reduce rental returns.	It is generally accepted by Council that rezoning the site to part R4 High Density Residential may have some implications on property prices and rental returns to some neighbouring residential properties however the proposed development is in line with both state and local planning strategies. The site will be subject to a local infrastructure provision as part of a VPA with Council which will provide public open space and embellishment of community familites which will also be accessible to residents outside the development which could potentially have the opposite effect.
Politicians do not care about the negative impact it will have on the people who live in Melrose Park.	Councillors have considered the strategic direction of City of Parramatta Council including the proposed development on behalf of local residents. The assessment and information provided to Councillors is undertaken independently by Council Officers and is in line with Local and State Planning Strategies.
Concerned about the provision of internet services in the area and how this will be managed.	Internet infrastructure and provision is not within the scope of Council to manage.

Object to the use of the Melrose Park name. Boundary creep has used the original Melrose Park name to benefit the development. Concerned there is a lack of benefits from the developer or Parramatta Council towards contributions to negate the impact on the Melrose Park residents within the Ryde LGA. There appears to be an effort to erase the existence of the "authoritative" address. Page 170 - NSW Address Policy and User Manual (October 2019).	The boundary creep issue is not a planning matter or within the scope of this planning proposal. Suburb naming and boundary control are managed by the Geographical Names Board of NSW.

PUBLIC AGENCIES		
AGENCY	**ISSUES RAISED**	**RESPONSE**
School Infrastructure NSW (First submission)	Shared road (EWR6) between new school site and playing field- SINSW requests that this road be removed, and this area be identified as a view corridor that is not accessible to vehicles, as was originally indicated by Council.	Council agrees to retaining this area of land as a view corridor that will not be accessible by vehicles.
	School capacity- proposed dwellings in Melrose Park are not included in the State Government's current dwelling projection data and consequently are not included in SINSW's student projections for this area. As a result of this proposal, a new primary school and additional secondary school are required to meet the projected demand.	A new primary school is proposed in the precinct and discussions continue with SINSW regarding the provision of a secondary school.
	Overshadowing: DoE and SINSW aim to ensure that at least 70% of school spaces receive direct sunlight between 9am and 3pm mid-winter. Overshadowing diagrams in the DDCP appear to show that the playing fields will be significantly overshadowed at 3pm but the extent is unclear. Request that overshadowing diagrams identify how DoE standards will be achieved for the playing fields.	Updated shadow diagrams have been provided to SINSW demonstrating that the DoE standards have been achieved.
	Privacy: Proposed building heights of 74m-80m (24/20 storeys) directly to the west and 36m (8 storeys) to the north	

	of the new school site and playing fields. This is likely to result in overlooking of the new school site and playing fields. Request DCP be amended to ensure that future development provides additional screening (architectural, frosted glazing/planting) for each of the windows that directly overlook the school and orientate balconies, so they don't overlook the school. VPA: SINSW requires a perimeter palisade fence around the playing field standard for schools. Playing field is required to accommodate a soccer field that is of official size (72mx106m) with adequate clearance on either side. SINSW requires a view corridor to be established between the playing field and new school site.	A new control has been incorporated into the draft DCP to address this concern. This control has received provisional agreement from SINSW. This is a Planning Agreement matter that will be addressed as part of the Council report.
School Infrastructure NSW (Second submission)	Letter received noting that SINSW no longer has any objections to the proposal providing the changes are made as agreed.	Noted.
Western Sydney Local Health District	Consideration of additional and dedicated parking for use be visiting social and health care providers' use. These services are increasingly being provided in homes. Strongly recommend that the plans ensure access to adequate open space for children and for families to congregate given high density conditions. Supports allocation of ARH units. Encourage community gardens. They have social, psychological and health benefits.	All noted.
Environment, Energy and Science Group (part of DPIE)	Recommends the supporting studies provide consistency with one another.	Noted.

	Concern over potential for microbats to be inhabiting the vacant industrial buildings and that a nocturnal fauna survey be completed as part of future development applications.	Threatened species are required to be considered at the development assessment phase under section 1.7 of the EP&A Act 1979. Nonetheless, a control has been included in section 4.11 of the DCP to ensure this is considered at the development application stage. In addition, an ecological consultant confirming that no potential habitat or evidence of presence of Microbats was identified and is considered no further assessment is required.
	Unclear what area of the Wharf Rd gardens will be for the protection of existing trees and planting of vegetation.	Noted. This will be provided prior to finalisation.
	Details are required on the total area/% of the open space that is proposed to protect and enhance native vegetation. EES recommends a scaled map is provided that overlays the existing tree species that are proposed to be retained and removed with the proposed masterplan and open space areas.	Noted. This will be provided prior to finalisation.
	Unclear if proposed building height increase from 12-36m will impact the long-term health/survival of existing trees along the eastern boundary in terms of shadowing.	Noted. This will be provided prior to finalisation.
	Unclear if 17m setback on eastern boundary is the RE1 zoned park and what the setback distance is between the existing trees and proposed development. Further information is required on the potential impact of future development on existing vegetation.	Noted. This will be provided prior to finalisation.
	DCP Recommended amendments:	Noted.

	Fig. 1- unclear is the area covered by the DCP applies to the proposed RE1 land. Recommend amending the legend so it is clear.	
	Recommend the DCP includes objectives and controls which outline that planting on the site should use a mix of local native provenance plant species that once occurred in this locality (rather than non-local natives or exotic species as depicted in images). Includes suggested wording for Objectives.	Noted. The tree species list is currently being finalised but will require the use of species appropriate for the location and be consistent with Council's specifications.
	Site Planning- Recommends the site planning section of the DCP refers to the potential for microbats to be using the existing buildings for habitat. Includes suggested wording for DCP. Demolition- Suggested amendments relating to microbat habitats in existing buildings.	Not considered necessary due to requirement to consider threatened species as part of the development application process and confirmation from an ecologist that no Microbat populations exist on the site. The Demolition section of the DCP has been removed, however a Section 4.11 Ecology has been included to address this issue. In addition, an ecological consultant confirming that no potential habitat or evidence of presence of Microbats was identified and is considered no further assessment is required.
	Built Form 1.1 Guiding Principles- Recommended amendment relating to overshadowing of existing trees. 1.3 Street, Block, OS and Building Layout- amendments to O2 and O9 to allow space for canopy trees to grow to grow to maturity.	All noted.

	1.11 Ground Floor- amendment for mitigating urban heat island effect and improving biodiversity / habitat and enabling tree canopies to grow to maturity. 2.1 Street Network and Footpaths- amend C.04 to reference local native tree species. 2.3 Street Trees- supports inclusion of O.02 and recommends DCP be amended to require mix of local native tree species. 2.4 Overhead Power Lines- supports undergrounding of power lines. 2.7 - suggested rewording for O.02 and C.01. For C.02, it is unclear what is proposed for the other 50%. 2.8 POS- Unclear if the playing field is to provide a dry detention basin which also functions as active rec space or if detention basin will be mixed dry and wetland. Section '(v) Wetlands' unclear where wetlands and detention basins located in masterplan. Suggested wording for Objectives 02, 04, 05, 06 and C.02 Central Parklands- suggested wording change relating to species mix. Questions 50% requirement of sunlight and if it's adequate for tree health. Western Parklands and Wharf Rd Gardens- minor wording change - plant species. 2.9 Landscape Design- suggested wording for O.01 d) and C.01, C.04-06.	
Sydney Water	Request that the following Secretary's Environmental Assessment requirements be applied: Water-related Infrastructure 1. The proponent of development should determine service demands following servicing investigations and demonstrate that satisfactory arrangements for drinking water, wastewater, and recycled water services have been made.	Noted.

	2. The proponent must obtain endorsement and/or approval from Sydney Water to ensure that the proposed development does not adversely impact on any existing water, wastewater or stormwater main, or other Sydney Water asset, including any easement or property. When determining landscaping options, the proponent should take into account that certain tree species can cause cracking or blockage of Sydney Water pipes and therefore should be avoided.	Noted.
	3. Strict requirements for Sydney Water's stormwater assets (for certain types of development) may apply to this site. The proponent should ensure that satisfactory steps/measures been taken to protect existing stormwater assets, such as avoiding building over and/or adjacent to stormwater assets and building bridges over stormwater assets. The proponent should consider taking measures to minimise or eliminate potential flooding, degradation of water quality, and avoid adverse impacts on any heritage items, and create pipeline easements where required.	Noted.
	Integrated Water Cycle Management The proponent should outline any sustainability initiatives that will minimise/reduce the demand for drinking water, including any alternative water supply and end uses of drinking and non-drinking water that may be proposed, and demonstrate water sensitive urban design (principles are used), and any water conservation measures that are likely to be proposed. This will allow Sydney Water to determine the impact of the proposed development on our existing services and required system capacity to service the development.	Noted. A number of sustainability controls are included in the draft DCP relating to water management and recycling.

	Request that an anticipated annual growth projection and staging for the redevelopment is provided to enable effective planning for water infrastructure planning.	Noted.
Transport for NSW	Require clarification that active transport road users have been adequately considered particularly in areas adjacent to the proposed town centre.	The new roads within the precinct have considered pedestrian and cyclists with input provided by Council's Transport Planning section. The pedestrian and cycleway network has been incorporated into the planning of the road reserves in accordance with Council's adopted Bike Plan.
	It is not clear from the plans included in the DCP that adequate areas have been allocated for public transport and pedestrian facilities to cater for future public transport services and pedestrian movements along Hope Street.	The Hope Street corridor has been design ed in consultation with TfNSW to ensure it can accommodate any required future public transport corridors such as light rail or bus.
	The proposed intersections of EWR4/NSR4 and Wharf Road/EWR4/Taylor Avenue are at acute angles which is likely to result in a sub-optimal outcome. It is recommended that a safety assessment be undertaken of the layout.	Noted. Advice will be sought on the functionality and safety of these intersections.
	The proposed direct connection of Wharf Road / EWR3 / Taylor Avenue may encourage redistribution of traffic who would otherwise use the Victoria Road / Wharf Road intersection.	It is considered that the internal street design and traffic calming measures will deter drivers from utilising this route as an alternative to Wharf Rd / Victoria Rd.
	Notes that the TMAP has been prepared based on a number of key assumptions including dwelling yield and future travel behaviour. Should any of these assumptions change the suitability of the infrastructure and services proposed in the	Noted.

	TMAP may need to be reassessed. Comments on proposed shuttle bus service.	This is a Planning Agreement matter and will be addressed in the Council report to follow.
OTHER		
	Issues	**Response**
Viva Energy	Objects to proposal under clause 66C of the SEPP. Raises concerns regarding the location of sensitive land uses near the high-pressure oil pipeline. If the proposal is approved, it be subject to the following conditions: A safety Management Study be completed. A Viva Energy Recoverable Works Agreement covering all Viva Energy costs must be signed by the Property owner. The landowner must at no cost to Viva Energy Australia Pty Ltd, carry out the works (whether or not within the pipeline easement) for the development to meet the requirements of: (a) Australian Standard AS2885 Pipelines – Gas and Liquid Petroleum. (b) Pipelines Act 1967; and (c) Pipeline Regulations 2013.	Noted. The requirements of HIPAP 10 have been considered and a Hazard Analysis Report has been prepared for the site and identified potential risks. A Safety Management Study will be completed at the development assessment stage.
Jerome Laxale, City of Ryde Mayor	The proposed development height is out of character with surrounding built form and will worsen traffic flows. The proposed public open space is not adequate for the additional patronage proposed. If Melrose Park is approved, it could act a precedent for inappropriate development of the Holdmark site.	Refer to response provided in Sections 1, 2 and 8 of the above table. The site owned by Holdmark is not part of this proposal and is subject to a separate planning proposal process. The southern precinct is also subject to an approved structure plan which identifies FSRs for each development lot which will provide a form of density control. Further information will be provided at the public exhibition stage of this proposal.

	There is limited public infrastructure in this location including limited public transport. The TMAP relies heavily on several hypothetical infrastructure developments by the State Government. Concerns regarding the identified number of car spaces- 500 and 700. Concerned there has been a significant underestimation of the traffic impacts. The TMAP states that there is already significant traffic congestion in the area.	Noted. The TMAP assumptions and methodology have been endorsed by TfNSW.
	The project was first proposed under the assumption that stage Two Greater Parramatta light rail would proceed. A development of this scale will significantly increase the volume of traffic and increase pressure on Ryde LGA infrastructure without any contribution from the State or Parramatta Council. Considerable investment in public transport and local roads is required.	Parramatta Light Rail Stage 2 has recently been allocated funding to progress the planning work for this project. This provides a level of certainty that this infrastructure will be delivered.
	Object to residential towers of 24 storeys unless there is already public transport infrastructure in place and a plan to invest significant amounts of money into improving infrastructure to be impacted by this proposal in the Ryde LGA.	Refer to the responses provided in section 1 of the above table.
City of Ryde Council (Council officer submission)	Traffic Multiple access points on Wharf Rd. Proposed 5 new access points on Wharf Rd will result in additional load onto this street. Ryde residents west of Archer Creek are heavily reliant on Wharf Rd and the introduction of new access points combined with significant increase in traffic volumes will increase congestion within local roads under Ryde Council.	Noted. Only four (4) new access points are proposed as there is no through-road between the proposed school and playing field. The TMAP doesn't anticipate that significant impacts will be experienced by residents within the Ryde LGA.

	Result in increased journey times and poor outcomes from a movement and place context.	
	The VPA should make provision for contributions to be made to Ryde Council for road improvements, renewal of existing traffic facilities and other infrastructure upgrades given the impacts on local roads in Ryde.	Noted. This is a Planning Agreement matter and will be addressed as part of the report to Council.
	Any modifications to Wharf Rd will require input and approval from Ryde Council.	Noted.
	Planning Issues Concerned that there are no proposed infrastructure upgrades to local roads or intersections west of Wharf Rd despite Andrew St and Constitution Rd West expected to carry a significant increase in traffic volume. Considered that at a minimum, traffic calming and pedestrian crossing facilities will be needed. Others include upgrade/reconfiguration of Wharf Rd intersections with Taylor Ave, Lancaster Ave and Andrew St, and Andrew St/Cobham Ave; signalisation of Constitution Rd West/Bank St/Meadow Cres; roundabout at Adelaide St/Constitution Rd West; and pedestrian crossings along Andrew St.	Noted. This is a Planning Agreement matter and will be addressed as part of the report to Council.
	Concerned about infrastructure & monetary contributions Ryde LGA and the likely impacts. CoP approach fails to recognise the infrastructure needs across the LG boundary and the burden the increased population will place on Ryde infrastructure. Funds should be allocated via VPA or other means that requires upgrade of infrastructure within Ryde LGA in consultation with Ryde Council. A contributions plan specific	Noted. This is a Planning Agreement matter and will be addressed as part of the report to Council. Nonetheless, infrastructure provision has been an extensive consideration as part of this planning proposal and it is considered that the proposed infrastructure will provide for the needs of the incoming population without the needs for a specific contributions plan for the precinct. It is not

	to the precinct should be considered to ensure the contributions are tied to the needs of both LGAs.	considered that the development will place any significant burden on facilities within the Ryde LGA. In addition, with the exception of the Payce development, all future redevelopment will be subject to the new increased s.711/s7.12 contributions rates as per the recently adopted Parramatta (Outside CBD) Contributions Plan.
	Unreasonable Flexibility in Utilisation of FSR Concern raised over the ability of FSR to be transferred between lots as this will allow the developer to change the development composition at the expense of locating additional GFA along Wharf Rd or other areas where the DCP/LEP doesn't recommend such as perimeter blocks.	Some flexibility has been incorporated into the FSR allocations to enable minor variations at the development application stage. Should variations be proposed, the principles of the master plan will still need to be addressed and considered, such as maintain lower heights on the perimeter of the site and towers at the identified locations in the core of the site.
	Taylor Ave - Rat Run Proposed connection to Taylor and Cobham Aves will potentially have serious adverse effects on the amount of traffic flowing into the low-density area. Has been raised previously and remains a major concern.	Noted. The new roads within the precinct will incorporate traffic calming measures to discourage through-traffic, such as roundabouts and wombat crossings.
	The TMAP indicates that increased bus services along Victoria Rd are required to support the development and achieve mode share targets. It also states that the road network analysis has identified that the remainder of existing surrounding road network is able to cater for traffic generated by proposed development with no significant impacts when compared to a future 'do minimum' scenario. Ryde Council	Noted.

	seeks a careful review of the report as this assertion cannot be correct.	
	Development Connection to Victoria Rd on Western Side Multiple entry points will be detrimental to traffic capacity of Wharf Rd. Alternatively, the layout should be changed to allow entry/exit towards the western side of the development and connection to Victoria Road via Hughes Ave and Atkins Rd. This will enable only limited existing road connections to remain on Wharf Rd. This option must be explored.	Opportunities for additional entry/exit points along Hughes Avenue are extremely limited due to the majority of properties on this street being under private ownership.
	Uncommitted Infrastructure Suggest a number of infrastructure commitments be brought forward as it seems that significant density can be allowed without committed infrastructure provision. Proposed densities should be predicated on the available infrastructure and only those infrastructure improvements guaranteed by appropriate planning/legal mechanisms.	Noted. This is a Planning Agreement matter and will be addressed as part of the report to Council.
Submission from the Northern Sydney District Council of Parents and Citizens Association has been responded to in the main submissions section		

CITY OF PARRAMATTA

PLANNING PROPOSAL (Revised)

Melrose Park North
8, 38-42, 44 & 44A Wharf Road, Melros
15-19 & 27-29 Hughes Avenue &
655 Victoria Road, Ermington

cityofparramatta.nsw.gov.au

TABLE OF CONTENTS

Planning Proposal drafts

Proponent versions:

No.	Author	Version
1.	Michael Woodland Consulting	February 2016
2.	Michael Woodland Consulting	March 2017 (Revised Planning Proposal)
3.	JBA Urban Planning Consultant	March 2017
4.	JBA Urban Planning Consultant	March 2017
5.	Keylan Consulting (formerly Michael Woodland Consulting	May 2019 (further revised Planning Proposal)

Council versions:

No.	Author	Version
1.	City of Parramatta Council	Report to Local Planning Panel and Council on the assessment of planning proposal – June 2017
2.	City of Parramatta Council	Submission to Department of Planning, Industry & Environment for endorsement – September 2019
3.	City of Parramatta Council	Public consultation version – April 2021

INTRODUCTION

This planning proposal explains the intended effect of, and justification for, the proposed amendment to *Parramatta Local Environmental Plan 2011*. It has been prepared in accordance with Section 55 of the *Environmental Planning and Assessment Act 1979* and the Department of Planning and Environment (DP&E) guides, 'A Guide to Preparing Local Environment Plans' (August 2016) and 'A Guide to Preparing Planning Proposals' (August 2016) and 'Guidance for merged councils on planning functions' (May 2016).

Background and Context

Precinct

In December 2016, the City of Parramatta Council adopted the Northern Structure Plan for Melrose Park. The Structure plan intends to act as a guide for future development in the precinct and is based on the recommendations of Council's Employment Land Strategy (adopted by Council in July 2016), which identifies the Melrose Park precinct as being suitable for redevelopment for non-industrial uses.

In July 2016, Council also endorsed the Melrose Park Structure Plan Principles document, which was developed by Council Officers in response to the complexity of the Melrose Park Precinct. The diagram establishes principles for the precinct, which must be taken into consideration by all future planning proposals in the precinct.

The Melrose Park North precinct comprises of land bound by Victoria Road to the north, Wharf Road to the east, Hope Street to the south and Hughes Avenue to the west (refer to **Figure 1**). The eastern boundary is shared with the City of Ryde Council (refer to **Figure 2**).

The Site

The Subject Site consists of twenty (20) allotments (refer to **Table 1**) with a total area of approximately 28ha. It is surrounded by low density residential development to the north, west and east. Industrial uses occupy land to the south of the site down to Parramatta River, with the exception of Melrose Park Public School, which is zoned SP2 Infrastructure (Educational Establishment).

The site is located close to Victoria Road, which is identified as a key strategic corridor and is within approximately 2.5km of Meadowbank and West Ryde Train Stations. West Ryde Town Centre is approximately 2km east of the site and Ermington Centre is approximately 2km west of the Site. Sydney Olympic Park is within close proximity to the site and provides a range of sporting, open space and recreation facilities. The subject site is shown in **Figure 1**, below.

Figure 1. Land subject to Melrose Park North Planning Proposal

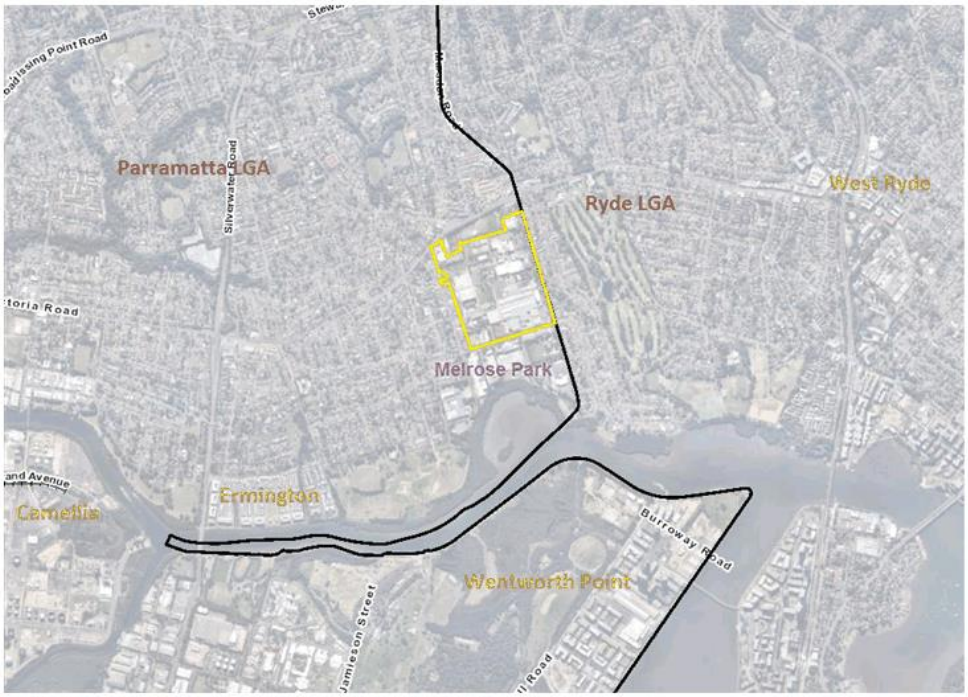


Figure 2. Context of subject site on a regional scale

Background

Prior to the adoption of the Northern Structure Plan, a draft Planning Proposal was submitted to Council on behalf of PAYCE MP DM Pty Ltd (Payce), the landowner of 38-42, 44 & 44A Wharf Road, Melrose Park, in February 2016 to rezone the land for non-industrial uses, however, the assessment of this Planning Proposal was placed on hold until the finalisation of the Northern Structure Plan had occurred. During 2016, a number of other landowners in the northern part of Melrose Park also expressed an interest in redeveloping their properties, including land at 8 Wharf Road and 15-19 Hughes Avenue and 655 Victoria Road, who submitted a preliminary Planning Proposal.

As a result of the Northern Structure Plan being adopted by Council, in March 2017, City of Parramatta Council received a revised draft Planning Proposal from Michael Woodland Consulting on behalf of PAYCE MP DM Pty Ltd (Payce) (the proponent) to rezone land and amend development standards at 38-42, 44 & 44A Wharf Road, Melrose Park (Site 1). Also in March, JBA Urban Planning Consultants lodged a draft Planning Proposal for land at 8 Wharf Road, Melrose Park on behalf of the landowner, Jae My Holding Pty Ltd (the proponent) to amend PLEP 2011 (Site 3).

In May 2017, a draft Planning Proposal for land at 15-19 Hughes Avenue & 655 Victoria Road, Ermington was lodged by JBA Urban Planning Consultants on behalf of the landowner, the Ermington Gospel Trust. A summary of the changes to the planning controls proposed by the proponents is contained in **Table 2.**

To enable a consistent approach to be taken in the assessment of planning proposals in the Melrose Park precinct, Council Officers have incorporated the three planning proposals into one Planning Proposal, referred to as the Melrose Park North Planning Proposal (The Site).

The properties at 19, 27, 29 and 31 Hope Street (Site 4), were included in the previous planning proposal and referred to as a deferred matter to demonstrate that a strategic approach was being taken for the precinct and allow time for the owners to engage with Council regarding the future intentions of these site. However, these landowners have not expressed an interest having the planning controls amended on their respective properties as part of this planning proposal and have therefore been removed. The removal is consistent with condition (d) of the Gateway Determination.

A Gateway Determination was issued on 27 September 2017 with a number of conditions. Further detail on these conditions and how the revised planning proposal addresses these conditions is provided later in this planning proposal. During this time, a Transport Management and Accessibility Plan (TMAP) was commissioned to test the traffic and transport capacity of the precinct.

An Alteration of Gateway Determination was issued on 27 March 2019, granting a 12 month extension of time for completion of the planning proposal.

A revised Melrose Park North Planning Proposal was submitted to Council for consideration in May 2019 and reported to Council at its meeting of 12 august 2019, where it was resolved to forward it to the Department of Planning, Industry and Environment (DPEI) for endorsement to proceed to exhibition.

The planning proposal subject to the Gateway determination did not include proposed amendments to the building height and FSR provisions on the site. The revised planning proposal has been informed by the outcomes of the TMAP and further urban design testing, which has resulted in the proposed density included in this proposal.

The planning proposal has subsequently been amended further to accommodate the following changes:

- Updates to reflect refinements made to the master plan
- Revised proposed Design Excellence provisions
- Amended site are which has been increased to include an additional property at 27 Hughes Avenue
- Increase to the proposed overall residential gross floor area permitted within the planning proposal area from 7,245m^2 to 508,768m^2 as a result of the increase in site area.

Under *Parramatta Local Environmental Plan 2011* the site currently has the following applicable planning controls:

Site		Zone	FSR	HOB	Heritage
1.	38-42, 44 and 44A Wharf Road and 27-29 Hughes Avenue	IN1 General Industrial and R2 Low Density	1:1	9m & 12m	I311. Stand of lemon-scented gums & two moveable items.
2.	15-19 Hughes Avenue & 655 Victoria Road	SP1 Special Uses & R2 Low Density Residential	0.5:1, 1:1 & 2:1	9m, 12m & 28m	Nil
3.	8 Wharf Road	IN1 General Industrial	1:1	12m	I311. Stand of lemon-scented gums & two moveable items

Table 2. Current planning controls on the site

An extract of each the above maps is provided in Part 4 – Mapping; specifically, Section 4.1 Existing controls.

Figure 3. Existing industrial building

Figure 4. Existing industrial building

Figure 5. Existing industrial building

Figure 6. View east across Payce site

Figure 7. Existing building at 8 Wharf Road

Figure 8. Church building on Hughes Ave

Figure 9. Church carpark

Figure 10. Industrial buildings on Hope Street

PART 1 – OBJECTIVES OR INTENDED OUTCOMES

The objective of this Planning Proposal is to amend the *Parramatta Local Environmental Plan 2011* (PLEP 2011) to enable the redevelopment of the subject site for residential and mixed-use development in an area identified for urban renewal by Council's Employment Lands Strategy.

The objectives of the Planning Proposal are to:

- Support a Greater Parramatta (and metropolitan area) through the urban renewal of the Site to create a vibrant mixed-use development and increase public amenity to and along Parramatta River;
- Encourage and support future employment generation on the Site to increase the number of employees and provide for higher employment densities to respond to market trends in the pharmaceutical industry;
- Provide improve public transport connection to and from the Site;
- Provide high quality urban renewal including quality residential housing development, incorporating a range of housing types, including affordable housing for Melrose Park and surrounding locality;
- To provide an innovative Town Centre with a range of commercial and retail employment activities which are more compatible with the residential uses in the area than industrial uses;
- Provide improved parklands, public recreational areas of open space and community facilities for the residents and workers of Melrose Park and surrounding area; and
- Integrate into the surrounding community through sound planning and environmental considerations.

The intended outcomes of the Planning Proposal are to:

- Address the lack of housing diversity and availability within the locality by potentially accommodating approximately 5,500 new dwellings on the site (including 20 affordable rental housing units to be dedicated to Council in perpetuity);
- Provide appropriate services and employment opportunities to arrest the decline in employment at the Site, ensure higher contemporary employment densities that suit the resident profile in the area and changing employment characteristics. Approximately 30,000m^2 of non-residential floor space is proposed to be provided for retail and employment uses;
- Allow for development that will complement and support other centres including West Ryde, Meadowbank and Ermington;
- Dedicate approximately 20% of the site for new areas of public open space including a playing field to provide for active and passive recreational needs with logical connections to the surrounding area and river and contributions towards the provision of community facilities; and
- Allow for public domain upgrades.

PART 2 – EXPLANATION OF PROVISIONS

This planning proposal seeks to amend *Parramatta LEP 2011* (*PLEP 2011*) in relation to the zoning, height and floor space ratio controls and insert a site-specific provision relating to the maximum residential gross floor area and minimum non-residential floor space requirement

In order to achieve the desired objectives, the following amendments to the *PLEP 2011* would need to be made:

1. Insert a site-specific provision in Part 6 *Additional local provisions – generally* to ensure:

   a) That design excellence provisions apply to Lots E, EA and G as identified in **Figure 11** without the provision of floor space and height bonuses.

   b) The total residential gross floor area within the planning proposal site does not exceed 508,768m^2.

   c) A minimum of 30,000m^2 of non-residential floor space is to be provided within the site to serve the retail and commercial needs of the incoming population.

2. Amend the zone in the **Land Zoning Maps** (Sheets LZN_017 and LZN_018 from part IN1 General Industrial and part SP1 Special Activities (Place of Public Worship) to part R4 High Density Residential, part B2 Local Centre, part RE1 Public Recreation and part SP2 Infrastructure (Educational Establishment). Refer **Figure 20** in Part 4 of this planning proposal.

3. Amend the maximum building height in the **Height of Buildings Maps** (Sheets HOB_017 and HOB_018) from part 9m and part 12m to multiple heights ranging from 28m to 95m which equates to approximately 26 storeys. Refer **Figure 21** in Part 4 of this planning proposal.

4. Amend the maximum FSR in the **Floor Space Ratio Maps** (Sheets FSR_017 and FSR_018)) from part 0.5:1 and part 1:1 to 1.85:1. Refer **Figure 22** in Part 4 of this planning proposal.

5. Amend the **Land Reservation Acquisition Maps** (Sheets LRA_017 and LRA_018) to reflect areas of open space to be dedicated to Council and land for the new school site to the State Government.

6. Amend Schedule 1 – *Additional permitted uses* within PLEP 2011 to permit 'Residential Flat Buildings' in the B2 Local Centre zone.

7. Appoint a Design Excellence Panel to provide design advice for all development applications within the northern precinct. Floor space and height bonuses are not to be awarded on any development lot.

Council resolved to stage the delivery of dwellings subject to traffic and transport infrastructure being in place to serve the incoming population as identified in the TMAP. In particular, Council endorsed the following implementation plans that should be incorporated into the LEP amendment for the purposes of achieving the following outcome:

(a) *Implementation Plan A – Provides up to 11,000 dwellings over the north and south precincts subject to identified road and traffic works, the bridge to Wentworth Point with light rail or equivalent bus service and Sydney West Metro being delivered. Implementation Plan A will facilitate an FSR 1.85:1 for the northern part of the precinct with and an appropriate development potential in the southern precinct.*

(b) *Implementation Plan B – Should there be no State Government commitment towards Sydney West Metro, the bridge to Wentworth Point and associated light rail or bus service then only 6,700 dwellings can be accommodated within the precinct. Accordingly, a 40% reduction in yield will be applied to the development in Melrose Park to ensure both north and south precincts are treated equitably.*

Figure 11. Lots subject to design excellence provisions outlined in blue

1.1. Other relevant matters

State and Local Infrastructure Delivery

1.1.1. Voluntary Planning Agreement

Contributions from all landowners proposing to redevelop their respective properties towards the provision of required local infrastructure is required. All Planning Agreements

are required to consider the Infrastructure Needs List (INL) (**Appendix 20**) that has been prepared by Council which identifies the required infrastructure within and outside the precinct to support the proposed density within and growth of the precinct. The INL includes items relating to open space, road network improvements and community facilities that would be required within and external to the precinct at the proposed density and an indicative cost/contribution to be made per dwelling.

Council has successfully negotiated a Planning Agreement for the delivery of local infrastructure with Payce which has a total value of $96.74 million.

In addition to a contribution towards the delivery of local infrastructure items, landowners seeking to redevelop their respective properties will also be required to contribute towards the cost of delivering identified State infrastructure. The delivery of this infrastructure will be facilitated via separate Planning Agreements between each landowner and the State government.

1.1.2. Draft DCP

Council has endorsed a draft site-specific Development Control Plan (DCP) for the northern part of the precinct. This DCP contains specific requirements, including, but not limited to:

- GFA allocation
- Site levels
- Street ad block layout
- Relationship of buildings to the street and block pattern
- Building typologies
- Desired character
- Public domain, open space and landscaping
- Site access, circulation and connectivity
- Transport and parking
- Environmental sustainability
- Stormwater management
- Solar access
- Transition areas to surrounding development
- Development within the town centre

PART 3 – JUSTIFICATION

This part describes the reasons for the proposed outcomes and development standards in the planning proposal.

3.1 Section A - Need for the planning proposal

This section establishes the need for a planning proposal in achieving the key outcome and objectives. The set questions address the strategic origins of the proposal and whether amending the LEP is the best mechanism to achieve the aims on the proposal.

3.1.1. Is the Planning Proposal a result of any study or report?

Parramatta Employment Lands Strategy

The Parramatta Employment Lands Strategy (ELS) was adopted by Council in July 2016 and provides recommendations for the future direction of all "employment lands" within the Parramatta LGA. Employment lands include those with a land use zone of either IN1 – General Industrial, IN2 – Light Industrial, IN3 – Heavy Industrial, B5 Business Development and B6 – Enterprise Corridor.

The ELS separates employment lands into precincts, each with their own set of recommendations. Melrose Park is Precinct 11 within the ELS and has previously accommodated a large concentration of large-scale pharmaceutical manufacturing companies and warehousing / distribution centres. However, this precinct is undergoing change and the restructuring of this industry has affected the viability of the precinct to continue operating for the purposes of industrial uses.

In addition to providing recommendation for each precinct, the ELS identifies a number of key actions that are aimed at ensuring employment generating uses are retained within the precinct and incorporated into future redevelopments. The two actions in relation to the planning proposal are:

- A3 – Rezoning to zones that facilitate higher employment densities
- A11 – Proposed rezoning must be supported by an Economic Impact Study

Over the past 10-15 years, the following remnant industrial lands have transformed into waterside communities:

- Former AGL Gasworks at Breakfast Point
- Former Union Carbide Site and Allied Feeds Site at Rhodes
- Former industrial and reclaimed lands at Wentworth Point
- Former industrial and employment lands at Shepherds Bay, Meadowbank
- Ermington Naval Stores
- The City of Parramatta Council Depot Site, Parramatta

In addition, the following current industrial / employment Sites have been identified for future urban renewal by the State Government:

- Former industrial lands at Camellia
- Cumberland Hospital, North Parramatta

It is acknowledged that the current employment and industrial lands at Camellia, Rydalmere and Silverwater are strategically important employment precincts due to their size and

location to key transport corridors. The Camellia Precinct has been targeted for urban renewal and is currently under investigation by the State Government in collaboration with The City of Parramatta Council and major landowners. This precinct is expected to retain significant employment land and likely to retain large areas for general industrial uses to meet demand in the subregion.

A requirement of the ELS is that any new development in the precinct must provide the equivalent number of jobs that could be achieved under the current zoning (2,456). Under the revised Proposal, it is estimated that the new land uses will provide between 1,538 – 1,932 jobs in the northern part of the site, which equates to approximately 65% to 75% of the overall job number target for the precinct. The above figures relate only to the northern precinct, with the southern precinct also required to provide for employment generating land uses. Given the northern precinct is a significant portion of the overall precinct, it is expected that more jobs would need to be provide as part of the northern redevelopment than the southern redevelopment. There is potentially a shortfall in the number of jobs proposed to be provided within the northern precinct; however, it is acknowledged that it may not be practicable for the total 2,546 job number requirement identified in the ELS to be matched. Instead it is considered that the key requirement is for the precinct to be able to adequately service the needs of the incoming population and reduce the requirement for residents to travel outside the precinct for retail/commercial purposes and therefore a lower job number provision is considered acceptable.

Local Strategic Planning Statement (LSPS)

Council's adopted Local Strategic Planning Statement (LSPS) provides strategic direction on how the City of Parramatta is planning for the next 20 years and draws together the needs and aspirations of the community and identifies priorities for jobs, home and infrastructure. The LSPS contains actions and priorities to help Parramatta achieve the vision of the State Government's Greater Sydney Region Plan and Central City District Plan and highlights its important role as the Central River City. In addition to being identified as a Growth Precinct in the Local Housing Strategy (LHS), the LSPS identifies it as a proposed Local Centre and one which could provide for over 2,000 jobs once fully redeveloped. The LSPS also identifies the need for improved public transport and demonstrates its important through Planning Priority 3 which relates Council's policy directions on improving connectivity to the Parramatta CBD and surrounding district through staging of development in alignment with delivery of PLR Stage 2 (or equivalent) and Sydney Metro West. As Melrose Park is identified as a Growth Precinct and the Proposal will help delivery the housing and infrastructure needed, it aligns with the vision of the LSPS. This consistency is highlighted in **Table 2**

Priority/Direction/Action	Response
Planning Priority 2 Policy Direction P4 Stage rezoning and Planning Proposal in Growth Precincts in Granville, Parramatta East, Camellia, Melrose Park and Westmead based on the timing of transport infrastructure. Action A4 Continue to work with the State government to bring forward the Parramatta Light Rail Stage 2 delivery to service the Carter Street, Camellia, Melrose Park and Parramatta East precincts.	Consistent. This Planning Proposal applies to approximately 85% of the northern precinct and is consistent with the Northern Structure Plan adopted by Council in December 2016. Infrastructure delivery will be provided in accordance with the requirements of Council and the State government to be funded via a variety of mechanisms such as developer contributions and planning agreements with Council and the State.
Planning Priority 3 Policy Direction	Consistent. This Planning Proposal will enable the planning controls on the planning proposal

P4 Stage rezoning and Planning Proposal in Growth Precincts in Granville, Parramatta East, Camellia, Melrose Park and Westmead based on the timing of transport infrastructure. A5 Continue to implement the first stages of rezoning and potential Planning Proposals within the Growth Precincts at Parramatta East (excluding WSU site) and Melrose Park (up to 6,700 dwellings).	site within the northern precinct to be amended to facilitate non-industrial redevelopment. The precinct is identified in Council's LSPS as a 'Growth Precinct'. As part of the planning of the northern precinct, implementation options to release density equitably throughout the entire Melrose Park precinct are proposed which are based on the delivery of identified transport infrastructure.
Planning Priority 5 Policy Direction P4 Stage rezoning and Planning Proposal in Growth Precincts in Granville, Parramatta East, Camellia, Melrose Park and Westmead based on the timing of transport infrastructure.	Consistent. The Planning Proposal enables a staged approach to the rezoning of the northern precinct. As outlined above, density will be equitably distributed across the entire precinct as the transport and other infrastructure is delivered.

Local Housing Strategy (LHS)

The Planning Proposal is consistent with the City of Parramatta Local Housing Strategy (LHS), which provides direction at the local level about when are where future housing growth will occur and how it aligns with the broader NSW-government strategic planning framework. The LHS identifies Melrose Park as a Growth Precinct and forecasts that approximately 6,330 new dwellings will occupy the precinct by 2036. The LHS also highlights the importance of ensuring that infrastructure delivery is aligned with housing growth and that growth precincts need to be aligned and effectively sequenced with State-driven transport delivery and to ensure targeted local infrastructure programs. The Proposal is consistent with this approach in that it is located within the announced Parramatta Light Rail (PLR) Stage 2 corridor and the TMAP for the precinct includes a staging plan for the delivery of the necessary road upgrades and public transport to support the future population of the precinct.

3.1.2. Is the Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The Planning Proposal is the best and most appropriate means of achieving the desired future redevelopment on the site. Council's ELS identifies the site as being suitable for redevelopment for non-industrial uses given the changing nature of the pharmaceutical manufacturing industry, location and accessibility. However, the planning controls currently applicable on the site do not permit redevelopment for non-industrial uses and therefore a planning proposal is required in order to facilitate the desired outcome on the site. This includes residential development, a new town centre including employment generating uses, open space and public benefits to support the community. Accordingly, an amendment to *PLEP 2011* is considered the most appropriate method to deliver the desired outcomes.

3.2. Section B – Relationship to strategic planning framework

This section assesses the relevance of the Planning Proposal to the directions outlined in key strategic planning policy documents. Questions in this section consider state and local government plans including the NSW Government's Plan for Growing Sydney and subregional strategy, State Environmental Planning Policies, local strategic and community plans and applicable Ministerial Directions.

3.2.1. Is the planning proposal consistent with the objectives and actions contained within the applicable regional or sub-regional strategy?

A Metropolis of Three Cities

In March 2018, the NSW Government released the *Greater Sydney Region Plan: A Metropolis of Three Cities* ("the GSRP") a 20-year plan which outlines a three-city vision for metropolitan Sydney for to the year 2036.

The GSRP is structured under four themes: Infrastructure and Collaboration, Liveability, Productivity and Sustainability. Within these themes are 10 directions that each contain Potential Indicators and, generally, a suite of objective/s supported by a Strategy or Strategies. Those objectives and or strategies relevant to this planning proposal are discussed below.

Infrastructure and Collaboration

An assessment of the planning proposal's consistency with the GSRP's relevant Infrastructure and Collaboration objectives is provided in Table 3a, below.

Table 3a – Consistency of planning proposal with relevant GSRP Actions – Infrastructure and Collaboration

Infrastructure and Collaboration Direction	Relevant Objective	Comment
A city supported by infrastructure	**O1:** Infrastructure supports the three cities	The Planning Proposal aligns with this Direction by providing: • State infrastructure provision ranging from traffic, transport and land for educational infrastructure that will provided as part of a future State VPA, and • Local infrastructure provision not limited to affordable housing units, provision of open space and embellishment and community facilities to be provided as part of a VPA with Council The applicant has been working collaboratively with Council, TfNSW, RMS and DoE to identify relevant infrastructure needs arising from the Planning Proposal. Further discussion will continue to be carried out between the applicant and relevant State Agencies to confirm provision of this infrastructure through State and Local Infrastructure VPAs.
	O2: Infrastructure aligns with forecast growth – growth infrastructure compact	
	O3: Infrastructure adapts to meet future need	
	O4: Infrastructure use is optimised	

Liveability

An assessment of the planning proposal's consistency with the GSRP's relevant Liveability objectives is provided in Table 3b, below.

Table 3b – Consistency of planning proposal with relevant GSRP Actions – Liveability

Liveability Direction	Relevant Objective	Comment
A city for people	**O6:** Services and infrastructure meet communities' changing needs **O7**: Communities are healthy, resilient and socially connected **O8**: Greater Sydney's communities are culturally rich with diverse neighbourhoods **O9**: Greater Sydney celebrates the arts and supports creative industries and innovation	The Planning Proposal aligns with this Direction by providing: • A new Town Centre • Community facilities • Open space/parks • Active transport provision • Dedication of land for a public school. The proposal aims to address not only the infrastructure demands arising from the proposal but also provide a vibrant place for a diverse range of people to live, work, and play.
Housing the city	**O10**: Greater housing supply **O11:** Housing is more diverse and affordable	The Planning Proposal aligns with this Direction as follows: • Provides mix of high density housing (1/2/3 bedders) • Provides affordable rental housing • Satisfies the criteria for 'urban renewal' given the strategic direction set out in Council's Employment Lands Strategy, its location along a regional transport link with connections to walking and cycling routes.
A city of great places	**O12:** Great places that bring people together **O13:** Environmental heritage is identified, conserved and enhanced	The Planning Proposal aligns with this Direction by: • increasing provision of open space • providing a new Town Centre and contribution towards community facilities • providing a mix of land uses and activities that provide opportunities for social connection within the public domain and open space.

Productivity

An assessment of the planning proposal's consistency with the GSRP's relevant Productivity objectives is provided in Table 3c, below.

Table 3c – Consistency of planning proposal with relevant GSRP Actions – Productivity

Productivity Direction	Relevant Objective	Comment
A well connected city	**O14:** The plan integrates land use and transport creates walkable and 30 minute cities	The Planning Proposal aligns with this Direction as follows: • the site is within walking distance of the Victoria Road transport corridor and can be integrated with the Parramatta Light Rail Stage 2 Corridor (if it proceeds) • the site connects into existing and provides additional cycleway and pedestrian pathways • contributes to the outcome of population within 30minute public transport access to the metropolitan cluster of Parramatta
	O15: The Eastern, GPOP and Western Economic Corridors are better connected and more competitive	
Jobs and skills for the city	**O19**: Greater Parramatta is stronger and better connected	The Planning Proposal aligns with this Direction as follows: • it provides for an appropriate renewal of existing industrial and urban services land that are currently undergoing transition by providing significant commercial and retail employment opportunities in the Town Centre • it provides for a new centre for people to live and work • it supports the continued economic development and diversity of Greater Parramatta
	O21: Internationally competitive health, education, research and innovation precincts	
	O22: Investment and business activity in centres	
	O23: Industrial and urban services land is planned, retained and managed	
	O24: Economic sectors are targeted for success	

Sustainability

An assessment of the planning proposal's consistency with the GSRP's relevant Sustainability objectives is provided in Table 3d, below.

Table 3d – Consistency of planning proposal with relevant GSRP Actions – Sustainability

Sustainability Direction	Relevant Objective	Comment
A city in its landscape	**O25**: The coast and waterways are protected and healthier	The Planning Proposal aligns with this Direction as it provides for significant areas of new open space, landscaping and provision of urban vegetation including street tree planting.
	O27: Biodiversity is protected, urban bushland and remnant vegetation is enhanced	
	O28: Scenic and cultural landscapes are protected	

	O29: Environmental, social and economic values in rural areas are protected and enhanced	
	O30: Urban tree canopy cover is increased	
	O31: Public open space is accessible, protected and enhanced	
	O32: The Green grid links Parks, open spaces, bushland and walking and cycling paths	
An efficient city	**O33**: A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change	The Planning Proposal aligns with this Direction as follows: • the site is in close proximity to major transport corridors (Victoria Road and proposed Gateway Bridge and is supported by a TMAP which includes measures to reduce high dependence on private vehicle travel • ESD to reduce waste and energy usage will be incorporated at detailed design at later stages.
	O34: Energy and water flows are captured, used and re-used	
	O35: More waste is re-used and recycled to support the development of a circular economy	
A resilient city	**O36**: People and places adapt to climate change and future shocks and stresses	The Planning Proposal aligns with this Direction as redevelopment of the site can be designed to adapt to the impacts of urban and natural hazards. Appropriate deep soil provision is provided within the proposed parks and as part of the footway which are also to be planted seeks to address urban heat issues. This will be set out and provided for as part of a future Site Specific DCP.
	O37: Exposure to natural and urban hazards is reduced	
	O38: Heatwaves and extreme heat are managed	

Implementation

An assessment of the planning proposal's consistency with the GSRP's relevant Implementation objectives is provided in Table 3d, below.

Table 3d – Consistency of planning proposal with relevant GSRP Actions – Implementation

Implementation Direction	Relevant Objective	Comment
Implementation	**O39**: A collaborative approach to city planning	The applicant has been working collaboratively with Council, TfNSW, RMS and DoE to identify relevant infrastructure needs arising from the Planning Proposal. Further collaboration will continue to be carried out between the applicant and relevant State Agencies to confirm provision of this infrastructure through State and

		Local Infrastructure VPAs to ensure that Masterplan for the site can be realised and more importantly creates a vibrant place for future residents to live/ work and play.

Central City District Plan

In March 2018, the NSW Government released *Central City District Plan* which outlines a 20 year plan for the Central City District which comprises The Hills, Blacktown, Cumberland and Parramatta local government areas.

Taking its lead from the GSRP, the *Central City District Plan* ("CCDP") is also structured under four themes relating to Infrastructure and Collaboration, Liveability, Productivity and Sustainability. Within these themes are Planning Priorities that are each supported by corresponding Actions. Those Planning Priorities and Actions relevant to this planning proposal are discussed below.

Infrastructure and Collaboration

An assessment of the planning proposal's consistency with the CCDP's relevant Infrastructure and Collaboration Priorities and Actions is provided in Table 4a, below.

Table 4a – Consistency of planning proposal with relevant CCDP Actions – Infrastructure and Collaboration

Infrastructure and Collaboration Direction	Planning Priority/Action	Comment
A city supported by infrastructure **O1:** Infrastructure supports the three cities **O2:** Infrastructure aligns with forecast growth – growth infrastructure compact **O3:** Infrastructure adapts to meet future need **O4:** Infrastructure use is optimised	**PP C1: Planning for a city supported by infrastructure** • **A1:** Prioritise infrastructure investments to support the vision of *A metropolis* • **A2:** Sequence growth across the three cities to promote north-south and east-west connections • **A3**: Align forecast growth with infrastructure • **A4:** Sequence infrastructure provision using a place based approach • **A5**: Consider the adaptability of infrastructure and its potential shared use when preparing infrastructure strategies and plans • **A6**: Maximise the utility of existing infrastructure assets and consider strategies to influence behaviour changes to reduce the demand for new infrastructure, supporting the development of adaptive and flexible regulations to allow decentralised utilities	The Planning Proposal provides the following contributions towards infrastructure: • Contributions to significant enabling infrastructure to support the urban renewal of the precinct • Road intersection/upgrades, and • Public open space. • Affordable Housing • Land for a future school and playing field (creating opportunities for shared use) This will be formalised via a VPA with State Government to formalise State Infrastructure contributions by the developer. Further, a VPA to formalise the applicant's contributions towards local

		infrastructure will be entered into between Council and the developer.
O5: Benefits of growth realized by collaboration of governments, community and business	**PP C**2: Working through collaboration • **A7:** Identify prioritise and delivery collaboration areas	The Planning Proposal is a result of many years work in collaboration with Council and State Agencies, resulting in the Gateway Determination for the Melrose Park North Planning Proposal and more recently the TMAP for the broader Melrose Park Precinct. The applicant is continuing to work collaboratively with Council, TfNSW, RMS and other State agencies, community and other stakeholders.

Liveability

An assessment of the planning proposal's consistency with the CCDP's relevant Liveability Prioirties and Actions is provided in Table 4b, below.

Table 4b – Consistency of planning proposal with relevant CCDP Actions – Liveability

Liveability Direction	Planning Priority/Action	Comment
A city for people **O6**: Services and infrastructure meet communities' changing needs	**PP C3: Provide services and social infrastructure to meet people's changing needs** • **A8:** Deliver social infrastructure that reflects the need of the community now and in the future • **A9:** Optimise the use of available public land for social infrastructure	The Planning Proposal proposes to provide the following social infrastructure to meet the changing needs of future residents: • Provision and embellishment of new public open space • Land for a new School • Provision of affordable housing • Provision and contribution towards community facilities These items will be formalised as part of future VPA negotiations with the development.

O7: Communities are healthy, resilient and socially connected **O8**: Greater Sydney's communities are culturally rich with diverse neighbourhoods **O9**: Greater Sydney celebrates the arts and supports creative industries and innovation	**PP C4: Working through collaboration** • **A10:** Deliver healthy, safe and inclusive places for people of all ages and abilities that support active, resilient and socially connected communities by (a-d). • **A11:** Incorporate cultural and linguistic diversity in strategic planning and engagement. • **A12:** Consider the local infrastructure implications of areas that accommodate large migrant and refugee populations. • **A13:** Strengthen the economic self-determination of Aboriginal communities by engagement and consultation with Local Aboriginal Land Council's. • **A14:** Facilitate opportunities for creative and artistic expression and participation, wherever feasible with a minimum regulatory burden including (a-c). • **A15:** Strengthen social connections within and between communities through better understanding of the nature of social networks and supporting infrastructure in local places	The applicant has been working collaboratively with Council, TfNSW, RMS and DoE to identify relevant infrastructure needs arising from the Planning Proposal. Further discussion will continue to be carried out between the applicant and relevant State Agencies to confirm provision of this infrastructure through State and Local Infrastructure VPAs.
Housing the city **O10**: Greater housing supply **O11:** Housing is more diverse and affordable	**PP C5: Providing housing supply, choice and affordability, with access to jobs, services and public transport** • **A16**: Prepare local or district housing strategies that address housing targets [abridged version] • **A17**: Prepare Affordable Rental housing Target Schemes	The Planning Proposal will deliver approximately 5,500 dwellings to be delivered with a dwelling mix as specified in the current Parramatta DCP 2011 to facilitate an appropriate mix of 1/2/3 bedroom units. The applicant is also proposing allocate 145 units for the purposes of affordable rental housing (20 units to be dedicated to Council in perpetuity and 125 units for management by a community housing provider for up to 15 years). This will be formalised as part of a VPA with Council.
A city of great places **O12:** Great places that bring people together **O13:** Environmental heritage is identified, conserved and enhanced	**PP C6: Creating and renewing great places and local centres, and respecting the District's heritage** • **A18**: Using a place-based and collaborative approach throughout planning, design, development and management deliver great places by (a-e) • **A19**: Identify, conserve and enhance environmental heritage by (a-c) • **A20**: Use place-based planning to support the role of centres as a	The Planning Proposal aligns with this Direction by: • increasing provision of open space • providing a new Town Centre and contribution towards community facilities • providing a mix of land uses and activities that provide opportunities for social connection within the public domain and open space. The Planning Proposal is just one part of the planning mechanism to

	focus for connected neighbourhoods • **A21**: In Collaboration Areas, Planned Precincts and planning for centres (a-d) • **A22**: Use flexible and innovative approaches to revitalise high streets in decline.	facilitate the above outcomes, further detail will need to be developed as part of the SSDCP supplement the LEP amendment to ensure the draft Masterplan is realised.

Productivity

An assessment of the planning proposal's consistency with the CCDP's relevant Productivity Priorities and Actions is provided in Table 4c, below.

Table 4c – Consistency of planning proposal with relevant CCDP Actions – Productivity

Productivity Direction	Planning Priority/Action	Comment
A well-connected city **O19**: Greater Parramatta is stronger and better connected	**PP C7: Growing a stronger and more competitive Greater Parramatta** • **A23:** Strengthen the economic competitiveness of Greater Parramatta and grow its vibrancy [abridged] • **A24:** Revitalise Hawkesbury Road so that it becomes the civic, transport, commercial and community heart of Westmead • **A25:** Support the emergency services transport, including helicopter access • **A26:** Prioritise infrastructure investment [abridged] • **A27:** Manage car parking and identify smart traffic management strategies • **A28:** Investigate opportunities for renewal of Westmead East as a mixed use precinct	The Planning Proposal is considered to be representative of the District Plans' goal of transitioning from industrial to a mixed use urban renewal precinct. The redevelopment of the site will provide housing opportunities for a residential population within 30 minutes of the Parramatta CBD.
Jobs and skills for the city **O15:** The Eastern, GPOP and Western Economic Corridors are better connected and more competitive	**PP C8: Delivering a more connected and competitive GPOP Economic Corridor** • **A28**: Investigate opportunities for renewal of Westmead East as a mixed use precinct PPC8 • **A29**: Prioritise public transport investment to deliver the 30-minute city objective for strategic centres along the GPOP Economic Corridor • **A30**: Prioritise transport investments that enhance access to the GPOP between centres within GPOP	The site is close to the GPOP Economic Corridor. The proposal is considered to improve connections to and the competitiveness of the corridor. A new transport bridge to Sydney Olympic Park is also proposed to ensure well connected places.
O14: The plan integrates land use and transport creates walkable and 30 minute cities	**PP C9: Delivering integrated land use and transport planning and a 30-minute city**	The Planning Proposal: • Supports the 30 minute city as detailed in the TMAP

	• **A32**: Integrate land use and transport plans to deliver a 30-muinute city • **A33**: Investigate, plan and protect future transport and infrastructure corridors • **A34**: Support innovative approaches to the operation of business, educational and institutional establishments to improve the performance of the transport network • **A35**: Optimise the efficiency and effectiveness of the freight handling and logistics network by (a-d) • **A36**: Protect transport corridors as appropriate, including the Western Sydney Freight Line, North South train link from Schofields to WS Airport as well as Outer Sydney Orbital and Bells Line of Road-Castlereagh connections	• Improves access to local jobs • Provides numerous walking and cycling connections.
O23: Industrial and urban services land is planned, retained and managed	**PP C10: Growing investment, business opportunities and jobs in strategic centres** • **A37:** Provide access to jobs, goods and services in centres [abridged] • **A38:** Create new centres in accordance with the principles for Greater Sydney's centres • **A39:** Prioritise strategic land use and infrastructure plans for growing centres, particularly those with capacity for additional floorspace	Not applicable – A Gateway Determination has been issued following Council and the Departments detailed assessment of the proposal given the strategic direction set out in Council's Employment Lands Strategy 2016 which identifies the Melrose Park employment precinct as a Structure Plan/urban renewal precinct.
O23: Industrial and urban services land is planned, retained and managed	**PP C11: Maximising opportunities to attract advanced manufacturing and innovation in industrial and urban services land** • **A49**: Review and manage industrial and urban service land, in line with the principles for managing industrial and urban services land, in the identified local government area • **A51**: Facilitate the contemporary adaption of industrial and warehouse buildings through increased floor to ceiling heights • **A52**: Manage the interfaces of industrial areas, trade gateways and intermodal facilities by land use activities (a-e) and transport operations (f-g) [abridged]	
O24: Economic sectors are targeted for success	**PP C12: Supporting growth of targeted industry sectors**	Not applicable.

	• **A53**: Facilitate health and education precincts by (a-d) [abridged] • **A54**: Provide a regulatory environment that enables economic opportunities created by changing technologies • **A55**: Consider the barriers to the growth of internationally competitive trade sectors, including engaging with industry and assessing regulatory barriers • **A56**: Protect and support agricultural production and mineral resources by preventing inappropriate dispersed urban activities • **A57**: Consider opportunities to implement place-based initiatives to attract more visitors, improve visitor experience and ensure connections to transport at key tourist attractions • **A58**: Consider opportunities to enhance the tourist and visitor economy in the district, including a coordinated approach to tourism activities, events and accommodation • **A59**: When preparing plans for tourism and visitation consider (a-g) [abridged]	

Sustainability

An assessment of the planning proposal's consistency with the CCDP's relevant Productivity Priorities and Actions is provided in Table 4d, below.

Table 4d – Consistency of planning proposal with relevant CCDP Actions – Sustainability

Sustainability Direction	Planning Priority/Action	Comment
A city in its landscape **O25**: The coast and waterways are protected and healthier	**PP C13: Protecting and improving the health and enjoyment of the District's Waterways** • **A60**: Protect environmentally sensitive areas of waterways • **A61**: Enhance sustainability and liveability by improving and managing access to waterways and foreshores for recreation, tourism, cultural events and water based transport • **A62**: Improve the health of catchments and waterways through a risk based approach to managing the cumulative impacts of development including coordinated monitoring of outcomes	Not applicable.

	• **A63**: Work towards reinstating more natural conditions in highly modified urban waterways	
O26: The coast and waterways are protected and healthier	**PP C14: Creating a Parkland City urban structure and identity, with South Creek as a defining spatial element** • **A64**: Implement South Creek Corridor Project and use the design principles for South Creek to deliver a cool and green Western Parkland City	Not applicable.
O27: Biodiversity is protected, urban bushland and remnant vegetation is enhanced **O28**: Scenic and cultural landscapes are protected	**PP C15: Protecting and enhancing bushland, biodiversity and scenic and cultural landscapes** • **A65:** Protect and enhance biodiversity by (a-c) [abridged] • **A66:** Identify and protect scenic and cultural landscapes • **A67:** Enhance and protect views of scenic and cultural landscapes from the public realm	The site is has been used extensively for employment purposes historically, is largely developed and does not contain areas of biodiversity that would warrant protection. However, the subject site contains Heritage Item I311 listed in Schedule 5 of the Parramatta LEP 2011. Item 311 is stand of lemon-scented gums (including two moveable items) located at the former Reckitt Benckiser site. A heritage assessment has been undertaken for the site which concludes that the item should be retained. It is proposed that the Item be incorporated into the landscaping on the sit and that redevelopment will have minimal impact on the integrity of this Item. This is supported by Council officers.

O30: Urban tree canopy cover is increased **O32**: The Green grid links Parks, open spaces, bushland and walking and cycling paths	**PP C16: PP C16: Increasing urban tree canopy cover and delivering Green grid connections** • **A68**: Expand urban tree canopy in the public realm • **A69**: progressively refine the detailed design and delivery of (a-c) [abridged] • **A70**: Create Greater Sydney green Grid connections to the Western Sydney Parklands	The Planning Proposal incorporates substantial tree planting across the site, improved public domain, increased setbacks and increased areas for street trees and more efficient use of open space.
O31: Public open space is accessible, protected and enhanced	**PP C17: Delivering high quality open space** • **A71**: Maximise the use of existing open space and protect, enhance and expand public open space by (a-g) [abridged]	New public open space areas are proposed as part of the planning proposal and will be zoned accordingly.
An efficient city **O33**: A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change **O34**: Energy and water flows are captured, used and re-used **O35**: More waste is re-used and recycled to support the development of a circular economy	**PP C19: Reducing carbon emissions and managing energy, water and waste efficiently** • **A75**: Support initiatives that contribute to the aspirational objectives of achieving net-zero emissions by 2050 • **A76**: Support precinct-based initiatives to increase renewable energy generation and energy and water efficiency • **A77**: Protect existing and identify new locations for waste recycling and management • **A78**: Support innovative solutions to reduce the volume of waste and reduce waste transport requirements • **A79**: Encourage the preparation of low carbon, high efficiency strategies to reduce emissions, optimise the use of water, reduce waste and optimising car parking provisions where an increase in total floor in 100,000sqm	It is considered that future development will be able to incorporate appropriate responses to these issues. ESD principles will be considered as part of a future site specific DCP as well as being important requirement for any design excellence competition scheme to be addressed. Further, future ground levels will be developed also as part of the SSDCP stage which will ensure appropriate conveyance of flood waters (including overland flooding) to identified detention or storage areas within the precinct.
O36: People and places adapt to climate change and future shocks and stresses **O37**: Exposure to natural and urban hazards is reduced **O38**: Heatwaves and extreme heat are managed	**PP C20: Adapting to the impacts of urban and natural hazards and climate change** • **A81**: Support initiatives that respond to the impacts of climate change • **A82**: Avoid locating new urban development in areas exposed to natural and urban hazards and consider options to limit the intensification of development in	

	existing areas most exposed to hazards • **A83**: Mitigate the urban heat island effect and reduce the vulnerability to extreme heat • **A84**: Respond to the direction for managing flood risk in Hawkesbury-Nepean Valley • **A85**: Consider strategies and measures to manage flash flooding and safe evacuation when planning for growth in Parramatta CBD	

3.2.2. Is the planning proposal consistent with the local council's Community Strategic Plan or other local strategic plan?

The following local strategic planning documents are relevant to the planning proposal.

Parramatta 2038 Community Strategic Plan

Parramatta 2038 is a long term Community Strategic Plan for the City of Parramatta and it links to the long-term future of Sydney. The plan formalises several big and transformational ideas for the City and the region.

The planning proposal is considered to meet the strategies and key objectives identified in the plan including the creation of a new commercial and retail centre, improved public transport connections and services, new open space and infrastructure upgrades to support the incoming population.

Parramatta Employment Lands Strategy 2016

Refer to Section 3.1 above.

3.2.3. Is the planning proposal consistent with the applicable State Environmental Planning Policies?

The following State Environmental Planning Policies (SEPPs) are of relevance to the site (refer to Table 5 below).

Table 5 – Consistency of planning proposal with relevant SEPPs

State Environmental Planning Policies (SEPPs)	Consistency: Yes = ✓ No = x N/A = Not applicable	Comment
SEPP 33 – Hazardous and Offensive Development	✓	The subject site is within proximity of a high pressure oil pipeline. Any relevant requirements regarding redevelopment close to the pipeline will be addressed at the development application stage.
SEPP 19 – Bushland in Urban Areas	✓	The Site is not zoned open space and is not identified as having biodiversity significance. As outlined in the *Flora and Fauna Report* by UBM the vegetation is relatively recent. Where trees exist on the

		Site they are generally in the landscaped setback area to the east of the Site, which is respected in the Northern Structure Plan by a linear Park. The Planning Proposal, in-principle, is consistent with the SEPP.
SEPP No 55 Remediation of Land	✓	A Phase 1 preliminary contamination investigation report for the subject site has been prepared. Council is satisfied the site can be made suitable for residential purposes with a Phase 2 to be prepared at the DA stage.
SEPP 64 – Advertising and Signage	N/A	Not relevant to proposed amendment. May be relevant to future DAs.
SEPP No 65 Design Quality of Residential Flat Development	✓	Detailed compliance with SEPP 65 will be demonstrated at the time of making a development application for the site facilitated by this Planning Proposal. During the design development phase, detailed testing of SEPP 65 and the Residential Flat Design Code was carried out and the indicative scheme is capable of demonstrating compliance with the SEPP.
SEPP (Affordable Rental Housing) 2009	N/A	The Planning Proposal is not subject to Council's *Planning Agreements Policy* 2018, which requires 10% of the value uplift to be provided as affordable rental housing. This is due to the Policy being adopted subsequent to the Proposal receiving Gateway determination and therefore the Policy does not apply. Nonetheless, it is proposed that 145 rental housing units will be provided within the development, comprising 120 units to be managed by a Community Housing Provider (CHP) for a period of 15 years and 20 units to be dedicated to Council in perpetuity. These units will be secured via VPA between Council and the developer.
SEPP (BASIX) 2004	N/A	Detailed compliance with SEPP (BASIX) will be demonstrated at the time of making a development application for the site facilitated by this Planning Proposal.

SEPP (Exempt and Complying Development Codes) 2008	✓	May apply to future development of the site.
SEPP (Infrastructure) 2007	✓	*SEPP (Infrastructure) 2007* aims to facilitate the effective delivery of infrastructure across the State. This includes by identifying matters to be considered in the assessment of development adjacent to types of infrastructure development, and providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing. Many of the provisions relate to development by the Crown and exempt development of certain development by on behalf of the Crown, which is not relevant to the Proposal. Clause 104 of Division 17 identifies the capacity or size of developments that should be referred to Roads and Maritime Services (RMS). Consultation has been undertaken with the RMS and Transport for NSW as part of the preparation of the Transport Management and Accessibility Plan (TMAP) and this will continue throughout the remainder of the Planning Proposal process, given the potential impacts (and opportunities) of the development up on Victoria Road, and wider commitments for public transport enhancement associated with the Planning Proposal. In terms of noise considerations, the Site is located within close proximity to Victoria Road and is not subject to aircraft noise limitations. Noise considerations to and from the proposed development can be addressed through the detailed design stage and would not be a determinative factor in rezoning the Site.
Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	N/A	The proposed development is not located directly on the Sydney Harbour Catchment foreshore. Any potential impacts as a result of development on the site, such as stormwater runoff, will be considered

		and addressed appropriately at DA stage.
SEPP (Vegetation in Non-Rural Areas) 2017	✓	The Flora and Fauna report prepared for this Planning Proposal indicates that the site does not retain any native vegetation. There are no mapped area of remnant vegetation on the site within maps published the NSW Office of Environment, Heritage and Science. Where trees exist on the site, they are generally part of an established landscaped area. It is unlikely that there are significant fauna habitats due to the disturbed nature of the site.

3.2.4. Is the planning proposal consistent with applicable Ministerial Directions (s.9.1 directions)

In accordance with Clause 9.1 of the *EP&A Act 1979* the Minister issues directions for the relevant planning authorities to follow when preparing planning proposals for new LEPs. The directions are listed under the following categories:

- Employment and resources
- Environment and heritage
- Housing, infrastructure and urban development
- Hazard and risk
- Housing, Infrastructure and Urban Development
- Local plan making

The following directions are considered relevant to the subject Planning Proposal.

Table 6 – Consistency of planning proposal with relevant Section 9.1 Directions

Relevant Direction	Comment	Compliance
1. Employment and Resources		
Direction 1.1 – Business and Industrial Zones	The Proposal complies with this objective. The proposed development seeks to provide for new employment growth through the creation of a new Town Centre and the provision of over 30,000m² of non-residential floor space through a B2 Local Centre zone. The Employment Lands Strategy stipulates that any new development in the precinct must provide the equivalent number of jobs that could be achieved under the current IN1 General Industrial zone, which is 2,546. The Proposal indicates that redevelopment will assist in the provision of between 1538 and 1,932 jobs within the northern precinct. Although not providing the full quantum of jobs to equal the target identified in the ELS, it could provide approximately 60%-75% of the overall jobs in the precinct. It is acknowledged that the provision of the full job number may not be practicable and Council considers instead that the key requirement is for the precinct to be able to adequately service the needs of the incoming population and reduce the requirement for the residents to travel outside the precinct for retail/commercial purposes. It is also noted that future	Yes

	redevelopment within the southern precinct will be required to contribute towards the provision of employment generating uses, in addition.	
2. Environment and Heritage		
Direction 2.3 - Heritage Conservation	The subject site contains Heritage Item I311 listed in Schedule 5 of the Parramatta LEP 2011. Item 311 is stand of lemon-scented gums (including two moveable items) located at the former Reckitt Benckiser site. A heritage assessment has been undertaken for the site which concludes that the item should be retained. It is proposed that the Item be incorporated into the landscaping on the sit and that redevelopment will have minimal impact on the integrity of this Item. This is supported by Council officers.	Yes
3. Housing, Infrastructure and Urban Development		
Direction 3.1 - Residential Zones	The Planning Proposal is consistent with this direction, in that it: • Does not reduce the permissible residential density of land. • Intends to provide for a range of apartment types in proximity to existing public transport. The Proposal also identifies infrastructure upgrades that will be undertaken to support the incoming population, including new open space, road upgrades and a site for a new school. • The Proposal intends to only provide for high density residential housing. Council officers encourage the provision of other forms of residential housing including medium density to ensure that housing choice and variety is achieved on the site.	Yes
Direction 3.4 - Integrating Land Use and Transport	The Planning Proposal is consistent with this direction, in that it: • will provide new dwellings in close proximity to existing public transport links • will enable residents to walk or cycle to work if employed in the Parramatta City Centre or utilise the shuttle bus connecting the precinct to nearby heavy rail stations. • makes more efficient use of space and infrastructure by increasing densities on an underutilised site.	Yes
4. Hazard and Risk		
Direction 4.1 - Acid Sulfate Soils	The site is identified as Class 5 on the Acid Sulfate Soils Map in Parramatta Local Environmental Plan 2011. Acid sulfate soils are generally not found in Class 5 areas however this will be addressed further at the development application stage.	Yes
Direction 4.3 - Flood Prone Land	The site is not flood prone and is above the 1:100 year flood level. Any potential impacts as a result of development on the site, such as stormwater runoff, will be considered and addressed appropriately at DA stage. This will also include any design detail required to ensure compliance with Council's water management controls within the Parramatta DCP 2011.	Yes

5. Local Plan Making		
Direction 6.1 - Approval and Referral Requirements	The Planning Proposal does not introduce any provisions that require any additional concurrence, consultation or referral.	Yes
Direction 6.2 – Reserving Land for Public Purposes	The Planning Proposal seeks to rezone existing private land to RE1 Public Recreation and SP2 Infrastructure (Educational Establishment). These sites are proposed to be identified on the relevant Land Reservation Acquisition maps.	Yes
Direction 6.3 - Site Specific Provisions	The Planning Proposal intends to introduce the following site specific provisions by amending Part 6 – *Additional local provisions – generally:* • Insert Design Excellence provisions applicable to Lots E, EA and G without the provision of bonuses. • Apply a maximum residential gross floor area for the site of 508,768m² • Apply a minimum non-residential floor area requirement of 30,000m² to serve the retail and commercial needs of the community.	Yes
6. Metropolitan Planning		
Direction 7.1 - Implementation of A Plan for Growing Sydney	The Proposal is consistent with the relevant Goals and direction in the Strategy as detailed previously in Section 3.2	Yes

3.3. Section C – Environmental, social and economic impact

This section considers the potential environmental, social and economic impacts which may result from the Planning Proposal.

3.3.1. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

There is no known critical habitat or threatened species, populations or ecological communities, or their habitats likely to be adversely affected as a result of the Proposal. As detailed in the Flora and Fauna report by UBM Ecological Consultants (**Appendix 11**), the development and clearing of the Site has resulted in little remaining remnant vegetation.

There are no mapped areas of remnant vegetation on the Site within maps published by the NSW Office of Environment and Heritage.

The Site is not identified on the Natural Resources – Biodiversity map, nor the Natural Resources – Riparian Land and Resources Map in Parramatta LEP 2011. The report by UBM states:

(The Site) was landscaped in the early 1950 with a mixture of non-local native trees and shrubs with an exotic understorey of horticultural species. This quasi-native landscaping style was popular in the mid-20th Century when the trend for using 'broadly Australian plants' was at its height. The landscaping on the Pfizer property is well maintained by garden staff, while the other properties appear to have been neglected for some time.

As can be seen from the aerial photos (in the UBM report), the majority of existing tree

cover occurs along the eastern end of the Site (part of the landscaped setback identified as having heritage significance). This has been respected by the Northern Structure Plan underpinning the Masterplan, which provides a landscaped setback and buffer zone to the east of the Site.

There is the possibility of some habitat for fauna within the Site; however, overall this is likely to be very low due to the high level of disturbance to the site due to the current industrial use.

3.3.2. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

The main potential environmental impacts to be examined in detail with any future development proposal for the site are:

Built Form

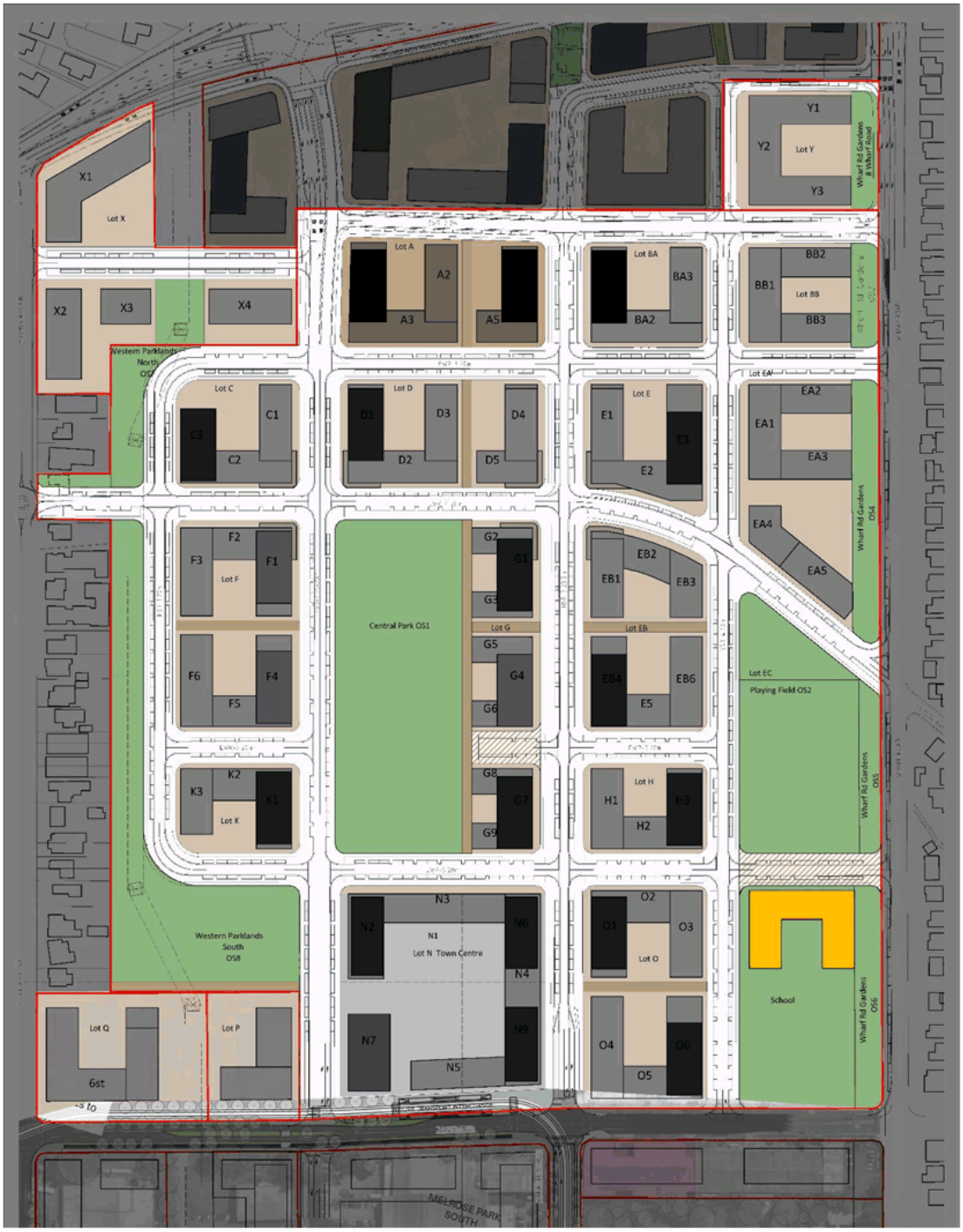


Figure 12 – The proposed design concept

Heritage

A detailed assessment of heritage impacts has been undertaken for the Site by Geoffrey Britton (**Appendix 2**) and Paul Davies Pty Ltd. Key findings and observations are detailed below. The Site is classified as low sensitivity with limited potential to contain items of Aboriginal heritage. There are no known Aboriginal cultural heritage resources relevant to the Melrose Park Site and given the history of significance disturbance of the Site it is considered unlikely to contain any items of Aboriginal heritage. Based on the Heritage Study undertaken for the Site, no further assessment of aboriginal heritage has been undertaken for the purpose of this report.

- Part of the Site includes a local heritage item listed as Item 311 on the *Parramatta Local Environmental Plan 2011*. The heritage item is described as *landscaping (including millstones at Reckitt)* under Item 311 on Schedule 5 of the PLEP 2011 and as having cultural value at a Local level. The assessment observed that the heritage item 311 is shown to be a number of remnant mature trees from the 1960s and 1970s that represent a relatively early use of Australian native plant species in the site planning and design of large-scale industrial sites within the Parramatta LGA.

- The assessment concluded that subject to several recommendations there is likely to be minimal heritage impact on the LEP listed Item 311 or the two moveable heritage items located nearby at the Reckitt Benckiser site resulting from the proposed redevelopment of the area. A summary of the proposed 5 recommendations follows:

Recommendation 1: *Revise the existing heritage listing to more accurately cover the remnant mature trees and the two moveable heritage items.*

Recommendation 2: *The proposed redevelopment of the Site should incorporate the larger mature trees as outlined in the Heritage Report in its detailed Site planning and design.*

Recommendation 3: *The vintage mobile fire pump should be properly conserved and housed under cover with consideration given to donating the unit to the Powerhouse Museum*

Recommendation 4: *The existing millstones should be considered for incorporation within an appropriate public precinct or consideration given to donating the millstones to either the National Museum of Australia or Powerhouse Museum.*

Recommendation 5: *There is an opportunity to engage future communities through appropriate and informative interpretive material about both the natural and cultural history of the overall Site. Ideally interpretation would be part of a broader, integrated program of cultural and natural heritage interpretation for the Parramatta LGA*

Comment

These recommendations are largely supported, however, it is also suggested that further research into the significance of the moveable items to potentially relocate them to another part of the site. It is considered that this can be addressed at the development application stage.

Figures 13 & 14 - Moveable heritage items on the Site

Traffic and Transport

A Transport Management and Accessibility Plan (TMAP) has been prepared for the precinct (**Appendix 3** and **Appendix 4**).

Land Contamination

Phase 1 investigations have completed by Senversa, GHD, Geotechnique, and DLA Environmental Services for the site (**Appendix 10**). The investigations revealed that due to the existing industrial uses on the site there is the potential for some contamination to be present. It is also acknowledged that while there are no obvious indicators of contamination at surface level, a number of areas will require further investigation and remediation to enable redevelopment for the intended uses. A Phase 2 investigation will be required to be undertaken as part of the development assessment process to establish appropriate management and remediation actions.

Comment

Given the current land uses on the site it is acknowledged that some contamination may be present. However, for the purposes of this Planning Proposal it is not considered significant to prevent the proposal proceeding. Further investigations on the Site will be required as part of the development assessment process, where the full extent of contamination will be determined.

Stormwater and Flooding

The Site is not below the 1 in 100-year flood level and the Site is not known to be flood liable.

There are stormwater assets across and surrounding the Site. The redevelopment of the Site provides a significant opportunity to improve water absorption within the Site (and reduce the estimated 60-70% of water leaving the Site) and also improve water quality leaving the Site, through appropriate treatment, detention and management of water within the Site.

Measures to reduce the ecological footprint of the proposed development including energy efficiency and carbon footprint reductions, efficiency of building design and waste avoidance, reduced embodied energy in materials and sustainable procurement will be implemented.

In terms of wastewater, the *Sustainability Masterplan* prepared by Northrop (**Appendix 9**)

outlines the proposed initiatives to be investigated for the Site including a project-wide wastewater strategy to optimise the amount of non-potable water available for landscape irrigation and toilet flushing, and will comprise of active wastewater treatment technologies and landscape filtration.

Specific measures include:

- Clean stormwater runoff before it enters waterways
- Harvest rainwater for reuse on-Site
- Active treatment of Site-generated wastewater, for re-use in toilet flushing and irrigation
- Water polishing embedded in landscape design and features
- Low flush and low flow bathroom fixtures in dwellings
- Water sensitive landscape planting and irrigation systems

The Proposal outlines potential water sensitive urban design practices that seeks to reduce the reliance of stormwater infrastructure while supporting the biodiversity of the Site. This includes identification of internal roads within the Site for stormwater runoff treatment and consideration of options including rain garden, tree gardens/pits and bio swales.

Comment

Technical studies prepared by Northrop and Geotechnique do not identify this site as being flood affected. The site is located approximately 300m north of a tidal reach of Parramatta River but is not affected by mainstream flooding from the main river channel (1% AEP (100ARI) or PMF floods).

The site is within Archer Creek catchment, which drains towards the south east and discharges into the Parramatta River. Approximately 6.2ha of residential land drains to the site from the north. In minor events, stormwater discharges to northern and western boundaries of the site. In rare events, overland flow from this area is conveyed east by Victoria Road and then flows around the site through Wharf Road. From here, floodwater enters Jennifer Park floodway and the Ryde-Parramatta Golf Club. Existing residential areas downstream from the site are flood prone.

Additional stormwater modelling has been undertaken for the site which takes into consideration the development occurring on the land to the north on Victoria Road directly adjacent to this site and over land flow impacts from further north in the catchment. This modelling has identified that a large land area is required for the purposes of on-site detention (OSD) to manage the run-off and consultation with the applicant has been undertaken to determine the most appropriate method of management which doesn't compromise usability of proposed open space or impact on the location of the utilities required to service the precinct. It is proposed that the new playing field and a portion of the Western Parklands South near the high voltage power line corridor will be used for the purposes of OSD and water sensitive urban design (WSUD) due to their respective size and location. Integration of these systems into the development will be addressed as part of the site specific DCP for the precinct.

Servicing

A report regarding services on and to the Site has been provided by Northrop (**Appendix 12**). This report describes the services available on and to the Site, outlines easement constraints and assesses the capacity of the services.

There are numerous easements protecting existing services and public assets across the Site. There are stormwater assets within and surrounding the Site, including a stormwater easement across the middle of the Site.

The Site is largely covered by buildings and concrete/paving with approximately 70-80% of the Site being impervious. In terms of stormwater, there are two overland paths traversing the Site. It is estimated that 60-70% of stormwater leaves the Site. The proposed redevelopment, by provision of open space, leading public domain design and OSD has the potential to significantly reduce runoff and improve water quality. As mentioned above, that the new playing field and a portion of the Western Parklands South near the high voltage power line corridor will be used for the purposes of OSD and water sensitive urban design (WSUD) due to their respective size and location. Integration of these systems into the development will be addressed as part of the site specific DCP for the precinct.

There is an existing 900mm sewer main located through the middle of the Site, which is protected by easement and is a significant piece of Sydney Water infrastructure. This may be diverted around the Site, or concrete-encased, to make areas of the Site available for development. This will be subject to discussion and agreement from Sydney Water.

In terms of potable water, there are no known water easements of bore licenses affecting the Site. Water mains ranging from 110mm - 1.2 metre exist in Hope Street and Wharf Road. There is an existing 200mm water main in Wharf Road, which may need to be upgraded to service the proposed development.

Such requirements are normal for such a redevelopment and the cost and implementation would need to be fully met by the developer and to Sydney Water's requirements.

The provision of water and sewer services (and the management of new development considering existing easements) can be managed through the Planning Proposal and direct engagement with Sydney Water.

There are gas services available to the Site (to the south and west) and telecommunication services would be enabled for the proposed redevelopment. The Site is serviced by telecommunications infrastructure (Telstra, Optus and Vodafone) A telecommunications mobile tower is in the south west corner of the Site. There is an easement associated with the tower and conduits.

The Site is well serviced by Electric Hybridity, with 9 sub-stations (owned by Endeavour Energy) currently across the Site. There are high voltage overhead transmission wires (132kV), owned by Ausgrid, along the western portion of the Site. This area is being protected from development with a minimum 15 metre setback from the easement edge as required. The area beneath the wires can be used for public open space, recreation and access purposes.

3.3.3. How has the planning proposal adequately addressed any social and economic effects?

Economic Impact Assessment

An Economic Impact Assessment (EIA) has been prepared by the AEC Group (**Appendix 5**) to analyse the economic impacts likely to result from the proposed planning controls amendments and subsequent redevelopment of the Site. The economic impacts have been analysed in the context of the proposed Masterplan as detailed in Section 8 of this report.

This work was informed by background research undertaken by AEC in 2014, 2015 & 2016 that examined the role and function of Melrose Park in the context of other industrial lands in the Parramatta LGA and an Alternative Use Options Study to examine other viable uses for the Site. These studies have been provided as part of this Planning

Proposal to support the case for change for the Site.

The Melrose Park Industrial Precinct has undergone significant change. In 2011, the Precinct employed 2,690 people with more than 70% in manufacturing and 12% in wholesale trade.
Since that time the precinct has lost a number of large long term occupiers including Pfizer, Reckitt Benckiser (health and hygiene products) and Big Sister Foods (bakery products) from the Site the subject of this Planning Proposal. These changes represent a 29% loss of jobs since 2011 from the Precinct. Pfizer and Reckitt Benckiser are considering remaining in Melrose Park subject to their new accommodation requirements being met by the proposed Masterplan (and the timely delivery of the development).

AEC advise that based on discussions with select businesses, it is understood that this job number further dropped to a loss of 40% or 414 jobs by the end of 2016. It is understood that this figure is likely to further reduce, particularly for the Site should it remain in its current state.
This significant shift in the industrial uses for the Site aligns with the changing profile of Parramatta's projected growth.

The EIA notes that this growth is driven by the following number of key industries:

- Health care and social assistance (10,099 additional jobs or 49% increase)
- Education and training (4,826 additional jobs or 83% increase)
- Public administration and safety (3,953 additional jobs or 26% increase)
- Professional, scientific and technical services (5,400 additional jobs or 75% increase).
- Retail trade (4,727 additional jobs or 59% increase)
- Accommodation and food services (4,312 additional jobs or 87% increase)

The EIA notes that the Melrose Park Industrial precinct is expected to continue to experience a decline in employment towards 2036. This follows a detailed investigation considering other nominated employment areas (namely Camellia, Rydalmere and North Parramatta) and key challenges identified for the Site, including its location, current buildings, structural changes in the industry, size and proximity to existing markets and freight transport corridors.

Business	Employees (2014)	Employees Expected (2016)	Change (2014-2016)	Comments
Pfizer	767	617	-150	The loss of 150 manufacturing jobs has been announced as the site will no longer carry out manufacturing. The remaining 617 jobs will be in office/administration.
ETP Electron Multipliers	25	0	-25	ETP expects to relocate their business to Granville.
Nuss Removals Justice Health ETP Electron King & Wilson	39	0	-39	The property at 4 Hope Street is currently on the market for sale. Discussions with the owner suggests consolidation into one location with tenants expected to vacate the premises.
Ermington Industrial Centre	43	0	-43	The property is currently on the market for sale. The businesses within the estate could conceivably relocate following sale.
Reckitt Benckiser	207	0	-207	The remaining employees at the Reckitt site will depart following facility closure.
Eli Lilly	200	250	+50	Through the acquisition of Novartis, Eli Lilly expects to accommodate additional 50 jobs on-site.
Others (unknown)*	628	628	-	Information unavailable
Total	**1,909**	**1,495**	**-414**	**Reduction of 40% jobs since 2014.**

*Refers to employees of businesses that have not been interviewed
Source: AEC & Colliers

Known and Projected Employment in Melrose Park 2014-2016 (AEC 2016)

Following a detailed investigation on the relevant planning polices, historical and future growth of Parramatta, alterative land uses and analysis of the future projections for the Site, the EIA concludes that the Proposal will make a significant contribution to the Parramatta LGA economy through its construction phase and the ongoing activities.
As part of the assessment, the EIA estimates a low and high range for future employment for the Site as detailed below:

> *…In developing the estimates of activity for the redeveloped Site, a 'steady state' of operations (whereby all facilities have been developed and long-term average utilisation rates prevail) has been assumed across High and Low occupancy scenario outcomes (predicated on different intensity of occupancy ratios see Table 6.4…*

Once the redevelopment is completed and fully operational, the redeveloped Site (low and high scenarios) is estimated to *directly and indirectly* support:

- $870.5 million - $ 1.1 billion in output
- $476.4 million - $617.3 million contribution to Gross Regional Product (GRP)
- $249.5 million - $322.6 million in incomes and salaries paid to local workers
- 2,945 – 3,777 Full time equivalent (FTE) jobs.

The Proposal will provide 1,478 - 1,873 (1,676 average jobs) jobs on Site which represents a net increase of 504 - 899 jobs and a far greater increase if nothing is done and jobs continue to decline at the Site.

AEC have undertaken a revised economic impact assessment to support the revised Planning Proposal. This revised economic assessment finds that the number of direct jobs has increased and the 30,000m^2 of non residential uses will provide 1,538 – 1,932 direct jobs on the Site, which will result in a net increase of jobs on the site

The Proposal facilitates the transition of the Precinct to meet floorspace requirements of key growth industries of employment in Parramatta, as well as meet the evolving nature of floorspace requirements of pharmaceutical companies who would otherwise completely transition off the Site.

As part of the EIA, AEC undertook an assessment against the *Industrial Lands Checklist* in accordance with *A Plan for Growing Sydney*. This confirms that the Proposal is consistent with this policy and supports the rezoning of industrial land to a mixed use development providing contemporary employment opportunities to respond to the constraints of the Site, changing nature of the area's economic and demographic profile and shift in the manufacturing industry for the Site.

Checklist	Consistency
Consistency with State or Council Strategies	The Proposal is consistent with this requirement. The Proposal consolidates new homes, jobs and investment in Parramatta in accordance with *A Plan for Growing Sydney* which states that Greater Parramatta should: *...provide capacity for additional mixed-use development in Parramatta CBD and surrounding precincts including offices and retail in Parramatta CBD, health services in Westmead, an education hub around the new University of Western Sydney Campus, a technology and education precinct in Rydalmere, arts and culture in Parramatta, a sports precinct around Parramatta Stadium and housing in all precinct...* The Proposal is consistent with the adopted Parramatta Employment Lands Strategy (2016) which acknowledges that major restructuring is occurring and will affect the land use needs of this precinct's future and recommends that a Structure Plan is prepared for Melrose Park, which considers future uses in the precinct and opportunities for renewal. The Proposal is also consistent with the Greater Sydney Region Plan and Central City District Plan, as it provides dwellings and jobs within 30 minutes by public transport of a metropolitan centre.
Location of the Precinct • close to key economic infrastructure • contributing to a significant industry cluster	While the Melrose Park Precinct is centrally located, the Precinct is challenged by the following factors: • Location directly off major arterial corridors facilitating unrestricted access. • Ability to operate in a conflict-free environment with sufficient buffer from residential. • Critical mass of lands to enable clustering activity of businesses. • Diversity of occupiers (by industry) to mitigate against vacancy risk following structural changes in a particular industry. • Generic buildings that can be easily re-purposed following relocation of occupiers. These weaknesses have become apparent in recent years following the departure of several large businesses and the cessation of manufacturing activities for pharmaceutical occupiers.

	In its current form, the Precinct is not competitive due to its small scale and unsuitability of the existing precinct buildings for re-purpose. By virtue of its comparatively isolated location, limited public transport options and lack of worker amenity, the market appeal as a business park and office precinct is conceivably limited. Furthermore, the lack of direct access from major highways and location abutting residential uses makes it unattractive to industrial users. This is already apparent from the lack of and muted interest in industrial space currently available in the Precinct.
Impacts to industrial land stock in the Subregion / Region and ability to meet future demand for industrial lands?	The Proposal results in a reduction to industrial stock in the Subregion, however, the employment projections and employment land use projections demonstrate that precincts such as Melrose Park and Chester Hill/South Granville are projected to record negative demand for floorspace over the projection period. Whereas, the precincts of Rosehill/Camellia and Rydalmere are projected to record the highest increase in GFA demand. Furthermore, it is important to note that the other employment precincts investigated (i.e. Parramatta CBD, Granville, North Parramatta, Westmead and UWS) are projected to absorb a greater amount of growth in comparison to the areas zoned for industrial uses (Precincts 1-21). Combined these precincts are projected to account for around 69% (or 1,026,189sqm) of total additional GFA demand between 2011 and 2031. As such, the LGA and Subregion will be able to cater to employment land demand in the future.
Impact to Subregional / Regional employment targets and objectives?	The Proposal will be more favourable with regard to meeting employment targets by resulting in 1,478 - 1,873 direct jobs, representing a net increase of 504 - 899 jobs. The revised economic assessment prepared by AEC finds that the number of direct jobs has increased as a result of the revised Planning Proposal. The Proposal will provide 1,538 – 1,932 direct jobs on the Site, which will result in a net increase of jobs on the site.
Compelling argument that the industrial land cannot be used for industrial purposes now or in the foreseeable future? Are there opportunities to redevelop the land for high tech or creative industries?	The EIA demonstrates why the industrial land cannot be used for industrial purposes now or in the foreseeable future. In its current form, the Precinct is not competitive due to its small scale and unsuitability of the existing precinct buildings for re-purpose. By its comparatively isolated location and lack of worker amenity, market appeal as a business park and office precinct is conceivably limited. Furthermore, the lack of direct access from major highways and location abutting residential uses makes it unattractive to industrial users. This is already apparent from the lack of and muted interest in industrial space currently available in the Precinct. The main challenge with Melrose Park is that the base locational characteristics required for each of the alternative use options (i.e. business park, office buildings, new industrial) are not present. These include a lack of public transport options and worker amenity.

	Furthermore, its small size and scale severely limits the employment uses the Precinct can be put to. It is apparent from the analysis that employment uses that are 'population driven' have the best potential for success in the Precinct, leveraging its location close to existing residential uses. The Masterplan will assist in meeting the changing employment needs of the Parramatta LGA by providing a range of uses including: retail, commercial, community uses and residential.
Is the Precinct critical to meeting the need for land for an alternative purpose identified in other NSW Government or endorsed Council Strategies?	Rezoning the Site will be critical to ensuring that the industries which are forecast to grow the most overtime are adequately catered for into the future.

In 2009, the then Department of Planning released the *Draft Centres Policy – Planning for Retail and Commercial Development* as a *Consultation Draft* only. The Draft Policy introduces the concept of a *Net Community Benefit Test (NCBT)*, noting that net community benefit arises when the sum of the benefits of a rezoning are greater than the sum of all costs from a community welfare perspective.

The EIA has undertaken an assessment of the Proposal against the NCBT in support of the Proposal as detailed in the Table below.

Consideration	Explanation
Will the LEP facilitate a permanent employment generating activity or result in a loss of employment lands?	The Proposal will be more favorable about meeting employment targets by will resulting in 1,478 - 1,873 direct jobs representing a net increase of 504 - 899 jobs. The revised economic assessment prepared by AEC finds that the number of direct jobs has increased as a result of the revised Planning Proposal. The Proposal will provide 1,538 – 1,932 direct jobs on the Site, which will result in a net increase of jobs on the site.
Will the LEP impact upon the supply of residential land and therefore housing supply and affordability?	The Greater Sydney Region Plan (Region Plan) sets out State government objectives for the Central City over a period of 5 and 20 years (by 2021 and 2036). The Region Plan sets a housing target of 53,500 additional dwellings by 2021 and 207,500 additional dwellings by 2036. The Central City District Plan sets a housing target of 21,650 additional dwellings in the Parramatta LGA by 2021. The provision of approx 5,000 residential dwellings on the Site constitutes a strong positive economic impact.
Will the LEP be compatible/complementary with surrounding land uses? What is the impact on amenity in the location and wider community?	Providing homes close to jobs, public transport, civic functions, retail and entertainment options is a community benefit. Doing so lowers the needs for residents to travel to access employment and the other services they require and promotes public transport use. As a result, negative externalities of travel in terms of lost time commuting, monetary expenses of travel, pollution, congestion, traffic, noise and so on are minimised.

Will the public domain improve?	For this reason, the Greater Sydney Region Plan aims to provide homes closer to jobs (Direction A well-connected city) and focus new housing in centres which have public transport that runs frequently and can carry large numbers of passengers. Furthermore, the Central City District Plan highlights having a greater number of jobs and centres within 30 minutes of where residents live. Parramatta LGA is an ideal place to concentrate new housing development. Amendments to the planning controls of the Site and subsequent development of approximately 5,000 apartments in this location in addition to new employment opportunities on Site constitutes a strong positive economic impact.
Will the Proposal increase choice and competition by increasing the number of retail and commercial premises operating in the area?	The Proposal envisages provision of 15,000m² of new retail floorspace. This will undoubtedly increase consumer choice and promote competition, all of which are associated with positive economic impacts. Notwithstanding, the issue of acceptable impact to existing centres is a relevant planning consideration. According to a Retail Impact Assessment (Leyshon Consulting, 2017), it is considered that the proposed rezoning of land at Melrose Park to provide for a new retail centre of some 15,000m² GFA; is justified based on the existing demand for retail services in the area and substantial growth in demand which will occur if the residential components of the proposed development are approved. The Assessment states that the impact of the proposed development in 2021 will not give rise to adverse economic impacts on existing centres. The substantial growth in available resident spending associated with the residential component of PAYCE's Melrose Park project will generate an estimated $133 million of additional available retail spending ($2018) after 2026. This will directly benefit not only the proposed centre but other existing centres at nearby Ermington, West Ryde and Top Ryde in particular.

Retail Assessment

The key principle of the proposed re-development of the Site is the introduction of a new Town Centre which will support existing and new communities and new employment areas on the Site. The proposed Structure Plan and Masterplan both nominate a new Town Centre in this location.

The Melrose Park Town Centre proposes up to 10,500m2 of new retail space as part of the new Town Centre for Melrose Park consisting of:

- a full line supermarket
- supporting retail shops and services

To determine the potential impacts associated with the proposed retail uses, a Revised Retail Impact Assessment of the proposed retail uses has been prepared by Leyshon Consulting (**Appendix 6**).

The Retail Assessment examines the local retail facilities, noting the closest retail/commercial centres of significance are West Ryde, Ermington and Meadowbank. Other major centres reviewed include Top Ryde, Carlingford, Rhodes and Eastwood. Leyshon's inspection of these centres indicate there is currently a very low level of vacant

floorspace, which suggests prima facie that existing centres are currently trading at acceptable levels.

A trade analysis was undertaken to establish primary and secondary trade areas for the Site, as shown in the Figure below, including identification based on generally accepted criteria of:

- competitive retail centres in the surrounding region;
- the arterial and sub-arterial road system; and
- barriers to movement

Outcomes of the trade area analysis indicate that the primary trade area were broadly similar to the broader Sydney Region, with key differences in the eastern Secondary trade areas attributes to increased residential development that suggest:

- higher proportion of persons between 20-29
- higher incomes
- higher proportions of persons employed as professionals
- lower unemployment rates

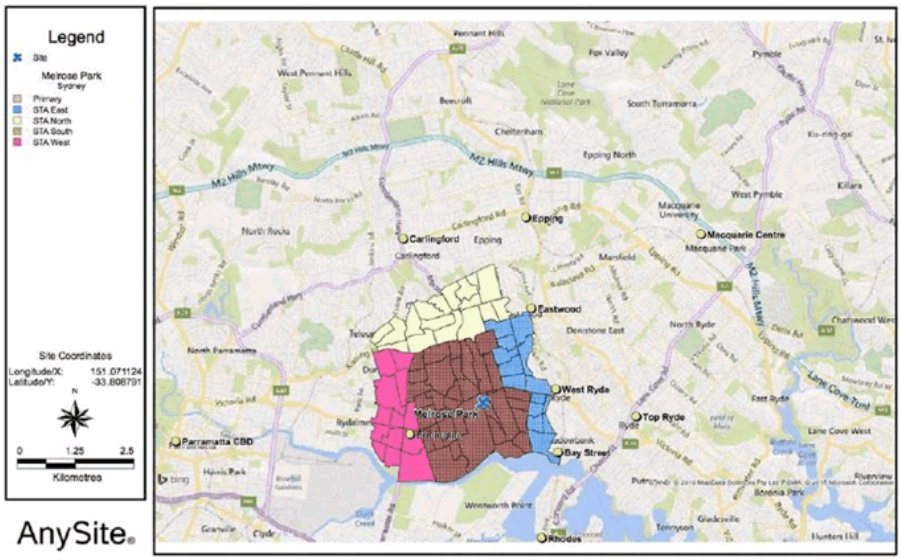


Figure 15 - Melrose Park Trade Area (Source: Leyshon Consulting 2019)

Leyshon notes that differing demography of the STA East compared with the trade area provides some insight into what may eventuate if Melrose Park is redeveloped primarily to residential development.

Leyshon also observes that it is likely that under such a scenario the incoming population would have a higher socio-economic status than does the existing resident population in the area surrounding the subject Sites.
Accordingly, it could be expected any such new population will have a potentially higher average demand for retail goods and services.

A demand analysis based on the trade areas and population demographic indicate that the total available annual supermarket spending in the Melrose Park trade area is estimated to increase by +$97.4 million ($2016) between 2014-21.

Importantly, following an analysis of the supportable retail floorspace considering demand and supply, Leyshon concludes:

- there is considerable potential demand for retail floorspace to be provided within the Melrose Park trade area
- there will be a need for an additional 14,970m2 Net Leasable Area (NLA) of retail floorspace due to population growth alone in the Melrose Park trade area between 2014-21 based on an increase in annual available spending during this period
- the estimated demand for additional retail floorspace does not rely on the redevelopment of land in the Melrose Park Industrial Area for residential uses other than the former Bartlett Park site
- The increase in demand for retail floorspace between 2014-21 (14,970m2) justifies the proposed PAYCE development (8,450m2 NLA).

Similarly, the Retail Assessment concludes that a full line supermarket would be supported on the Site based on current and projected demand.

The Retail Assessment undertakes an analysis on the existing centres as detailed above. The report notes that the impact on existing centres in 2021 fall into either the very low or the low/medium category of impact.

The Assessment concludes the impacts of the Proposal are not of a scale which would warrant refusal of the proposed development on economic impact grounds and existing centres which do experience an impact (Ermington and West Ryde) will substantially benefit beyond 2021 from the proposed residential development at Melrose Park.

The report also undertakes an assessment against the Draft Centre Policy NCBT, noting that the Proposal will exhibit a positive *net community benefit* when assessed against the criteria based on the following:

- the residential component of the proposal is of a scale to justify the provision of the proposed retail centre;
- the substantial increase in the residential population which will result from the project proceeding means additional retail floorspace needs to be provided to service both these new residents as well as the existing residential community in Melrose Park and adjacent areas;
- the proposed development will address an existing significant shortfall in retail floorspace in general and supermarket floorspace in particular within the MTA;
- the proposed retail floorspace and the associated community and commercial facilities will provide a new focus for the existing and future community at Melrose Park;
- the proposed development will create substantial on-Site employment both during its construction phase and, more importantly, once the centre is completed. This is estimated to be in the order of 324-368 jobs; and
- the Proposal's impacts on existing centres are not of a scale which would give rise to concerns about any adverse economic impact which possibly could undermine the viability of existing centres.

The Assessment concludes the impact of the proposed development in 2021 will not give rise to adverse economic impacts on existing centres. In contrast, the Assessment finds that substantial growth in available resident spending associated with the residential component of the Melrose Park project will in itself generate an estimated $117.0 million of additional available retail spending ($2016) after 2021.

Finally, the Assessment finds that this additional spending from the resultant population will directly benefit not only the proposed centre but other existing centres at nearby Ermington, West Ryde and Top Ryde in particular and will negate any impact of the proposed centre on other existing centres.

AEC have undertaken a revised economic impact assessment to support the revised Planning Proposal. This revised economic assessment finds that the number of direct jobs has increased in response to the 30,000m2 of non residential uses to 1,538 – 1,932 direct jobs on the Site, which will result in a net increase of jobs on the site.

Leyshon has also reviewed an updated retail analysis which concludes that the impact of the proposed development in 2026 will not give rise to unacceptable adverse economic impacts on existing centres.

The Assessment finds that the revised approximate 12,750m2 NLA is justified based on the existing

In contrast, the Assessment finds that substantial growth in available resident spending associated with the residential component of the Melrose Park project will in itself generate an estimated $133 million of additional available retail spending ($2018) after 2026.

Social Impact Assessment

A Social Impact Assessment (SIA) for the Site was undertaken by Urbis (**Appendix 8**). The SIA is high level and preliminary, yet comprehensive for a Planning Proposal (when also combined with the Community Facilities Study undertaken by Elton Consulting). The SIA outlines the potential benefits and impacts from the Proposal. Based on information available and ongoing mitigation and management measures, the SIA concludes:

> *…This development has the capacity to deliver far reaching benefits to the community…*

The SIA can be further developed upon progress of the Planning Proposal at the community engagement phase and upon meeting any Council requirements.

In terms of social impact, the Revised Proposal has the potential for overall positive social impacts and wider public benefits, with social impact assessment being an ongoing aspect to guide development of the Site.

Community, Sport and Recreation Facilities, Open Space and Educational Analysis

A Community, Sport and Recreation Facilities and Open Space Analysis was undertaken by Elton Consulting (**Appendix 7**). Elton has a strong understanding of social and facilities planning from prior work done in the Parramatta LGA. The Site has a wide range of surrounding services, ranging from community facilities, childcare, primary and secondary schools and recreational assets within the Parramatta and Ryde Council areas.

The new community will bring increased demand for community facilities, although a principle underpinning the Proposal is to provide, augment and complement existing facilities and infrastructure, to benefit the wider community. To this end, leading benchmarks or guidelines have been used in the formulation of facilities on the Site, with the provision of public benefits as outlined in this Planning Proposal.

The Analysis identified the future community (approximately 10,600 people) will generate demand for the following community infrastructure:

- Library services (partial)
- Multipurpose community centre space
- Childcare centre places
- Local parks, higher order passive open space and active/sporting open space (including sports fields and courts)
- Indoor sport and recreation facilities

The applicant's specific contribution towards local infrastructure will be refined as part of future VPA between Council and the applicant and will be subject of a future report to Council prior to proceeding to public exhibition.

3.4. Section D – State and Commonwealth Interests

3.4.1. Is there adequate public infrastructure for the planning proposal?

Local Infrastructure

The redevelopment of the Melrose Park precinct will require significant infrastructure to be delivered to meet the needs of new residents and the community. As part of the assessment process and preparation of this Planning Proposal it was identified that this precinct would need to be self-sufficient in the provision of local infrastructure due to the significant increase in density and potential new residents. At its meeting of 10 July 2017, Council resolved the following:

> *"(f) That Council officers proceed with the preparation of an Infrastructure Needs List and subsequent negotiations for a Voluntary Planning Agreement (VPA) with the proponents in relation to the Planning Proposal on the basis that any VPA entered in to is in addition to Section 94A developer contributions payable."*

As a result, in discussion with the applicant, a draft Infrastructure Needs List (INL) was developed which identified the types of infrastructure that would be needed to support a community of this size and the approximate costs of providing these benefits.

The draft INL included items relating to open space, road network improvements and community facilities that would be required within and external to the precinct at the density proposed and an indicative cost per dwelling. The draft INL requires refinement which will be undertaken when the overall density of the precinct is confirmed. The INL will be formalised as part of a future Voluntary Planning Agreement (VPA) between the developer and Council and will be reported to Council separately. The INL will also be used to inform other VPAs in the precinct to help determine an appropriate apportionment for remaining landowners to contribute towards infrastructure provision.

State Infrastructure

Due to the size and nature of this urban renewal precinct and the anticipated demand it will place on not only local infrastructure but also State infrastructure, preliminary discussions have been undertaken with various state agencies including Transport for NSW (TfNSW) and the Department of Education (DoE). As a result, it is proposed that a State VPA will be entered into between the developer/s and State agencies to contribute towards the funding and provision of required State infrastructure.

It has also been identified that the anticipated population increase will also place additional demand on existing education facilities beyond their current capacity to accommodate the population growth. Both new primary and high school facilities are required to service the incoming population and as a result of consultation with the DoE, land for a new primary school is proposed to be provided within the northern precinct with an adjacent playing field that will be shared with the school and community. All landowners within the precinct who proposed to redevelop their sites will be required to contribute towards the cost of delivering the identified State infrastructure as part of a State VPA. The DoE are currently investigating locations that could potentially accommodate a secondary school to service the needs of the Melrose Park community, noting that nearby Marsden Road High School has been recently closed and relocated to

Meadowbank as part of a new education precinct. Council officers have raised concern about the closure of this school given the projected population increase in the area and the Department of Education's justification for requiring a new high school site within this area when an existing school was already located within close proximity to the precinct. The DoE advised that there are many aspects that are considered in relation to the provision of schools and Council is not privy to full details regarding the decision to close Marsden Road High School, however have been advised that location and accessibility are taken into consideration.

It is important when determining infrastructure needs that there be sufficient scope to ensure that the required infrastructure can be delivered at both the local and regional level. When negotiating any VPA associated with the planning proposal Council officers will liaise with all State agencies to ensure that any State VPA does not compromise the ability of any local VPA to provide sufficient funding / works to meet the needs of the local community.

3.4.2. What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

Formal consultation with the State and Commonwealth (where relevant) public authorities will be undertaken once the Planning Proposal is placed on public exhibition. As discussed previously, non-statutory consultation has already occurred between the TfNSW and RMS as part of the preparation of the TMAP and DoE to understand the demand for new educational facilities within the precinct.

PART 4 – MAPPING

This section contains the mapping for this planning proposal in accordance with the DP&E's guidelines on LEPs and Planning Proposals.**Existing controls**

This section illustrates the current *PLEP 2011* controls which apply to the site.

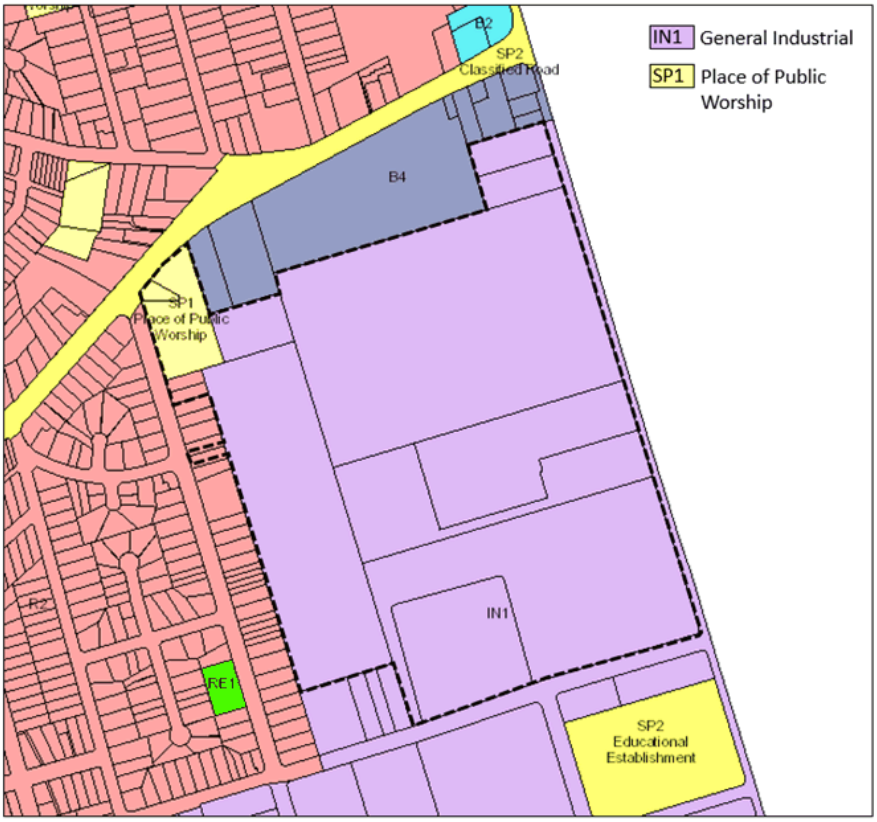


Figure 16 – Existing zoning extracted from *Parramatta LEP 2011* Land Zoning Map

Figure 16 illustrates the existing part IN1 General Industrial and part SP1 Special Activities (Place of Public Worship).

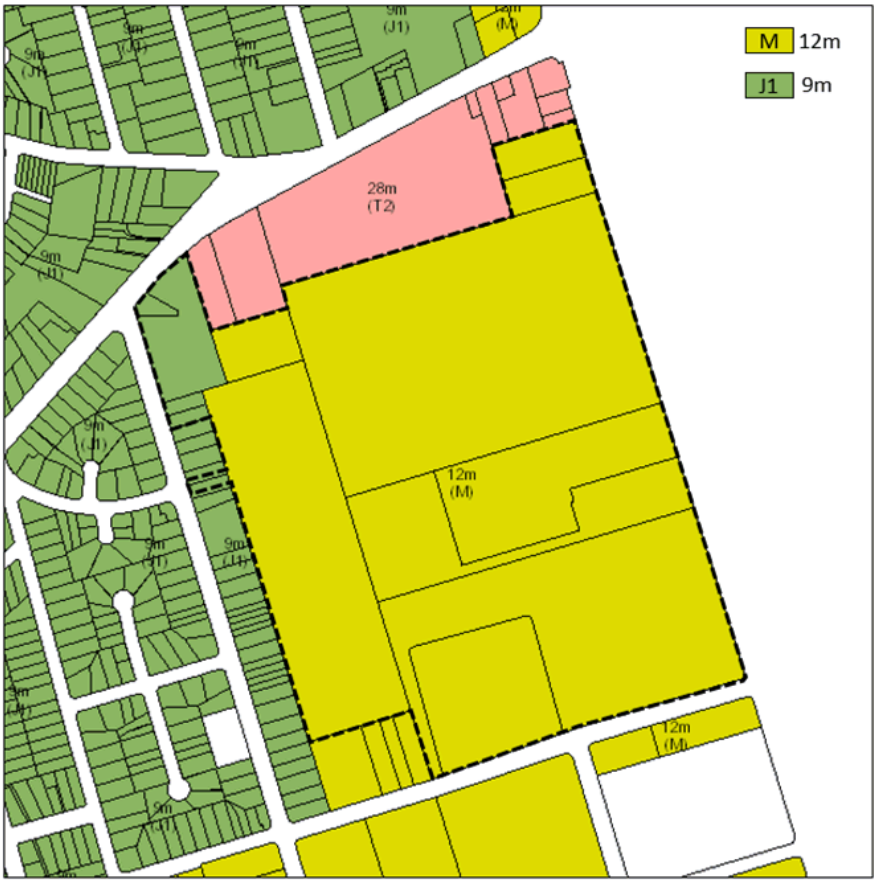


Figure 17 – Existing building heights extracted from the *Parramatta LEP 2011* Height of Buildings Map

Figure 17 illustrates the existing part 9m and part 12m.

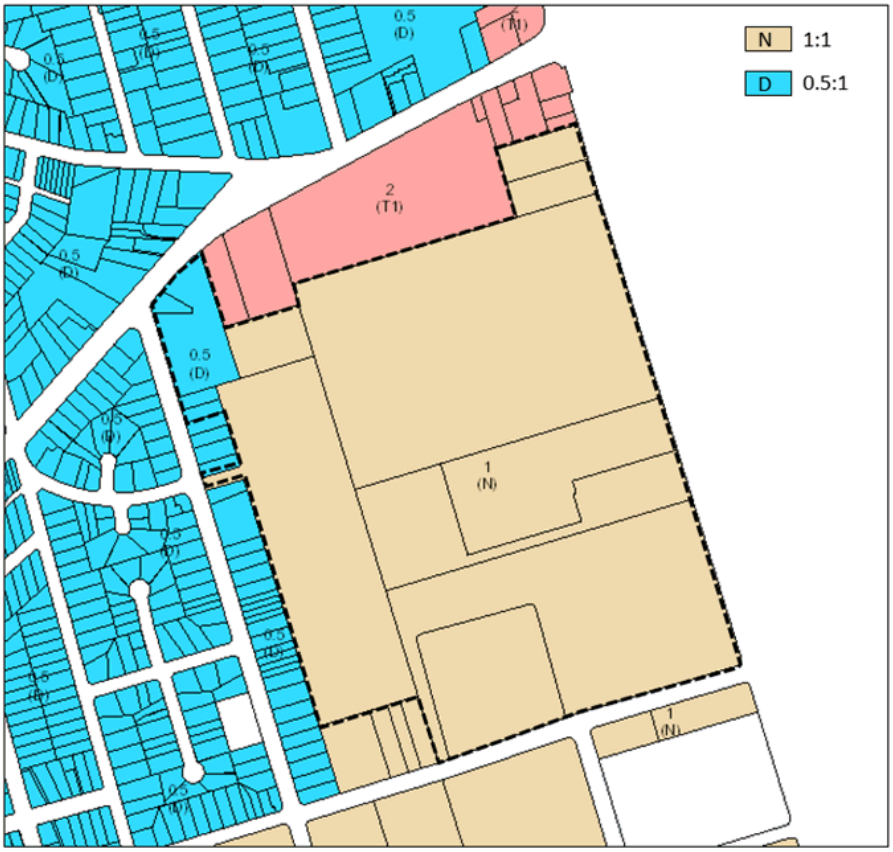


Figure 18 – Existing floor space ratio extracted from the *Parramatta LEP 2011* Floor Space Ratio Map

Figure 18 illustrates the existing part 0.5:1 and part 1:1.

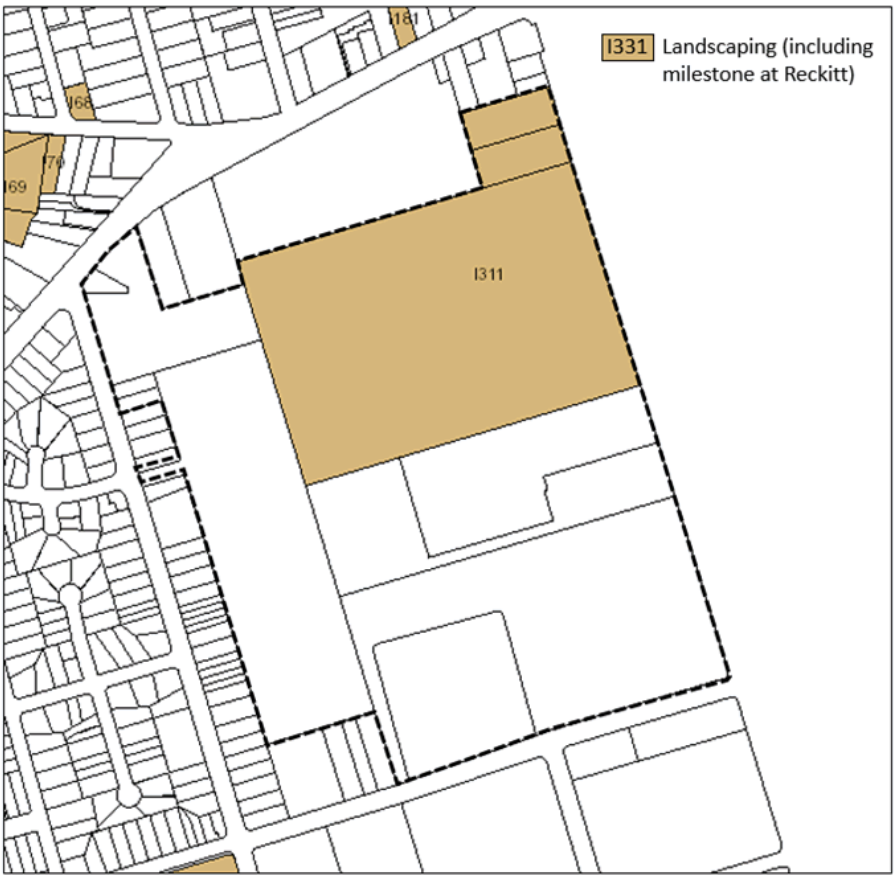


Figure 19 – Existing heritage items extracted from the *Parramatta LEP 2011* Heritage Map

Figure 19 above illustrates the Heritage Item 311 - Landscaping (including milestone at Reckitt).

4.2 Proposed controls

The figures in this section illustrate the propose

Figure 20 – Proposed amendment to the *Parramatta LEP 2011* Zoning Map

Figure 20 above illustrates proposed part R4 High Density Residential, part B2 Local Centre, part RE1 Public Recreation and part SP2 Infrastructure (Educational Establishment) zonings over the site.

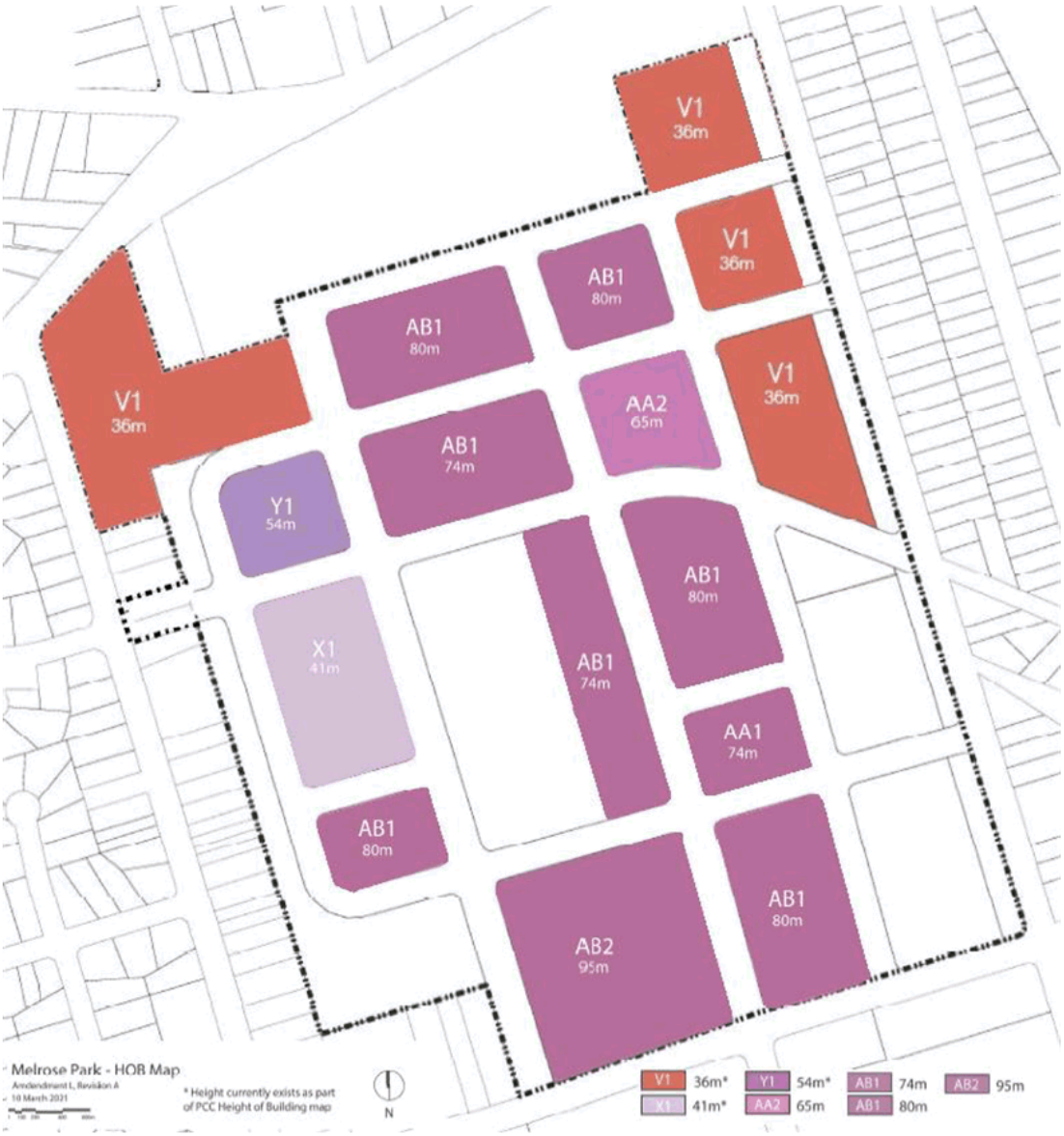


Figure 21 – Proposed amendment to the *Parramatta LEP 2011* Height of Building Map

Figure 21 above illustrates the proposed multiple heights ranging from 28m (6 storeys) to 95m (approximately) 26 storeys building heights.

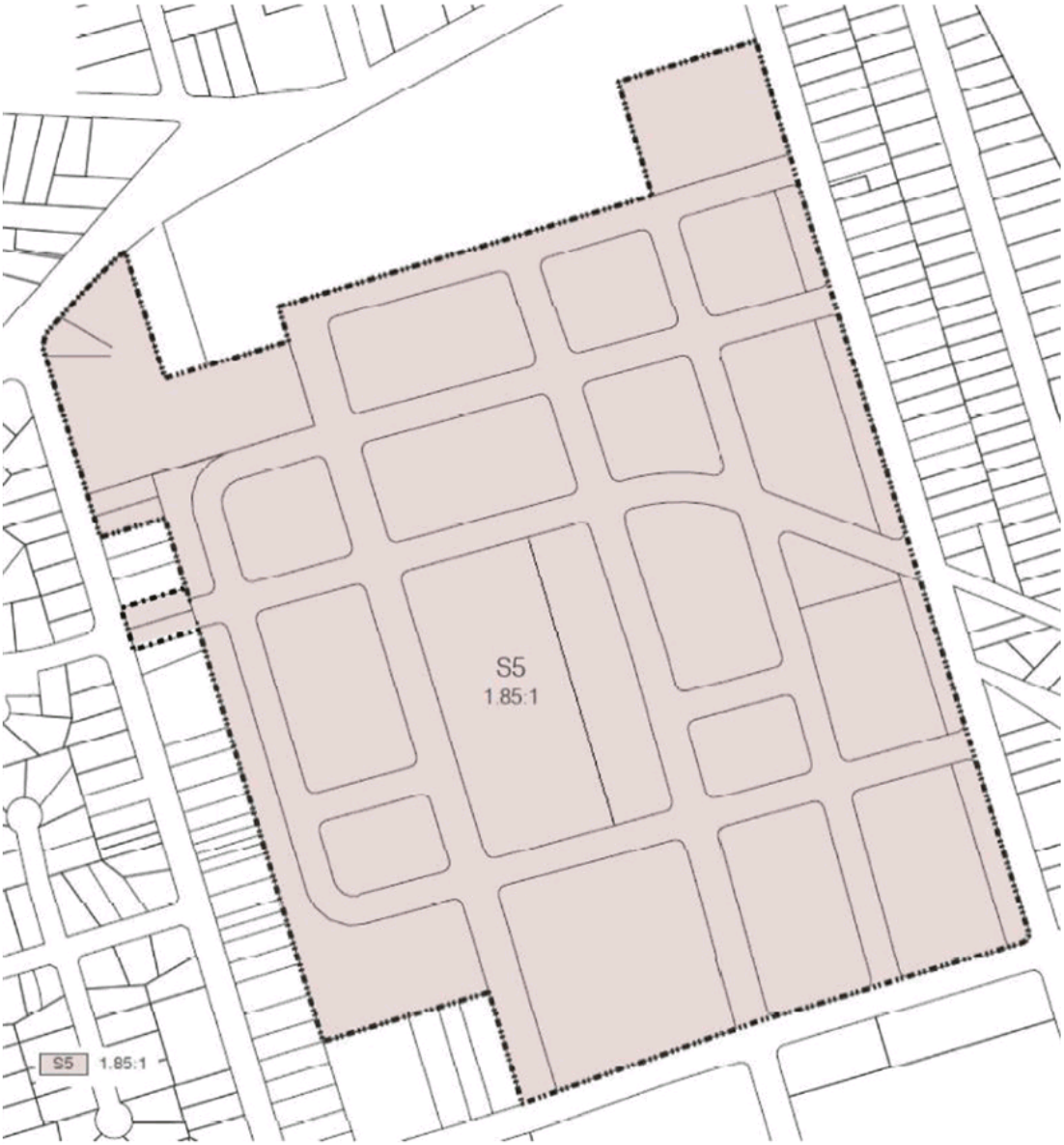


Figure 22 – Proposed amendment to the *Parramatta LEP 2011* Floor Space Ratio Map

Figure 22 above illustrates the proposed 1.85:1 over the site.

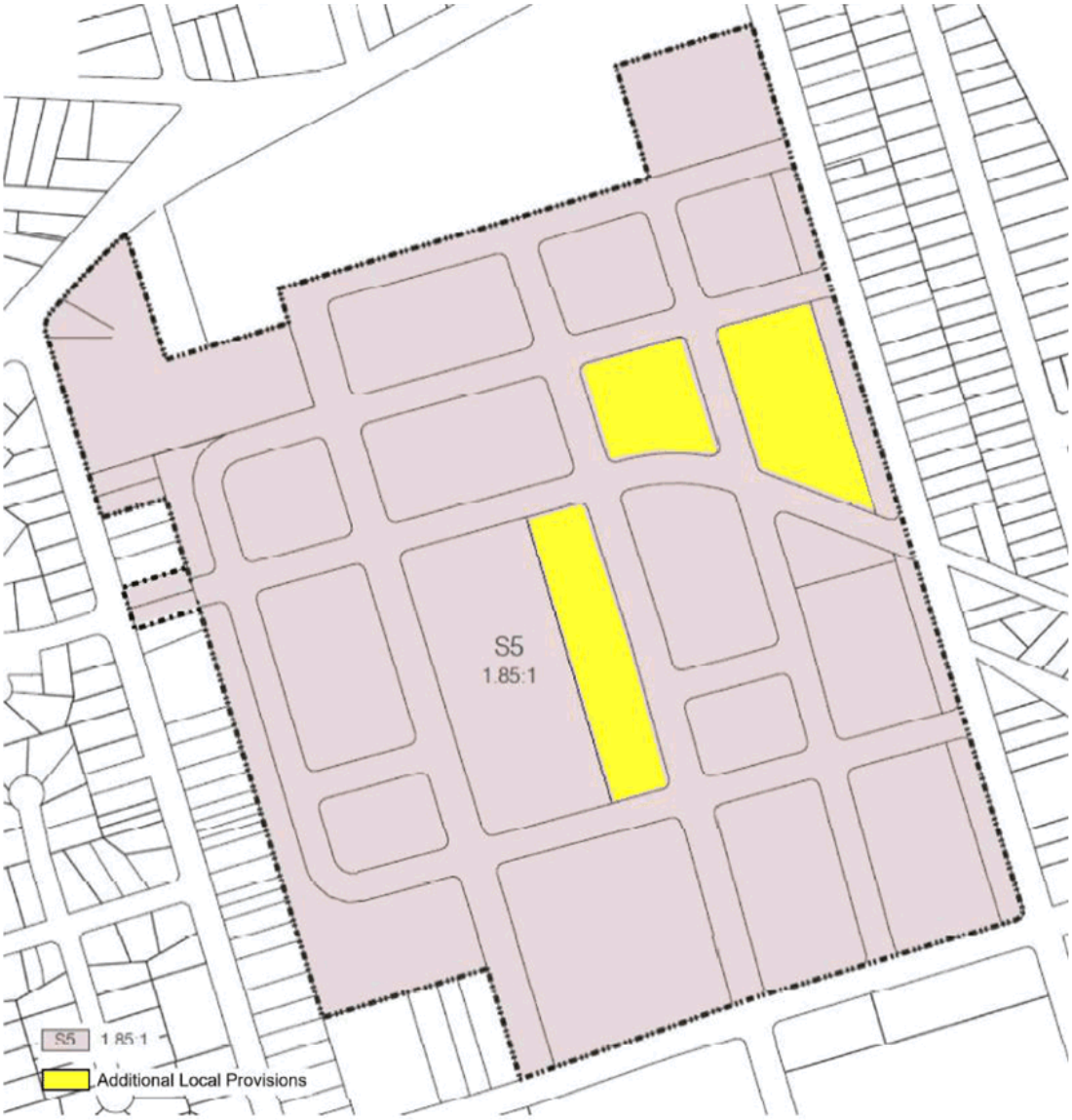


Figure 23 – Proposed amendment to the *Parramatta LEP 2011* Additional Local Provisions Map

Figure 23 above illustrates the proposed location of the additional local provisions relating to Design Excellence over the site.

PART 5 – COMMUNITY CONSULTATION

The planning proposal (as revised to comply with the Gateway determination) is to be publicly available for community consultation.

Public exhibition is likely to include:

- advertise on Council's social media platforms;
- display on the Council's website; and
- written notification to adjoining landowners.

The Gateway determination will specify the level of public consultation that must be undertaken in relation to the planning proposal including those with government agencies.

Consistent with sections 3.34(4) and 3.34(8) of the *EP&A Act 1979*, where community consultation is required, an instrument cannot be made unless the community has been given an opportunity to make submissions and the submissions have been considered.

PART 6 – PROJECT TIMELINE

Once the planning proposal has been referred to the Minister for review of the Gateway Determination and received a Gateway determination, the anticipated project timeline will be further refined, including at each major milestone throughout the planning proposal's process.

Table 7 below outlines the anticipated timeframe for the completion of the planning proposal.

Table 7 – Anticipated timeframe to planning proposal process

MILESTONE	ANTICIPATED TIMEFRAME
Report to LPP on the assessment of the PP	June 2017
Report to Council on the assessment of the PP	July 2017
Referral to Minister for review of Gateway determination	July 2017
Date of issue of the Gateway determination	September 2017
Date of issue of Alteration Gateway Determination	March 2019 (granting 12-month extension for completion).
Report to Council on updated Planning Proposal and TMAP	August 2019
Referral of updated Planning Proposal and TMAP to DPIE	September 2019
Report to Council on amended Planning Proposal, site-specific DCP and VPA	March 2021
Alteration of Gateway Determination received	March 2021
Commencement and completion dates for public exhibition period (exhibition dates subject preparation of a draft VPA and SSDCP as the PP will be exhibited concurrently)	April / May 2021
Commencement and completion dates for government agency notification	April 2021
Consideration of submissions	May / June 2021
Consideration of planning proposal post exhibition and associated report to LPP	August 2021
Consideration of planning proposal post exhibition and associated report to Council	October 2021
Submission to the Department to finalise the LEP	October 2021
Notification of instrument	December 2021

Appendix 1 – Urban Design and Landscape Architecture Report

Appendix 2 – Assessment of Heritage Impact

Appendix 3 – Transport Management and Accessibility Plan

Appendix 4 – TMAP Executive Summary

Appendix 5 – Economic Impact Updated Letter

Appendix 6 – Retail Impact Assessment

Appendix 7 – Community, Sport and Recreation Facilities and Open Space Study

Appendix 8 – Social Impact Assessment

Appendix 9 – Concept Stormwater Strategy

Appendix 10 – Site Contamination Report

Appendix 11 – Flora and Fauna Report

Appendix 12 – Services Investigation Report

Appendix 13 – Education Needs Analysis

Appendix 14 – Council Report -12 August 2019

Appendix 15 – Minutes of Council - 12 August 2019

Appendix 16 – Council Report of 22 March 2021

Appendix 17 – Minutes of Council Meeting 22 March 2021

Appendix 18 – Hazard Analysis Report

Appendix 19 – Melrose Park Infrastructure Needs List

CITY OF PARRAMATTA COUNCIL

Draft Melrose Park North Site-Specific Development Control Plan

Public Exhibition Version

Date Adopted: xx 2021

CITY OF PARRAMATTA

Contents

Figures

Appendices

INTRODUCTION

APPLICATION

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

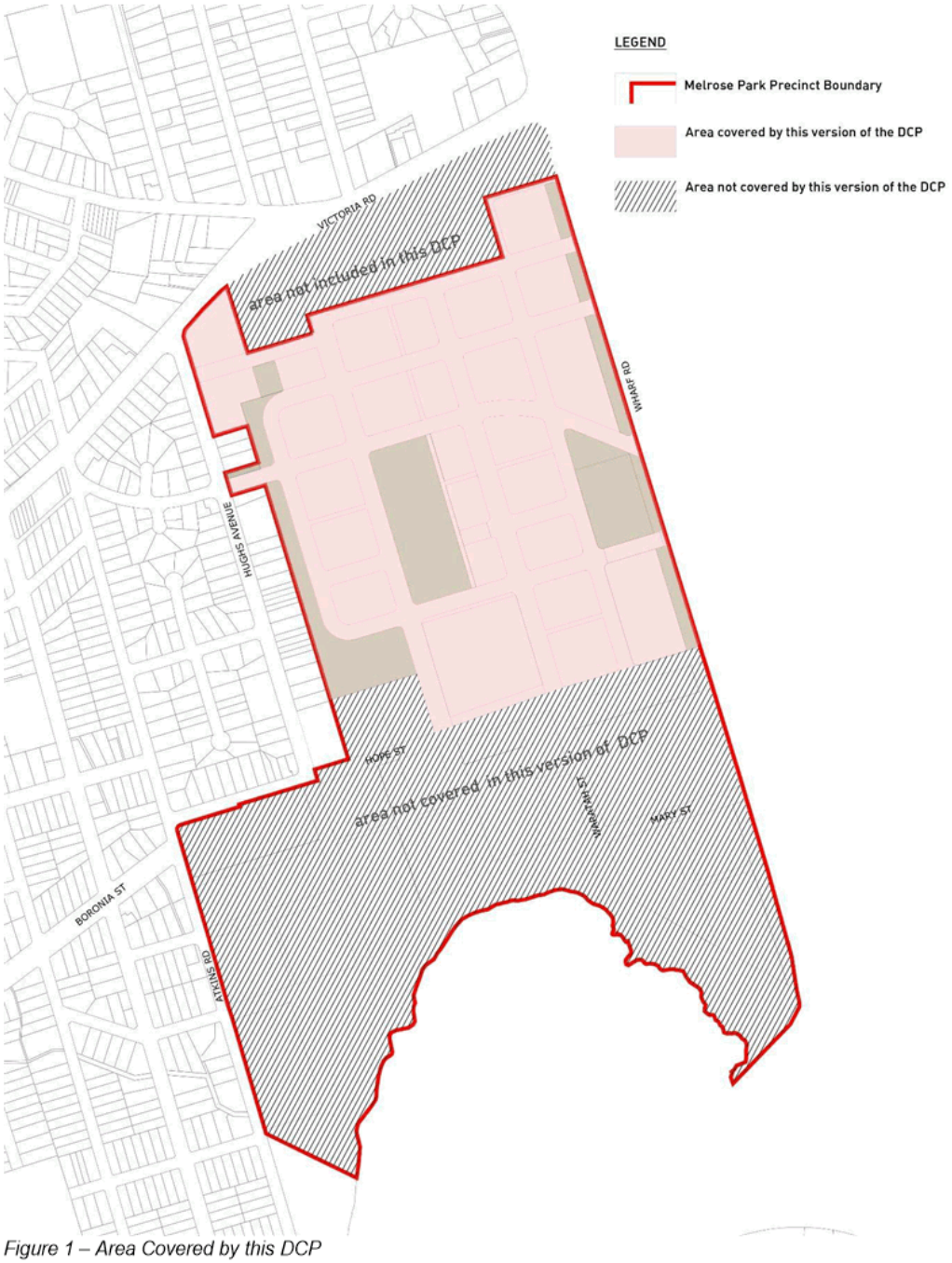


Figure 1 – Area Covered by this DCP

THE DCP

This DCP includes the written document and the Masterplan.
The Masterplan describes the intended physical outcome for Melrose Park.
The Public Domain Plan and associated Public Domain Guidelines and Water Management Strategy will alsoinform the outcome.

MASTERPLAN

The Masterplan for the Northern Melrose Park precinct consists of the following:

Street, Block, Open Space and Building Layout identifies the street layout including the pedestrianconnections; the open space; development lot locations and the building footprints.

Setbacks from the Public Domain identifies the setbacks to the buildings from the street and publicdomain.

GFA by Lot identifies the gross floor area (GFA) generally permitted for each lot and across the site.

Heights by Lot identifies the number of storeys generally permitted on each building. See Appendix 1.

PUBLIC DOMAIN PLAN and PUBLIC DOMAN GUIDELINES

Public Domain Plan includes:

Street Hierarchy Plan identifies the location and width of all streets.

Street Type Schedule identifies street arrangement in section in spreadsheet format

Public Domain Guidelines includes:

Pavement Strategy and Materials Palette; Street Tree Strategy (species, tree surrounds), Materials Palette and Tree Surround Finishes Strategy; Furniture Strategy and Materials Palette; Pedestrian and Vehicle Lighting Level Strategy, and Light Pole Strategy for streets, plazas, pedestrian connections andparks, plus other special details that may be required.

WATER MANAGEMENT STRATEGY AND MASTERPLAN

The Water Management Strategy and Masterplan govern development in the precinct and includes:

- Overland flow and flood management;
- Road and public drainage and detention; and
- Environmental management of low flows with OSD and Water Sensitive Urban Design

(WSUD).

OTHER DOCUMENTS

Council documents also used for reference:

- Parramatta LEP 2011
- City of Parramatta DCP 2011
- Council's Standard Construction details
- General requirements of the Parramatta Public Domain Guideline

GENERAL OBJECTIVES

The City of Parramatta Council aims to foster the development of a lively, diverse, and healthy LGA, one which celebrates a sense of place and local character in both the public and private realms. To the east of the Parramatta CBD Melrose Park is being developed on ex-industrial land located between Victoria Road and the Parramatta River. There are three precincts the Wharf Road Precinct located on Victoria Road is the most northerly precinct. Melrose Park North extends from the Wharf Road Precinct to Hope Street. MelrosePark South extends from Hope Street to the Parramatta River. The Wharf Road Precinct has been rezoned and is not the subject of this DCP. This DCP applies to the Melrose Park North Precinct. This DCP will be amended to includeMelrose Park South Precinct and its related masterplan. The overall precinct slopes south to the river and is surrounded by low density detached housing on the east and the west. On completion, Melrose Park North and South will be home to approximately 25,000 people, provide retail and entertainment facilities, two schools and parks.

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

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

General Objectives

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

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

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

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

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

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

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

DESIGN EXCELLENCE

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

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

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

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

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

In Melrose Park, under the Design Excellence process, design competitions are required for three lots as agreed. These lots are Lot E, Lot EA and Lot G . Bonuses in floor space and height are not applicable.

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

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

Melrose Park North will be home to approximately12,000 people. Design quality is therefore paramount. Quality is not just of the individual buildings but how the buildings relate one to another. 'Cookie cutter' buildings will create a monotonous outcome; 'look at me' buildings will create a high 'perceived' density and a building dominant outcome. Careful definition of the spaces between the buildingsin plan and section; preservation of all views to the sky and discrete modulation of the buildings are required to ensure variety and interest in the public domain and amenity in the apartments.

Objectives

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

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

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

O.04 Use of a range of architects with an understanding of the objectives of the DCP

Controls

C.01 I Design Competition briefs for lots are Lot E, Lot EA and Lot G should contain a reference to the objectives and controls contained within this DCP.

C.02 All 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 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 facades and external areas to form part of the consent documents. These should include fully annotated 1:20 scale cross sections and partial plans of facades, details of typical and important junctions, and details and materials specification of all external works.

C.05 The Landscape Architect and Civil Engineer for all Development Applications should liaise closely to prepare fully coordinated Public Domain Alignment Drawings. The detailed design considerations and documentation requirements for this submission are outlined in the Parramatta Public Domain Guidelines.

C.06 Different Architects are to be used across the Precinct. Allocation of sites to different architects should be based on the lots being dispersed along the street network or relate to particular intersections rather than different architects being allocated to a 'group' of street blocks.

WATER MANAGEMENT STRATEGY AND MASERPLAN

Note 1: See Water Management Masterplan below and Appendix 8 for more detail.

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

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

The Upper Parramatta River Catchment Trust (URPCT) Edition 4 is to be applied, where relevant.

Refer to the Water Management Strategy for full requirements

Refer to Sustainability section for Water Sensitive Urban Design (WSUD) requirements.

Objectives

O.01 Ensure pre-development (natural) overland flow paths are restored.

O.02 Ensure that run-off does not impact on surrounding properties or the environment resulting in damage to public and private assets, reduced property values or require additional expenditure on

flood mitigation or drainage works for properties outside the precinct.

O.02 Ensure that sustainable water management practices are applied, where practicable.

Controls

C.01 Manage water flows across the precinct within the roads reserves and identified public open space areas.

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

C.03 Lower flows to be directed through landscape water quality treatment systems (Water Sensitive Urban Design)

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

C.05 In 50%AEP storm events, post-development peaks are to be reduced to or as close as possible to natural levels.

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

1. BUILT FORM

1.1 GUIDING PRINCIPLES

The following principles apply to all development in Melrose Park

P.01 The GFA is to be generally consistent with the overall gross floor area (GFA); height and setbacks as generated within by the Masterplan

P.02 Building depth, bulk and separation is to create a precinct that protects amenity, daylight penetration, views to the sky and privacy between adjoining developments and minimises the negative impacts of buildings on the amenity of the public domain.

P.03 Building depth, bulk and separation should assist to create a precinct that protects amenity, daylight penetration, views to the sky and privacy between adjoining developments and minimises the negative impacts of buildings on the amenity of the public domain.

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

P.05 Podia are to be set back from the street to be generally consistent with the Master plan to enable deep soil planting, reinforce the human scale of the streets, mitigate wind impacts and enable views to thesky in streets and public places.

P.06 Towers are to be appropriately proportioned and maximise their slender form.

P.07 The design and materials selection of buildings and the public domain are to contribute to a high quality, durable and sustainable urban environment.

P.08 In the town centre and where the streets have active ground floor frontages, street walls are to be designed atappropriate heights to create spatially defined streets that are well proportioned, comfortable, safe, functional, and attractive.

P.09 Towers in the town centre are to be set back above street walls to re-enforce the human scale of the streets, mitigate wind impacts, and enable views to the sky in streets and public places.

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

P.11 The variety within the precinct is derived from the detail resolution of the buildings and not from excessive differences in the form of the buildings and / or the selection of materials.

1.2 ALLOCATION OF GROSS FLOOR AREA

Objectives

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

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

Controls

C.01. The maximum GFA for any development lot is to approximate the GFA detailed in Figure A. The GFA attributed to each lot results from the FSR controls in the PLEP 2011 or as otherwise nominated in a Notice of Development Consent granted by a relevant consent authority

C.02. The allocation of the total floor space relates to the Masterplan and is based on 75% of the capacity of the building envelope on each lot. The total GFA which is referenced in the DCP is distributed across the precinct in this way.

C.03. The maximum GFA is approximate for each lot and includes all buildings accommodated on a development lot.

C.04. Development applications must submit supporting plans that demonstrate the GFA outcome on the development lot is consistent with PLEP 2011 or as otherwise nominated in a Notice of Development Consent granted by a relevant consent authority.

C.05. Should a maximum GFA not be able to be achieved for a development lot, or has minor variations that amount of GFA canbe transferred to any other development lot subject to consideration against the relevant provisionsin this DCP and maintaining the gross FSR of 1.85:1 across the Precinct

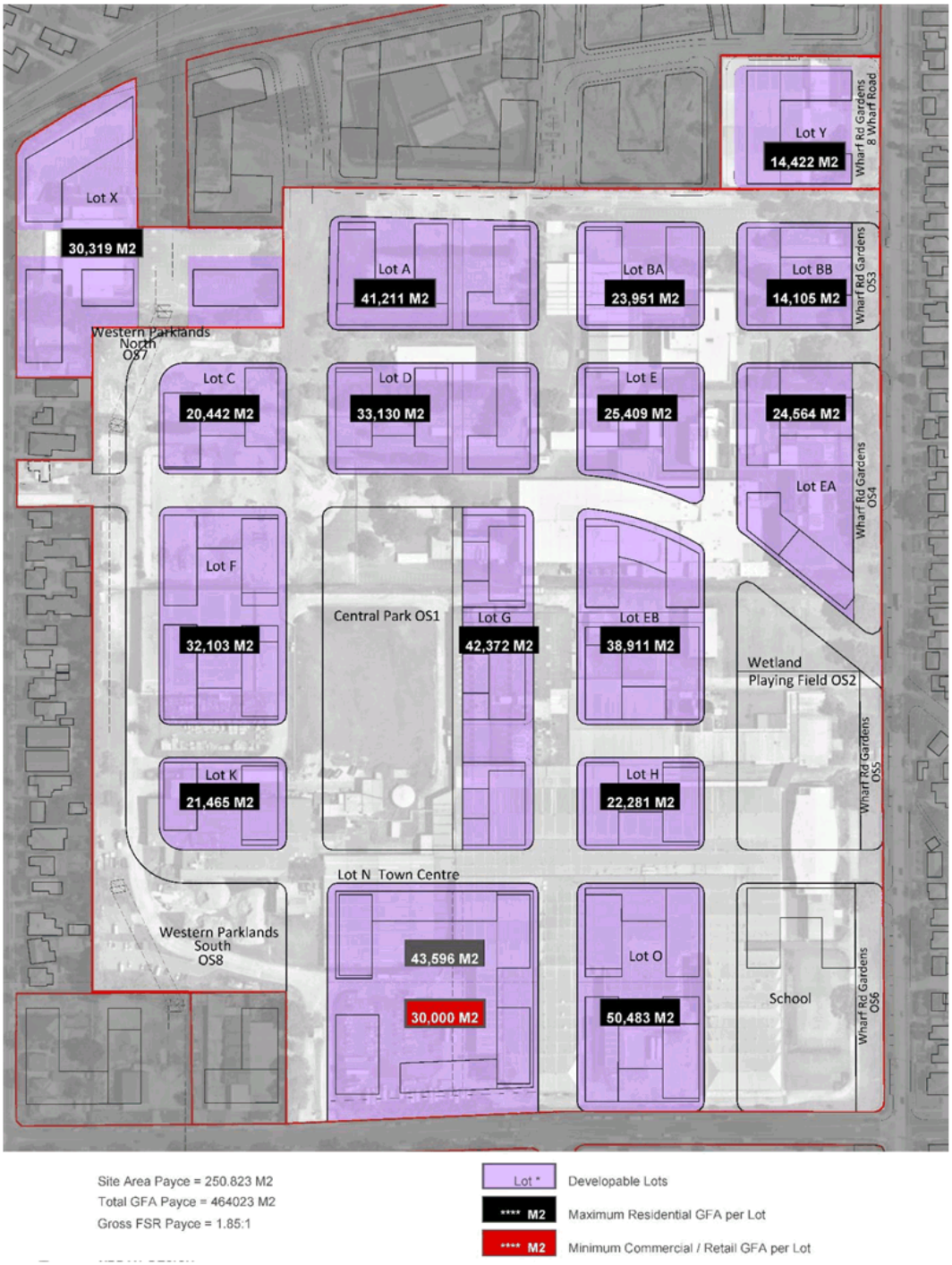


Figure 2 - GFA Plan per Lot

1.3 STREET, BLOCK, OPEN SPACE and BUILDING LAYOUT

Objectives

O.01 The street network is to be laid out as shown in the Masterplan and Public Domain Plan to:

a) optimise the internal and external connectivity
b) provide views to sky and views that are not blocked by buildings at the ends of streets
c) 'reveal' the topography '
d) minimise 'perceived' density
e) define a street hierarchy considering the landform, street widths and built form.
f) enable generous canopy tree planting
g) enable all road users to move safely
h) provide access to parking basements where possible from the lowest point on the lots and from the least busy streets,
i) locate streets on the ground
j) dedicate streets to Council

O.02 The public and privately owned open spaces that are defined in the Masterplan are to form the basis dthe open space network and are to:

a) accommodate passive and active recreational needs of the residents and workers
b) manage overland floodwater as well as local stormwater drainage, water sensitive urbandesign and ground water
c) minimise hard surfaces
d) enable growth of healthy canopy trees

The lots defined in the Masterplan are to are to: .

e) provide the necessary standard of amenity in relation to privacy, building separation, solar access,ventilation, and outlook.
f) enable adequate building separation with regard to the ADG and this DCP.
g) provide street activation where retail uses are permitted.
h) allow safe and efficient access and servicing.
i) optmise accessibility
j) provide deep soil and landscaping

O.03 The siting and design of the buildings are to:

a) achieve reasonable setbacks, solar access, and separation requirements
b) optimise the amenity of the apartments in terms of outlook, landscaping
c) define the public domain
d) minimise perceived density

Controls

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

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

C.03. The pedestrian connections that are above basements and privately owned should be publicly accessible 24/7 (except the Mall).

C.04. All subdivision plans should comply with the Masterplan

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

C.06. Deep soil and landscaping should be consistent with the ADG and the a reduced amount of Deep Soil as per the PDCP 2011. Deep soil zone under which there is no development is a minimum of 7% of the site and minimum dimension of 6 metres as per the ADG. Where possible additional deep soil is be provided at 13% of the lot where the minimum dimension is 4 4 metres or greater. or where located in a wide street verge

C.07. Tree Planting and landscaping located on a slab is to be set down into the slab a minimum 1 metre plus drainage for trees and a lessor amount appropriate for other planting. All soil in the street frontage setbacks is to comply with the Soil Profile Strategy Report recommendations. The minimum number of trees to be provided in landscaped areas is 1 tree per 80m² or as agreed by Landscape Management Officer.

C.08. Where possible, stormwater must be managed as an integral part of the land scape and discharge water quality must be achieved through WSUD measures.

1.4 THE BUILDING ENVELOPE

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

Views contribute to wayfinding, the character and amenity while enhancing the sense of place and identity. The physical setting of Melrose Park and the adjacent Parramatta River provides for special views of this natural and landscape setting. The building envelopes have been located to minimize perceived density by providing views to sky and have been tested for separation distances and overshadowing of public parks. It is important that views within, into and out of the Melrose Park are maintained from as many points as possible.

Objectives

The objectives for the building envelopes are to:

O.01 Provide a coherent spatial structure

O.02 Create meaningful variety related to street character across the precinct

O.03 Define the streets, intersections and open spaces

O.04 Enable the resolution of the architecture within the building envelopes to reinforce the different street characters

O.05 Locate height to relate to street hierarchy and separation distances,

O.06 Optimise the number of units with outlook to open spaces and views,

O.07 Minimise overshadowing on open spaces and adjacent residential development

O.08 Minimise perceived density

O.09 Provide view corridors.

O.10 Enable satisfactory resolution of the slope and the water management of the precinct

Controls

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

C.02All view corridoes as defined in the masterplan are to be retained.

1.5 STREET SETBACKS

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

There are two principal categories for the ground floor:

- The buildings that have a residential ground floor frontage; and

The buildings that have an active ground floor frontage In areas with residential ground floors, the building should be set back from the street alignment allowing an arrangement which balances the need for resident privacy as well as engagement with the street, and also provides the necessary space for deep soil; landscaping and amenity, both for residents and the street.

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

Raised floor levels, appropriate location of windows and courtyard planting can be used to address privacy and surveillance

In lots where ground floor usage is uncertain, such as at key intersections where it is desirable to have some retail uses, setbacks and public domain design should be considered together.

In the town centre the street wall 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.

Above the town centre street wall, towers should be set back.

Objectives

The objectives for the lower level setbacks are:

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 Recognise the variation in street frontage heights throughout the site driven by topographical features and allow flexibility to respond to context.

O.05 Protect daylight access at street level and permit views of sky from the street by providing setbacks above street frontage height that promote separation between buildings.

O.06 Ensure that building form achieves comfortable public domain conditions for pedestrians, with adequate daylight, appropriate scale, and adequate mitigation of wind effects of tower buildings.

O.07 Create a clear delineation between public and private space.

O.10 Reinforce important elements of the local context including public spaces, key intersections, public and heritage buildings, and landscape elements.

O.11 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 Street setbacks should generally comply with the Masterplan
C.02 For the Town centre:

b) nil setback for the town centre podia

c) towers above the street wall / podium should be set back to suit finaldesign but are generally a minimum of 2m, 5m or 6m from the street boundary, refer Fig 1

C.03 Where active uses are proposed at ground on the key important intersections (NSR 2 andEWR 4 Highest Priority and NSR 3 and EWR 4 Second Highest Priority):

i. the ground floor,first and second floors of the podium may extend into the setback zone for a distance of 3metres maximum from the building line towards the property boundary, refer Fig 2.

ii. in plan the decreased street setback can extendfor a distance of up to 25 metres along each street, refer Fig 3

iii. design the corner conditions of all buildings at the intersection to relate to each other and define the space of the intersection up to a height of 3 levels.

iv. incorporate a corner condition such as a splayed setback, orthogonal recess as required to address the intersection

v. design any of the above levels to relate to the ground floor resolution

vi. should be accompanied by a streetscape analysis to determine the most appropriate relationships along, across the street and at intersections.

C.04. A 400mm articulation zone is permitted forward of the setback, in which building elements 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.05 Setbacks should be measured perpendicular to the boundary to the outer faces of the building, refer Fig 4. Elements in the articulation zone are excluded.

C.06 The separation distance between buildings where the east west pedestrian connections are located is to be 12 metres, refer Fig 7 Within this space a straight pedestrian path minimum 4 metres wide is to be located. Private gardens and entrances to apartments are permitted.

C.07 Provide for landscape areas and street trees

C.08 Enable lots with courtyards that are open to the street setbacks to have deep soil landscaping thatis contiguous with the courtyard landscaping.

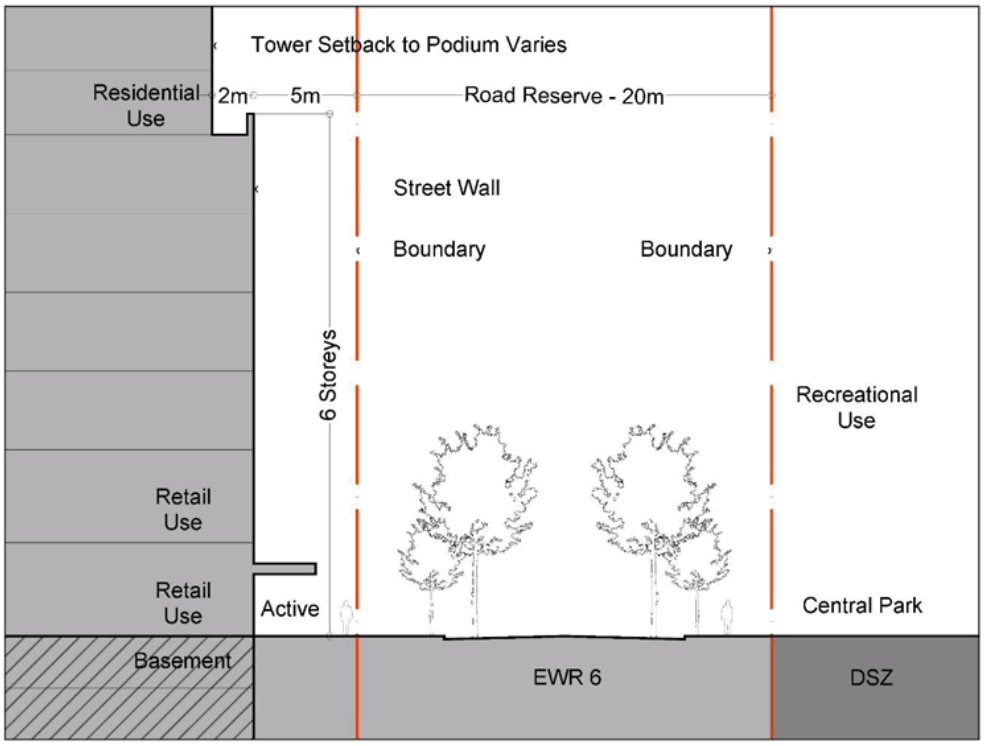


Figure 3 – Street Wall Height in Town Centre

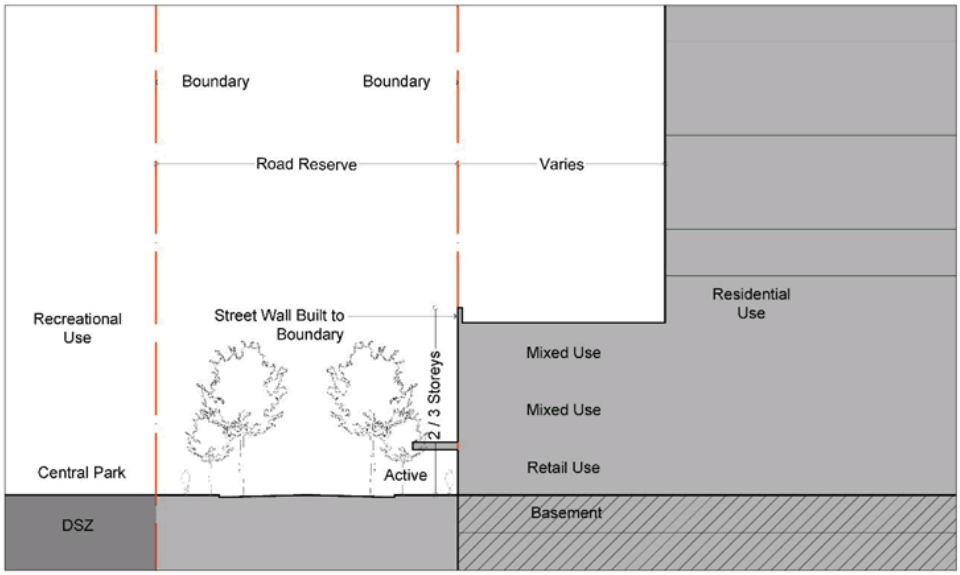


Figure 4 - Street Wall Height at Key Intersection

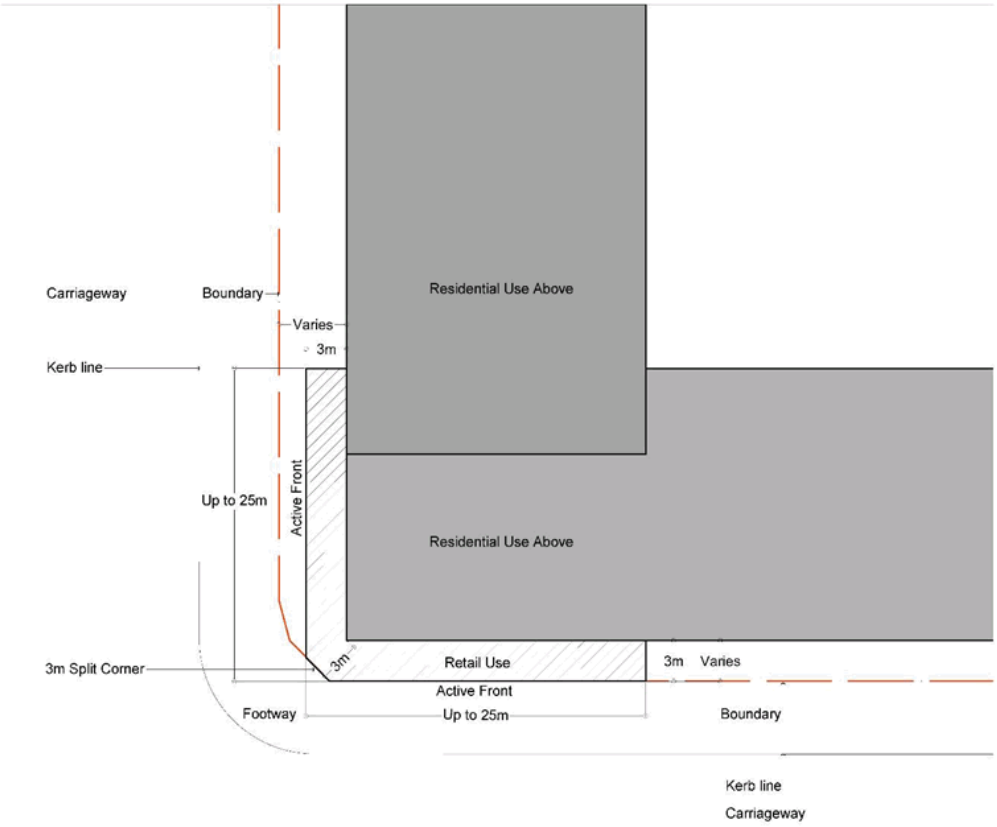


Figure 5 –Indicative Corner Activation at Key Intersections, Plan (NSR 2 and EWR 4 Highest Priority and NSR 3 and EWR 4 Second Highest Priority) NTS

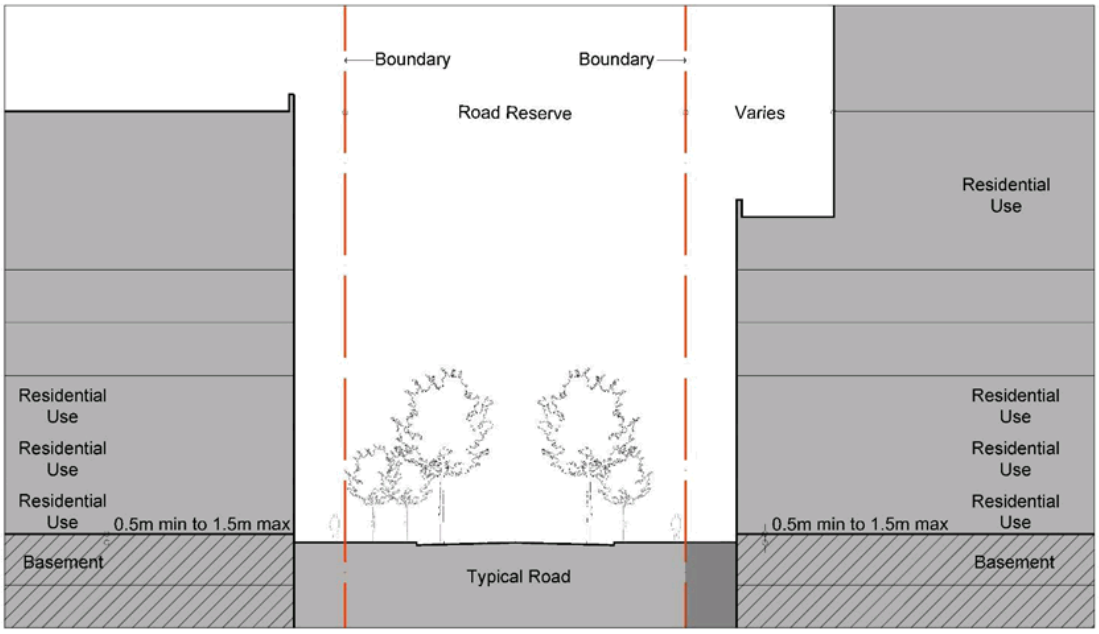


Figure 6 - –Street Wall Height at Typical East West Street, NTS

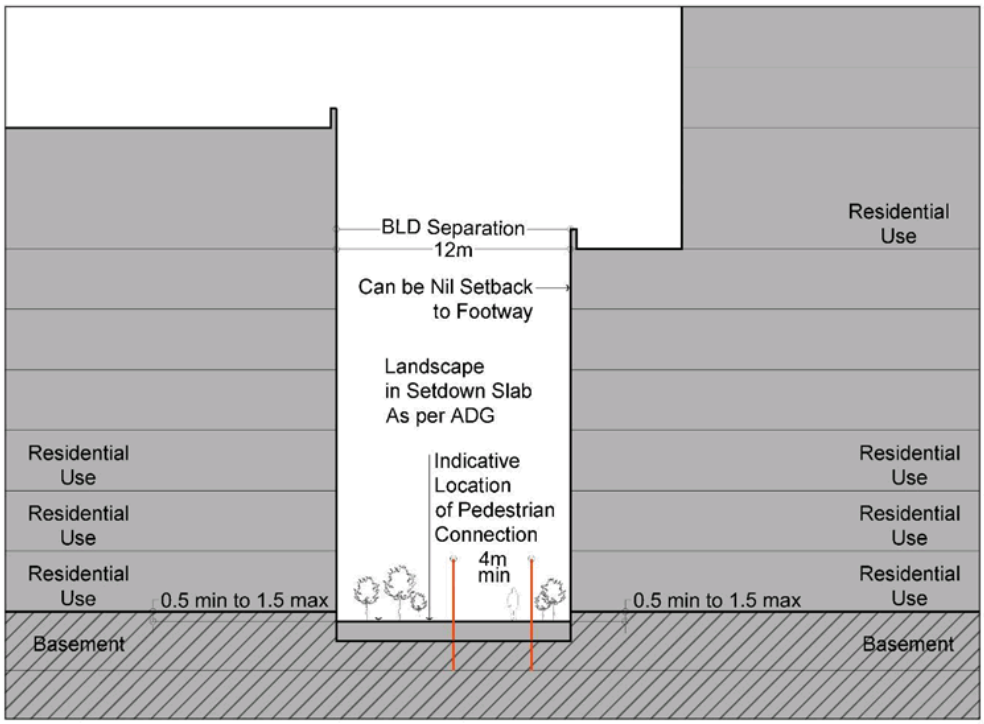


Figure 7 – Street Wall Height at Pedestrian Connection, NTS

1.6 BUILDING SEPARATION

The controls relating to Apartment Design Guide (ADG). building separation for residential buildings are to be based on visual privacy not as a separation distances The separation distances for towers are to meet the ADG requirements but where buildings face the pedestrian connections issues of privacy and surveillance are to be resolved inthe architectural resolution.

Objectives

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

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

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

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

Controls

C.01 The towers (residential and commercial) should be generally consistent with the Masterplan.

C.02 For residential towers, building separation should be generally consistent with the Masterplan and the ADG.

C.03 Perimeter block buildings/ podia that have residential apartments on the ground floor and that face pedestrian connections are to comply with the separation distances as shown on the Masterplan. 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.

C.05

C.06 For purposes of these controls, serviced apartments should be treated as a residential building

1.7 TOWER DESIGN AND SLENDERNESS

The overarching objective of the DCP is to generate an urban form with well-defined streets of high amenity.

The slenderness of towers is important both to achieve elegance of form as well as to minimise the perceived density, maximise amenity and environmental performance. Plan area, plan proportion, alignmentand height are contributing factors in the perception of slenderness.

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 carefully designed so that its appearance complements the broader skyline.

Objectives

Towers are to:

O.01 Have slender proportions.

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

O.03 Mitigate 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 1000m^2:

C.02 The maximum floorplate for a commercial tower should be1,500m^2.

C.03 The maximum length of tower façade should be 50 m.

C.04 Tower forms should not extend around corners so that they are 'L' shaped in plan

C.05 Upper levels of towers should not extend over the lower levels and create unsightly under-croft spaces however differentials in the section may occur where:

a) There is an articulation zone

b) A tower meets the perimeter base building. Some indentation of the lower level of the tower may be required to ensure that the base reads differently from the tower

C.06 Tower floorplates and sections should define positive spaces for streets, open spaces,and courtyards

1.8 BUILDING HEIGHTS

Objectives

O.01 Arrange the building heights across the precinct to:

a) clearly differentiate the street wall, podia lower height component of the buildings from the towers

b) reinforce the street hierarchy and open space with the taller buildings being located as shown on the Masterplan

c) minimise solar impacts on Melrose Park South and the existing residential areas

d) minimise adverse wind, reflectivity, glare, and urban heat impacts

e) provide adequate solar access to streets, open spaces, and neighbouring buildings.

Controls

C.01. Heights should be generally consistent with the maximum heights as shown in the Masterplan

1.9 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.08 Minimum floor to floor heights should be as follows:

USE	MINIMUM FLOOR TO FLOOR HEIGHT
Commercial	3.6m
Residential floor to floor heights from level 2 and above. Floor to ceiling heights greater than the minimum 2.7metres are encouraged.	3.1m
Ground floor active street frontage	4.5m
Residential floor to floor heights for ground and first floor	7.6m

1.10 THE STREET WALL, PODIA AND PERIMETER BLOCK BUILDINGS

Together with the public domain, the podia of the residential buildings and the retail street wall with active ground floor 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, it is the principal architectural component of collective civic intent. That is, it 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. Its design should be derived from the attributes that generate successful streets – human scale, expressed detail, and tactile material quality.

Seen this way, the street wall, podia, and perimeter block buildings can be thought of as a separate project to the design of the tower and can be distinct and different in character from the tower. The lower levels of all buildings should complement each other. The lower level buildings act as a mitigating element for the tower building, able to define the street at the appropriate height and protect the street from the wind effects of the tower. The perimeter buildings, podia and the street wall heights are set to address the street setbacks, building separation, and the proportions of the street and overshadowing.

The towers while to some degree are a separate entity to the lower levels, in Melrose Park they are numerous, and they have a minimal set back to the lower levels. For this reason, towers need to make a positive spatial relationship with neighbouring towers and the public domain. Their design needs to respond to context, climate, and views and to provide a continuity of built form but with subtle differences.

Erosions of the street wall in the form of undercrofts are not permitted.

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

Objectives

Street walls are to:

O.01 Define the space of the street and public spaces and articulate their edges.

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

O.03 Provide appropriate scale, detail to reveal the topography.

O.04 Achieve fine grain modulation in the street.

O.05 Provide comfort and shelter for pedestrians.

O.06 Minimise large expanses of inactive frontage in the town centre.

O.07 Use durable materials and detailing that are appropriate for their location and climate and reflectthe local context.

Controls

C.01 The street wall, podia and the perimeter block buildings should:

a) be built to align with the street along their full frontage at all levels with or without a setback as shown on the Masterplan. Minor recesses in the profile for modulation and articulation, entrances are permissible.

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

c) be articulated horizontally so that the proportions of the perimeter block buildings up to 8 storeys are proportioned at approximately 1/3 to 2/3rds.

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

e) 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.

f) 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 tetopography is emphasised

g) include an awning in accordance with Section AWNINGS in the town centre

h) include a ground floor facade design which intensifies the walking experience with particular richness in detail.

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 -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.

C.04 All development applications should include a streetscape analysis and provide details of the street wall and perimeter block. Submissions should include:

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

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

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

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

1.11 THE GROUND FLOOR

C.01 An appropriate freeboard at ground floor level within the Town Centre is to be provided, where required.

C.02 Active ground floor uses should occupy the ground floor frontage. Services should be minimised on the ground floor.C.03 The internal tenancy widths, foyers and lobbies to the towers in the town centre should create a fine grain frontage.

C.04The active ground floor frontage should be considered in detail and the following should be incorporated in its design:

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) the ground floor levels, and facade masonry frame should allow for fine grain tenancy widths.

c) the facade should have a high level of expressed detail and tactile material quality.

d) the articulation of the facade should include a well resolved meeting with the ground that also takes account of any slope. A horizontal plinth, integrated in the design, should be incorporated at the base of glazing to the footpath. Where required an appropriate freeboard is to be provided.

e) the frontage should take account of the need to provide a clear path of travel for disabled access.

f) legible entrances should be formed in the frontage.

g) fire escapes and service doors should be seamlessly incorporated into the facade with quality materials.

h) colonnades are not encouraged

i) all required major services should be incorporated in the design of the ground floor frontage at DA stage, refer Section SERVICING AND UTILITIES.

j) security doors or grilles should be designed to be fitted internally behind the shopfront, fullyretractable and a minimum 50% transparent when closed.

1.13 TOWN CENTRE MALL INTERFACE

Objectives

O.01 Improve connectivity
O.02 Encourage walkability

O.03 Maintain the number and variety of safe routes of travel throughout Melrose Park as shown in the Masterplan

Controls

C.01 Direct access should be provided through the town centre mall at the end of the north /south pedestrian connection from EWR2 to Hope Street.

C.02 The north / south connection through the mall is to allow for pedestrian access to Hope Street during the hours of operation of the Light Rail

C.03 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 side of the Mall or if entrances are not proposed to connect to the corner of EWR 5 and NSR2.This connection is to ultimately connect to Hughes Avenue

1.14 RESIDENTIAL GROUND FLOOR FRONTAGE

Residential buildings should be set back from the street boundary or set at a different level to the street / pedestrian connection 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.

Existing and possible future context must be considered in determining the optimum built form.

Objectives

The residential ground floor is to:

O.01 Define and design the street alignment and setback area to achieve amenity and privacy for residents as well as engagement with and passive surveillance of the street.

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

.

O.03 Provide appropriate amenity for:

a) apartments that are located below street level

b) apartments that have no set back to the public domain

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

O.05 Minimise the impact of basements

O.10 Acknowledge and safely accommodate with design, the overland flow flooding and stormwater conveyance in residential and ground floor frontage treatments

Controls

C.01 Basements are to be located under the footprints of the buildings. They can extend under courtyards but not into the street setbacks, refer Fig 6.

C.02 Generally, ground floor apartment levels should be a minimum of 500mm and maximum of 1500mm abovefootpath level except where the buildings front the pedestrian connections or additional height above the ground is required for privacy and / or to address the slope, refer Fig 8

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

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

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

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

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

c) Where the orientation is not south

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

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

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

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

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

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

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

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

C.09 The ground floor design including variations to floor levels are to:

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

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

The setback area should be designed to relate to the footpath and as common property for landscaping. Canopy trees should be planted in this area, a minimum 3.5 metres from any structure. Tress 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 Enable canopy trees in the setbacks that are 5 metres or greater and in the setbacks that have 2 metres adjacent to the street that contribute to the landscape character of the street and residential amenity.

C.11 Establish lower scale planting including hedges at street boundary for a minimum of 1 metre in street set back zone

C.12 Establish canopy planting in courtyards to achieve amenity and privacy for residents as well as contributing to the street.

C.13 Co-locate the deep soil planting with the courtyard planting where the courtyards face the street setback

C.14 Minimise impervious surfaces at ground level in the setback areas

C.15 All required major services should be incorporated in the design of the ground floor frontageat DA stage, refer Section SERVICING AND UTILITIES

C.16 A fully illustrated and coordinated ground floor design, showing all the necessary levels and detail, should accompany applications. Drawings should include the following:

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

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

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

d) elevations and sections at minimum 1:50 scale of all built elements in the setback area should be provided and should illustrate Floor to Floor heights of 3.6 m and Floor to Ceiling heights of 2.9m.

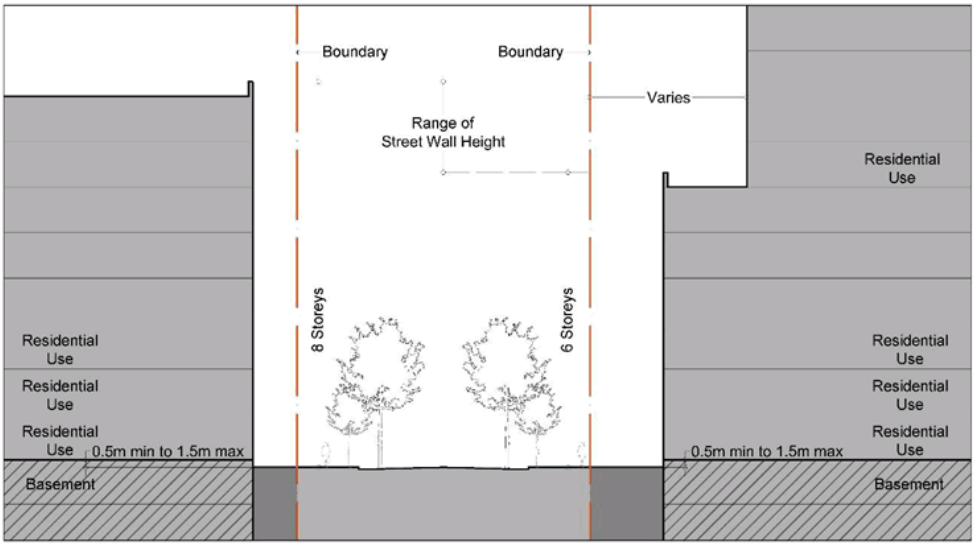


Figure 8 –Podium / Street Wall Height with Setback, NTS

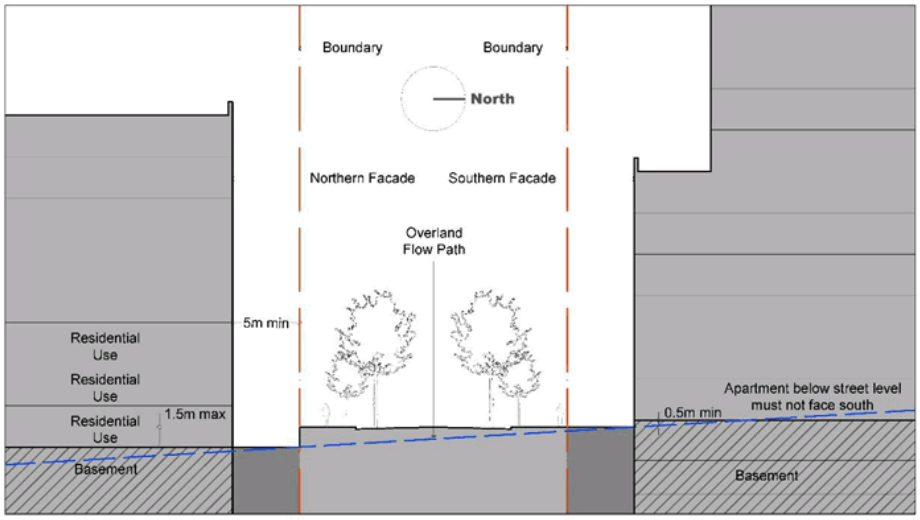


Figure 9 – Apartment below Street Level, NTS

1.15 RESIDENTIAL APARTMENT DESIGN QUALITY

Objectives

O.01 Development is to be generally consistent with SEPP 65 and the ADG.

O.02 Ensure development achieves good amenity standards for residents.

Controls

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

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

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

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

C.05 Daylight and natural ventilation should be provided to all common circulation spaces and windows should be visible from lift cores as well as the ends of corridors.

C.06 Where practicable, balconies should be orientated with the longer side facing outwards.

C.07 Divisions between apartment balconies should be of solid construction and extend from floor to ceiling.

C.08 Common open space should include a unisex WC, seating, solid sun shading, and a BBQ and food preparation area with a sink.

C.09 Balustrades should take account of sightlines to balance the need for privacy within apartments and views out of apartments. A proportion of solid or translucent material should be used, which will vary according to outlook and height relationships.

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

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

b) wall mounted equipment (e.g. instantaneous gas hot water heaters) and associated pipe work 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 ADG minimums should be provided.

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

1.16 SOLAR ACCESS (RESIDENTIAL)

Objectives

O.01 To ensure that development:

a. does not unreasonably diminish sunlight to neighbouring properties and within the development site.

b. enables sunlight access to private open space and

c. enables sunlight access to private open space and habitable rooms to improve amenity and energy efficiency.

Controls

C.01 Residential components of a development should generally comply with the solar and daylight access design criteria and guidance prescribed under the Apartment Design Guide.

C.02 Where residential development cannot strictly comply with the design criteria of the ADG as outlined in C.01, it should demonstrate how site constraints and orientation preclude meeting the design criteria and how the development meets the Objectives and Design Guidance 4A-1 of the Apartment Design Guide

1.17 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 wall (excluding balustrade) fully operable louvres or sliding glass panels. Casement or awning windows are not permitted.

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

C.03 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.04 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.05 Glazing in the external façade of a wintergarden should have a solar absorption of less than 10% glass to have solar heat absorption not greater than a clear float glass of the same composition.

C.06 The flooring of the wintergarden should be an impervious finish and provide exposed thermal mass.

C.07 Air conditioning units should not be located on wintergarden balconies.

C.08 Wintergarden areas able to be excluded from Gross Floor Area should be limited to depth of 3 metres.

1.18 CLIMATE CONTROL AND PRIVACY

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

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

Objectives

Climate control devices are to:

O.01 Enhance the:

a) amenity of the balcony and interior spaces

b) design of the building facades

O.02 Provide:

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

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

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

a) provide optimum control

b) be easily cleaned

c) assist in providing both visual and noise privacy

Controls

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

a) used on balconies

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

c) designed as an integral part of the building facade

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

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

f) constructed in materials that meet the sustainability objectives

g) able to be cleaned from the apartment.

C.02 Climate control devices should:

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

1.19 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 following dwelling mix is to be used as a guide for the apartments in Melrose Park:

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

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

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

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

1.20 MATERIALS

Melrose Park proposes very high densities with towers and perimeter block buildings in close proximity.

Because only the town centre has a full street wall condition resolution of the architecture must provide both variety and continuity. A street wall condition can accommodate a greater difference in the detail resolution of buildings because only the frontage to the street is visible from the public domain and buildings are not seen in the round. Where this is not the case, as with podia, U shaped buildings and towers, greater consistency should be required in the selection of materials so there is an overall continuity of built form throughout the precinct.

Objectives

O.01 Ensure that:

a) materials contribute to the continuity of the precinct so that one building does not stand out from another

b) the collective built form reinforces the variety evidenced in the topography and the spatial organisation of the streets and open spaces

c) the variety within the precinct is derived from the detail resolution of the buildings and not from excessive differences in the form of the buildings and / or the selection of materials.

O.02 Use materials that meet sustainability objectives and requirements

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

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

Controls

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

C.02 Materials should:

a) Ensure buildings do not stand out from another

b) meet sustainability requirements of embodied energy

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

d) complement the materials in the public domain

1.21 RETAINING WALLS

Melrose Park is located on sloping terrain. Many of the development lots and the open space and school sites will require retaining walls. 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 PDG in consultation with Council.

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

d) enable casual seating where appropriate

e) have horizontal tops and minimal stepping

FENCING

Objectives

Fences are dominant elements in the urban environment. They are to be designed to:

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 The fences are to:

a) be located at the street boundary

b) provide a combination of solid and porosity

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

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

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

f) provide continuity with subtle differences across the precinct

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

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

C.03 The height of fences can vary up to approximately 2000mm.

1.22 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

The courtyards are to:

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 Provide a communal space for relaxation and communal activities

O.04 Provide passive surveillance opportunities public areas

O.05 Have generous planting

O.06 Assist with reducing urban heat

O.07 Assist with flood management

Controls

C.01 Courtyards are to be located as shown on the masterplan

C.02 Courtyards should:

- be visually and physically linked with streets, open spaces and pedestrian connections
- be delightful outdoor rooms and should be considered with regard to aspect and height to width, and depth to width proportions.
- include vegetation and canopy planting
- generally, be the same level as the street to facilitate access and integration with 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 address flood management

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

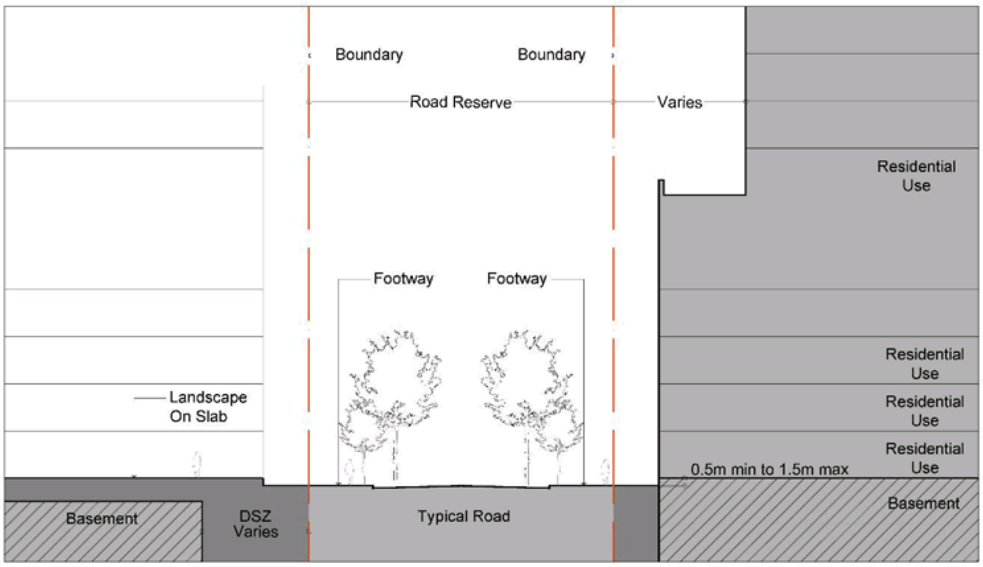


Figure 10 - Courtyard Basement – Interface with Street

1.23 SERVICING AND UTILITIES

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

Objectives

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

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

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

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

Controls

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

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

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

2. PUBLIC DOMAIN

The Masterplan, and the Public Domain Plan and the Public Domain Guidelines, indicate intended public domain for Melrose Park.

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 Masterplan, the Public Domain Plan, and the latest publicly available version of Public Domain Guidelines with particular reference to Melrose Park, These set out the process, design guidelines and submission requirements for all new public domain assets in the City of Parramatta LGA.

The Public Domain Plan and the Public Domain Design Guidelines for Melrose Park are being developed in conjunction with the proponent

Street tree form shown in the public domain cross sections, Fig 9-Fig 16, are indicative. For final street tree arrangements refer to the Public Domain Plan and the Public Domain Design Guidelines.

2.1 STREET NETWORK AND FOOTPATHS

The streets and footways in Melrose Park North are generally accessible to the public. The elements in the street such as footpaths and paving widths, parking lanes, tree planting and cycle ways should be designed to suite the determined street hierarchies as per the Masterplan.

Objectives

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

O.02 Organise the roads based on a street hierarchy and precinct connectors, which connect to the overarching bicycle network and surrounding street network.

Controls

C.01 The streets network, hierarchies and widths are to be laid out as per the Masterplan

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

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

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

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

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

Melrose Park Street Type Cross-Sections

LEGEND FOR ALL STREET CROSS SECTIONS:

F – FOOTPATH	BR TP – BIORETENTION TREE PIT
SHP – SHARED PATH	SW/RG – SWALE / RAIN GARDEN
B – BIKE PATH	B/V – LANE ABLE TO PLY BUSES
P – PARKING	V – VEHICLULAR LANE

Note:

a. Level changes to be managed within the building footprint

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

c. Upper level of buildings is not to extend into street setbacks

d. 400 mm articulation zone

Type 1 – Major Road (typical to NSR 2)

- 25 m wide road corridor as typical
- 3.5m wide footpaths both sides
- Trees in parking Lanes

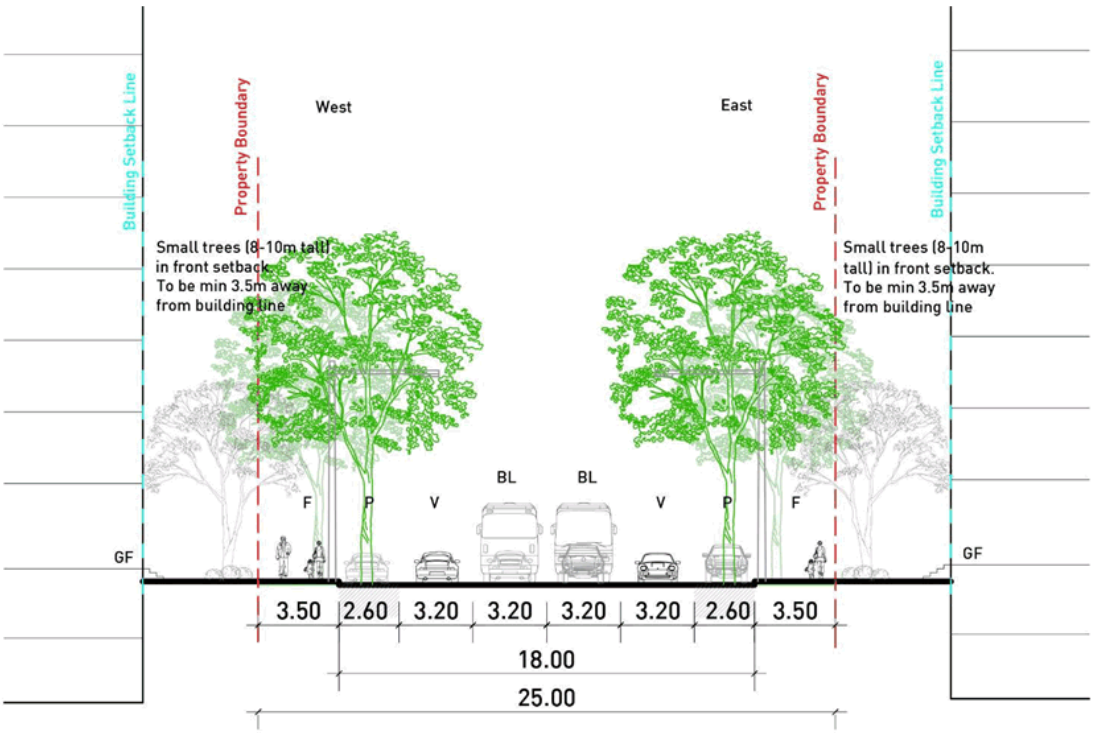


Figure 11 – Type 1a Major Road Building to Building (NSR 2)

Type 1b – Major Road (typical to NSR 2) between EWR 4 and EWR 6

- 22 m wide road corridor
- Minimum 3.4m wide footpaths both sides
- Trees in footpath and/or verge
- WSUD details to be applied.
- Trees in deep soil in the 5m front setbacks

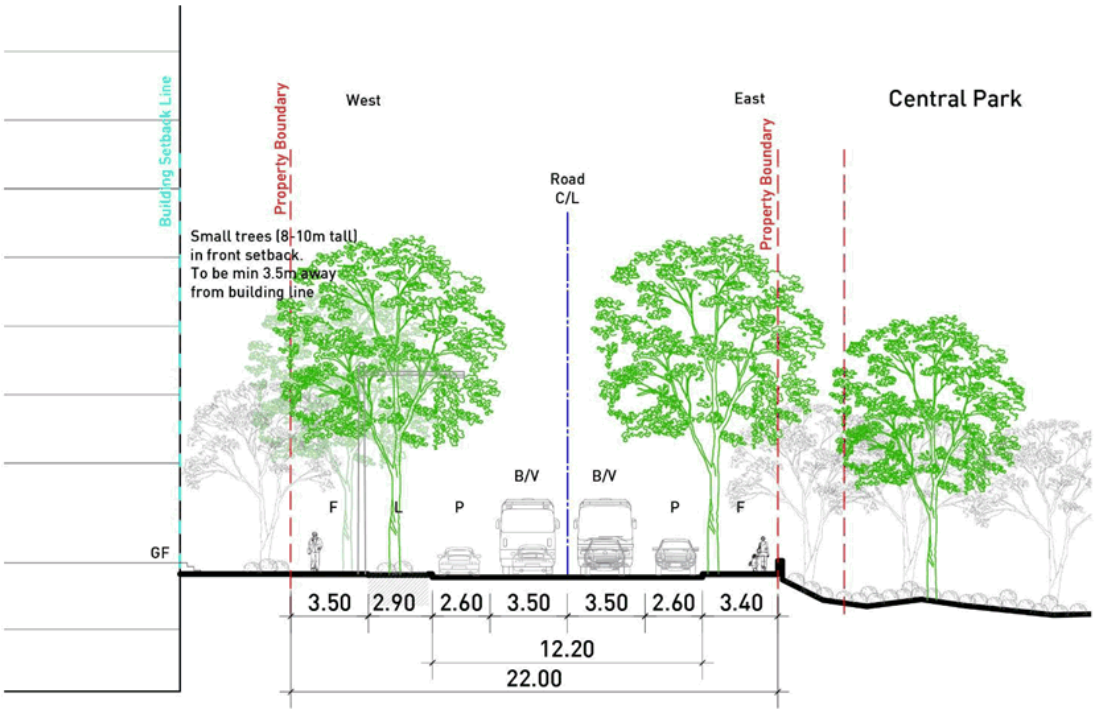


Figure 12 - Type 1b Major Road Central Park Interface (NSR 2 between EWR 4 and EWR 6)

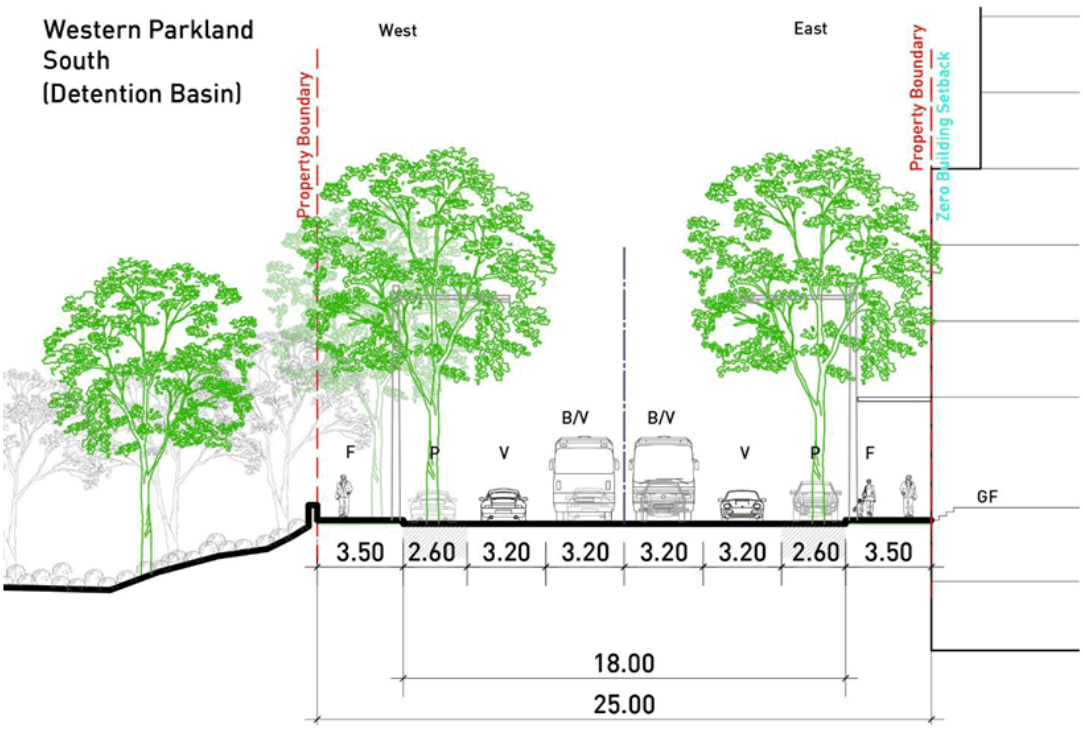


Figure 13 - Type 1c Major Road Town Centre and Western Park Interface (NSR 2)

Type 2 – Main Road with Cycle Tracks (typical to NSR 3)

- 23.5 m wide road corridor
- 1.8 m 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

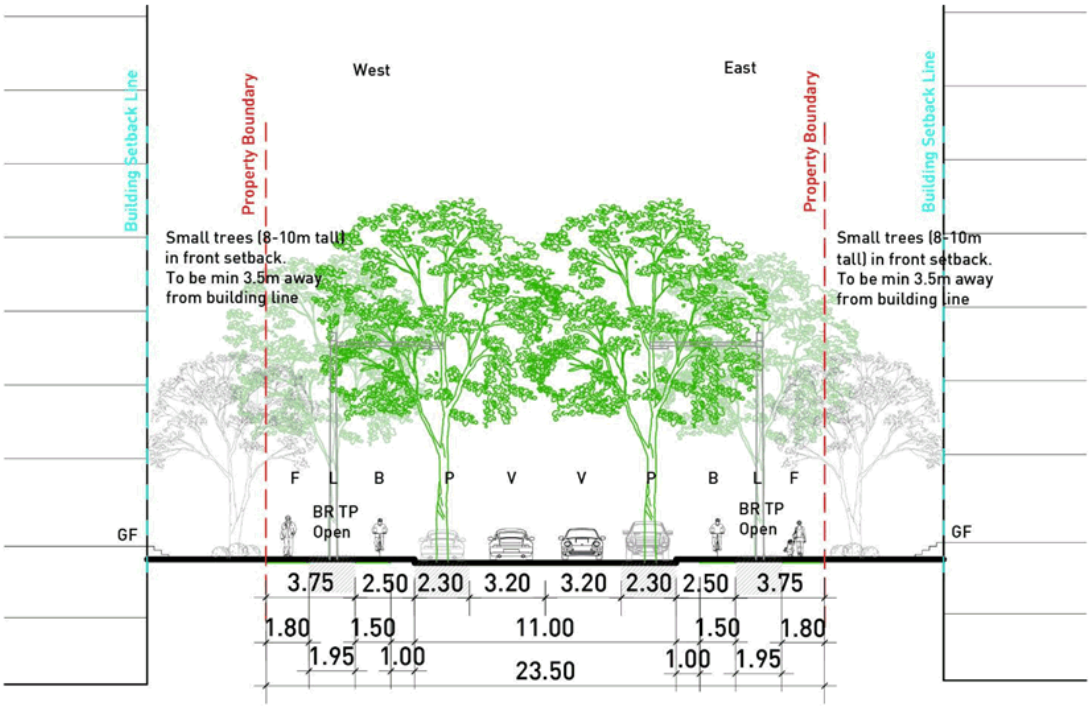


Figure 14 – Type 2b Main Road with Cycle Tracks (NSR 3)

Type 2d – Main Road with Cycle Tracks (typical to NSR 3) between EWR 4 and EWR 6

- 26.5 m wide road corridor
- 2m wide footpath on western side and 1.8 m 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.
- Possible vegetated area in the wider public domain on western side
- Trees in 5m front setback

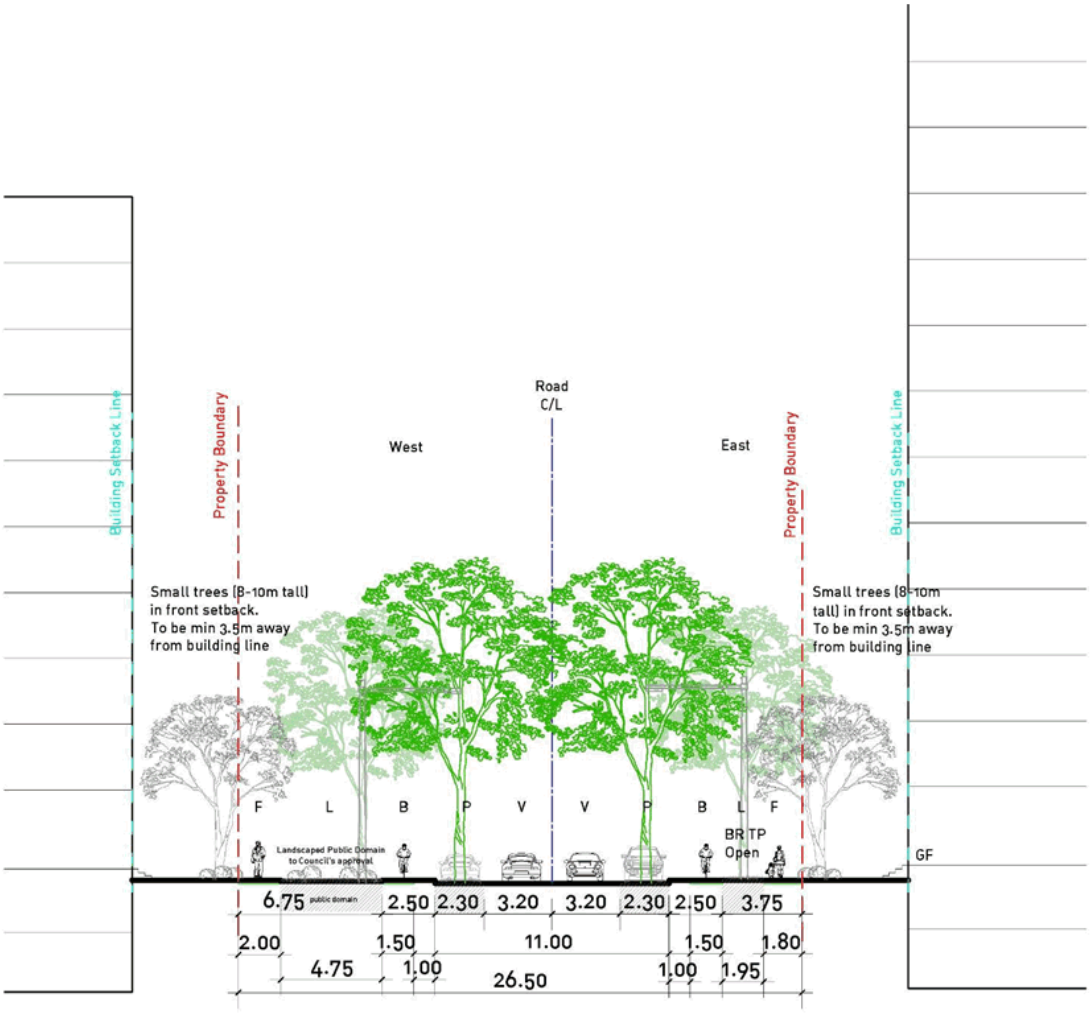


Figure 15 – Type 2d Main Road with Cycle Tracks between EWR 4 and EWR 6 (NSR 3)

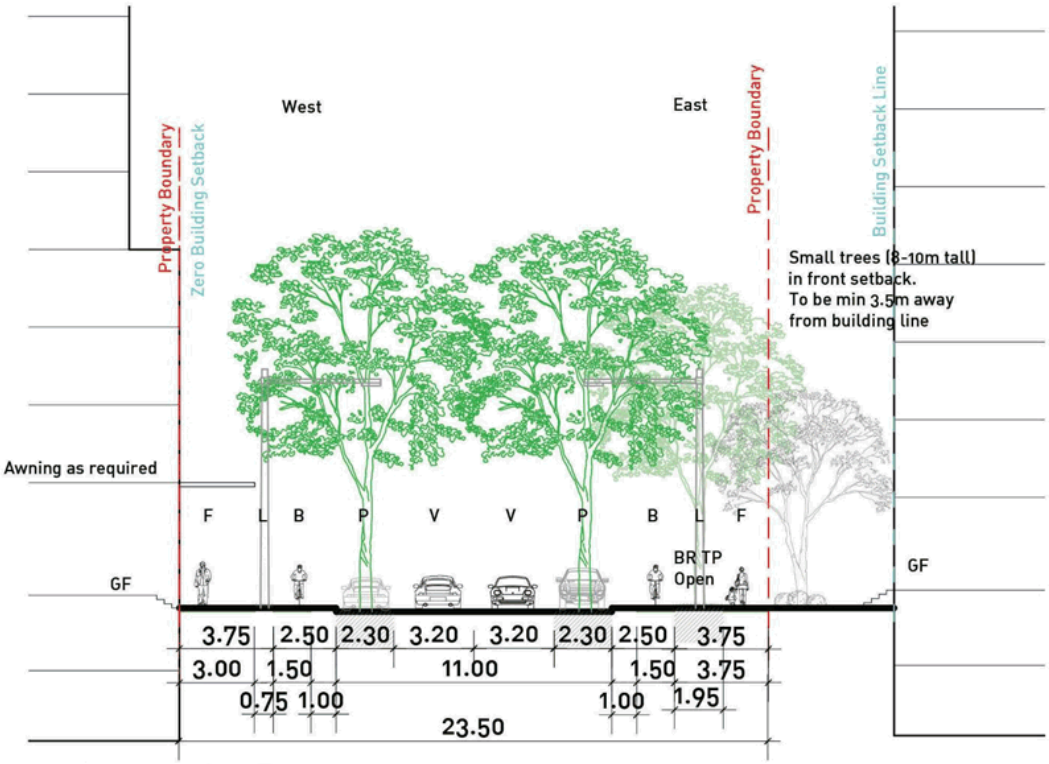


Figure 16 – Type 2c Main Road with Cycle Tracks Town Centre Interface (NSR 3)

Type 3 – Main East West Connector road (typical to EWR 4)

- 20 m wide road corridor
- 3 m 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.
- WSUD details to be applied.
- Trees in deep soil, in the 5m front setback on southern side of the road

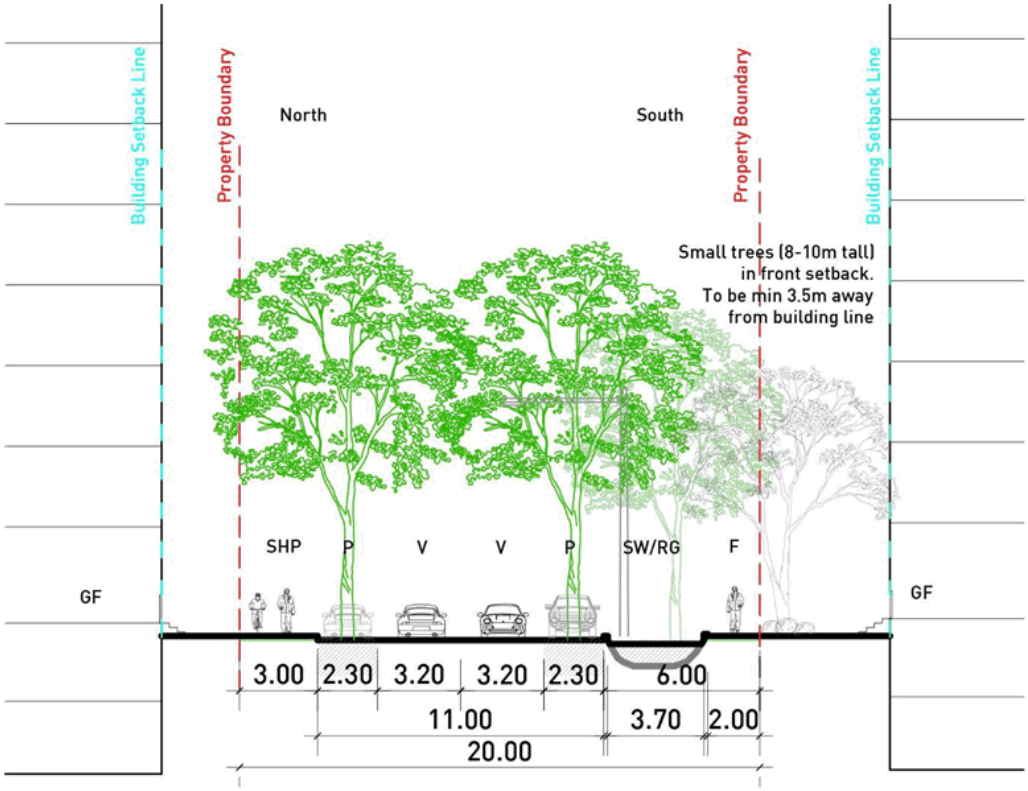


Figure 17 – Type 3 Main East West Connector road (EWR 4)

Type 4 – Local Street (typical to EWR 3, 5, 6 and NSR 1 and 4)

- 20 m wide road corridor
- 2 m wide footpaths both sides
- Trees in parking lanes
- WSUD details to be applied.
- Trees in open planted beds in the verge.

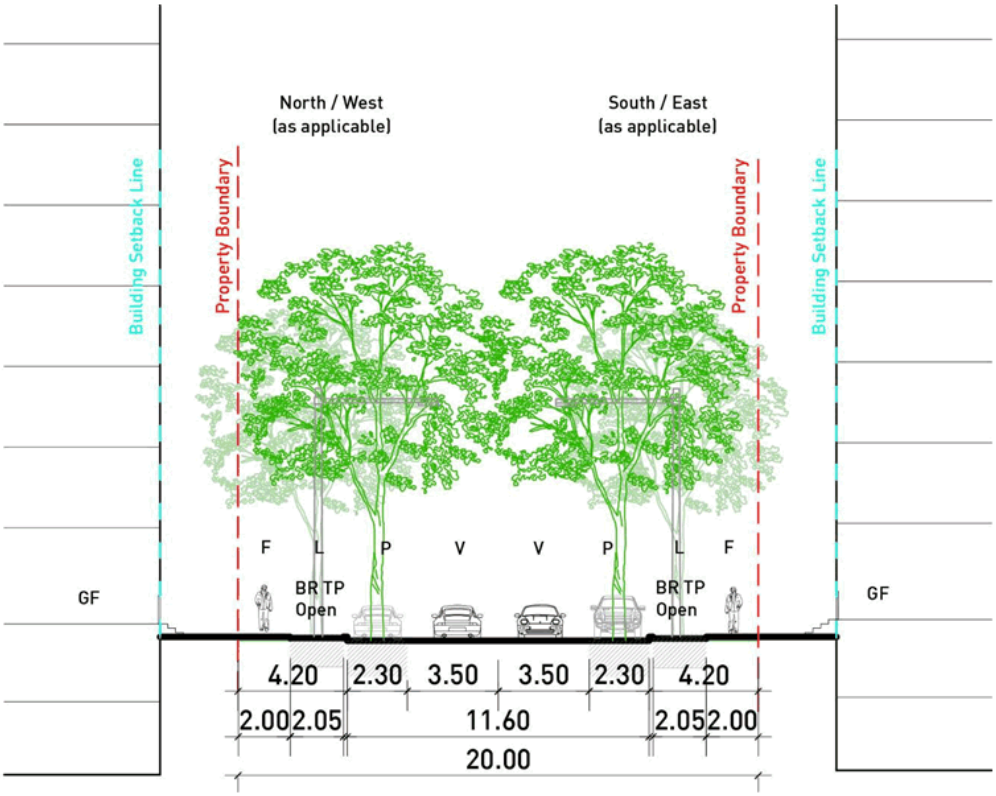


Figure 18 – Type 4 Local Street (EWR 3, 5, 6 and NSR 1 and 4)

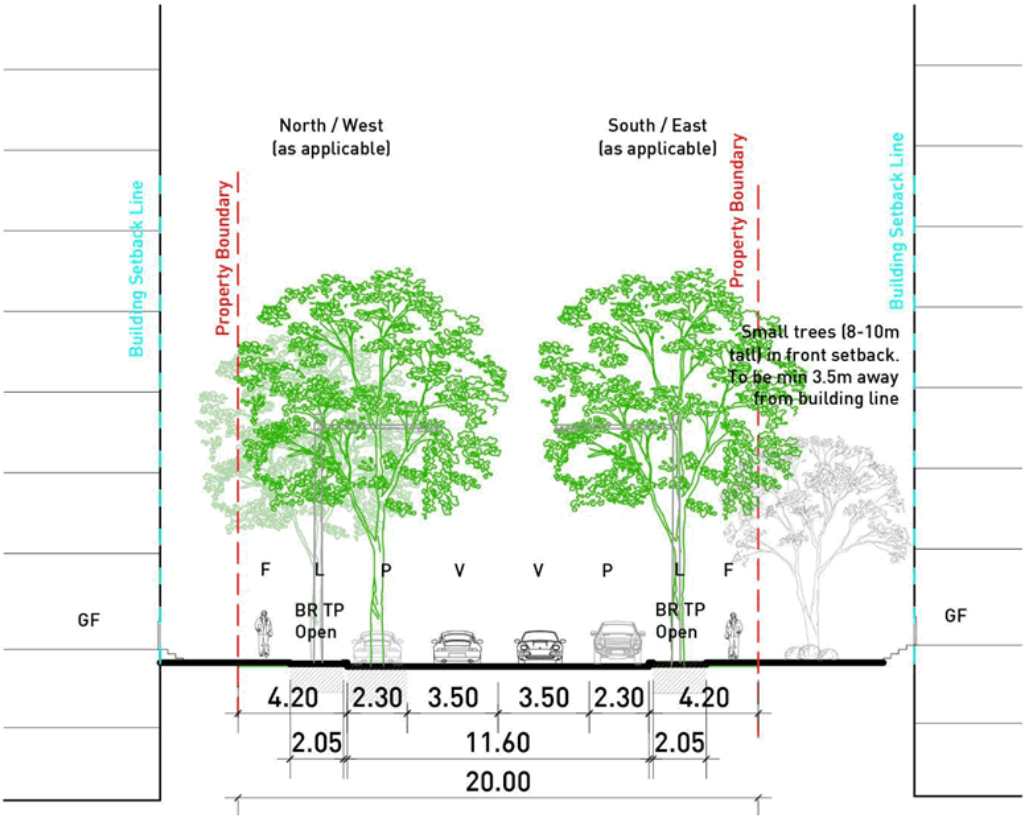


Figure 19 – Type 4a Local Street (EWR 2A and NSR 4)

2.2 PEDESTRIAN CONNECTIONS

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

Pedestrian connections are non-trafficable and can be narrower in width than those with vehicular access. Pedestrian connections can be shared with service vehicles and have pedestrian priority over vehicle movement and typically have a flush surface for the full width of the lane.

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

Objectives

O.01 Pedestrian connections have been introduced to:

a) increase connectivity and spatial variety in the street network.

b) break up built form and long street walls with fine grain pedestrian connections at street level

c) provide connectivity and direct path of access to Public Amenities, Parks, and modes of Transport.

d) provide alternative access points to apartments. .

e) link the Central Park to the overall precinct

O.02 Ensure all proposed privately owned pedestrian connections have a fully public nature equivalent to the public domain.

Controls

C.01 The pedestrian connections should be -

a) consistent with the Masterplan

b) 24/7 publicly accessible (except at the mall)

c) extend from street to street or street to park

d) open to sky (except at the mall)

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

f) fully accessible using, in order of preference:

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

C.02 The pedestrian connections should have:

a) view lines along that align across all blocks

b) building to building separation generally as shown on the masterplan

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

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

depth, irrigation, and sub-soil drainage

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

C.03 Materials as per the PDG

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

C.05 Central Park north/south connection, refer Fig 17, is to have:

a) A minimum 4 m wide path

b) A low wall located on the park edge, within the 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.

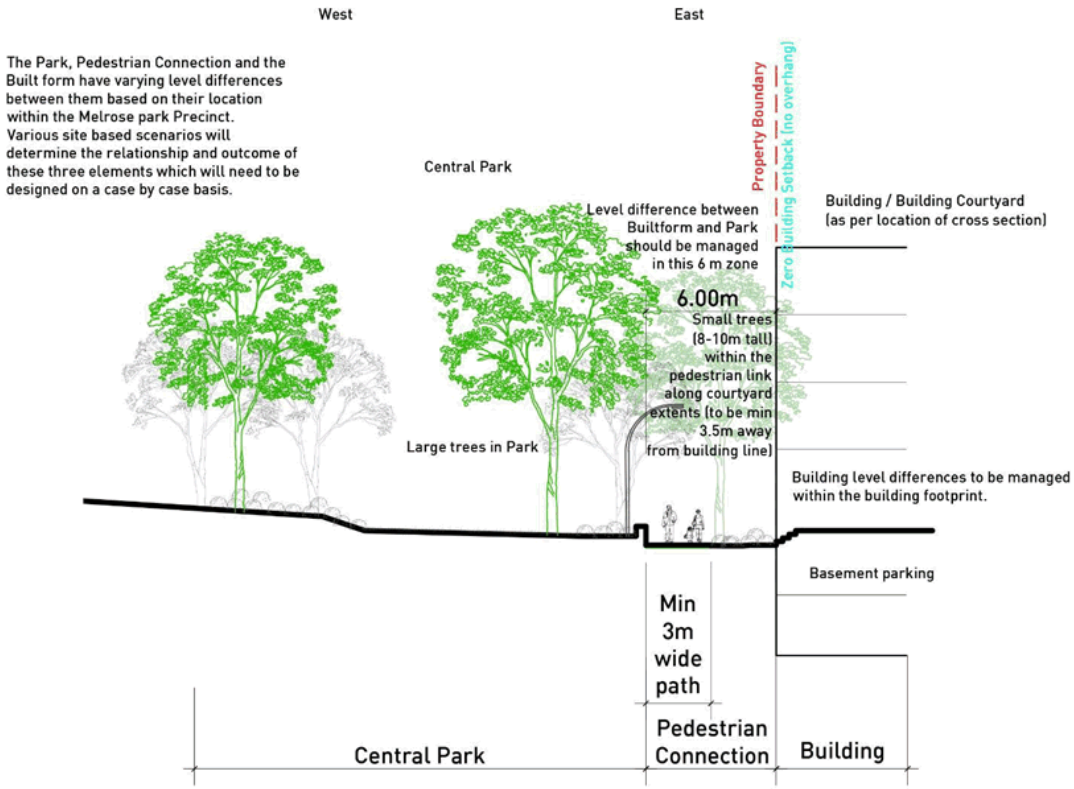


Figure 20 - Pedestrian connection – interface with Central Park

d) Canopy trees within the pathway

C.06 The north south connection is to align with shopping mall entrance and providedirect access to Hope Street through the mall as per the master plan.

C.07 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

2.3 STREET TREES

Street trees help improve the quality of environment for the residents with reducing temperatures, providing shade, attracting fauna, and providing quality views. Street trees will be the elements in public domain which will define the spaces and relate to the scale of buildings in Melrose Park. For an area of this density, trees should have priority.

Objectives

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

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

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

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

Controls

C.01 Street trees should be provided along those streets where identified in latest version of Parramatta Public Domain Guidelines - Melrose Park.

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

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

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

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

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

2.4 OVERHEAD POWER LINES

Objectives

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

Controls

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

2.5 AWNINGS & DESIGN OF AWNINGS

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

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

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

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

Objectives

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

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

O.03 Maintain complementary architectural detail between awnings

Controls

C.01 Awnings in Melrose Park North are allowed only at the town centre and at intersections with activated shop frontages as per the Public Domain Plan in accordance with Typical Awning with Street Trees, Fig 21

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

C.03 Wrap awnings around corners where a building is sited on a street corner.

C.04 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 6m.

C.05 Awning dimensions should generally be:

a) Minimum soffit height of 3.3 metres.

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

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

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

e) Where street trees are required the entire length of the awning should be set back from the kerb

by a minimum of 1.2 metres. Cut outs for trees and light poles in awnings are not acceptable.

f) Dimensions of awnings should be in accordance with Typical Awning with Street Trees, Fig 21

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

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

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

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

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

Figure 21 - Typical Awning Condition with Street Trees

2.6 PEDESTRIAN ACCESS AND MOBILITY

Objectives

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

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

Controls

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

2.7 SOLAR ACCESS & OVERSHADOWING TO SIGNIFICANT PUBLIC SPACES

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

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

Objectives

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

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

Controls

C.01 Development should demonstrate how built form massing, orientation and distribution of height will provide adequate sunlight to parks and public spaces identified in the Masterplan. In particular, at least 50% of the areas of the Central Park, Playing Field, both Detention Basins and wetland area should receive sunlight between 10am and 3pm on June 21.

2.8 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 to support the new residential community to meet, walk and recreate. These are

a) Central Park

b) Playing Field including Lot EC

c) Western Parklands

d) Wharf Road Gardens and

e) The Wetlands

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

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

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

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

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

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

Controls

C.01 Public open space is to be provided as identified in the Masterplan, Appendix 5 - Public Open Space Plan and PublicOpen Space Key Characteristics, Table 1.

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

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

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

c) integrate stormwater management and urban tree canopy

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

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

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

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

h) clearly delineate private and publicly accessible open space

i) provide access to both sunlight and shade

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

k) accommodate high levels of use

l) be accessible 24/ 7

m) be capable of being well maintained within reasonable costs

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

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

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

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

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

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

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

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

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

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

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

Table 1 - Public Open Space Key Characteristics

Site	Purpose/s	Use/s
Central Park	District Park	Play, Passive Recreation, Community Events and Gatherings
Playing Field	Sport, WSUD	Active Recreation, Wetland
Western Parklands	Green Link, WSUD	Pedestrian / Cycle Connections, Dog Off-leash, Multi-use courts, Stormwater Detention
Wharf Road Gardens	Landscape Buffer	Passive Recreation
The Wetlands	Stormwater Management	Passive recreation

I. Central Parklands

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, 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
- utilize 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
- achieve direct sunlight to a minimum of 50% of the park between 10am and 3pm on 21 June

II. Playing Field

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
- integrated stormwater and floodwater management

III. Western Parklands

A linear park with a minimum size of approximately 20 metres and an approximate area of 15,180 m² 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
- achieve direct sunlight to a minimum of 50% of the park between 11am and 3pm on 21 June

IV. Wharf Road Gardens

A linear park with a minimum width of approximately 17 metres; 13 metres adjacent to the playing field and an approximate area of 7,500m²should 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
- achieve direct sunlight to a minimum of 40% of the park between 10am and 2pm on 21 June
-

V. Wetlands

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
- not have underground structures, such as car parking, unless approved by Council

2.9 LANDSCAPE DESIGN

Objectives

C.01 To create a landscape that:

a) is fully integrated into the design of development.

b) uses landscaping to ameliorates urban heat effects

c) uses tree canopy to enhance the street character.

Controls

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

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

C.03 Landscape requirements should be as per Section 3.3.1 Landscaping, and 3.3.2 Private and Communal Open Space of the Parramatta DCP 2011 and where there is a conflict, this DCP shall prevail.

2.10 PLANTING ON STRUCTURES

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

Objectives

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

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

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

Control

C.01 Design for optimum growing conditions and sustained plant growth and health by providing minimum soil depth and, soil volume as per Table 2, and soil area appropriate to the size of the plants to be established,

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

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

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

Table 2 - Minimum soil depth for plant establishment (in addition to drainage layer)

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

3. VEHICULAR ACCESS, PARKING, SERVICING

3.1 ACCESS AND PARKING

Vehicle Footpath Crossings - The design and location of vehicle access to developments should minimise both conflicts between pedestrians and vehicles on footpaths, particularly along pedestrian priority places and visual intrusion and disruption of streetscape continuity.

Objectives

O.01 Make vehicle access to buildings compatible with pedestrian movements and the public domain

O.02 Ensure vehicle entry points are integrated into building design and contribute to high quality architecture and streetscapes.

Controls

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

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

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

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

C.09 Doors to vehicle access points should be fitted behind the building façade and to be of materials that integrate with the design of the building and contribute to a positive public domain.

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

3.2 VEHICULAR DRIVEWAYS AND MANOEUVRING AREAS

Objectives

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

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

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

c) minimising potential conflict with pedestrians.

d) limiting street crossings.

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

Controls

C.01 Driveways should be:

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

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

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

d) located on the less busy streets

C.02 The number of street crossings and entrances to basement car parking should be minimized

C.03 Vehicle access should be designed to:

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

b) integrated into the building design.

C.04 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.05 Pedestrian and vehicle access should be separate and be clearly differentiated.

C.06 Vehicle access should be a minimum of 3 metres from pedestrian entrances.

C.07 Vehicular access should not ramp along boundary alignments edging the public domain, streets, lanes parks, water frontages and the like.

C.08 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.09 Driveway entries and vehicle crossings should be in accordance with AS2890.1

C.10 Vehicle entries visible from the street when doors are open should have a high-quality finish to walls and ceilings as well as a high standard of detailing. No service ducts or pipes are to be visible from the street.

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

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

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

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

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

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

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

C.17 Entrance doors to basements should be:

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

b) designed to be recessive

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

C.18 Vehicle slip lanes in public streets for private use are not permitted.

C.19 Vehicular access, egress and manoeuvring should be provided in accordance with the NSW Fire Brigades Code of Practice – Building Construction – NSWFB Vehicle Requirements.

3.3 ON-SITE PARKING

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

Objectives

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

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

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

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

O.05 To enable car parking to be utilised most efficiently.

Controls

C.01 Car parking should be generally provided in basements, and semi-basements.

C.02 Car parking should be consolidated in basement areas under building footprints and courtyards to maximise the available for deep soil planting in setbacks.

C.03 Maximise the efficiency of car park design with predominantly orthogonal geometry and related to circulation and car space sizes.

C.04 Accessible parking spaces designed and appropriately signed for use by people with disabilities are to be provided to meet Australian Standards.

C.05 Separate motorcycles parking is to be provided at 1 car parking space, as a minimum, for every 50 car parking spaces provided, or part thereof. Motorcycle parking does not contribute to the number of parking spaces for the purpose of complying with the maximum number of parking spaces permitted.

C.06 On-site parking should meet the relevant Australian Standard (AS 2890.1 2004 – Parking facilities, or as amended).

C.07 Pedestrian pathways to car parking areas are to be provided with clear lines of sight and safe lighting especially at night.

C.08 If excavation is required management procedures as set out in the Parramatta Historical Archaeological Landscape Management Study is to be undertaken

C.09 Provide greater flexibility in the use of car parking by separating the title of car parking from the title of the apartments for sale.

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

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

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

3.4 BICYCLE PARKING

Objectives

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

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

Controls

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

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

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

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

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

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

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

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

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

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

C.09 End of tip facilities are to:

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

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

3.5 VEHICLE FOOTPATH CROSSINGS

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

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

Objectives

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

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

Controls

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

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

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

4. SUSTAINABILITY

4.1 *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 drinking water.

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

O.06 Reduce wastewater discharge.

Controls

C.01. The development should:

a) Seek to achieve a BASIX Energy score of

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

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

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

4.2 RECYCLED WATER

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

Objectives

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

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

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

Control

C.01. All development must install a dual reticulation system to support the immediate or future connection to a recycled water network. The design of the dual reticulation system is to be such that a future change-over to an alternative water supply can be achieved without significant civil or building work, disruption, or cost.

C.02. The dual reticulation system should have:

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

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

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

4.3 WATER SENSITIVE URBAN DESIGN

Water Sensitive Urban Design (WSUD) is an integral component of the Melrose Park Masterplan. WSUD is used to help manage and clean storm runoff water quality prior to it entering the river system. WSUD reduces dependency on potable water to sustain open space landscapes. WSUD help sustain large canopy street trees integrated with the road and stormwater runoff systems.

Objectives

O.01 .

O.02 Manage the quantity of stormwater run-off.

O.03 Protect and enhance existing natural or constructed drainage networks including channel bed and banks by controlling the magnitude and duration of erosive flows.

O.04 Ensure that downstream flora and fauna are protected from stormwater impacts during and post construction.

O.05 Minimise surcharge from the existing drainage systems.

O.06 Ensure that on-site stormwater management measures are operated and maintained in accordance with design specifications.

Controls

C.01 Prepare Water Sensitive Urban Design Strategy as per the Water Management Strategy.

The development should:

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

b) employ operating practices that prevent contamination of stormwater.

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

d) WSUD elements should be located and configured to maximise the impervious area that is treated through them as shown in the Masterplan and Public Domain Guidelines (PDG).

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

C.03. Stormwater drainage design criteria should be in accordance with Council's Stormwater Disposal Policy and current Development Engineering Design Guidelines.

C.04. Stormwater, including overland flows entering and discharging from the site, should be managed. The site drainage network should provide the capacity to safely convey stormwater run-off resulting from design storm events listed in Council's Development Engineering and Guidelines.

C.05. The design and location of stormwater drainage structures, such as detention and rainwater tanks, should be in accordance with Council's Stormwater Disposal Policy and current Development Engineering and Design Guidelines,

C.06. Run-off entering directly to waterways i.e. the Parramatta River should be treated to reduce erosion and sedimentation, nutrient and seed dispersal.

C.07. The discharge of polluted waters from the site is not permitted. Discharges from premises of any matter, whether solid, liquid, or gaseous is required to conform to the Protection of the Environment Operations Act and its Regulations, or a pollution control approval issued by the NSW Office of Environment and Heritage for Scheduled Premises.

C.08. Prepare and implement a Site Stormwater Management Plan (SSMP) incorporating water sensitive urban design measures is required. The SSMP should:

a) identify the potential impacts associated with stormwater run-off for a proposed development and

provide a range of appropriate measures for water quantity, water quality and water efficiency and re-use; and

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

c) to the maximum extent practical, achieve pollution reduction targets identified in Table 2 and consider measures including vegetated swales; vegetated filter strips; sand filters; bio-retention systems; permeable pavements; infiltration trenches; infiltration basins; landscape developments; Gross Pollutant Traps and filters;

d) utilise the MUSIC modelling tool (or equivalent) to determine pollution load reduction as defined in Table 3.

e) be prepared by a suitably qualified professional.

Table 3 - Stormwater Treatment Targets for Development

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

Pollutant	Performance Target reduction loads
Gross Pollutants	95% reduction in the post development mean annual load of (greater than 5mm)
Total Suspended Solids	90% reduction in the post development mean annual load of Total Suspended Solids (TSS)
Total Phosphorus	85% reduction in the post development mean annual load of Total Phosphorus (TP)
Total Nitrogen	65% reduction in the post development mean annual load of Total Nitrogen (TN)
Hydrocarbons, motor oils, oil, and grease	No visible oils for flows up to 90% of the one-year ARI peak flow specific for service stations, depots, vehicle body repair workshops, vehicle repair stations, vehicle sales or hire premises, car parks associated with retail premises, places of public worship, tourist and visitor accommodation, registered clubs and pubs.

4.4 ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Terminology

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

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

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

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

EV Distribution Board is a distribution board dedicated to EV charging that is capable of supplying not less than 50% of EV connections at full power at any one time during off-peak periods, to ensure impacts of maximum demand are minimised. To deliver this, the distribution board will be complete with an EV Load Management System and an active suitably sized connection to the main switchboard. The distribution board must provide adequate space for the future installation (post-construction) of compact meters in or adjacent to the distribution board, to enable the body corporate to measure individual EV usage in the future.

Objectives

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

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

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

Controls

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

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

C.02 All apartment residential car parking must:

a) provide an EV Ready Connection to at least one car space per dwelling.

b) provide EV Distribution Board(s) of sufficient size to allow connection of all EV Ready Connections and Shared EV connections.

c) Locate EV Distribution board(s) so that no future EV Ready Connection will require a cable of more than 50m from the parking bay to connect.

d) Identify on the plans submitted with the DA the future installation location of the cable trays from the EV Distribution Board to the car spaces allocated to each dwelling that are provided a future EV connection, with confirmation of adequacy from an electrical engineer. Spatial allowances are to be made for cable trays and EV Distribution Board(s) when designing in other services.

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

C.04 All commercial building car parking must:

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

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

4.5 URBAN HEAT

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

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

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

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

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

- encouraging laminar wind flows and reducing turbulence through the setbacks above street wall and podia height controls as shown in the Masterplan
- 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 4.3.3.1.

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

Terminology

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

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

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

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

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

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

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

PRINCIPLES

Reduce the contribution of development in Melrose Park to urban heat in the Parramatta Local Government Area.

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

ROOF SURFACES

Objectives

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

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

Controls

C.06 Where surfaces on roof tops or podiums are used for communal open space or other active purposes, the development must demonstrate at least 50% of the accessible roof area complies with one or a combination of the following:

a) be shaded by a shade structure;

b) be covered by vegetation consistent with the controls on Green Roofs or Walls in Section 2.9 Landscaping;

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

C.07 Where surfaces on roof tops or podiums are not used for the purposes of private or public open space, for solar panels or for heat rejection plant, the development must demonstrate the following:

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

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

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

4.6 VERTICAL FACADES

Objectives

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

Controls

C.01 The extent of the vertical façade of street walls , podia , perimeter block development (or if no street wall, as measured from the first 12 metres from the ground plane) that comprise Reflective Surfaces should demonstrate a minimum percentage of shading as defined in Table 4 as calculated on 21 December on the east facing façade at 10am, northeast and southeast facing façade at 11.30am, north facing façade at 1pm, northwest and southwest facing façade at 2.30pm and the west facing faced at 4pm (as shown in Figure 1.2).

Table 4 - Minimum Percentage Shading

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

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

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

Table 5 - Shading Sun Angles

Façade Orientation	Sun Angles
East ± 22.5°	Reference Time: 10am AEDT (UTC/GMT+11) 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 6 as calculated on 21 December on the east facing façade at 10am, northeast and southeast facing façade at 11.30am, north facing façade at 1pm, northwest and southwest facing façade at 2.30pm and the west facing faced at 4pm (as shown in Figure 1.4).

Table 6 - Minimum tower percentage shading

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

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

C.03 Shading may be provided by:

a) external feature shading with non-reflective surfaces;

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

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

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

C.05 Where it is demonstrated that shading cannot be achieved in accordance with the above controls, a maximum external solar reflectance as defined in Table 7 and as indicated in Figure 1.1 is generally acceptable.

Table 7 - Maximum solar reflectance of Reflective Surfaces

Reflective Surface Ratio (RSR)	**<30%**	**30%-70%**	>=70%
Maximum External Solar Reflectance (%)	**No Max.**	**62.5-0.75*RSR**	10

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

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

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

4.7 HEATING AND COOLING SYSTEMS – HEAT REJECTION

Objectives

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

O.02 Avoid or minimise the impact of heat rejection from heating, ventilation, and cooling systems on user comfort in private open space and the public domain.

Controls

C.01 Residential apartments within a mixed-use development or residential flat building should incorporate efficient heating, ventilation and cooling systems which reject heat from a centralised source on the upper most roof.

C.02 Where the heat rejection source is located on the upper most roof, these should be designed in conjunction with controls in this Section of the DCP relating to Roof Surfaces and the controls on Green Roofs or Walls.

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

C.04 Heat rejection units are strongly discouraged from being located on building facades or on private open space, such as balconies and courtyards. However, where it is demonstrated that heat rejection cannot be achieved in accordance with the above controls C1 and C2 above and these units are installed, the HVAC system must demonstrate:

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

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

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

4.8 GREEN ROOFS AND WALLS

Objectives

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

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

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

Controls

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

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

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

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

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

c) adherence to the objectives, design guidelines and standards contained in the NSW Department of Planning and Environment's Apartment Design Guide 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 WC facilities are permitted to exceed the height plane

4.9 SOLAR LIGHT REFLECTIVITY (GLARE)

Objectives

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

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

Controls

C.08 New buildings and facades must not produce solar light reflectivity that results in glare that is hazardous, undesirable or causes discomfort for pedestrians, drivers, and occupants of other buildings or users of public spaces.

C.09 Solar light reflectivity from building materials used on facades must not exceed 20%.

C.10 Subject to the extent and nature of glazing and reflective materials used, a Reflectivity Report that analyses potential solar light reflectivity from the proposed development on pedestrians, motorists, or surrounding areas may be required.

C.11 Buildings greater that 40m in height require a Reflectivity Report that includes the visualisation and photometric assessment of solar light reflected from the building on the surrounding environment. Analysis is to include:

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

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

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

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

4.10 BUILDING FORM AND WIND MITIGATION

Objectives

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

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

Controls

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

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

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

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

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

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

e) Ensure usability of open terraces and balconies.

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

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

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

4.11 ECOLOGY

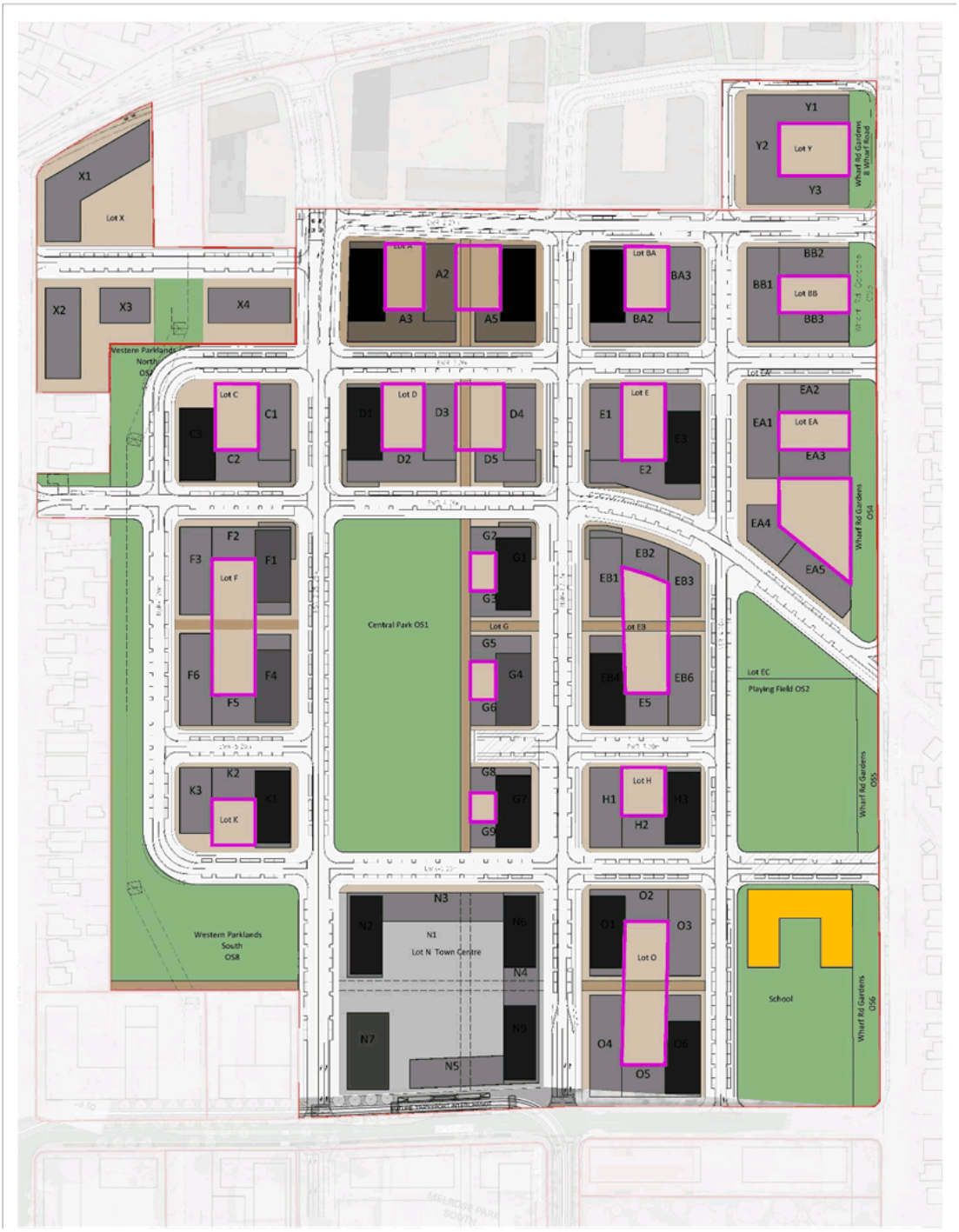
Objective

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

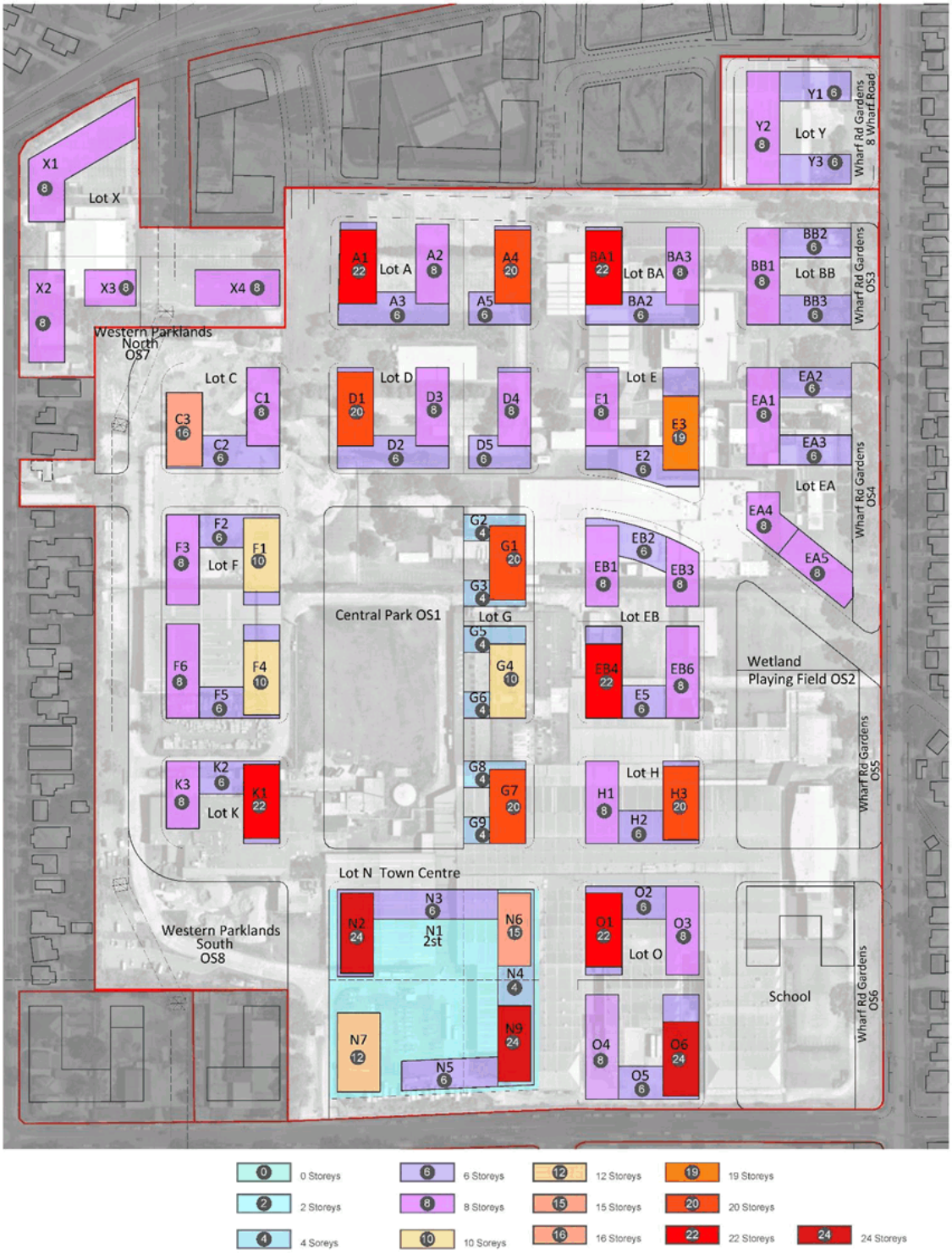
Control

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

Appendix 1 – Melrose Park North Master Plan



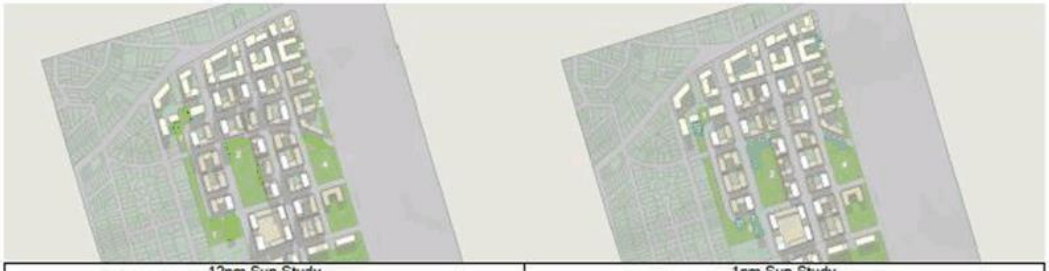
Appendix 2 – Building Heights



Appendix 3 – Solar Access Plan

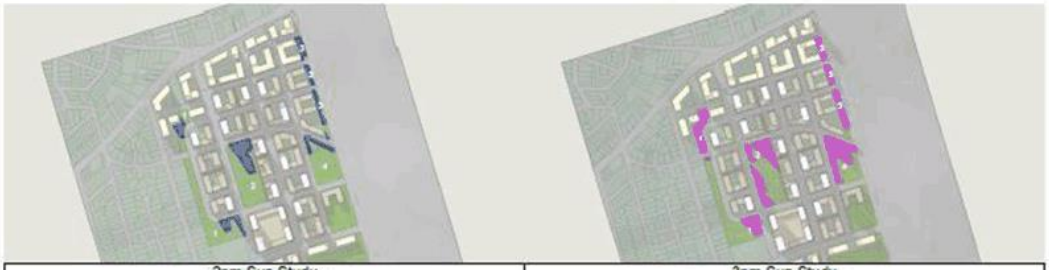
10am Sun Study			
Area	Area in Sun (sqm)	Total Area (sqm)	Percentage in Sun (%)
1	6100	16013	38
2	8990	16341	55
3	5016	5016	100
4	8600	11684	74

11am Sun Study			
Area	Area in Sun (sqm)	Total Area (sqm)	Percentage in Sun (%)
1	9480	16031	59
2	12912	16341	79
3	5016	5016	100
4	8830	11684	76



12pm Sun Study			
Area	Area in Sun (sqm)	Total Area (sqm)	Percentage in Sun (%)
1	12398	16013	77
2	14855	16341	91
3	5016	5016	100
4	10676	11684	91

1pm Sun Study			
Area	Area in Sun (sqm)	Total Area (sqm)	Percentage in Sun (%)
1	13173	16031	82
2	13651	16341	84
3	4866	5016	97
4	9059	11684	78



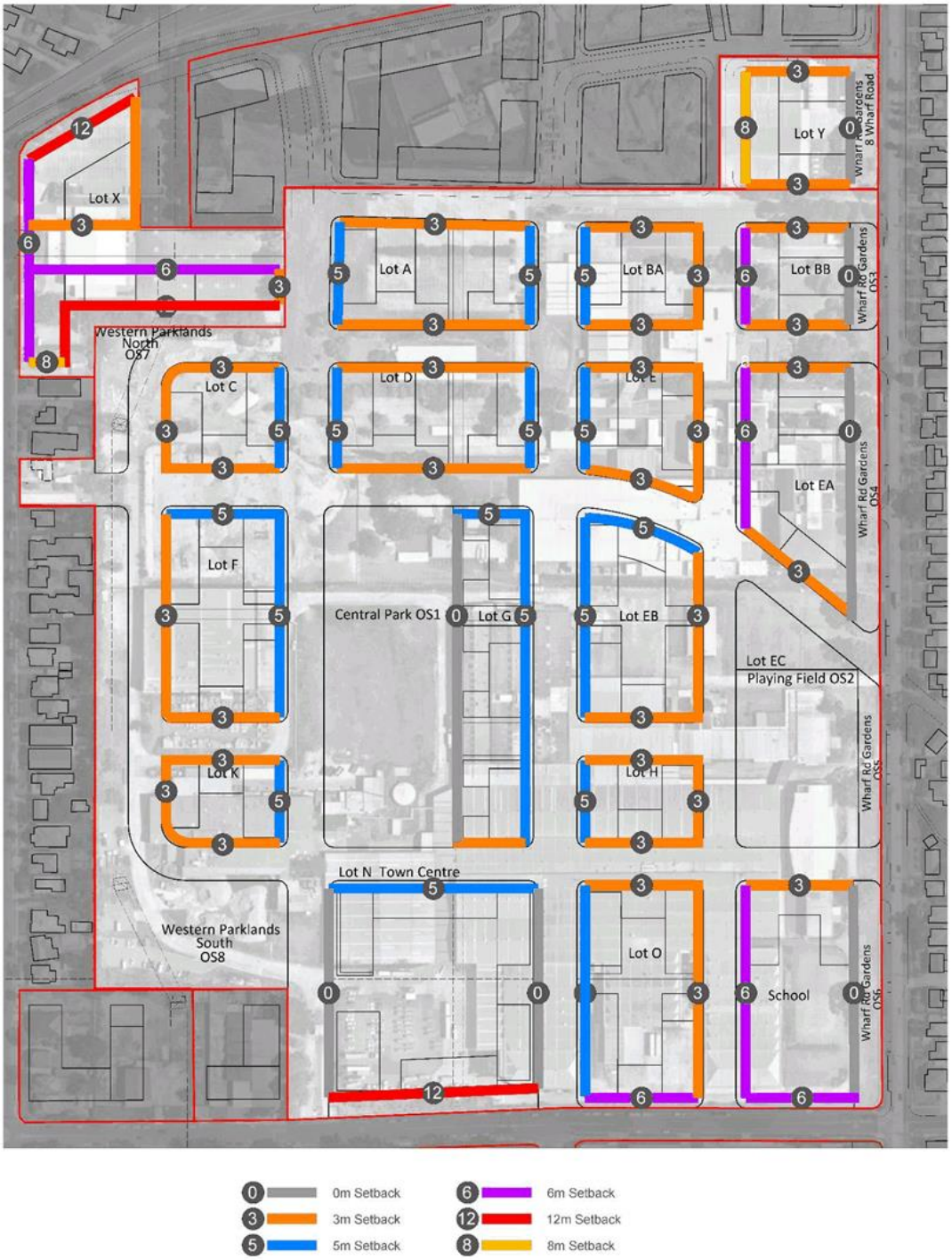
2pm Sun Study			
Area	Area in Sun (sqm)	Total Area (sqm)	Percentage in Sun (%)
1	13204	16031	82
2	11815	16341	72
3	2365	5016	47
4	6799	11684	58

3pm Sun Study			
Area	Area in Sun (sqm)	Total Area (sqm)	Percentage in Sun (%)
1	10436	16013	65
2	9662	16341	59
3	551	5016	11
4	1818	11684	16

Cumulative Sun Access to Open Space

Cumulative Shadow Cast from Development to Open Space

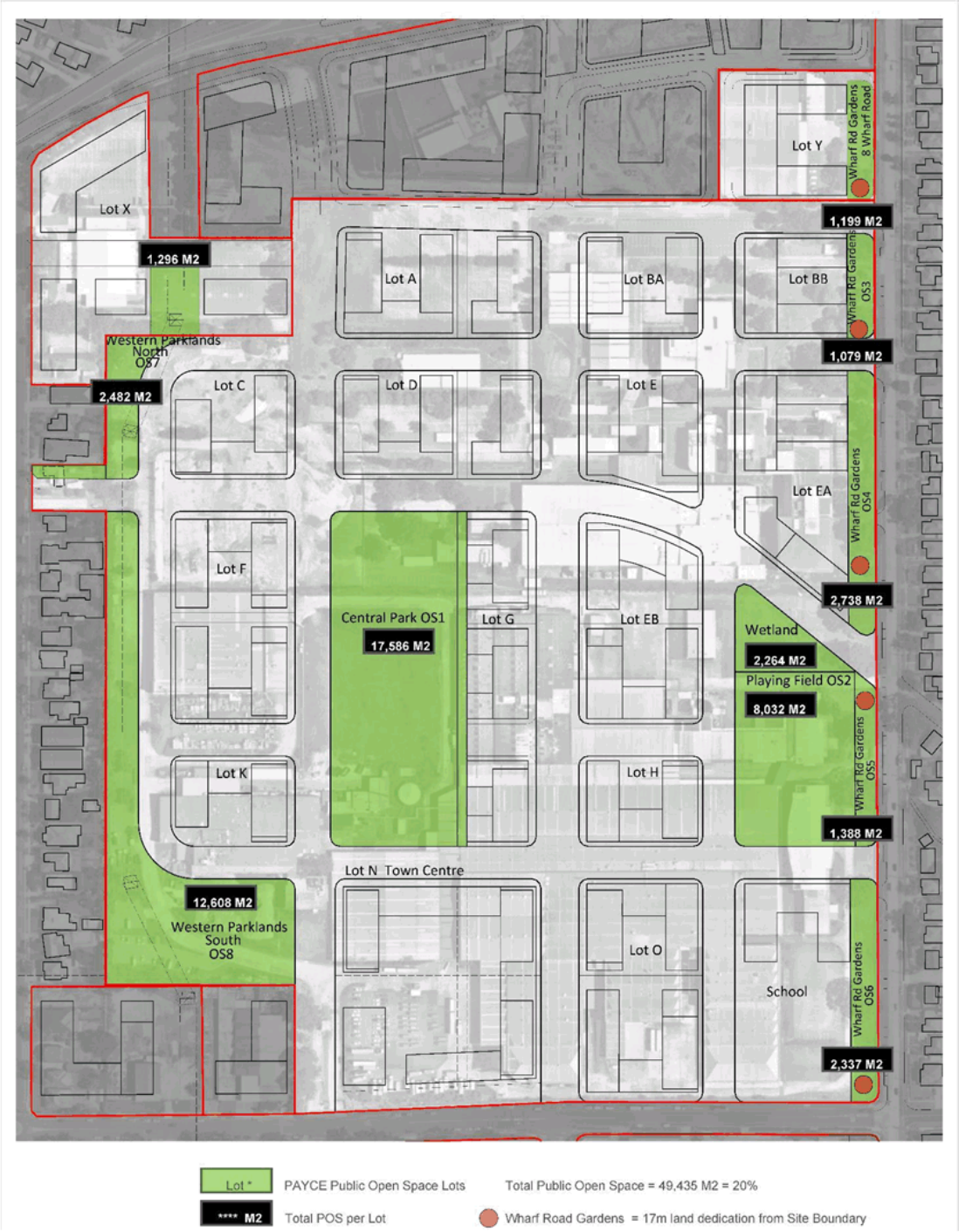
Cumulative Sun Access to Public Open Spaces					
Area	Total Area	Max Sun Access Times	Total Area in Sun	Percentage in Sun	Total Area in Shadow
1	16013	12pm - 2pm	9921	62	6092
2	16341	11am - 1pm	10354	63	5987
3	5016	10am - 12pm	5016	100	0
4	11684	11am - 1pm	10266	88	1418



Appendix 4 – Building Setbacks

Page 82 of 83

Appendix 5 – Public Open Space



Appendix 6 – Street Hierarchy

Appendix 7 – Street Schedule

City of Parramatta

Melrose Park North : Urban Design Public Domain Street Layouts

Author: VH Rev: V5 Date: 19.04.2021

Melrose Park North RZ/1/2016 masterplan (Work in Progress)

S.No	Street / Pedestrian Connection name	Street / Pedestrian Connection Corridor Width	Direction	Proposed Street Nomenclature	Proposed Building Setback		Description of Elements in Road Reserve											
					W/N side of road corridor (whichever is applicable)	E/S side of road corridor (whichever is applicable)	Footway Width W/N (whichever is applicable)	Footway Width E/S (whichever is applicable)	Footpath W/N (whichever is applicable)	Footpath E/S (whichever is applicable)	Planting Beds W/N (whichever is applicable)	Planting Beds E/S (whichever is applicable)	Trees	Parking	Vehicular lanes	Bicycle Path/ Lane	WSUD Planter	Notes
Streets																		
1	NSR-1	20m	North South	XX Crescent	Western Parklands North and South	3m	4.2m	4.2m	2m	2m	Yes. 2.05m clear width	Yes. 2.05m clear width	Larger trees in Parking; smaller trees in planting beds	2.3m wide both sides	single lane 3.5 m wide, each way	No	Bio retention open tree pit for the smaller trees, WSUD treatment for tree in parking (planter or paving TBC)	
2	NSR-2 Typical (Type 1a)	25m	North South	XX Boulevard	5m typical along developments/ 0m at Western Parkland South opposite Town Centre	5m Typical	3.5m	3.5m	3.5m	3.5m	No	No	Larger trees in Parking; smaller trees in front setbacks, possible third row in footpath	2.6m wide both sides	Two 3.2 m wide lanes each way with buses plying on this street	No	For the tree in parking - either in planter or paving TBC Trees in verge to possibly have bio-retention tree pits	Bus Route on road. NSR 2 town centre has zero setback. Public domain on western side of street between EWR 4 and EWR 6, to possibly house a linear park with elements like seating spaces, exercise areas, games etc. in its footway width of 6.4 m.
	NSR-2 (Type 1b) between EWR 4 and EWR 6	22m				0m at Central Park	6.4m	3.4m		3.4m	Yes. Possible linear park		Larger trees in footpath on eastern side, and in verge on western side		Single 3.5 m wide lanes each way			
	NSR-2 (Type 1c) Town Centre Interface	25m				0m at Town Centre	3.5m	3.5m		3.5m	No		Larger trees in Parking; possible second row in western footpath		Two 3.2 m wide lanes each way OR single 3.5 m wide lanes each way with line marked median, depending on the connection to Hope Street. Buses ply on this street			
3	NSR-3	23.5m	North South	Waratah Street	5m overall / 0m at Town Centre	5m	6.25 includes cycleway	6.25 includes cycleway	1.8m	1.8m	Yes. 1.95m clear width	Yes. 1.95m clear width	Larger trees in Parking; smaller trees in between the footpath and the cycle track	2.3m wide both sides	single lane 3.2 m wide, each way	Yes - one way paired, separated bicycle paths - both sides having an assumed 2.5m wide bicycle corridor, 1.5m wide on both sides asphalted with a 1m concreted portion alongside to allow for people coming out of parked cars from the on-street parking lane	For the tree in parking - either in planter or paving TBC	NSR 3 Town Centre condition, town centre setback is 0m and development side is a 5m setback. 3m wider public domain on western side of street between EWR 4 and EWR 6. Total public area available (excluding the cycleway) is 6.75 and this can house a linear park with elements like seating spaces, exercise areas, games etc.
	NSR-3 (Type 2d) between EWR 4 and EWR 6	26.5m			5m		9.25 includes cycleway	6.25 includes cycleway	2m		Possible Linear Park							
4	NSR-4	20m	North South	XX Street	3m	6m for developments / Lot EC (Wetland) and playing field / 6m for school	4.2m	4.2m	2m	2m	Yes. 2.05m clear width	Yes. 2.05m clear width	Larger trees in Parking; smaller trees in planting beds. 3rd row of trees in 6m setback	2.3m wide both sides	single lane 3.5 m wide, each way	No	Bio retention open tree pit for the smaller trees, WSUD treatment for tree in parking (planter or paving TBC)	
5	Wharf road	existing road	North South	Wharf Road					3m shared path							Yes - shared		The shared path is desired to be 3m but is to be adjusted in width depending on future additional traffic lanes. Where possible, a 3m path should be put in and reduced where constrainsts exist. Bus route on road
6	EWR-2A	20m	East West	XX Street	3m	6m	4.2m	4.2m	2m	2m	Yes. 2.05m clear width	Yes. 2.05m clear width	Larger trees in Parking; smaller trees in planting beds	2.3m wide both sides	single lane 3.5 m wide, each way	No	Bio retention open tree pit for the smaller trees, WSUD treatment for tree in parking (planter or paving TBC)	The possibility of connecting the EWR-2A to NSR 2 needs to be explored. Levels could be an issue in trying to achieve this outcome. Layout and connection subject to final advice from Traffic.
7	EWR-3	20m	East West	XX Street	3m	3m	4.2m	4.2m	2m	2m	Yes. 2.05m clear width	Yes. 2.05m clear width	Larger trees in Parking; smaller trees in planting beds	2.3m wide both sides	single lane 3.5 m wide, each way	No	Bio retention open tree pit for the smaller trees, WSUD treatment for tree in parking (planter or paving TBC)	
8	EWR-4	20m	East West	XX Grove	3m	5m / lot EC (Wetland)	3m	6m	3m wide shared path	2m wide	no	in swale	Larger trees in Parking	2.3m wide both sides	single lane 3.2 m wide, each way	Yes - shared, on northern side of the street	Open Continuous Swale / Raingarden	
9	EWR-5	20m	East West	XX Street	3m	3m	4.2m	4.2m	2m	2m	Yes. 2.05m clear width	Yes. 2.05m clear width	Larger trees in Parking; smaller trees in planting beds	2.3m wide both sides	single lane 3.5 m wide, each way	No	Bio retention open tree pit for the smaller trees, WSUD treatment for tree in parking (planter or paving TBC)	
10	EWR-6	20m	East West	XX Street	3m Typical / Central Park / Playing Field	3m Typical / 5m at Town Centre	4.2m	4.2m	2m	2m	Yes. 2.05m clear width	Yes. 2.05m clear width	Larger trees in Parking; smaller trees in planting beds	2.3m wide both sides	single lane 3.5 m wide, each way	No	Bio retention open tree pit for the smaller trees, WSUD treatment for tree in parking (planter or paving TBC)	

Publicly accessible private street/ shared space -																		
11	Connection between G6/G4 and G8, links to EWR 3	20m	East West	xx Lane	3m	3m	possibly 4.2m	possibly 4.2m	possibly 2m	possibly 2m	yes	yes	Large trees along the sides	possibly yes	Shared lanes possibly 3.2 to 3.5m wide each way	No	Possibly Bio retention open tree pits for the trees	
12	Connection between Playing Field and School, links to NSR 4 and possibly Wharf Road	20m	East West	xx Lane	3m	3m	possibly 4.2m	possibly 4.2m	possibly 2m	possibly 2m	yes	yes	Large trees along the sides	possibly yes in a width of 2.3 m both sides	Shared lanes possibly 3.5m wide each way	No	Possibly Bio retention open tree pits for the trees	
Pedestrian Connections -																		
13	Pedestrian connection between A2-A4/A5 and links EWR2 and EWR 3	6m wide (12m building to building), extending street to street	North South	xx Lane		**Refer Masterplan Drawing A01 dated 19.04.2021 Rev M and Street Hierarchy Plan drawing L01 Rev K dated 16.04.2021** **Controls –** **The Pedestrian Connections are to be:** - Located as per the Masterplan - 24/7 publicly accessible - Extend from street to street or street to park - Open to sky (except at the mall) - Located within property boundaries on deep soil (preferably) and or on basement slab except one along central park which is located within the park boundaries. - Available for controlled access for light weight maintenance/service vehicles - Fully accessible using, in order of preference – - graded walkways (no steeper than 1:20) where possible; limited use of ramp system as per DDA; - 24/7 clearly visible publicly accessible lift service within the building structure, or - alternative options for approval; **The Pedestrian Connections are to have:** - View lines along lane easement to align across all blocks - Building to building separation as shown on the masterplan - A public path 3-6m wide (based on site situation and constraints) and the balance of the 12m, where applicable, with landscape and canopy trees - Trees in deep soil (preferably) or in set down slabs and planters to encourage and sustain large canopy trees as per ADG requirements including soil volumes, soil depth, irrigation and sub-soil drainage - Pedestrian lighting to provide safe 24/7 access using Council approved lane lighting types as per the PDG - Materials as per the PDG (TBC) - The Pedestrian Connections should provide secondary entry to the buildings and courtyards - Park edge north/south connection is to have: - A low wall located along the park edge within the 6m lane boundary assumption. This wall could occur on both sides of the path depending on levels difference between the park and private boundary. The wall is to be masonry, a minimum of 450mm wide and a suitable option for sitting. - Canopy trees within the pathway in a set down slab (if required) to define park edge - The North South connection is to align with shopping mall entrance and provide direct access to Hope Street through the mall as per the master plan. This connection should be fully accessible (based on principles described above) and should be accessible 24/7. - Where retaining walls are required they are to be located within property boundary (except along Central Park). - 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 particular recognition of the grades and sight lines across the site. - Fences, to courtyards adjoining the laneways, are to have a masonry base and be designed to provide views into the courtyards.	
14	Pedestrian connection between D5-D4/D5 and links EWR 3 and EWR 4	6m wide (12m building to building), extending street to street	North South	xx Lane														
15	Pedestrian connection between Central park and blocks G2, G3, G5, G6, G8 & G9; and links EWR 4 and EWR 6	6m wide, extending street to street	North South	xx Lane														
16	Pedestrian connection between F3 & F6 and F1 & F4, and links NSR 1 & NSR 2	6m wide (12m building to building), extending street to street	East West	xx Lane														
17	Pedestrian connection betweenG1/G5 and G5 and links NSR 3 and Central Park	6m wide (12m building to building), extending street to street	East West	xx Lane														
18	Pedestrian connection between EB1 & EB4 and EB3 & EB6, links NSR 3 & NSR 4	6m wide (12m building to building), extending street to street	East West	xx Lane														
19	Pedestrian connection between O1 & O4 and O3 & O6, links NSR 3 & NSR 4	6m wide (12m building to building), extending street to street	East West	xx Lane														
20	24/7 Pedestrian access connections through town centre as shown on the drawing	6m	North South	xx Place														
21	24/7 Pedestrian access connections through town centre as shown on the drawing	6m	East West	xx Place														
22	Pedestrian connection between Western Parklands south and lots P & Q; and links Hughes Avenue reserve (across Hughes avenue) and NSR 2	6m wide, extending street to street through lot along Hughes Avenue	East West	xx Lane														

ELEMENTS & MATERIALS :
All Footpaths - Concrete, as per Council's details (unless otherwise specified), widths as specified above.
Town Centre, Shops & Cafe Areas, and important intersections' Paving & Footpaths - Provision of Stone Paving to be investigated
Bicycle paths - Asphalt finish on concrete. Pavement markings and cross section as specified in CoP Bicycle facilities Design Guide (Draft) - To be forwarded to the applicants.
Shared Paths - Concrete. Pavement marking (TBC) to be as specified in CoP Bicycle facilities Design Guide.
Kerb and gutter - Concrete. Dimensions and arrangement as per Council's details.
Roads - Asphalt to Council's standard details; however, other materials to help reduce heat to be explored.
Water Sensitive Urban Design (WSUD) Details - To be worked out based on requirements noted above. **WSUD techniques** to follow best practice and be appropriate for site specific applications, in particular street grades, and approved by Manager DTSU.
Street Furniture - Placement of elements as per the Parramatta Public Domain Guidelines (PPDG)
Lighting Design & Light Pole types - To be confirmed based on detailed lighting plan of the Melrose Park North Precinct. Light pole locations in plan and spacing to be confirmed based on required lighting levels and luminaire type.
Tree Species - Selection to be informed by DCP building height, setback controls and subsequent solar access.
Tree Pits - All tree pits to be designed to include structural soil support systems e.g. 'Strata Vaults' and WSUD guided soil profiles, as specified.
All Fill in the public domain and on private lot deep soil to use constructed soil profile as approved by Manager DTSU.
Road Intersections - To be designed to suit usage and surrouding elements. These must have blisters at all intersections but these may be more extensive at important intersections. Designs may vary depending on pedestrian and bicycle requirements.
Pedestrian Laneways - To be fully accessible. Arrangement, materials and cross sections to be confirmed.
Retaining walls and Fences - To be designed to Council's satisfaction, and to be located in the private domain in their entirety.

ASSUMPTION:
Access to building car parking is always from the southern side of the building unless otherwise noted.

Appendix 8 – Stormwater Management Strategy

MELROSE PARK

TRANSPORT MANAGEMENT AND ACCESSIBILITY PLAN

Final Report

24 JANUARY 2019

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CONTENTS

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CONTENTS

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Figures

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Tables

REVISION	DATE	DESCRIPTION	BY	REVIEW	APPROVED
A	09/05/2018	Draft submittal	C. Arkell	S. Konstas	S. Konstas
B	31/10/2018	Updated based on govt agency comments	C. Arkell	I. Smith	I. Smith
C	07/12/2018	Final report	C. Arkell	I. Smith	I. Smith
D	24/01/2019	Updated based on additional TfNSW comments	C. Arkell	I. Smith	I. Smith

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

Background

Jacobs Group (Australia) Pty Ltd has been engaged to prepare a Transport Management Accessibility Plan (TMAP) for the Melrose Park north and south precincts. This report addresses the traffic and transport implications of the proposed development of approximately 11,000 dwellings and has been tailored specifically to address stakeholder comments through the Project Coordination Group (PCG) made up by City of Parramatta (CoP), Department of Planning & Environment (DPE), Transport for NSW, Roads and Maritime (RMS), Parramatta Light Rail (PLR), mProjects, and City plan.

The TMAP has recognised the transport planning initiatives described in the *Greater Sydney Regional Plan* and *Future Transport Strategy 2056* developed by DPE and TfNSW respectively. The purpose of the TMAP is to provide a framework for the implementation of a range of measures designed to achieve a sustainable transport outcome for the Melrose Park structure plan.

The assessment process has included analysis focused around achieving the targets defined with the PCG of encouraging more people to use public transport (40%-50%) over the next 20 years. Initiatives to increase public transport use have guided the planning process for the Melrose Park structure plan and are fundamental to the development of the precinct.

Proposed Delivery Melrose Park Structure Plans

The aspiration of the Melrose Park structure plans is to develop a smart precinct minimising natural resource, energy and transport demands. Transport demand and infrastructure requirements are to be minimised through an appropriate balance of business, housing and employment uses within the precinct and wider Greater Parramatta and Olympic Peninsula (GPOP) targeting of strategic mass transit, intermediate transit and local transit connections proposed through the core of the development.

The land use mix will support an appropriate balance of residential, social and business opportunities. This is to support Melrose Park's role as a self-sufficient smart precinct with high levels of connectivity to its regional and wider contexts.

A multi-decade development framework has been proposed to enable development flexibility and to complement future transport initiatives planned within the study area. For the purposes of assessing the transport infrastructure and service requirements the following staging elements have been examined:

- 3,200 dwellings to be developed by 2024
  - Commercial 7,900 m² GFA
  - Retail 6,000 m² GFA
- 6,700 dwellings to developed by 2028
  - Commercial 13,500 m² GFA
  - Retail 10,200 m² GFA
- 11,000 dwellings full build-out by 2036
  - Commercial 19,400 m² GFA
  - Retail 15,600 m² GFA

The Melrose Park structure plans for the north and south precincts ensures that public transport and active transport will be fully integrated into the precinct.

Key Issues Examined

The TMAP assessment has used a set of transport modelling tools (Public Transport Project Model and Aimsun Model) developed to assist decision making on key issues such as:

- The nature and scale of the development and the ability of the road and public transport network to accommodate forecast additional demands
- The cumulative impacts of future developments and forecast background growth in travel demand within the study area
- Changes in transport infrastructure and services that will satisfy the target objectives of increasing travel by alternative modes other than car
- The level of investment required in public transport initiatives to achieve the targets and visions of *Future Transport Strategy 2056*
- The relationship between parking provision and the achievement of higher mode share to public transport, cycling and walking
- The overall staging and trigger points for proposed mitigation measures attributed to Melrose Park.

Key Findings

The key findings of the investigations undertaken as part of TMAP are as follows:

- Based on the nominated service levels for the surrounding road network, the upgrade of Victoria Road intersections (Wharf Road and Kissing Point Road) will be required in order to efficiently service the Melrose Park precinct
- The road network analysis has identified that the remainder of the existing surrounding road network is able to cater for traffic generated by the proposed development, with no significant impacts when compared to a future 'do minimum' scenario
- Increased bus service frequencies on Victoria Road are required to support development and achieve mode share targets. Investigations have confirmed the required bus service levels are feasible
- A new bridge crossing (public and active transport only) across the Parramatta River linking Melrose Park to Wentworth Point is required by 2028 (approximately 6,700 dwellings) to enable connections between residential and employment areas to key public transport nodes including the planned Sydney Metro West station at Sydney Olympic Park.
- New bus services between Top Ryde and Concord Hospital via Melrose Park are proposed to operate via the new bridge
- Shuttle services between Melrose Park and Meadowbank station are proposed to operate prior to the implementation of the new bridge. Proposed operations can be implemented without signifcant works or impacts
- Ferry user patronage demand from Melrose Park is likely to be small. A new bridge across the Parramatta River will provide access to the newly-upgraded Sydney Olympic Park and proposed new ferry wharf at Rhodes East
- As development progresses and activity increases, a light rail corridor is being proposed by TfNSW established through the core of the development. This would bring light rail services through the heart of Melrose Park with direct access to the proposed Sydney Metro West station at Olympic Park
- The introduction of PLR Stage 2 leads to a number of access implications along Boronia Street, Hope Street and Waratah Street which will need to be carefully managed
- The public transport network for Melrose Park has been planned to cater for the full development (11,000 dwellings) without the need for light rail but has been planned to accommodate light rail through the precinct
- The northern precinct structure plan maintains a corridor on Hope Street between Hughes Avenue and Waratah Street to enable the implementation of light rail. The southern precinct allows for light rail along Waratah Street.
- Key elements of Stage 1 - Prior to bridge (up to 6,700 dwellings:
  - Stage 1A, Stage 1B and Stage 1C Victoria Road upgrades
  - Enhanced Victoria Road bus services to serve both background growth and Melrose Park demand
  - Shuttle services to Meadowbank Station
- Key elements of Stage 2 - After new bridge (more than 6,700 dwellings)
  - New high frequency services (bus or light rail) over the bridge
  - Continued enhancement of Victoria Road bus services

Conclusions

The key conclusions of the Melrose Park TMAP are:

- The scale of development envisaged for Melrose Park presents significant but manageable challenges for transport infrastructure and services for both the road and public transport network
- The additional traffic demands as a result of Melrose Park development on the surrounding local road network fall within acceptable capacity thresholds
- Sydney Metro West will deliver significant benefits for residents from Melrose Park with high-capacity and more frequent services between Parramatta CBD, Sydney Olympic Park and Sydney CBD
- A new active and public transport bridge across Parramatta River will provide substantial connectivity improvements between Melrose Park, Rhodes and Sydney Olympic Park before light rail is implemented
- The increased frequency of the T1 Northern Line (to 8 services per hour) will provide capacity to support the development and will continue once Sydney Metro North West opens in 2019
- Parramatta Light Rail Stage 2 would provide a direct link to the Parramatta CBD, and connect to Sydney CBD via the broader rail and metro networks
- The new bridge across Parramatta River will provide fast, direct, high frequency services linking Melrose Park to Rhodes Station and future metro station at Sydney Olympic Park. The full development (11,000 dwellings) can be supported by either bus or light rail services across the bridge.
- Substantial resources will need to be devoted to improving the public transport servicing and infrastructure in the study area, with significant support and funding contributions from the various agencies, proponents and authorities
- An integrated package of measures needs to be implemented as the development progresses, with the package containing a mix of policy, infrastructure and transport services measures
- The measures presented within the TMAP need to be integrated comprehensively and consistently over the life of the development if the mode split targets as outlined in the TMAP are to be achieved.
- The TMAP recommends a total off-street parking supply of 9,441. A total on-street parking supply of approximately 700 and 500 spaces is being proposed for the northern and southern precincts respectively. It is proposed to initially provide levels of parking in accordance with CoP DCP, and gradually decrease parking provision as the public transport initiatives are implemented.

1. INTRODUCTION

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1. INTRODUCTION

1.1 Background

Melrose Park is located along the northern banks of the Parramatta River, 6km east of the Parramatta CBD and north east of the Greater Parramatta and Olympic Peninsula Urban Renewal Area (GPOP). The existing industrial area in Melrose Park has been proposed to be rezoned to enable large scale urban renewable and create a mixed use development featuring housing, commercial offices, retail space and community facilities. Melrose Park will include approximately 11,000 dwellings in a high density residential environment interspersed with retail, community and child care uses, and a mixed use Town Centre providing retail, commercial, community, a child care centre, affordable housing and plaza spaces.

In order to assist in the planning and rezoning of this precinct, this Transport Management and Accessibility Plan (TMAP) has been prepared. The recommendations of the TMAP will inform both the rezoning and the voluntary planning agreement process for Melrose Park to determine the ability of the transport network to cope with additional growth, and the improvements required to realise the development potential of Melrose Park.

An analysis of the regional context of the site has identified the following key considerations:

- The site at Melrose Park is located on and adjacent to the Global Economic Corridors to Parramatta and Sydney Olympic Park
- The eastern edge of the site forms the boundary between the Parramatta LGA and the Ryde LGA (Wharf Road)
- The site is located directly on the proposed corridor of Parramatta Light Rail Stage 2, which will provide a direct connection to Parramatta CBD. PLR Stage 2 will also connect to Sydney Olympic Park where significant development is planned along with a station for the future Sydney Metro West
- Surrounding remnant industrial sites at Camellia, Carter Street and Wentworth Point have been identified by the State Government as Priority Precincts for Urban Renewal and Urban Transformation
- The region contains an excellent network of Regional Parks and open spaces that traverse the banks of the Parramatta River.

The site at Melrose Park presents:

- A close proximity to Parramatta CBD a major economic centre, with strong commercial, living and cultural precincts with the single biggest concentration of jobs outside of Sydney CBD and North Sydney CBD
- A range of complementary land uses and community services that will be provided from the beginning of the development
- A mix of land uses will be created for Melrose Park to become an emerging, vibrant and attractive place to live, work, play and stay
- An integrated transport system comprising an interconnected, legible and urban scale grid street pattern providing a pedestrian and cycling friendly environment to provide optimal opportunities for bus, future light rail and connections to existing heavy railway transport interchanges and future metro through the core of the development
- A significant opportunity for urban renewal that has excellent access to the amenity of the Parramatta River and its associated network of regional parks and open space.

1.2 Purpose of this TMAP

The overall objective of the TMAP is to identify the local and regional impacts to the transport network as a result of approximately 11,000 dwellings at Melrose Park and to outline strategies and mitigations to ameliorate these impacts. The TMAP also aims to:

- Address movement to, from and within Melrose Park in a sustainable manner
- Ensure the provision of infrastructure and services will satisfy the forecast growth in travel demand generated by Melrose Park and is consistent with those planned for the wider region, taking into consideration potential development staging
- Present an integrated transport system that integrates all travel modes with a focus on encouraging the use of public transport, walking and cycling
- Ensure the development integrates seamlessly with the surrounding street environment
- Determine the changes in transport infrastructure that will satisfy the target objectives of more travel by alternative non car modes
- Examine the relationship between parking provision and the achievement of higher mode share to public transport, cycling and working
- Prepare a multi-modal transport network and services action plan including staging and trigger points of infrastructure upgrades.

The TMAP has recognised the land use and transport planning initiatives described in recently released NSW Government policies and strategies such as the *Greater Sydney Regional Plan* and *Future Transport Strategy 2056*. The purpose of the TMAP is to provide a framework for the implementation of a range of measures designed to achieve a sustainable transport outcome for Melrose Park.

The assessment process has included analysis built around achieving the targets defined and agreed during the TMAP process in getting more people on public transport (40%-50%) over the next 20 years. These initiatives and their influence on Melrose Park have been assessed and refined in the planning process for the TMAP.

1.3 Melrose Park TMAP objectives

The main objective of the Melrose Park structure plans is to achieve new standards of integration between land uses and public transport. Improved integration will be achieved by allowing higher development densities and clusters of different land uses together around public transport nodes and corridors, such as around existing Victoria Road bus corridor and future high-quality light rail corridor along Hope Street as part of PLR Stage 2. By allowing higher densities and a greater mix of land uses, including local employment, destinations are closer together, reducing travel distances. Higher densities in residential areas would also reduce land consumption, promote walking, support public transport services and reduce car use.

Transport infrastructure and services to support the development will need to be carefully planned and implemented to ensure an optimal outcome is achieved for future residents and the wider community. Potential issues that could arise as a result of poor planning and implementation have been identified and specific objectives formulated in response. These key objectives as determined with the Melrose Park Project Coordination Group (PCG) have guided the development of the TMAP and can also be used to measure the overall success of the northern and southern precincts in the future.

The potential issues and objectives set out in Table 1.1 highlight the requirements for regional transport improvements that could be made in GPOP and the surrounding area. The recently released *Greater Sydney Regional Plan* and *Future Transport Strategy 2056* are a number of NSW Government policies and strategies also identify and promote public transport improvements in and around GPOP that could deliver a number of benefits to Melrose Park. The relationship between these policies and Melrose Park is discussed further in Section 2 of this report.

Table 1.1 : Melrose Park Objectives

Potential issue	Objective	Indicator
A lack of feasible non-car access to/ from the precinct leading to high car use and congestion	Encourage access by public transport, walking and cycling to reduce car dependence	Non-car mode share for peak trips to and from Melrose Park of 50% by 2036.
Limited options for travel between Melrose Park and strategic destinations, reducing the resilience and reliability of the transport network	Provide multiple transport options connecting to a variety of local and strategic destinations	30 minute travel time access by public and active transport to key metropolitan and strategic centres to and from Melrose Park by 2036.
A large number of residents being forced to travel long distances by car to access jobs and services.	Support a walkable urban environment with opportunities to work and play close to home	All new residents in Melrose Park are within a safe walking distance of open space, social infrastructure and retail facilities.
Excessive levels of car parking encouraging car use and ownership and inducing large volumes of car trips.	Support public and active transport through reducing private car parking and ownership	A reduction in residential parking provision from current parking requirements by 2036.
Trips generated by the development negatively impacting on regionally significant corridors adjacent to the precinct.	Minimise impacts to productive regional movement corridors	Travel times along Victoria Road (within model area) do not increase by greater than 5% compared to a 2036 base case scenario. Key precinct signalised intersections perform at LOS E or better in highest impact peak hour.
Insufficient new capacity is supplied to allow for and encourage non car travel.	Provide capacity to support a sustainable level of transport demand and cater for local access needs	Volume/capacity ratios on key public transport corridors directly impacted by the development are not detrimentally increased compared to a 2036 base case scenario.

1. INTRODUCTION

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1.4 Melrose Park TMAP study area

Figure 1.1 shows the Study Area adopted for this TMAP. The Study Area includes the Melrose Park northern and southern precincts and the area bordered by Stewart Street and Rutledge Street to the north; Church Street/Devlin Street to the east; Silverwater Road to the west and Parramatta River to the south. Consideration of physical issues such as interfaces with land use and the surrounding transport system are contained within the Study Area whereas considerations such as travel desire lines, trip distribution, demand and network capacity are considered beyond the Study Area.

1.5 Scope and limitations

As is normal in such studies, the scope of this work entails a number of assumptions and limitations. The TMAP does not aim to describe every aspect as the majority of the precinct is still in the planning proposal stage. Further detail will need to be provided as part of the development application and voluntary planning agreement process. The main assumptions and limitations include:

- Limits in the certainty of many key inputs to the public transport planning process such as the delivery of PLR Stage 2, Sydney Metro West and upgrades along T1 Northern Line
- The assumptions of rate and timing of development were provided by proponents for the northern and southern precincts and are understood to represent the current plans for Melrose Park
- In assessing the transport infrastructure needs, it has been assumed that access to Melrose Park will be facilitated in 2020, 2026 and 2036 to allow the requisite levels of transport infrastructure and services to match development and transport demands
- The interface between light rail and traffic in general requires significant further investigation and detailed traffic modelling. This is currently being investigated by TfNSW's PLR Stage 2 team
- The TMAP does not consider the detailed traffic and transport impacts associated with the operation of PLR Stage 2. The modelling has assessed the elimination of non-signalised right turns across the light rail alignment. Left-in/left-out movements have been assumed at remaining minor intersections
- Planned modifications to bus services as a result of PLR Stage 2 has been cursory and requires further work to understand and plan for the effective integration between bus and light rail across GPOP
- Indicative light rail layouts and stop locations for Hope Street (between Hughes Avenue and Waratah Street) have not been developed as part of the TMAP. This is currently being investigated by TfNSW's PLR Stage 2 team
- The impact of services and utilities on all the proposed mitigation measures may require further and more detailed examination
- Improvements to intersections at Devlin Street, Blaxland Road and Parkes Street were announced after the finalisation of future network assumptions for the project and have not been included in this modelling. Observed congestion in future traffic modelling at this location is likely to be significantly improved by these works.

1.6 Stakeholder engagement – process and key input

As part of this TMAP, regular consultation was undertaken with the City of Parramatta, and with other key stakeholders such as Department of Planning & Environment, Transport for NSW (TfNSW) and Roads and Maritime Services (RMS) through a series of meetings and workshops.

During the TMAP process a formal Project Coordination Group (PCG) consisting of representatives listed below was established to oversee the key project assumptions, strategic land use and transport outcomes, planning timeframes, assess available evidence and model development. The members of the PCG met at least once a month to monitor the progress and provide technical expertise, advice, support and direction as necessary to the TMAP process. The PCG comprised the following key stakeholders:

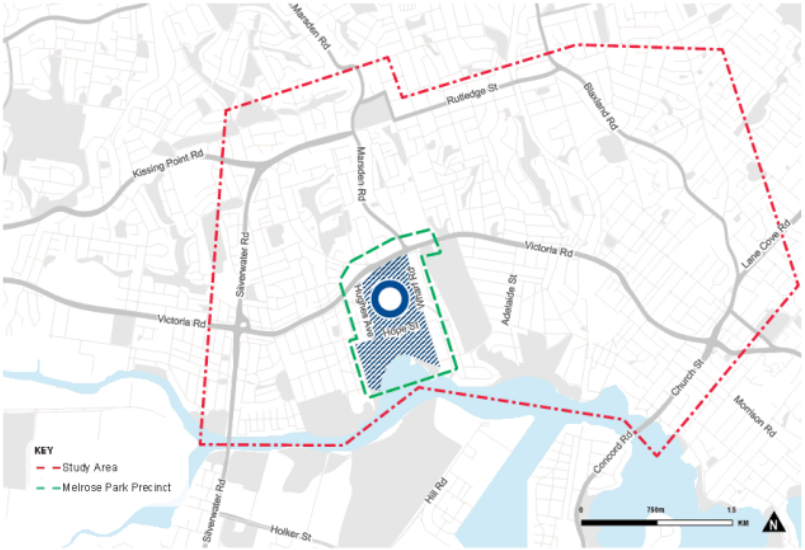
- Department of Planning & Environment (Chair)
- Greater Sydney Commission
- Transport for NSW
- Roads and Maritime Services
- Parramatta Light Rail Stage 1 and 2
- City of Parramatta
- mProjects (on behalf of Payce)
- Keyplan
- City Plan (on behalf of Holdmark and Goodman)

1.7 Report structure

This report is structured as follows:

- **Section 2: Strategic Context:** this brings together and summarises the background information and defines the physical context and transportation task affecting the study area
- **Section 3: Transport Context**: summarises the existing conditions of the study area and the future background conditions that will influence Melrose Park
- **Section 4: Melrose Park Structure Plans:** documents the planned land use proposed for Melrose Park and staging of the development
- **Section 5: Transport Modelling:** describes the transport modelling process as agreed with Transport for NSW, Roads and Maritime Services, Department of Planning and Environment and City of Parramatta
- **Section 6: Appraisal of the Melrose Park Structure Plans:** outlines the performance of the functional elements of the multi-modal transport network identified in the Melrose Park structure plans, and identifies infrastructure and service requirements to meet the desired standards of service
- **Section 7: Implementation Plan**: documents an integrated package of measures recommended to be implemented for Melrose Park.
- **Section 8: Conclusion and recommendations**: Summarises the key findings and outcomes of the TMAP.

Figure 1.1 : Melrose Park TMAP study area



1. INTRODUCTION

2. STRATEGIC CONTEXT

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2. STRATEGIC CONTEXT

2.1 Overview

This section reviews key NSW state and local government strategies and policies for land use and transport in and around Greater Parramatta Olympic Peninsula including Melrose Park. It provides a snapshot of the spatial planning and policy elements that may influence land use and transport outcomes for Melrose Park. This section presents an overview of the strategic land use and transport context and documents current and future land use and transport trends and projections.

2.1.1 Metropolitan and district context

Melrose Park is located 6km east of the Parramatta CBD which is in the geographic centre of the Sydney Metropolitan Region. With Parramatta identified as Sydney's second CBD, the region has an integral part to play in the provision of housing and jobs to Sydney.

The *Central District Plan* projects an additional 207,500 new dwellings and 210,000 new jobs by 2036. In the longer term, the district is projected to be home to up to over 2 million people and contain almost 1 million jobs by 2056. These projections are shown in Figure 2.1

The *Future Transport Strategy 2056* released in 2018 commits the NSW Government to a number of actions for improving transport to and within Parramatta CBD and Greater Parramatta Olympic Peninsula (GPOP). It is recognised that in its role as a CBD, the GPOP transport system must balance the need of all customers as well as align with current and future land use.

Melrose Park is surrounded by some of Greater Sydney's fastest growing strategic centres, presenting residents with significant employment options within close commute of home. The recently announced Sydney Metro West and Parramatta Light Rail Stage 2 project provides a unique opportunity to deliver a world-class transit system which can have a catalytic role in transforming Parramatta CBD and GPOP into a series of interconnected, sustainable and livable precincts. These public transport improvements provide an integrated transport and land use solution that is able to fully realise the benefits of the Parramatta CBD's multiple activity generators.

Melrose Park is strategically located to create strong synergies between the proposed light rail and future metro network and the economic activity centres of Parramatta CBD, Sydney CBD, Olympic Park, Macquarie Park, and Norwest. Current NSW Government policies and strategic directions will help shape a transport vision for Melrose Park which will include strengthened regional transport links, improved connectivity and sustainability.

Figure 2.2 presents Sydney's metropolitan transport network and its relationship with Melrose Park. The location of Melrose Park to GPOP presents a significant opportunity to deliver a strategy that will harness the multiple benefits of a sustainable regional transport system and a highly accessible urban form. The Melrose Park TMAP will assist in achieving a key aspect of the Metropolitan Strategy by strategically identifying a connected network of places that allow residents, workers and visitors to safely and efficiently access public transport improvements and surrounding land uses and amenities.

Figure 2.1 : Central District population and job growth

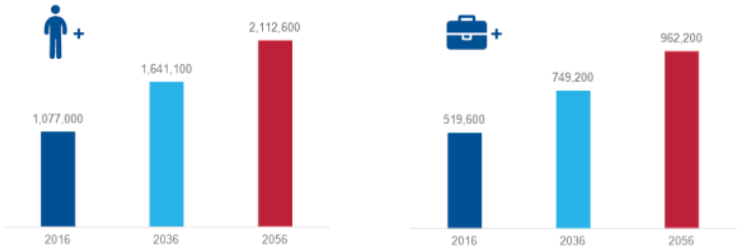
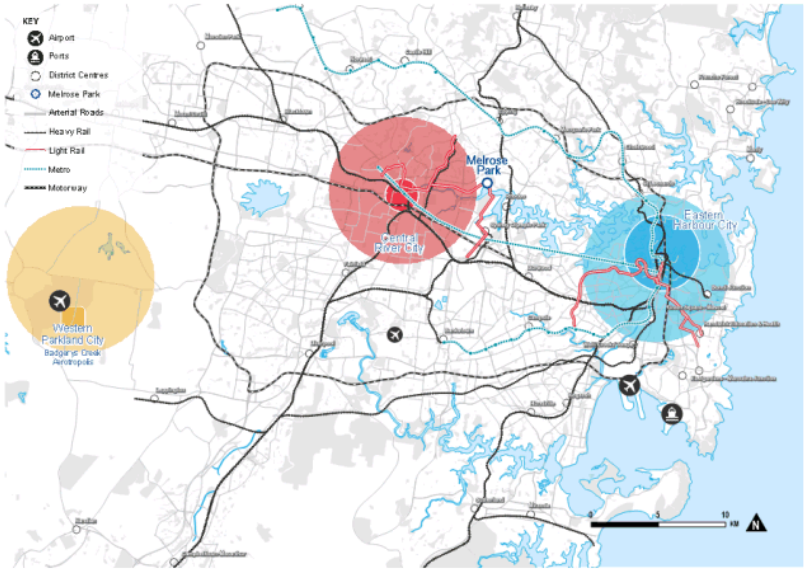


Figure 2.2 : Metropolitan and district context



2. STRATEGIC CONTEXT

2.2 GPOP context

Greater Parramatta Olympic Peninsula (GPOP) is comprised of the Parramatta CBD and several other distinct components including North Parramatta, Westmead, Rosehill Racecourse, Carter Street Activation Precinct, UWS Rydalmere, Sydney Olympic Park, Parramatta Road Urban Transformation, Rydalmere and Camellia industrial precincts. The Greater Sydney Commission has also recently included Melrose Park within the GPOP boundary. Many of these areas have been identified for potential redevelopment incorporating mixed use centres, which is expected to lead to increasing public and private sector investment in GPOP.

GPOP is at the heart of a second 'central' city, supported by a network of strategic centres including areas such as Melrose Park will become increasingly important as they work to help deliver the 30-minute city. Melrose Park sits within GPOP, and is surrounded by strategic and secondary employment and residential centres with significant public and private sector investment already underway.

Population and employment in GPOP are set to grow dramatically, putting more pressure on existing transport services and requiring major public transport improvements to the network. By 2056 there are planned to be an extra 370,000 residents and 200,000 jobs in GPOP. Forecast residential and employment growth for GPOP is shown in Figure 2.3.

The recently released *Future Transport Strategy 2056* shows that major investment such as Sydney Metro West and PLR Stage 2 via a new bridge across the Parramatta River will transform the surrounding area and GPOP including Melrose Park. Such transformation manifests itself as opportunities for best practice higher density developments that will attract residents looking for affordable housing in a centralised location with strong public transport links to Parramatta CBD and Sydney CBD within 30 minutes.

PLR Stage 1 will be introduced through the Parramatta CBD connecting the major educational and health facilities of Westmead and Rydalmere with provide faster and more frequent services. The recent announcement of PLR Stage 2 (refer to Figure 2.4) connecting Rydalmere to Melrose Park and Sydney Olympic Park will also make an important contribution to enhancing the sustainability of GPOP and improving its livability. PLR Stage 2 will play a positive role in stimulating urban renewal at Melrose Park connected by an integrated transport network to provide both housing and access to employment by connecting people and places.

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Figure 2.3 : GPOP population and employment growth

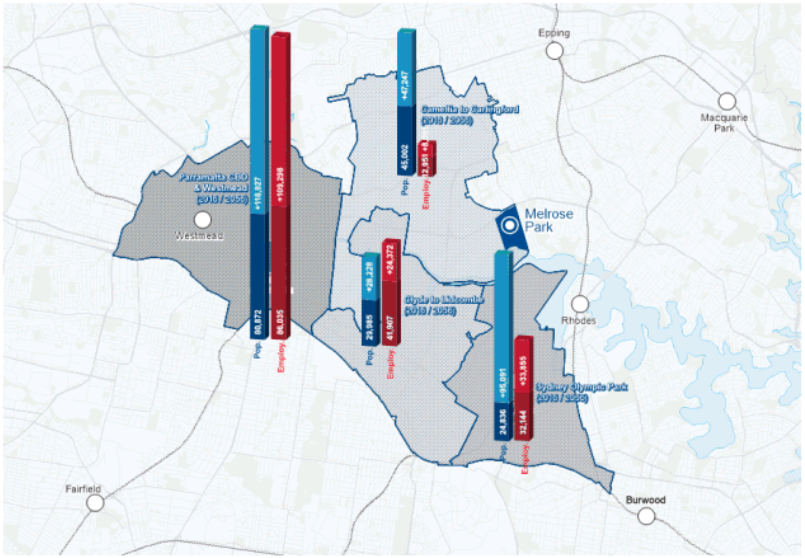
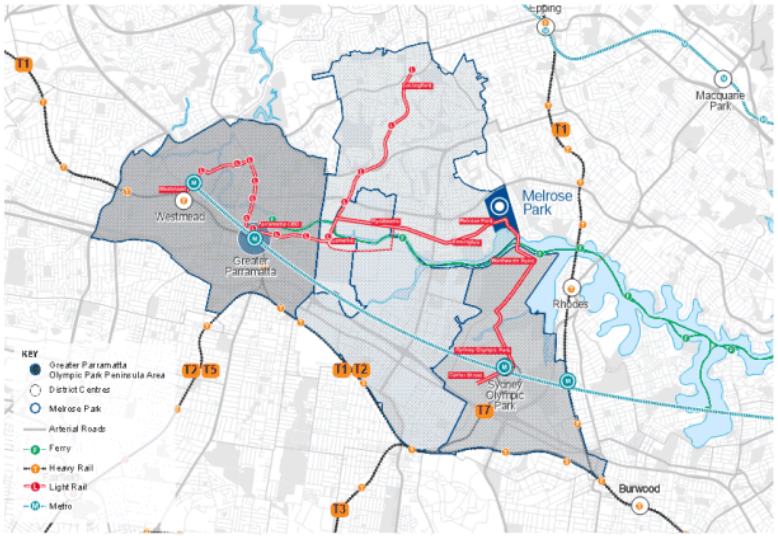


Figure 2.4 : GPOP context



2. STRATEGIC CONTEXT

JACOBS

2.3 Precinct and local context

Both the northern and southern Melrose Park precincts are located in an industrial site within an existing suburban area. The current block size (defined by the street network) is significantly larger than the block size commonly found in higher density urban areas. These large existing blocks present the opportunity for the street network layout proposed for the Melrose Park structure plan to connect well to the surrounding streets and offer good connectivity and permeability for the site. The blocks within the development are of a finer scale than the surrounding street areas and is further discussed in Section 4.

The Melrose Park precinct is well located in relation to several of Sydney's key strategic centres. The precinct incorporates effective connections to the transport system and provides good access to the Sydney CBD and key centres of economic activity across Sydney. A number of future public transport connections that would serve Melrose Park are planned or under investigation. The overall structure plan has been developed to facilitate and integrate with these opportunities if or when they are implemented. Some of these strategic corridors connecting the site include:

- Victoria Road
- Concord Road linking Ryde Bridge
- Connections to John Whitton Bridge
- Parramatta Light Rail Stage 2 connecting to Sydney Park via Melrose Park
- New bridge crossing across Parramatta River via Wharf Road (under investigation)

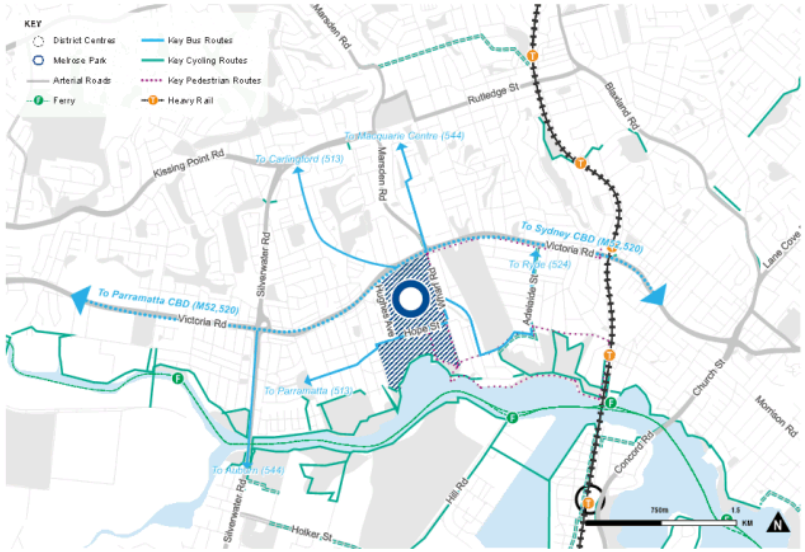
Major elements of the existing integrated transport network for the Melrose Park are shown in Figure 2.5. Key features of the network are outlined below:

- Trunk bus services between Parramatta CBD and Sydney CBD via Victoria Road are provided by the Route M52 and Route 520
- Key walking connections serving Melrose Park include Victoria Road, Hope Street, Adelaide Street, Hughes Avenue, Constitution Road West and Parramatta River Foreshore
- Key cycling routes serving Melrose Park include Parramatta River Foreshore, Andrew and Adelaide Streets, and bridges across Parramatta River (at Silverwater Road, Concord Road Street and John Whitton Bridge)
- Four key access corridors for general traffic serving destinations within Melrose Park include Victoria Road, Wharf Road, Hughes Avenue and Hope Street.

Melrose Park has a significant opportunity to raise the quality of sustainable transport as well as the built environment along and near the identified PLR Stage 2 corridor along Hope Street and Waratah Road, with a new bridge across Parramatta River connecting to a proposed new metro station at Sydney Olympic Park. The key to successfully implementing this city transformation project for the Melrose Park precinct is capitalising on opportunities created through carefully considered planning and urban design strategies along the Hope Street corridor in order to create a series of interconnected, sustainable and liveable precincts.

The enhanced public transport service with proximity to light rail stops and a potential new bridge across Parramatta River will encourage 'transit-oriented development', where the Melrose Park precinct urban design and built form can benefit from active transport links to public transport, whilst reducing the reliance on car access and parking in the medium to longer term.

Figure 2.5 : Major elements of existing network



2. STRATEGIC CONTEXT

JACOBS

2.4 Planning and policy context

The Commonwealth, State and Local Governments have recognised the importance of maintaining the economic growth and liveability within cities and urban areas, and have introduced a number of strategic plans to support future development within the Greater Sydney Metropolitan Area and GPOP. This section focuses on the most significant plans which shape the land use and transport context for Melrose Park. A summary of the key planning documents relevant to the Melrose Park, both regional and local, is provided in Table 2.1. They key output of TfNSW's *Future Transport Strategy 2056*, the proposed city-shaping and city-serving network, is shown in Figure 2.6.

Figure 2.6 : Future Transport 2056

Table 2.1 : Planning and policy context

Document	Overview	Implications for Melrose Park
Greater Sydney Regional Plan	The Greater Sydney Region Plan, *A Metropolis of Three Cities* is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities, services and great places.	It is noted that Melrose Park: • Is strategically located in close proximity to both the Eastern and Central cities • Is well placed to provide 30-minute access to both of these cities as well as a significant number of strategic centres via active and public transport
Central West District Plan	The final district plans released in 2017 set out a strategic vision for each of the districts, having regard to economic, social and environmental objectives, and identifying priority growth areas.	The key implications to the Melrose Park precinct includes the following priorities: • Support the Greater Parramatta and the Olympic Peninsula (GPOP) vision • Encourage employment growth • Create a more connected District • Improve housing design and diversity • Improve access and health of waterways The proposed development of Melrose Park is strongly aligned with all of the above priorities. It presents a unique opportunity to be an exemplar development for the vision of the West Central District.
Greater Parramatta Olympic Peninsula	GPOP refers to Greater Parramatta and Olympic Peninsula. GPOP is set to undergo a significant rate and scale of growth over the next 20 years. Greater Sydney Commission has delivered a strategic vision for the area and has also designed Growth Infrastructure Compacts which will match housing and jobs growth with timely and cost- effective delivery of infrastructure.	Melrose Park is included in the GPOP area and the proposed development is strategically well placed to provide housing, jobs and services which will support the growth of the peninsula.
Future Transport Strategy 2056	The strategy provides plans and initiatives for the next 40 years of how people will live, work and move across the state A key component of the strategy is the Greater Sydney Services and Infrastructure Plan which shows significantly improved connections from Melrose Park to Parramatta via Parramatta Light Rail and to the Eastern City via Sydney Metro West.	Both the Central and Eastern city centres will be able to be reached within approximately 30 minutes from Melrose Park via active and public transport, a key metric identified in Future Transport 2056. This connectivity will make the Melrose Park site an ideal location for urban renewal and best practice higher density development.
State Infrastructure Strategy	The State Infrastructure Strategy (SIS) sets out the government's priorities for the next 20 years, and combined with the Future Transport Strategy 2056, the Greater Sydney Region Plan and the Regional Development Framework, brings together infrastructure investment and land-use planning for our cities and regions..	Key directions specific to Melrose Park and the Central City include: • Improve intercity and intracity transport connections. • Improve north-south transport connections, for example Greater Parramatta to Epping and Greater Parramatta to Kogarah via Bankstown. • Support growth in population and housing, including social and affordable housing options

2. STRATEGIC CONTEXT

3. TRANSPORT CONTEXT

JACOBS

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3. TRANSPORT CONTEXT

3.1 Overview

This section reviews the existing, planned and proposed transport and land use conditions that will influence the development of the Melrose Park precinct. For the purposes of this of the Melrose Park TMAP it is important to understand the operation of the existing and future transport systems serving the current precinct within the study context.

3.2 Existing transport network

The existing network contains the primary access routes for Melrose Park, including:

- Public Transport – The major existing bus, ferry and rail corridors providing access to, through and within Melrose Park.
- Private vehicles– The major routes for private vehicles, service and delivery vehicles, freight and taxis/ride-share vehicles providing access to, through and within Melrose Park.
- Active Transport – The major walking and cycling routes providing access to, through and within Melrose Park.

An overview of the existing transport network is shown in Figure 3.1. Accessibility to and from Melrose Park within 30 minutes by public and active transport is shown in Figure 3.2. Approximately 45,000 residents and 28,000 jobs are currently located within a 30-minute public transport journey of Melrose Park (Figure 3.2).

Figure 3.1 : Strategic transport network serving Melrose Park

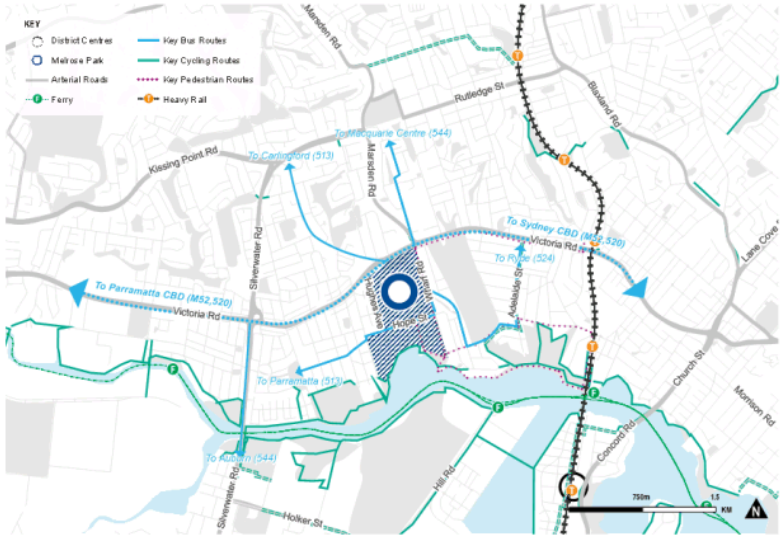
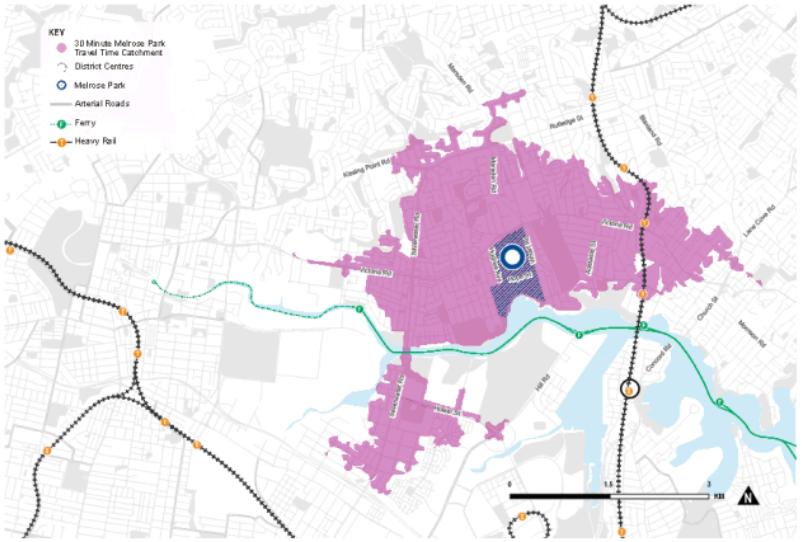


Figure 3.2 : Existing 30-minute public transport catchment from Melrose Park



3. TRANSPORT CONTEXT

JACOBS

3.3 Public transport network

3.3.1 Bus

Trunk bus services between Parramatta CBD and Sydney CBD via Victoria Road are provided by the Route M52 (6/hr in peak) and Route 520 (2/hr in peak). Bus services between Top Ryde and the Sydney CBD are more frequent but do not service the site directly.

These routes provide a direct and frequent service between Melrose Park and the Sydney CBD and Parramatta CBD. While travel times are relatively slow and unreliable (especially on Victoria Road east of Melrose Park), they are somewhat competitive with driving times. While there is generally spare passenger capacity on these services in the vicinity of Melrose Park, as bus routes get closer to the Sydney CBD, bus congestion on Victoria Road and in the Sydney CBD start to constrain passenger capacity on these routes.

Other bus routes serving Melrose Park include:

- Route 513 – Carlingford to Meadowbank Wharf (2/hr in peak)
- Route 523 – Parramatta – West Ryde (2/hr in peak)
- Route 524 – Parramatta – West Ryde (2/hr in peak)
- Route 544 – Auburn – Macquarie Centre (2/hr in peak).

These routes are relatively indirect and infrequent, offering a poor quality of service. The travel times for these north-south bus routes serving strategic centres are uncompetitive with driving times. As a result, there is generally spare capacity on these services.

Bus passenger loading data from Opal counts at locations near Melrose Park in both the inbound and outbound directions in May 2017 are summarised in Figure 3.3 and Figure 3.4 below. A summary of the data shows:

- Significant spare capacity on services traveling to Parramatta with spare seats available on all services. It is expected that a significant number of Melrose Park residents will travel to Greater Parramatta as jobs and services in the area increase over time.
- Several bus services are operating close to capacity in the eastbound direction through Melrose Park. It is expected that additional capacity will be required to allow Melrose Park residents to access destinations in the Eastern City.

Figure 3.3 : M52 bus loading - to Parramatta

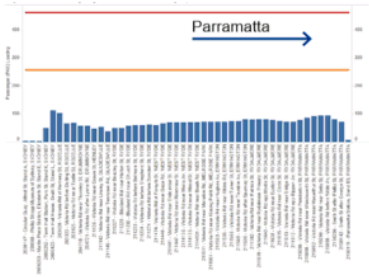
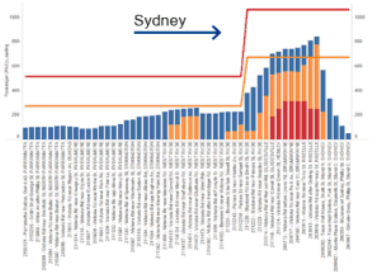


Figure 3.4 : M52 bus loading - to Sydney



Planned Bus Improvement – Victoria Road

TfNSW is currently planning bus priority improvements along Victoria Road. This project will improve travel times for public transport services in the Victoria Road Corridor between Sydney CBD and Parramatta CBD. Services will be faster and more frequent, with improved bus priority, wider stop spacing and high quality interchanges with consistent wayfinding and signage. These improvements will also enable local bus networks to be streamlined to connect with Victoria Road services and take advantage of faster travel speeds.

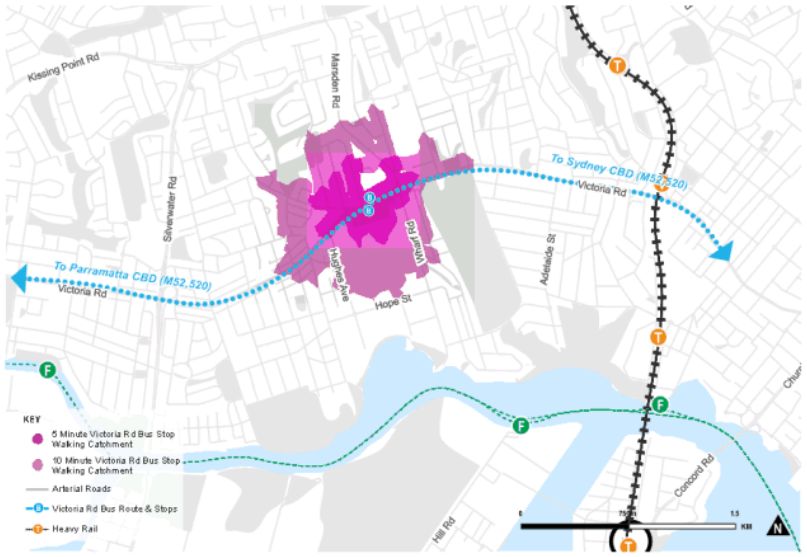
This offers an excellent public transport opportunity for Melrose Park because:

- It provides a high-frequency bus connection to destinations along the Victoria Road corridor, connecting to both the Sydney CBD and Parramatta CBD.
- It would deliver improved levels of reliability and capacity (the existing bus services currently experience significant delays due to traffic congestion).
- It can be designed to facilitate integration of bus services with Parramatta Light Rail (PLR) Stage 2, in terms of their services patterns and their respective operation within the street network.

Bus Stop Catchment

An analysis of the walk-up catchment for the existing bus stops on Victoria Road demonstrates that approximately half of the Melrose Park development site is within a 10-minute walk of bus services. This journey also involves an uphill grade from the site to Victoria Road. This catchment is shown in Figure 3.5.

Figure 3.5 : Victoria Road bus stops - 5 and 10-minute walking catchments



3. TRANSPORT CONTEXT

JACOBS

3.3.2 Rail

The north-eastern corner of the proposed Melrose Park precinct is approximately a 1.9 km walk from West Ryde Station and the south-eastern corner of the proposed Melrose Park precinct is approximately a 2.1 km walk from Meadowbank Station. Melrose Park is outside the generally accepted walk-up catchment of nearby rail stations, meaning that access to the rail network needs to be provided by linked trips involving kiss and ride, bus access, shuttle services, on-demand services or access by bicycle.

The Northern Line (T1) serving West Ryde and Meadowbank (the two closest stations to Melrose Park) are served by 5 trains per hour in the AM peak (7:00-9:00am) and 4 trains per hour over the rest of the day. The travel time between West Ryde and Town Hall is around 32 minutes. Bus services currently offer a faster public transport option between Melrose Park and Parramatta than train.

TfNSW's travel statistics for 2016 report peak hour loadings and passengers as a percentage of seat capacity on T1 North Shore rail services (refer to Figure 3.6). Rail loadings are higher on services towards the city in the AM peak an approaching capacity at North Strathfield.

Planned rail improvement – Sydney Metro West

TfNSW is currently planning Sydney Metro West, a new metro line connecting Parramatta and Sydney central business districts. This project will be located on a corridor between the Parramatta River and existing T1 Western Line. The currently proposed rail alignment (see Figure 3.7) envisages new railway stations at Westmead, Parramatta, Sydney Olympic Park, the T1 Northern Line, the Bays Precinct and at Sydney CBD and is expected to be able to move up to 40,000 passengers an hour in each direction.

This offers an excellent public transport opportunity for Melrose Park by:

- Providing a high frequency, fast rail connection to both the Sydney CBD and Parramatta CBD. Trains departing as frequently as every 2 minutes.
- Providing significant additional rail capacity which will relieve the currently constrained heavy rail network. The new line will be able to carry up to 40,000 people per hour in each direction.

For Melrose Park to benefit from the new east-west connectivity that Sydney Metro West will provide, a fast, direct, high frequency intermediate service linking Melrose Park to the future metro station at Sydney Olympic Park will be required. This is planned to be provided by Stage 2 of Parramatta Light Rail (PLR2) but will be required for Melrose Park even if PLR 2 does not proceed. If well connected to the proposed metro, the Melrose Park development could be a valuable source of patronage for Sydney Metro West.

Planned rail improvement – T1 Northern Line

The need for rail capacity enhancements for the T1 Northern Line was identified in the *Rhodes East Investigation Area Traffic and Transport Report - 2017*. This report also considered the quadruplication of the T1 Northern Line through Rhodes and north over the Parramatta River rail bridge, allowing more services to stop at West Ryde, Meadowbank and Rhodes Stations.

The future introduction of Sydney Metro City & Southwest timetable adjustments will cater for increased capacity via additional services and less crowded services at West Ryde, Meadowbank and Rhodes (with T1 Northern Line customers diverting on to the Metro at Epping, prior to reaching Rhodes) are also being investigated.

The Northern Sydney Freight Corridor Stage 2 will also improve the performance of the T1 Northern Line by improving separation of freight and passenger services on the corridor.

It is noted that the recently commenced Epping-Chatswood shutdown has coincided with increased services on the T1 Northern Line, now 8 per hour in the peak. These services will continue following the implementation of Sydney Metro North West and provide a 60% capacity increase compared to the previous 5 services per hour.

These improvements offers an excellent public transport opportunity for Melrose Park by:

- Providing increased capacity for Northern Line services at West Ryde, Meadowbank and Rhodes Stations
- Supporting mode shift towards increased public transport trips
- Supporting the proposed shuttle services between Melrose Park and Meadowbank.

Figure 3.6 : T1 Northern Line loadings

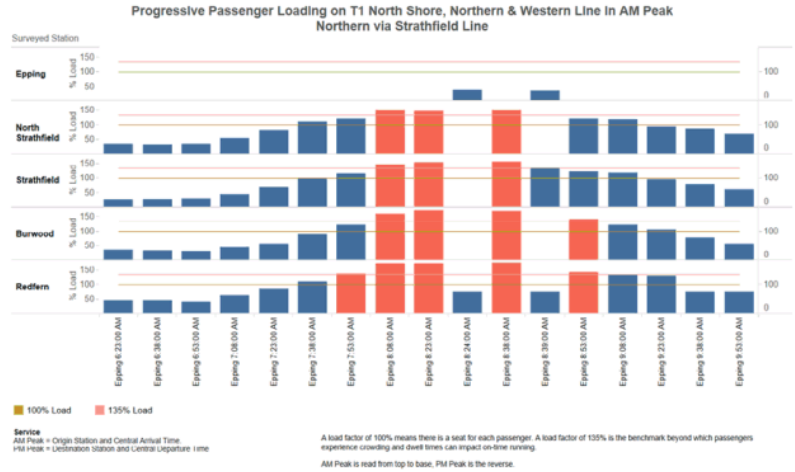
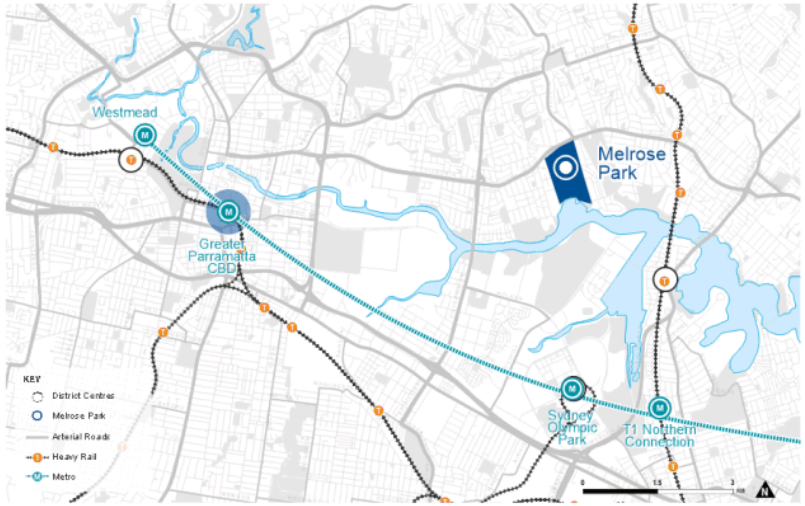


Figure 3.7 : Sydney Metro West (source: TfNSW)



3. TRANSPORT CONTEXT

JACOBS

3.3.3 Light rail

There is currently no light rail access in the vicinity of Melrose Park. Parramatta Light Rail Stage 1 will be introduced through the Parramatta CBD connecting the major educational and health facilities of Westmead and Rydalmere.

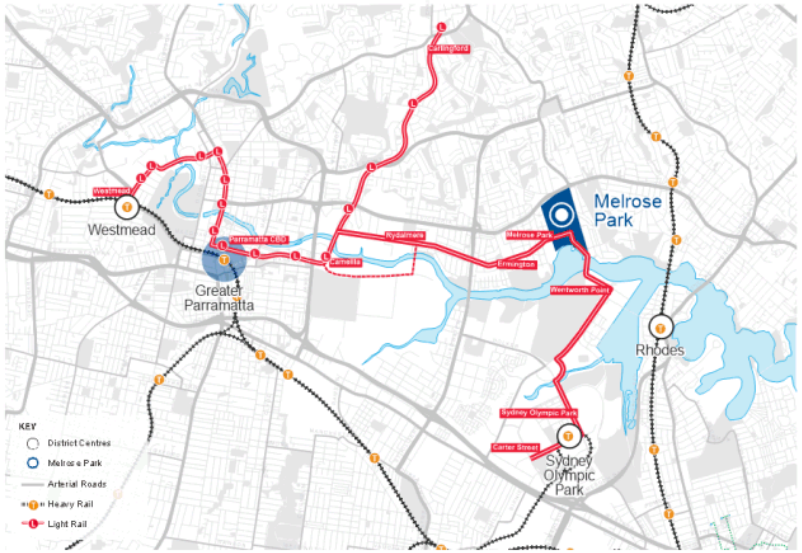
Planned light rail improvement – Parramatta Light Rail Stage 2

Parramatta Light Rail (PLR) Stage 2 is currently at the planning stage. The corridor under investigation connects Parramatta CBD with Sydney Olympic Park via Melrose Park using South Street, Boronia Street, Hope Street, Waratah Street, new bridge across Parramatta River, Hill Road, Australia Avenue and Carter Street. TfNSW is currently undertaking a final business case for PLR Stage 2 which is due to be completed by December 2018. Figure 3.8 shows the proposed alignment

This offers an excellent public transport opportunity for Melrose Park by:

- Better integrating Parramatta CBD with Rydalmere, Melrose Park, Wentworth Point and Sydney Olympic Park
- Providing an attractive and accessible service and the potential to reduce the need for car trips and car-parking use at Melrose Park
- Facilitating the development of higher density housing through better urban design and urban form at future light rail stops on Hope Street and Wharf Road.

Figure 3.8 : Proposed Parramatta Light Rail alignment (source: TfNSW)



3.3.4 Ferry

The existing ferry network is shown in Figure 3.9. Ferries currently run between Meadowbank Ferry Wharf and Circular Quay around twice per hour during the day. The trip takes approximately 50 minutes. Ferries currently run between Meadowbank Ferry Wharf and Parramatta once per hour and the trip takes 33 minutes.

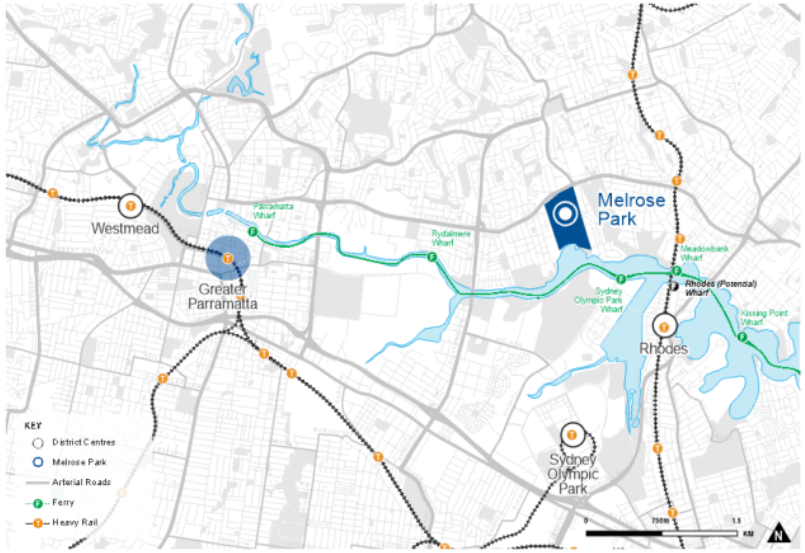
Parramatta River services have a higher proportion of travel for recreation than all Sydney ferry services, with a longer access trip, a longer ferry trip and a higher proportion of older passengers than the Sydney average. The current services are relatively slow and experience low patronage during the working week and overcrowding during the weekends.

Current commuter ferry services have capacity to accommodate future growth projected along the Parramatta River to the Parramatta CBD. Parramatta customers will continue to transfer to the Rivercat service at Rydalmere. Services will continue to operate directly to Parramatta in off-peak times and on weekends, reflecting demand.

Planned ferry improvement – Rhodes East Wharf

Roads and Maritime and TfNSW are investigating ferry wharf options at Rhodes East including between the John Whitton Rail Bridge and Ryde Bridge. The future wharf location will ultimately be decided based on operational and navigational design parameters for Sydney Ferries to run between Rhodes East and Meadowbank. Roads and Maritime has advised that the new Rhodes wharf will be delivered within the next three to five years. Further community consultation in relation to the proposed wharf will be undertaken by Roads and Maritime.

Figure 3.9 : Existing ferry network



3. TRANSPORT CONTEXT

JACOBS

3.4 Road network

3.4.1 Existing strategic road network

The key features of the road network in the vicinity of the Melrose Park site are summarised below:

Victoria Road

Victoria Road is a State Road providing access between Parramatta and the western end of Anzac Bridge. It is currently carrying approximately 60,000 veh/day and there are approximately 2,000 bus services provided along Victoria Road on a weekly basis in the vicinity of the site. Whilst serving as a primary arterial road and movement corridor, there is still a significant amount of direct access to properties on both sides of the road in the vicinity of the development site.

There is significant traffic congestion at nearby intersections on Victoria Road during peak hours. There are delays and queues eastbound in the AM peak at both signalised intersections with Wharf Road / Marsden Road and Kissing Point Road. Similar delays and queues exist in the PM peak at the Wharf Road / Marsden Road intersection.

Wharf Road

Wharf Road is a local road which provides direct access to properties on both sides of the road. Its main function is to facilitate the convenient and safe movement of local traffic to and from Victoria Road. This road generally provides two traffic lanes with parking on both sides. The road has a posted speed limit of 50km/h.

Hope Street

Hope Street is a local road which provides direct access to properties on both sides of the road. The Boronia Street-Hope Street-Andrews Road corridor distributes traffic within residential and industrial areas. These roads form a link between the local and higher order road network. This road generally provides two traffic lanes with parking on both sides. The road has a posted speed limit of 50km/h.

Hughes Avenue

Hughes Avenue is a local road which provides direct access to properties on both sides of the road. This road generally provides two traffic lanes with parking on both sides. The road has a posted speed limit of 50km/h.

Key issues and opportunities of the existing road network are summarised in Table 3.1 below.

A summary of the function of key roads in and around the Melrose Park precinct is summarised in Figure 3.10. This is based on observations pertaining to existing traffic volumes and the type of trips currently facilitated by particular corridors. The presented hierarchy is not intended to strictly correlate with the classification and governance structure of these assets i.e. some sub-arterial corridors are state roads whilst others are local roads.

Planned road improvement – Devlin Street

RMS are currently investigating improvements to intersections at Devlin Street, Blaxland Road and Parkes Street. These works were announced after the finalisation of future network assumptions for the project and have not been included in this modelling. Observed congestion in future traffic modelling at this location is likely to be significantly improved by these works.

Figure 3.10 : Indicative road hierarchy

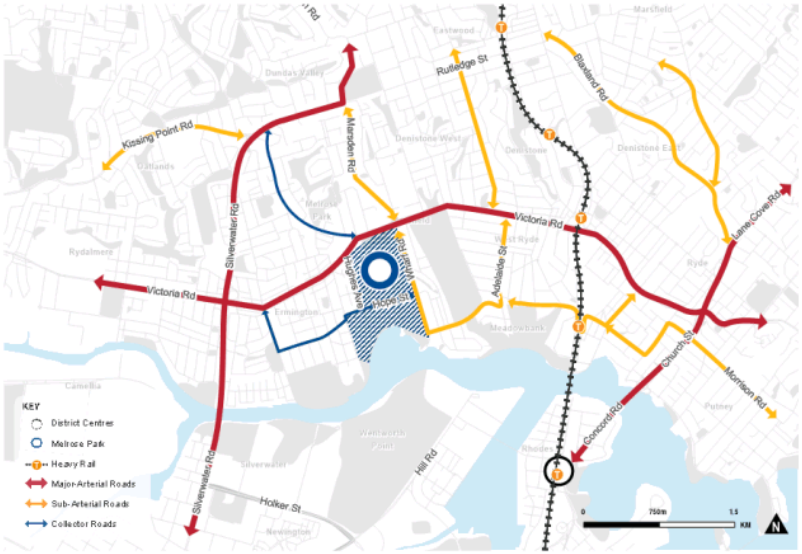


Table 3.1 : Key road access corridors serving Melrose Park

General Traffic Corridor	Role / Function	Opportunities
Victoria Road (A40)	Regional route and predominant movement corridor fronting Melrose Park and providing the most direct access for the development	Direct access from major arterial roads is generally discouraged as it may reduce efficiency of the corridor. Possible opportunities for left in left out access to relieve congestion on local roads
Wharf Road	Local access route along eastern edge of Melrose Park, providing alternative route into the development	Restricted by capacity to access by intersection on to Victoria Road. Opportunity to distribute traffic to reduce congestion.
Hughes Avenue	Local access route along western, edge of Melrose Park, providing alternative route into the development	Restricted to left in left out at priority intersection. Additional access to west and Parramatta.
Hope Street	Local access route along southern, edge of Melrose Park, serving as a local 'back route' and providing alternative route into the development.	Circuitous alternative route already in use to Meadowbank Station and Concord Road that avoids Victoria Road. Forms part of planned route for PLR Stage 2.

3. TRANSPORT CONTEXT

JACOBS

3.4.2 Existing traffic volumes

Peak hourly traffic volumes on selected roads in the study area, available from Aimsun Model, are summarised in the figure below depicting the traffic survey data collected in 2017. The key points from the traffic volumes include:

- Victoria Road, Silverwater Road and Church St/ Devlin Street carry significant traffic volumes of between 2,000 – 3,000 vehicles per hour in the peak direction.
- The section of Victoria Road east of Wharf Road carries the most traffic along this movement corridor.
- The Andrew Street/Constitution Road corridor performs a sub-arterial function and serves as an alternative east-west corridor to Victoria Road, with flows of up to 1,000 vehicles per hour.

These volumes are shown in Figure 3.11 and Figure 3.12.

Figure 3.11 : Existing traffic volumes AM peak hour

Figure 3.12 : Existing traffic volumes PM peak hour

3. TRANSPORT CONTEXT

JACOBS

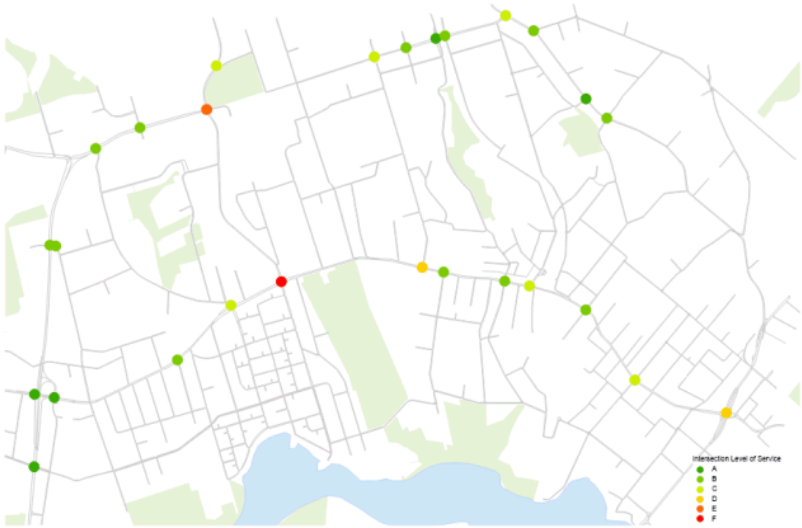
3.4.3 Intersection Performance

The existing intersection performance of the Melrose Park study area was analysed using the Aimsun model for peak conditions (AM and PM peak) for 2017. The results of the analysis are presented in Figure 3.13 and Figure 3.14. The key points from the intersection performance include:

- Significant delays are observed along Victoria Road near Melrose Park at Wharf Road. The remaining intersections on Victoria Road perform satisfactorily with the exception of Church Street intersection in both peak periods and the West Parade intersection in the PM peak.
- Significant eastbound delays are observed on the Kissing Point Road/Stewart Street corridor in the AM peak, particularly at the Stewart Street/Marsden Road intersection.

Figure 3.13 : Existing intersection level of service AM peak hour

Figure 3.14 : Existing intersection level of service PM peak hour



3. TRANSPORT CONTEXT

JACOBS

3.4.4 Network Performance

A summary of the key existing performance indicators for general traffic, namely travel time and average vehicle speed, have been summarised in Table 3.2 and Table 3.3. The key points from the network performance include:

- Average speeds of approximately 33km/h in both the AM and PM periods indicates that the overall network performs relatively well, considering the modelled network is in an urban environment and does not include any motorways
- There is more demand for travel in the PM period with approximately 25,000 more km traveled across the four hours compared to the AM period
- All of the modelled traffic is able to enter the network in both modelled periods i.e. there is no unreleased traffic .

Table 3.2 : Travel time (2017)

		6:00am – 10:00am	3:00pm – 7:00pm
Victoria Road (between Silverwater Road and Devlin Street)	EB	12:14	11:23
	WB	9:02	12:16
Silverwater Road/Stewart Street (between South Street and Marsden Road)	NB	10:10	7:10
	SB	5:37	4:43
Wharf Road/Marsden Road (between Andrew Street and Stewart Street)	NB	5:40	7:54
	SB	4:05	4:19

Table 3.3 : Network statistics (2017)

	6:00am – 10:00am	3:00pm – 7:00pm
Vehicle kilometres travelled (VKT)	332,582	356,925
Vehicle hours travelled (VHT)	9,982	10,985
Average network speed (km/h)	33.3	32.5
Unreleased traffic (veh)	0	0

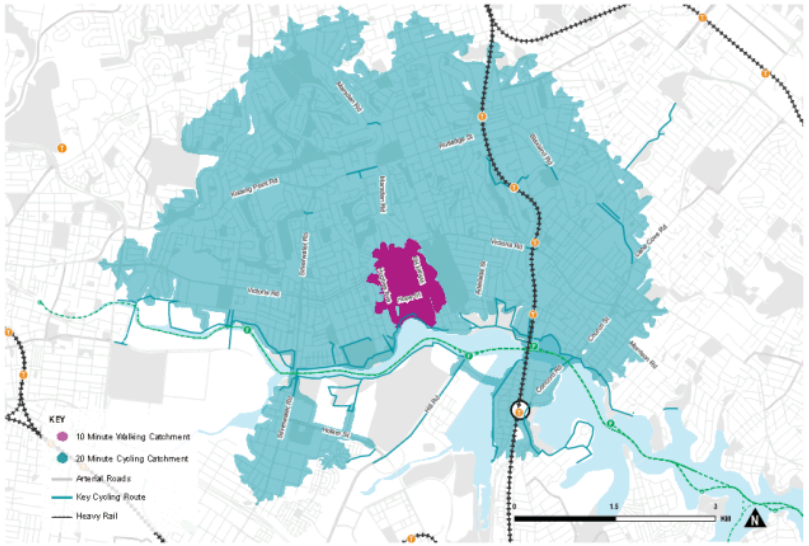
3.5 Pedestrian and cycling network

Figure 3.15 shows the current walking and cycling catchment from Melrose Park. The catchment analysis is indicative only and does not take into account locations in the road network which may be difficult for pedestrians and cyclists to traverse, such as major grade separated intersections. It does however provide a useful strategic assessment of active transport accessibility.

The catchments show that:

- Limited public transport services are within the existing walking catchment of Melrose Park
- Significant services and centres are within a 20 minute cycle of Melrose Park. These include:
  - T1 Northern Line
  - Rydalmere industrial area and future PLR stage 1
  - Sydney Olympic Park
  - Rhodes
  - Top Ryde.

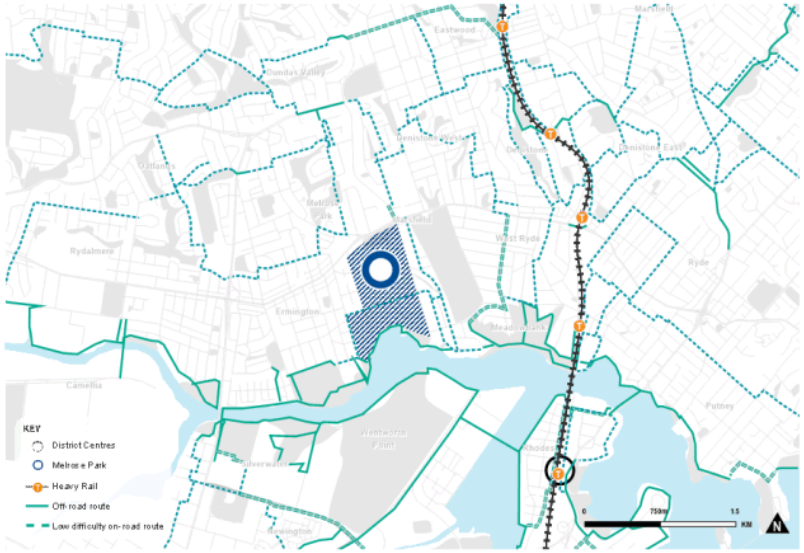
Figure 3.15 : Walking and cycling catchments from Melrose Park



3. TRANSPORT CONTEXT

JACOBS

Figure 3.16 : Cycling routes



Existing off-road and low difficulty on-road cycling routes are shown in Figure 3.16 and are summarised in Table 3.4, below.

Table 3.4 : Key cycling connections serving Melrose Park

Connection	Role / Function	Route
Parramatta River Foreshore Pathway active transport shared path	Recreational and commuter cyclist connection to Meadowbank ferry wharf (and potentially station)	Parramatta River Foreshore Pathway east of the Melrose Park development (includes short section of Lancaster Avenue)
Southern precinct of Melrose Park to Victoria Road (West Ryde)	Local cycle connection	Andrew Street, Adelaide Street
Active transport shared path connections to southern side of Parramatta River and to Foreshore Pathway on southern side of river	Recreational and commuter cyclist connection to southern side of Parramatta River	Bridges across Parramatta River (Silverwater Road, Concord Road)

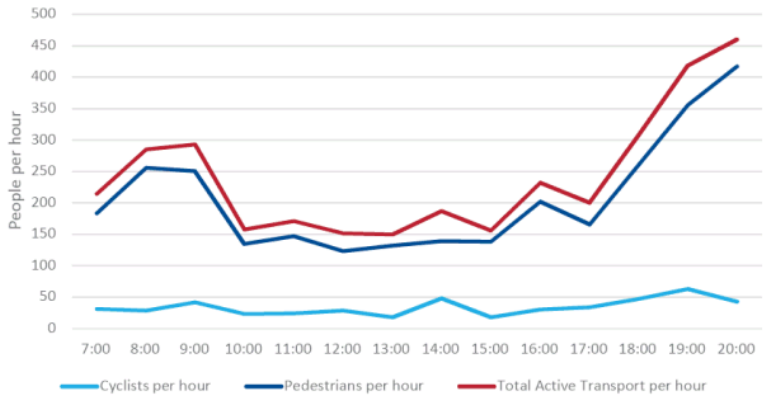
Bennelong Bridge active transport use

Surveys have been undertaken of active transport use on the Bennelong Bridge, connecting Wentworth Point and Rhodes. These surveys give an indication of the willingness of residents in the areas surrounding Melrose Park to use active transport if given safe and direct access to key centres.

Figure 3.17 outlines the results of the survey undertaken in November 2017. It is observed that:

- There is significant all-day use of the bridge by both pedestrians and cyclists.
- In the PM peak hour, over 50 cyclists and over 400 pedestrians utilise the bridge.
- Approximately 3,500 active transport trips are made across the bridge between 7:00am and 8:00pm.

Figure 3.17: Bennelong Bridge active transport use



3. TRANSPORT CONTEXT

JACOBS

3.6 Existing travel behaviour

Travel patterns to, from, through and within Melrose Park and GPOP have been analysed using data extracted from a range of sources including the Australian Bureau of Statistics (ABS) 2016 Census journey-to-work (JTW), Household Travel Survey (HTS) and TfNSW Strategic Travel Model (STM).

3.6.1 Existing mode share

The current site's function and urban character without renewal is predominately industrial which influences the existing travel patterns and purpose of trips to and from the study area. A number of trips are generated by workers commuting to employment opportunities provided by established commercial and industrial businesses within the study area.

Considering the predominantly residential nature of the proposed development, travel zones with existing residential characteristics adjacent to Melrose Park have been chosen to provide a more robust assessment of existing and future travel behaviour.

The travel zones shown in Figure 3.18 have been used to examine current JTW travel patterns and behaviour within and in proximity to Melrose Park.

Figure 3.19 and 3.20 show that trips to and from Melrose Park are predominantly undertaken by private vehicle, particularly for trips to the study area. Of more relevance to the future residential development, non-car mode share for commuting trips from the study area is currently 23%.

Figure 3.19 : Mode share for residents commuting from Melrose Park

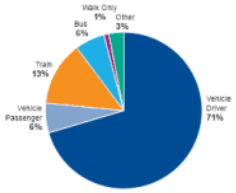


Figure 3.20 : Mode share for workers commuting to Melrose Park

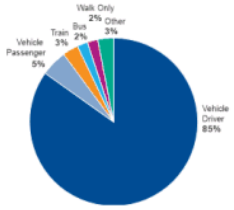
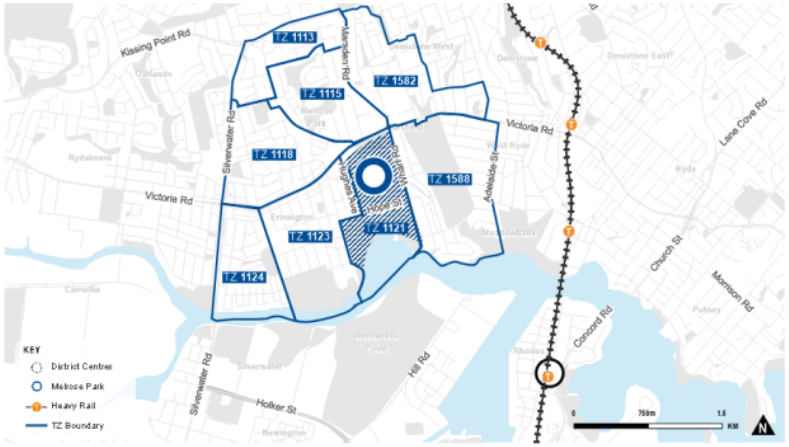


Figure 3.18 : Travel Zones - Melrose Park and surrounds



3.6.2 Existing trip purpose

A summary trip purpose is shown in Figure 3.21. This data is obtained from the Household Travel Survey (HTS). The Melrose Park data has been compared to the average trip purpose breakdown for the entire Sydney region. HTS data is available at the SA3 level so for the propose of this assessment the Melrose Park data has been derived from the Carlingford SA3 data. It is observed that:

- Commuter trips from Melrose Park make up a slightly higher proportion than the Sydney average.
- Trips for work related business, education, shopping and social/recreation from Melrose Park make up a slightly lower proportion than the Sydney average.

3.6.3 Existing trip lengths

Figure 3.22 shows the trip length distribution for all trips in the GPOP area. It is observed that:

- Average weekday trip distances have slightly shortened, with more trips in 0-5km category.
- On weekends, that trend is reversed, with more people taking longer trips (greater than 10km). This is indicative of a trend towards more car use for longer trips on weekends. This could particularly be the case if GPOP residents are traveling outside GPOP for discretionary weekend trips.
- Figure 3.23 shows that the breakdown of trips across the major weekday time periods has stayed relatively constant. There does not seem to have been any shift towards undertaking more off-peak travel in GPOP.

Figure 3.21 : Trip purpose

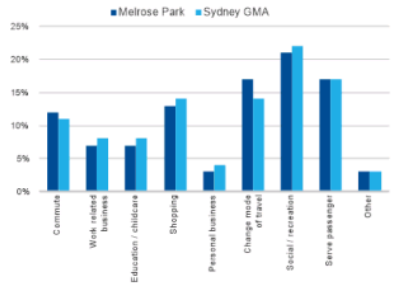


Figure 3.22 : Trip length distribution GPOP

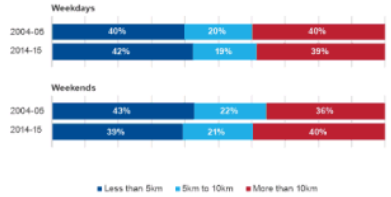
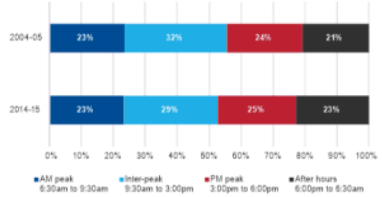


Figure 3.23 : Percentage of trips by time period



3. TRANSPORT CONTEXT

JACOBS

3.6.4 Existing trip distribution

The existing distribution of all trips leaving Melrose Park in the AM Peak has been analysed using TfNSW's Public Transport Project Model (PTPM), which is being used for planning of PLR Stage 1 and 2. Figure 3.24 shows the key 12 destinations – at the SA3 level – of these trips.

Figure 3.25 shows the destinations of all trips leaving Melrose Park at a '3 cities' level, with trips either remaining in the Central City or heading to the Eastern or Western Cities.

Both figures represent all modes of travel.

Several key observations can be made:

- A significant number of trips are relatively short and either remain in the Carlingford SA3 or travel to the adjacent Ryde-Hunters Hill SA3
- There is a strong desire line to the east of Melrose Park – due to the current imbalance of jobs and services in the Eastern City. 62% of trips originating around the Melrose Park precinct have destinations in the Eastern City.
- As the Parramatta CBD and wider Central City continues to grow it is expected that future residents of Melrose Park will be less reliant on the Eastern City. The existing 36% of trips which remain in the Central City is expected to increase.
- The balance of employment in Sydney has been shifting west, moving beyond the traditional employment hubs in the Eastern City

Figure 3.24 : Distribution of AM peak hour trips from Melrose Park - SA3 level (all modes)

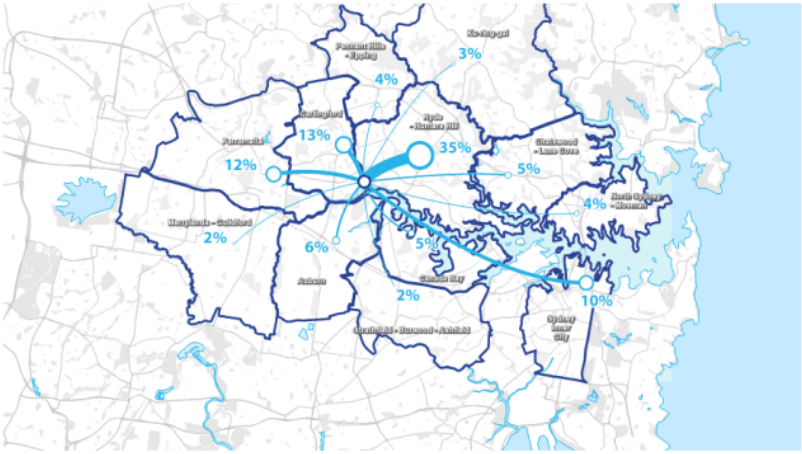
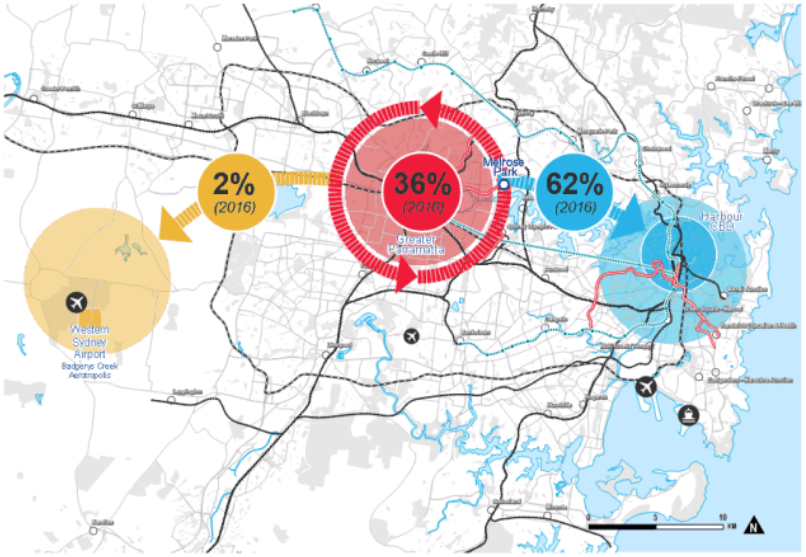


Figure 3.25 : Distribution of AM peak hour trips from Melrose Park - 3 cities (all modes)



3. TRANSPORT CONTEXT

4. MELROSE PARK STRUCTURE PLANS

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4. MELROSE PARK STRUCTURE PLANS

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4. MELROSE PARK STRUCTURE PLANS

4.1 Overview

The land uses within the Melrose Park northern and southern precincts will generate activity that will result in demand for travel. This section provides a guide to the location of the proposed land uses and activities generated by the planned development. This section describes the transport planning vision and objectives for Melrose Park to ensure that planning and investment in the transport network will result in positive outcomes, address the areas of highest priority, and cater for increased future transport demands resulting from the planning proposal.

4.2 The structure plans

The overall structure plans will provide public space that will connect Victoria Road to Parramatta River Foreshore with Melrose Park. The structure plans will also have a rich land-use mix, including housing, offices, town centre, retail, and amenities, connected by public landscape elements. Throughout the day, different happenings in the public domain, including daily work and leisure activities, and urban intersections will enable encounters between different users on site.

The structure plan has been developed in two parts, a northern and southern precinct separated by Hope Street. The structure plans have been developed by the respective proponents of the sites however they have been done so in a collaborative and consistent manner.

The TMAP process has considered the development as an entire combined precinct as agreed by the Project Coordination Group (PCG) in order to develop a consistent and coherent plan for transport and accessibility throughout the whole site, and its connection with the wider GPOP.

4.2.1 Northern structure plan

The northern structure plan has been adopted by City of Parramatta and is shown in Figure 4.1. It has been developed based on the following guiding principles:

- Urban Renewal in the Right Location
- Creating New Employment Opportunities
- Creating New Communities
- Connected Urban Renewal
- Well-Mannered and Environmentally Conscious

The land use plan has higher densities at key locations, increasing the potential for public transport share at key transit nodes. The major activities of Melrose Park are concentrated along the Victoria Road rapid bus corridor and planned light rail corridor along Hope Street. This improves access and provides the opportunity to increase walking and cycling, with the aim of reducing car dependency and overall parking requirements.

The former Bartlett Park site located on Victoria Road forms part of the northern precinct and has been re-zoned with DA approval for 1,200 dwellings.

A new town centre located on Hope Street will provide the focal point for the mixed use development and will contain the major commercial and retail uses. All this will be supported by a series of high quality public spaces which are to be dedicated to he City of Parramatta. The proposed development will create at least 1,500 full-time jobs within the town centre.

As part of the northern structure plan, upgrades on Victoria Road have been proposed as outlined in Figure 4.2. These upgrades have been planned in order to:

- Increase the accessibility of Melrose Park for all road users. Increased capacity at the Wharf Road intersection and new access via a southern leg at Kissing Point Road will allow vehicle demand to be efficiently dispersed across the network
- Improve the efficiency of the Victoria Road corridor. Additional stopline capacity on Kissing Point Road, Wharf Road and Marsden Road as well as for turning movement into these roads will ensure that regionally significant trips on Victoria Road are not adversely impacted by the development.
- Reinforce bus priorty by filling in gaps in existing bus lanes along Victoria Road and facilitating increased public transport use along the corridor.

Further investigations will be required in order determine the final layout of these upgrades. It is noted that all traffic modelling presented in this TMAP assumes full one-stage pedestrian crossings on all legs of Victoria Road intersections with Kissing Point Road and Wharf Road.

The proposed land use programme for the northern precinct is shown in Table 4.1

Table 4.1 : Land use summary (northern precinct)

Land use	GFA/dwellings
Residential	
Dwellings	6,850 dwellings
Non-residential	
Commercial	15,000m²
Retail	12,500m²

Figure 4.1 : Northern structure plan (adopted by CoP)

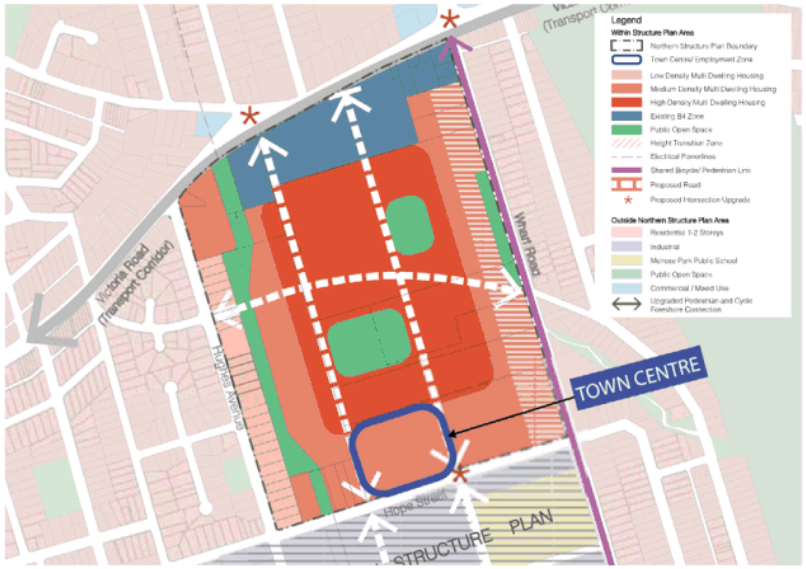

Figure 4.2 : Proposed Victoria Road Upgrades (Northrop)

4. MELROSE PARK STRUCTURE PLANS

4.2.2 Southern draft structure plan

The southern draft structure plan is shown in Figure 4.3 and has been developed based on the following guiding principles:

- A New Waterfront Community
- A Connected Precinct
- An Appropriately Scaled Precinct
- A Sustainable Precinct.

Built form in the Southern Precinct will be consistent with the scale of new development along Parramatta River and shall relate to the height of new development in the Northern Precinct.

- Built form will reduce in scale at the east and west edges of the precinct to affect a good transition in height to protect the amenity of adjoining low-rise neighborhoods.
- Along the riverfront park, scale will be limited to ensure a reasonable scale is achieved behind the mangrove line.
- There is to be no overshadowing of endangered Coastal Salt Marsh between 9am and 3pm at mid-winter, and no overshadowing of existing and new open space.

Higher density development is to be located at the heart of the precinct to facilitate a built form response that manages transitions adjoining low-rise residential. Densities will be reduced along the waterfront park edge.

At least 15% of the precinct and 15% of privately owned land has been identified as new open space.

The proposed land use programme for the northern precinct is shown in Table 4.2

Table 4.2 : Land use summary (southern precinct)

Land use	GFA/dwellings
Residential	
Dwellings	4,238 dwellings
Non-residential	
Commercial	4,400m²
Retail	3,100m²

Figure 4.3 : Southern draft structure plan

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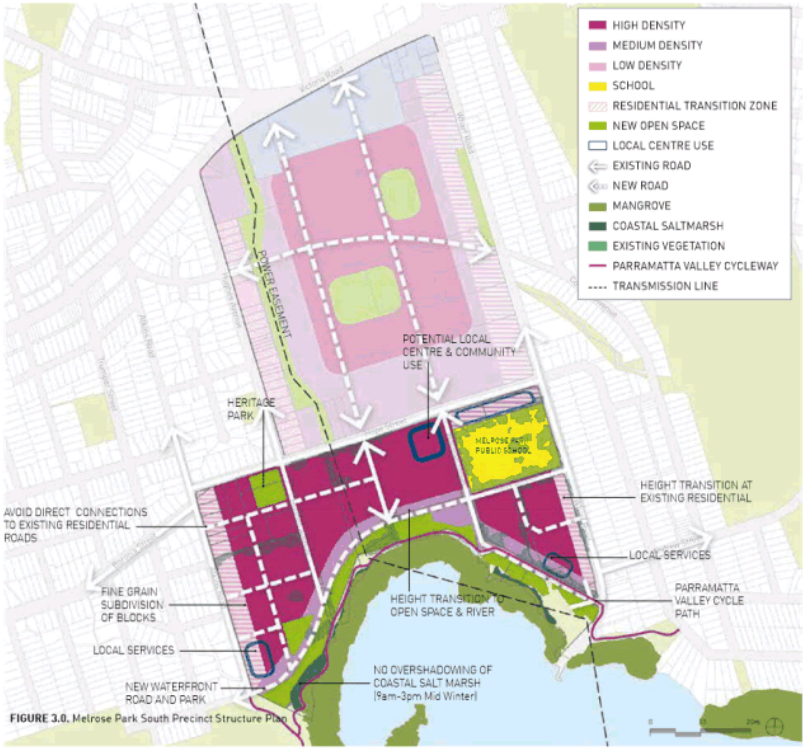

4. MELROSE PARK STRUCTURE PLANS

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4.3 Transport planning objectives and indicators

The Melrose Park precinct has been planned with the goal of delivering balanced, integrated and sustainable outcomes that will potentially achieve the proposed transport targets of:

- Walking and cycling mode share - 5%.
- Public transport mode share - 45%.
- Car mode share - 50%.

These targets are shown in Figure 4.4. It is noted that these mode shares are for peak hour trips external to the development. It is anticipated that trips within the development will be primarily undertaken by active transport.

The Melrose Park TMAP leverages off and facilitates existing, planned and potential future transport options and accommodates the staged implementation of these proposals. Table 4.3 shows the overall, integrated transport strategy for the Melrose Park TMAP. Specific transport objectives and indicators in the integrated network are discussed below to support the overall Melrose Park vision and respond to the constraints outlined in Section 3.0.

Figure 4.4 : Melrose Park peak hour mode share targets - excluding trips internal to development

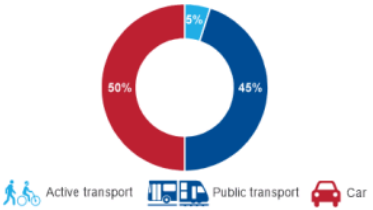


Table 4.3 : Melrose Park integrated transport objectives and indicators

Objective	Melrose Park indicators
1. Contribute to a general mode shift to public and active transport and reduce non-car mode share for peak trips to / from Melrose Park	Reducing the reliance on private car travel will provide significant benefits for future residents of Melrose Park whilst also minimising the impacts of the proposed developments on existing users of the road network. A non-car mode share of 50% represents a sizeable shift from the existing travel characteristics of the area. The delivery of significant new infrastructure – PLR Stage 2 and Sydney Metro West – will enable this step change in travel behaviour. These new public transport options will directly connect Melrose Park to the cores of the Eastern and Central CBD's, enhancing accessibility and reducing travel times to jobs and services.
2. Ensure that the transport network and services reflects the future growth and importance of key activity centres to / from Melrose Park	Melrose Park is perfectly located to provide 30-minute access to both the Eastern and Central CBD by public transport. Other nearby strategic centres include Sydney Olympic Park, Rhodes Business Park. This goal of 30-minute access to centres has been a key driver throughout the TMAP process and will be a key indicator for the overall success of the precinct.
3. Ensure all new residents in Melrose Park are within a safe walking distance of open space, social infrastructure and retail facilities.	The proposed development will deliver important non-residential facilities with retail, commercial and community uses as well as public open space. In order to maximise the benefits from these uses it will be imperative that a convenient, comfortable and safe walking environment is provided.
4. Minimise travel times along key public transport and movement corridors	Victoria Road is a regionally significant movement corridor. The efficiency and productivity of the corridor will need to be protected and the Melrose Park development will need to be implemented in a way that does not lead to travel time increases of more than 5% through the study area. This TMAP shall seek to meet this performance indicator through the provision of appropriate infrastructure upgrades and the minimisation of car use for trips to and from Melrose Park.
5. Ensure that the future transport network and services are attractive to the trip patterns of future residents	Melrose Park will be well served by existing and planned public transport services but there is a need to ensure patronage from the development does not exceed the planned future capacity of the network. The TMAP process will ensure that the staged development of the precinct occurs in lock-step with the provision of public transport infrastructure and services. The development will seek to focus highest intensity land uses around the primary public transport network such that 90% of the potential passenger catchment is within a 800 metre radius of a stop on the intermediate public transport system and/or within 400 metres of a local and suburban public transport route.
6. Ensure the key road network performs at acceptable levels of service during the highest impact peak hour.	The two key access points for the precinct will be on Victoria Road at Kissing Point Road and Wharf Road. Maintaining intersection level of service at LOS E or better will ensure that Victoria Road through traffic is not adversely impacted by the development whilst also allowing efficient access into and out of the precinct. It is noted that Victoria Road/Wharf Road currently performs at LOS F.
7. Prioritise active and public transport, and demand management measures to support sustainable travel behaviour and encourage reduced car use	Maximising the use of active and public transport will have significant benefits for the future residents and visitors of Melrose Park and will reduce the impacts of the development on the wider transport network. A key driver of active and public transport use will be the prioritisation of these modes throughout the precinct. This can primarily be done through best-practice urban and public realm design and by designing the precinct with pedestrians and cyclists as a primary consideration.

4. MELROSE PARK STRUCTURE PLANS

JACOBS

4.4 Movement and place framework

In recognition of these various functions, TfNSW has prepared new guidelines for street planning in NSW. The NSW Road Planning Framework (2017) proposes five different road types, as shown and described in Figure 4.5. Ultimately the classification of a road corridor to one of these types is based on a corridor's Movement needs and Place function.

The proposed road network within the Melrose Park precinct and hierarchy is shown in Figure 4.6. The hierarchy of the road has many functions on which the future precinct will rely on, including:

- Connecting communities through the movement of people and goods
- Supporting places and public spaces in urban areas and regional centres
- Facilitate economic growth and prosperity
- Facilitating social activities such as events and celebrations.

The Melrose Park structure plan is based on an interconnected, legible, urban-scale grid street pattern that will provide a pedestrian-friendly environment and provide optimal opportunities for bus servicing and access. The road network has been planned and dimensioned in conjunction with the spatial and land use planning of the precinct. This has ensured that the design of each street and its position in the movement and place hierarchy is appropriate to its role and the traffic demands placed upon it.

The internal road network has been conceived as a 'grid-like' system. Beginning from the higher order road network, each road type in the hierarchy branches into a smaller road with reduced speed environment. The hierarchy has been designed so that as individual blocks and access are approached, the level of speed of traffic decreases. The road network comprises three major elements:

1. The road hierarchy and street pattern
2. Road widths
3. Intersections

Figure 4.5 : Movement and Place

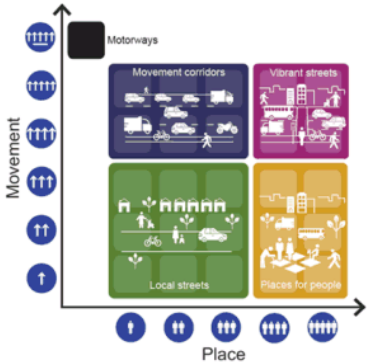


Figure 4.6 : Indicative internal street hierarchy

These elements have been integrated with a firm view of the broader aims of the structure plan to ensure the following outcomes:

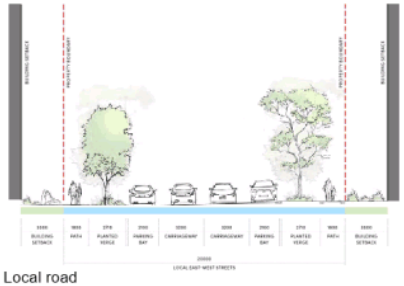
- An interconnected, legible, urban-scale grid street pattern that will provide a pedestrian-friendly environment and optimal opportunities for bus servicing and access
- The proposed Town Centre at the south east corner of Hope Street and Wharf Road is developed on the basis of promoting local access rather than regional traffic
- The road hierarchy is compatible with the land use and range of roles that each street serves. This incorporates a grid of local collector roads to distribute traffic within the Centre and to provide access into parking areas
- The alignment of roads and intersections support the urban structure and form. The structure plan includes proposed upgrades to Victoria Road in order to provide a new access into the precinct via the Victoria Road/Kissing Point Road intersection. Minor capacity upgrades to the Wharf Road/Victoria Road intersection are also proposed

Carriageways have been dimensioned to support the aims of the structure plan:

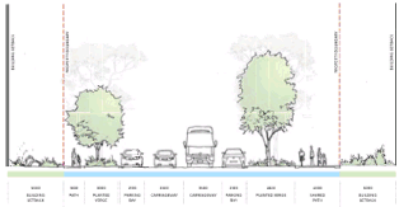
- Main roads in the core are proposed to each have a width capable of providing either four travel lanes or two travel lanes and two parking lanes
- Appropriate setbacks provided along the northern side of Hope Street (between Hughes Avenue and Waratah Street), future proofing the land to enable implementation of PLR Stage 2
- Some of the lesser roads are proposed to have 8.5m wide carriageways which would be capable of providing two travel lanes plus a parking lane on one side
- Roads in the residential areas are proposed to have carriageways typically 8m wide. These allow parking on each side plus a single travel lane between or parking on one side plus room for two vehicles to pass in opposing directions
- On-street parking (indented parallel parking bays) to be provided within the internal road network to provide for overspill of resident and visitor vehicles
- Comprehensive pedestrian and bicycle network providing sufficient footpath width that will provide permeability and a high degree of convenience for walkers and cyclists.

The right-of-way and typical cross sections associated with the northern and southern structure plans are shown in Figure 4.7 and Figure 4.8. It is noted these figures are indicative only and will be subject to refinement during detailed design and precinct delivery.

Figure 4.7 : Internal road sections - northern precinct



Local road



Main boulevard

Figure 4.8 : Internal road sections - southern precinct

4. MELROSE PARK STRUCTURE PLANS

5. TRANSPORT MODELLING

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5. TRANSPORT MODELLING

5.1 Overview

Transport modelling is a core part of the Melrose Park TMAP. The modelling process forecasts the traffic and transport impacts of the overall Melrose Park precinct. This section outlines the various platforms and processes used throughout the modelling components of the TMAP.

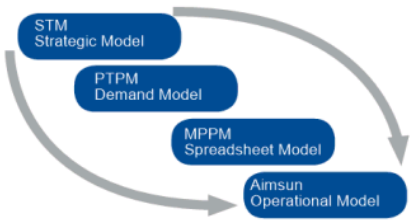
5.2 Modelling framework

The transport modelling approach was tailored to the needs of the Melrose Park TMAP included the use of three (3) separate models with linkages, as outlined in Figure 5.1. Transport modelling has been undertaken using a multi-tiered modelling approach using a combination of strategic, mesoscopic and microscopic modelling. Strategic modelling has been used for demand forecasting and mode split, while mesoscopic modelling has been undertaken to determine key performance indicators for general traffic, buses and light rail for the base and future scenarios.

The transport modelling approach and included the use of three (3) models with linkages as follows:

- **Public Transport Project Model (PTPM)** - used to determine future travel patterns based on population and employment forecasts from STM and estimate public transport patronage.
- **Melrose Park Precinct Model (MPPM)** - bespoke precinct wide spreadsheet modelling tool to derive high level patronage forecasts, and potential mode shares to assist in understanding the initial feasibility of various transport scenarios
- **Aimsun mesoscopic traffic model** - developed to assess transport impacts on the road network of the proposed land use changes and to ascertain the requirements for transport infrastructure and services to support this growth.

Figure 5.1 : Modelling process



5.2.1 Public Transport Project Model (PTPM)

PTPM (Public Transport Project Model), currently being used for PLR Stage 1 and 2, is an incremental multi-modal demand model developed for and operated by the Transport Performance Analytics (TPA) within TfNSW to assist in the evaluation of major public transport projects. It is closely related to the Strategic Travel Model (STM) which provides the overall growth factors before PTPM undertakes the mode choice and assignment functions using generalised costs. A key strength is the underlying observed demand, which provides a solid platform to forecast patronage and demand related impacts of public transport projects and policies.

In this context, the Melrose Park TMAP Project Coordination Group advised the use of PTPM to investigate the following for a 2026 and 2036 forecast year:

- Determine regional trip distribution across the Sydney Metropolitan Area
- Determine potential future travel patterns based on population and employment forecasts
- Estimate public transport patronage and future services through the study area.

5.2.2 Melrose Park Precinct Model (MPPM)

As part of the Melrose Park TMAP, Jacobs developed a bespoke precinct wide spreadsheet modelling tool (MPPM) in conjunction with Dr Neil Prosser to derive high level patronage forecasts, and potential mode shares to assist in understanding the initial feasibility of various transport scenarios. The MPPM is a combination of mode choice modelling with tailored assumptions trip generation, trip distribution, and travel attributes based on background data. The MPPM is a finer grain precinct wide model based on benchmarking future demand based on proposed developments near the vicinity of Melrose Park such as Meadowbank, Wentworth Point, Rhodes and Liberty Grove etc.

A summary of the development and operation of the model is provided below:

- A combination of mode choice modelling with assumptions about trip generation, distribution and travel attributes based on an analysis of JTW (2011) and HTS (2015/16) data
- Coarse representation of zones outside the study area – modelling of key origins and destinations
- No modelling of the road and traffic network – car travel times are obtained from STM
- Public transport – travel attributes, including travel time, walk time, wait time, transfers and fares, are estimated within the PT model based on specified public transport routes and services
- Walking and cycling – walk and cycle travel times are estimated based on specified average speeds and distance factors.

The MPPM has benefits associated with the modelling approach undertaken for the Melrose Park TMAP including:

- More accurate modelling of higher density land use at a block by block level near transit nodes
- Finer disaggregation of travel zones within the precinct when compared to PTPM
- Detailed modelling of bus, light rail and future rail services with 'walking up' components incorporated in mode choice
- Estimation of trip generation for work and non-work trips
- Modelling of public transport travel and mode share to and from Melrose Park during the AM and PM peak hours.

Detailed documentation of MPPM background and model development is provided in Appendix A.

5.2.3 Mesoscopic and microscopic modelling

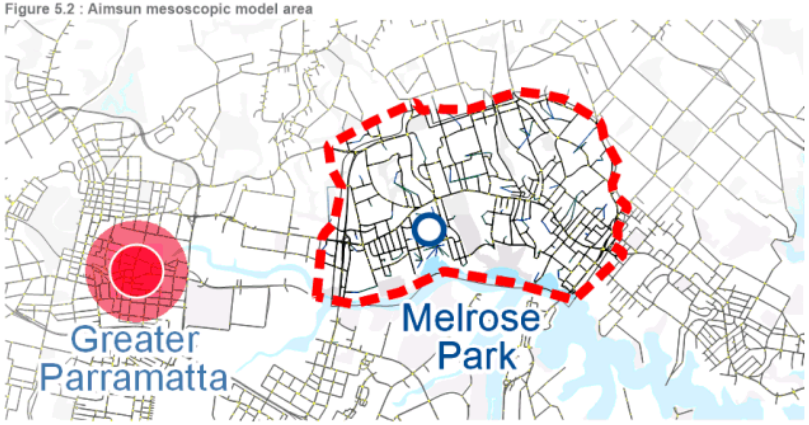
A mesoscopic model is a mid-level modelling tool which uses features from both strategic modelling and micro-simulation modelling to forecast the future transport demand on the road network by considering the predicted land use changes (population and employment). Operational modelling of the study area has been undertaken using the Aimsun modelling platform using a hybrid combination of mesoscopic and microscopic modelling. The extent of the model area is shown in Figure 5.2.

Mesoscopic modelling allows for simulation to be undertaken using dynamic assignment that takes into account the effects of congestion on the network and allows for the identification of network constraints at the arterial and sub-arterial level. Microscopic level modelling allows for more detailed examination of specific locations using microsimulation for selected areas. This hybrid configuration of mesoscopic/ microscopic modelling has been undertaken for the TMAP, with microsimulation at the immediate development interface and mesoscopic modelling for the wider network.

The adopted hybrid modelling configuration provides sufficient detail to determine the performance of the network under proposed future land use demands and provides guidance on the need for further road infrastructure improvements. In addition, the hybrid simulation allows for true dynamic equilibrium assignment, where vehicles can select their optimum travel routes based on their previous travel experiences. This provides confidence that the modelled pattern of traffic represents a realistic response to all of the delays and capacity constraints that would be experienced on the network.

The Aimsun model calibration report is provided in Appendix B.

Figure 5.2 : Aimsun mesoscopic model area



5. TRANSPORT MODELLING

JACOBS

5.3 Mesoscopic Modelling – Calibration and validation

The Melrose Park Traffic Model has been calibrated and validated according to the principles outlined in the RMS Traffic Modelling Guidelines, 2013. Calibration and validation of models is essential to ensure that they are an accurate reflection of observed traffic conditions.

Further detail on the calibration and validation process is provided in the *Melrose Park Mesoscopic Model Calibration and Validation Report* (Jacobs, 2018).

5.3.1 Data sources

The model has been calibrated using turning movement counts collected across the study area in August 2017. Travel time surveys were undertaken along key corridors in order to provide a basis for model validation. Travel times were collected for:

- Victoria Road
- Silverwater Road
- Wharf Road/Marsden Road.

5.3.2 Model coverage

The Melrose Park mesoscopic model is a sub-area model derived from the Sydney GMA model. The Melrose Park sub-area extends from Silverwater Road in the west to Church Street/Devlin Street in the east. The Parramatta river forms the southern boundary and the model extends to Stewart Street and Rutledge Street in the north.

The model is comprised of:

- Over 1,267 individual road sections
- Over 100 traffic generating centroids
- Over 40 signalised intersections.

5.3.3 Calibration

Through a process of demand adjustment and refinement of traffic signal settings and route attractiveness, the models were calibrated to the observed counts. The Melrose Park model has been calibrated according to the following criteria:

- R^2 of greater than 0.95
- Regression slope between 0.95 and 1.05

Whole model:

- At least 80% of flow comparisons with GEH less than 5
- At least 95% of flow comparisons with GEH less than 10

Core/microsimulation area:

- At least 85% of flow comparisons with GEH less than 5
- 100% of flow comparisons with GEH less than 10

The GEH statistic is used in the calibration of traffic models to compare the differences between modelled and observed traffic flows

The R^2 value generally represents the closeness of fit of the observed data points with the modelled data points and the slope of the trendline provides an indication of whether the model is generally over assigning (slope greater than 1) or under assigning (slope less than 1) traffic across the network.

Review of the GEH and regression statistics, see Table 5.1, Table 5.2 and Figure 5.3 shows that the model is sufficiently well-calibrated on the basis of turning movement flows, for both peak periods in aggregate and for each hour within those peak periods.

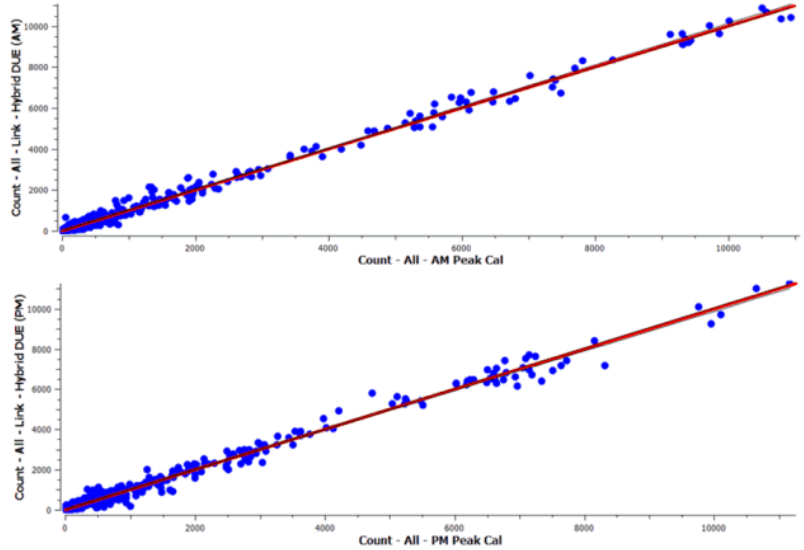
Table 5.1 : GEH statistics

Measure	Target	Hour starting				
		All hours	6:00am	7:00am	8:00am	9:00am
Whole model						
GEH<5	80%	85%	78%	80%	78%	80%
GEH<10	95%	98%	98%	99%	95%	98%
Core area						
GEH<5	85%	91%	82%	88%	86%	85%
GEH<10	100%	100%	100%	100%	100%	100%

Table 5.2 : Regression statistics

AM Peak	R^2	Slope
6:00 - 10:00 (Aggregate)	**0.992**	**0.989**
6:00 - 7:00	0.988	0.974
7:00 - 8:00	0.990	0.981
8:00 - 9:00	0.981	0.975
9:00 - 10:00	0.982	1.014
PM Peak	**R^2**	**Slope**
15:00 - 19:00 (Aggregate)	**0.987**	**0.979**
15:00 - 16:00	0.973	0.950
16:00 - 17:00	0.986	0.986
17:00 - 18:00	0.986	0.989
18:00 - 19:00	0.977	0.982

Figure 5.3 : Regression graphs



5. TRANSPORT MODELLING

JACOBS

5.3.4 Validation

In order to determine the suitability of the Melrose Park model in forecasting future traffic conditions, it was necessary to validate the model against a set of data that is independent from that used in the demand estimation and calibration process. Validation of the Melrose Park model has been undertaken using travel time surveys outlined above and results for Victoria Road are shown in Figure 5.4 and Figure 5.5. Results indicated that the model was sufficiently validated in accordance with RMS Traffic Modelling Guidelines.

Figure 5.4 : Victoria Road travel time validation (AM peak hour)

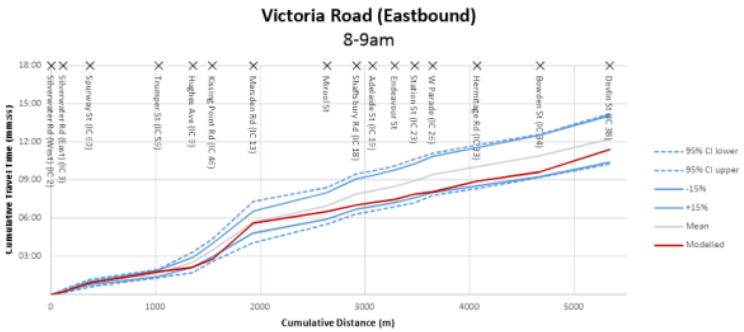
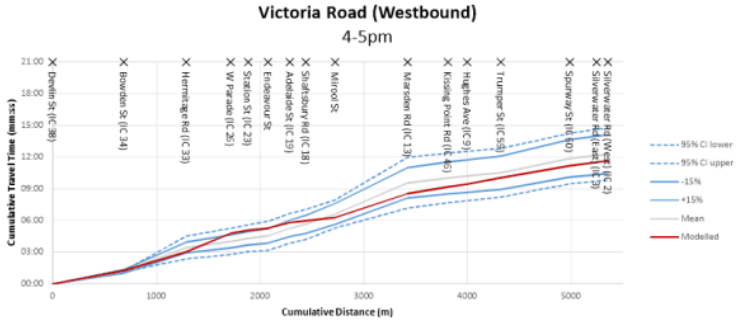


Figure 5.5 : Victoria Road travel time validation (PM peak hour)



5.4 Model inputs and assumptions

The transport models developed for the Melrose Park TMAP required a number inputs and assumptions, including population/employment forecasts, wider network changes, road network configurations and public transport service provision. Key assumptions in the immediate area impacting the Melrose Park TMAP included:

- Population and employment across Sydney GMA consistent with LU16 forecasts
- Major public transport projects – Parramatta Light Rail Stages 1 and 2 connecting Rydalmere and Sydney Olympic Park via Melrose Park (via new bridge across Parramatta River (in 2026), and Sydney Metro West connecting Parramatta CBD, Sydney Olympic Park and Sydney CBD in 2036
- Major motorway road projects – WestConnex Stages 1&2 by 2026 and WestConnex Stage 3 and Western Harbour Tunnel by 2036.
- Major arterial road projects – proposed structure plan incorporates widening of Victoria Road (from Wharf Road to Hughes Avenue), upgrades to Victoria Road signalised intersections at Wharf Road and Kissing Point Road in 2026
- Local road network changes – all intersections along Boronia Street-Hope Street between Spurway Street and Wharf Road along the PLR Stage 2 corridor have been assumed to be signalised with other intersections 'left-in' and 'left-out' in 2026

5.5 Trip generation

5.5.1 Approach

As agreed with the Melrose Park PCG, two methods were used to estimate the overall trip generation of the overall Aimsun model study area. The first method involved the application of the STM/PTPM, and the second method was based on the RMS Guide to Traffic Generating Developments (2002) and High Density Residential Car Based – Trip Generation Surveys Analysis Report (2017) undertaken on behalf of RMS.

5.5.2 Traffic generation calculations

The estimation of future traffic volumes to be used in the Aimsun model has been developed using a combination of both the STM/PTPM and RMS guidelines as follows:

- PTPM has been used to generate 'external trips' only with neither originating or ending in the study area
- RMS guidelines have been used to generate 'internal trips' into and out of Melrose Park precinct based on a combination of RMS updated surveys (TDT 2013/04a) and more recent surveys undertaken in 2017 on behalf of RMS.
- Commercial vehicle trip rates are based on rates from RMS updated surveys (TDT 2013/04a)
- Retail rates are based on surveys undertaken at East Village Shopping centre as outlined in the *Melrose Park Planning Proposal Traffic and Transport Study (2016)*.

An analysis of the above data along with an extensive benchmarking process led to the following rates being proposed and agreed with the PCG:

- The traffic generation rate for the former Bartlett Park site incorporating 1,200 dwellings has based on an AM and PM rate of 0.19 and 0.15 trips per dwelling per hour respectively as part of previously approved rezoning proposal
- The traffic generation rate for the remaining 9,855 dwellings for Melrose Park has been based on a rate of 0.25 trips per dwelling per hour for both the AM and PM periods.
- Retail rates includes a 20% reduction to account for linked trips already captured by the residential generation rates, as is appropriate for a high density mixed use development.

The expected generated trips for the AM and PM peak hours for the 'ultimate build-out' (2036) is shown in Table 5.3.

Table 5.3 : Melrose Park traffic generation (ultimate build-out)

		AM PEAK HOUR		PM PEAK HOUR	
		Trip generation rate	Vehicle trips	Trip generation rate	Vehicle trips
Dwellings (Bartlett site)	1,200	0.19 per dwelling	228	0.15 per dwelling	180
Dwellings	9,886	0.25 per dwelling	2,471	0.25 per dwelling	2,471
Commercial GFA	19,400m²	1.6 per 100m²	310	1.2 per 100m²	233
Retail GFA	15,600m²	2.5 per 100m²	390	5.0 per 100m²	780
Total			**3,399**		**3,664**

5. TRANSPORT MODELLING

JACOBS

5.6 Trip distribution

The distribution of all trips in the network has been based on the outputs of PTPM. Overall trip distribution for the Melrose Park Traffic Model has been undertaken on the basis of revealed travel patterns from the PTPM, and by extension the STM. Trip distribution in STM is an iterative process that distributes trips based on the proximity of jobs and population for the whole Sydney metropolitan area.

The PTPM trip matrices provide the most appropriate source of future trip distribution for all trips within and through the study area. The future land use projections for the entire Sydney metropolitan area are included in the PTPM hence the distribution of trips within PTPM takes into account the location of future jobs, dwellings and services likely to generate and attract trips which interact with the Melrose Park study area.

Figure 5.6 and Figure 5.7 show the distribution of trips leaving Melrose Park in the 2036 AM peak periods. There remains a relatively strong desire line to Sydney CBD, however there is a noticeable shift away from the Eastern City as a whole. More trips from Melrose Park remain in the Central City where a significant number of new jobs and services are expected to be provided within the next 20 years. Less than half of all trips originating from Melrose Park are expected to have destinations in the Eastern City, compared with almost 60% in 2016.

This change in trip distribution patterns will lead to shorter trips and will help to relieve the existing pressure on existing transport infrastructure which is currently constrained by the significant number of eastbound trips towards the Eastern City in the AM peak period.

Figure 5.6 : Distribution of trips departing Melrose Park - SA3 level (2036 AM)

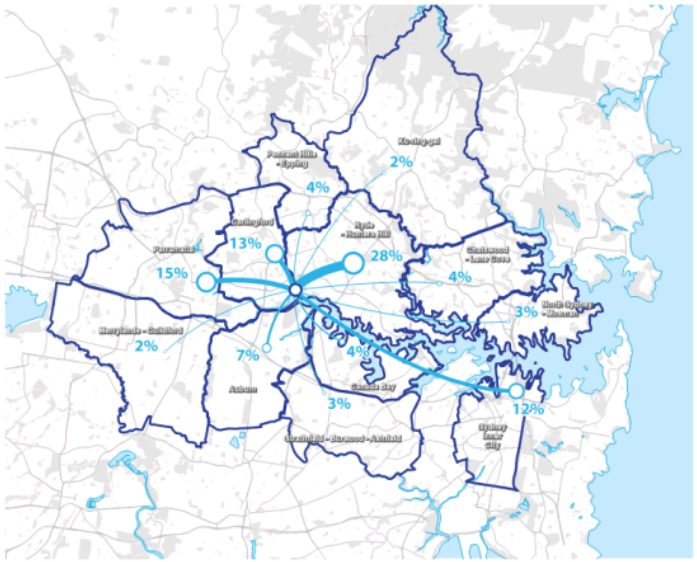
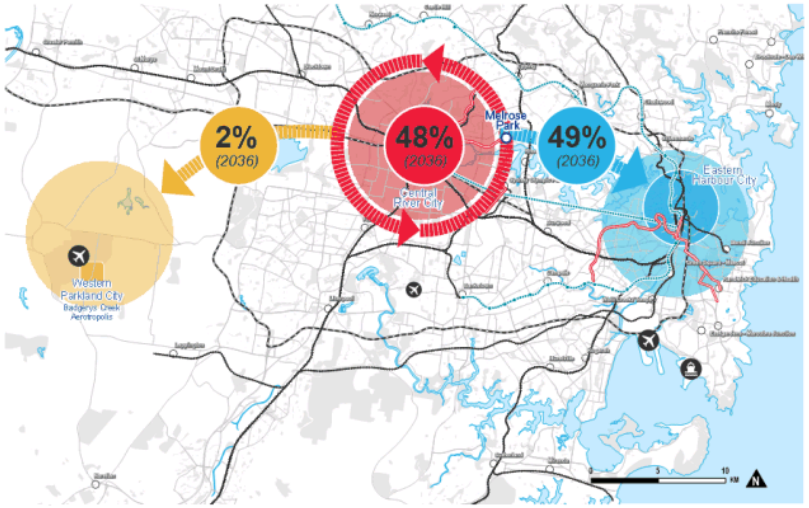


Figure 5.7 : Distribution of trips departing Melrose Park - 3 cities level (2036 AM)



5. TRANSPORT MODELLING

JACOBS

5.7 Mode choice

Potential future mode shares for Melrose Park have been assessed using a combination of the PTPM and MPPM models. Both models use an assessment of the generalised cost of travel time to forecast mode choices for a particular journey.

The potential for reduction in car dependency by implementing the public transport initiatives (see Section 6.0) for Melrose Park is considerable, and preferable to the alternative of the traditional car-based solution. As discussed earlier, the Melrose Park site represents a major opportunity to influence travel through initiatives that encourage transport alternatives that will reduce car dependency.

The proposed PLR Stage 2 and its connection to Sydney Metro West via a new bridge across the Parramatta River represents a major commitment to promoting public transport, as a competitive and preferable mode to private vehicle use, which will be demonstrated later in this report.

The mode share for trips from Melrose Park derived from both the PTPM and MPPM is provided in Figure 5.8. It is noted that PTPM is forecasting higher car mode shares for all future horizon years compared to the MPPM results. Several points are noted regarding this difference:

- PTPM 'pivots' off the existing base conditions using a combination of incremental and absolute forecasting methods. The existing land use in Melrose Park is industrial and non-residential and existing car mode shares for trips from Melrose Park are therefore very high. The incremental forecasting component of PTPM is potentially unable to fully quantify the change in mode share that will result from the delivery of a highly accessible mixed use precinct and major public transport infrastructure.
- The MPPM results are based on an assessment of generalised costs for all mode options in the network. They are also founded on benchmarking of travel patterns from existing centres and developments similar in composition to the proposed Melrose Park precinct.

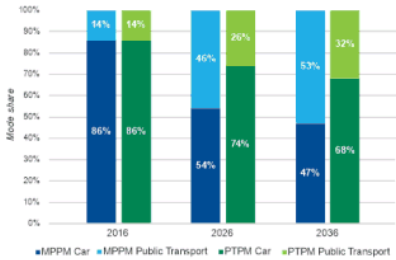
5.8 Trip assignment

The assignment of vehicle trips has been undertaken in two stages:

- Stage 1: Static traffic assignment in PTPM to determine sub-area traffic demand based on a traversal matrix from STM
- Stage 2: Dynamic user equilibrium assignment in Aimsun mesoscopic model

This assignment methodology is detailed below.

Figure 5.8 : Melrose Park mode share



5.8.1 Static assignment

The static assignment step has been undertaken to generate a sub-area traversal of the whole Sydney Greater Metropolitan Area model, suitable to be used as an input for future traffic demand within the smaller Melrose Park traffic model.

5.8.2 Dynamic user equilibrium assignment

Traffic generation as previously described was assigned to the Melrose Park traffic model Aimsun model using a Dynamic User Equilibrium (DUE) assignment method. DUE is an extension of the concept of static equilibrium however vehicle simulation is used to generate route costs, rather than a theoretical speed/flow curve. This has the advantage of taking into account the capacity constraints of the network in greater detail including traffic signals and intersections, merging and weaving on freeways and the accumulation of traffic in queues.

5.8.3 Assignment of Melrose Park trips

Figure 5.9 and 5.10 shows the assignment of trips in the 1-hour AM and PM peak periods generated by the Melrose Park development only. The origin and destination of trips has been defined by the PTPM strategic model whilst the route taken through the model is a result of DUE assignment. It is noted that:

- The majority of Melrose Park trips travel in an east-west direction, either via Victoria Road or the Andrews Street/Constitution Road corridor
- The Hope Street and Marsden Road corridors also serve as a key access for the Melrose Park precinct
- These volumes are not purely in addition to volumes in the do minimum scenario. It is noted that the development will replace existing traffic generating land uses and so the net increase in traffic would be lower than the total trip generation volumes in these figures.

Figure 5.9 : Traffic volume - 2036 AM peak hour (only trips generated by development)

Figure 5.10 Traffic volume - 2036 PM peak hour (only trips generated by development)

5. TRANSPORT MODELLING

JACOBS

5.9 Development of future traffic forecasts

5.9.1 Future background traffic growth

Initial testing and analysis of the future year 2036 forecast travel demands – without Melrose Park development - showed that there was insufficient capacity on the network to accommodate forecast traffic growth. Demand capping was undertaken using simulation of the forecast traffic demand on the mesoscopic network and comparing forecast demand with model throughput across the network to:

- Identify network constraints where proposed demand exceeded capacity and resulted in either excessively low average speeds or vehicles being unable to enter the network
- Cap the growth in trips for any origin-destination pairs that must pass through identified capacity constraints
- Allow trips to change their departure time to avoid capacity constraints and maximise available traffic network capacity.

The process accounts for the fact that strategic model outputs from PTPM, are likely to overestimate the growth in peak hour trips. Historic traffic counts demonstrate that peak period vehicle trips have experienced limited growth despite significant population growth. PTPM forecasts significant growth (1-2% per annum) on Victoria Road and Silverwater Road which have experienced flat or negative growth since 2009 (-2% and -4% per annum respectively.) To account for this, traffic growth was capped to the modelled network capacity under the Do-Minimum scenario (without Melrose Park development).

The quantum of capped trips assumed to not depart during the modelled 4-hour period is shown in Figure 5.11 and equates to less than 2% of the total uncapped future demand from PTPM.

The primary result of the demand capping process has been to shift trips from the peak hour to the shoulder periods. This is consistent with the observed pattern of growth along Victoria Road and Silverwater Road, where peak hour volumes have remained relatively constant, but the peak period has expanded to cover a longer time period.

A difference plot comparing capped and uncapped static assignment hourly volumes is shown in Figure 5.12. It is noted that the majority of capped trips are those that use the Church Street/Devlin Street corridor in the far south east of the model area. The number of capped trips is also observed to be very low through the study area.

5.10 Trip generation summary

A summary of the AM peak 1-hour trip generation of Melrose Park for all modes is presented in Table 5.4. Trips are shown for the two major proposed staging scenarios i.e. 'No-bridge' representing the period prior to the implementation of the new bridge over Parramatta River and 'Post-bridge' representing the ultimate 11,000 dwelling scenario with the bridge in place. (See section 6.4.3 for a more detailed description of staging)

Table 5.4: All modes trip generation (AM peak hour person trips)

	No-bridge (approx 6,700 dwellings)	Post-bridge (approx 11,000 dwellings)
Private Vehicle[1]	2,525	4,080
Bus only	150	30
Bus/Train	1,590	450
Light Rail only	-	280
Light Rail/ Train	-	2,390

[1] Assuming vehicle occupancy of 1.2 people per vehicle

Figure 5.11 : Demand capping results (AM 4-hour period)

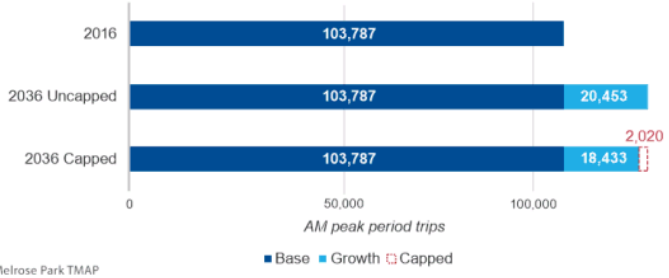


Figure 5.12 Difference plot comparing capped and uncapped 2036 AM demand (average hourly flows over 4-hour modelled period)

5. TRANSPORT MODELLING

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

6.1 Overview

Transport modelling has been used as the basis for assessing the surface transportation network presented in the Melrose Park structure plans. This section examines the overall road network performance based on the land use estimates of 11,000 residential dwellings proposed for overall Melrose Park precinct and assesses future infrastructure enhancements for 2026 and 2036. In assessing the adequacy of the Melrose Park road network to meet the proposed future land-based demands, a desired assessment criteria for strategic road network planning and intersection performance has been developed.

This section addresses the potential impacts of the public transport system in the study area in the context of the mode shift objectives. This section also recognises the role walking and cycling replaces car-based trips within Melrose Park, and how the provision of improved transport facilities and opportunities can help drive positive mode change in the future.

6.2 Approach to appraisal

The appraisal of the Melrose Park structure plans was tested using the PTPM, MPPM and the Melrose Park Traffic Model (using Aimsun) to examine the potential impacts on transport infrastructure and services on the local and regional road network, public transport and walking and cycling. The key stages of the Melrose Park TMAP approach were as follows:

- Land use development scenario of 11,000 dwellings for the combined northern and southern precincts
- Update the TfNSW PTPM model to forecast travel demand and mode share
- Traffic forecasts and assessments for the road network produced by the Melrose Park traffic model based on:
  - 'Do Minimum' (without Melrose Park development)
  - 'With Project' (with Melrose Park development)
- Identify future system problems and user needs for the public transport network
- Develop appropriate transport network infrastructure and services
- Define appropriate travel demand management measures.
- Iteratively test staging scenarios to develop a strategy that ensures adequate capacity for both road and public transport networks at all stages of development.

6.3 Road network performance

6.3.1 Introduction

The Melrose Park Aimsun traffic model has been used as the basis for assessing the surface transportation road network presented in the structure plan. This section examines the overall road network performance based on the land use estimate of 11,000 dwellings proposed for Melrose Park and assesses future road infrastructure enhancements 2036. The following key performance indicators were used to assess the strategic merits of the structure plans and proposed road infrastructure enhancements:

- Midblock flow and density (measures of congestion in mesoscopic models)
- Intersection Level of Service (based on average delay)
- Travel times on key movement corridors (i.e. Victoria Road).

The above performance indicators have been extracted from the Melrose Park traffic model for the highest impact peak hour, under a future 'do minimum' (no development) and a future 'with project' (with development) scenario for 2036.

6.3.2 Desired service criteria

Midblock traffic density

The Melrose Park traffic model has traffic flows constrained by capacity whether due to saturation flows in midblock sections or due to capacity limitations at intersections. When traffic demand exceeds capacity, traffic queues form and these are depicted within the mesoscopic model as increases in traffic density. Traffic density is the average number of vehicles per kilometre on each section of road.

In this context, the road network traffic density was used to examine key capacity constraints within the road network developed for the structure plan. Higher densities indicate vehicles are closer together and therefore traveling more slowly and spending more time queuing (i.e. higher densities indicate more congestion). The assessment of network performance on the basis of traffic density was used to resolve capacity constraints (if any). Road network infrastructure improvements identified on the basis of traffic density were assessed according to whether they increased the volume of traffic that could be assigned to the network.

Intersection level of service

The performance of an urban road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. It is therefore appropriate to consider intersection operation as a measure of the capacity of the road network.

The criteria for evaluating the operational performance of intersections is provided by the RTA Guide to Traffic Generating Development (2002); these criteria are shown in Table 6.1. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (the level of service) which is applied to each band on the basis of average delay. This average vehicle delay is equated to a corresponding level of service from A (best) to F (worst).

Based on the performance measures shown in Table 6.1 a target maximum level of service threshold for new intersections of level of service E (as agreed with PCG) has been adopted for peak period conditions for future signalised intersection performance where practicable.

Travel times

Victoria Road is a regionally significant movement corridor which carries more than 60,000 vehicles per day through the study area. It is also a key east-west bus corridor with up to 30 services per hour projected by 2026. The efficiency and productivity of the corridor will need to be protected and the Melrose Park development will need to be implemented in a way that does not lead to private vehicle travel time increases of more than 5% through the study area.

Table 6.1 : Intersection level of service criteria

Level of Service	Average delay (sec/veh)	Signalised intersections and roundabouts	Give way and stop signs
A	<14	Good operation	Good operation
B	15 – 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29-42	Satisfactory	Satisfactory but accident study required
D	43-56	Operating near capacity	Near capacity and accident study required
E	56-70	At capacity; incidents will cause excessive delays	At capacity, requires other control mode
F	>70	Over capacity, unstable operation, excessive queuing	Over capacity. Unstable operation

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.3.3 Future road link and segment performance

Future traffic volumes

The traffic volume plots in Figure 6.1 to Figure 6.4 show the 2036 forecast volume of traffic in the model area for Melrose Park. They provide a useful indication of the volume of traffic using a road and helps to understand the demand for access to the road network. This demonstrates the areas on the road network expected to experience an increase in traffic volumes as a result of the development. More detailed plots showing only traffic generated by the development are presented in Figure 5.9 and Figure 5.10.

The future traffic volume plots show:

- In the 'with development' scenario, Victoria Road is forecast to carry over 3,000 vehicles per hour in the peak direction (eastbound in AM and westbound in PM) an increase of approximately 300 vehicles per hour in the morning peak and 900 in the evening peak, compared to the do minimum scenario
- The largest increase in traffic volumes occurs in the westbound direction on Victoria Road in the morning peak. This is due to the fact that trips towards the Eastern City in the morning peak are more likely to use proposed public transport options (further discussed in Section 6.4)
- The Andrews Street-Constitution Road corridor carries between 800 and 1,000 vehicles per hour in the peak direction. This is an increase of approximately 300 vehicles per hour in the morning peak and 100 in the evening peak
- Increases in volumes on the local road network would not lead to adverse impacts to the performance or amenity of the network.

It is noted that some links would experience a reduction in volume in the 'with development' scenario. This is generally a result of the upgraded road network leading to a change in traffic assignment. Some morning peak southbound trips on Marsden Road and Kissing Point Road traveling from the north-west of the model to the east, for example, are observed to re-direct to Silverwater Road due to the improved performance and hence attractiveness of Victoria Road eastbound.

Figure 6.1 : Traffic volume - 2036 AM do minimum - no development

Figure 6.2 : Traffic volume - 2036 AM with development

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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Figure 6.3 : Traffic volume - 2036 PM do minimum - no development

Figure 6.4 : Traffic volume - 2036 PM with development

Future midblock traffic density

An assessment of midblock traffic density (vehicles per km) has been calculated for all road sections within the Melrose Park model area. When traffic demand exceeds capacity, traffic queues form and these are depicted within the mesoscopic model as increases in flow density. Traffic density is the average number of vehicles per kilometre on each section of road. Density plots are shown in Figure 6.5 to Figure 6.8, for 2036.

It is noted that the plots represent the results of the hour in which the highest vehicle flows occur throughout the entire modelled period. Performance before and after these time periods (i.e. in the 'shoulder' of the peak) is generally better to that presented below.

The plots show:

- Significant congestion is observed at north-western and south-eastern extents of the modelled area in all scenarios. This is not a direct result of the Melrose Park development but rather an indication that minor network improvements may be needed to accommodate regional traffic growth. Vehicles entering the model at these locations are not able to change their route to avoid congestion in the same way trips through the central part of the model are able to. In reality it is likely that some of these trips may use a different route and congestion would not be as severe as shown in these results.
- Modelled congestion on Devlin Street northbound on approach to Blaxland Road is likely to be relieved by proposed widening works along Devlin Street in this location. These works were announced after the finalisation of future network assumptions for the project and have not been included in this modelling.
- Upgrades on Victoria Road proposed as part of the Melrose Park structure plans would result in reduced congestion at Kissing Point Road and Wharf Road intersections in the 'with development' scenario during both of the peak periods.
- Minor increases in density are observed on Victoria Road eastbound near Shaftsbury Road in the AM peak. This is partly due to the increased throughput at Kissing Point Road and Wharf Road intersections allowing higher vehicle flows to reach the Shaftsbury Road intersection, rather than solely due to traffic generated by the Melrose Park development.
- Increases in density are observed on Victoria Road westbound near Hermitage Road in the PM peak but are considered within acceptable thresholds
- Increased flows on the Andrews Street-Constitution Road corridor lead to minor increases in density however no significant delays or adverse impacts are observed.

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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Figure 6.5 : Density - 2036 AM do minimum - no development

Figure 6.6 : Density - 2036 AM with development

Figure 6.7 : Density - 2036 PM do minimum - no development

Figure 6.8 : Density - 2036 PM with development

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.3.4 Intersection level of service

Future intersection performance metrics are provided in Figure 6.10 to Figure 6.13 for key intersections in the study area. It is noted that the results represent only the busiest one-hour period on the road network. Results from the Melrose Park traffic model show that:

- Upgrades on Victoria Road - outlined in detail in section 4.2 and section 7.2 - proposed as part of the Melrose Park structure plan would reduce congestion at Kissing Point Road and Wharf Road in the 'with development' scenario
- Delays Victoria Road intersections with Shaftsbury Road in the AM peak and Hermitage Road in the PM peak would increase with the additional development traffic would still be within acceptable limits.
- All intersections along Hope Street through the precinct operate satisfactorily with the introduction of PLR Stage 2 and associated intersection changes. It is noted that the intersection of Hope Street and Wharf Road is proposed to be maintained as a priority controlled intersection. Modelling demonstrates that the intersection is forecast to operate satisfactorily without signalisation. This location has been identified as a key route for pedestrians accessing Melrose Park Public School. As such, investigation of a midblock crossing on Hope Street between Wharf Road and Waratah Street is recommended. This crossing would align with the key desire line between the new town centre and the school.

Further intersection performance metrics are provided in Figure 6.9 below. This analysis shows:

- Several key intersections in the study area are forecast to operate above capacity in a 'do minimum' scenario by 2036
- The 'with development' scenario reduces the number of intersections operating above capacity in both the AM and PM peak periods, mainly due to proposed improvements on Victoria Road.

Figure 6.9 : Intersection level of service comparison

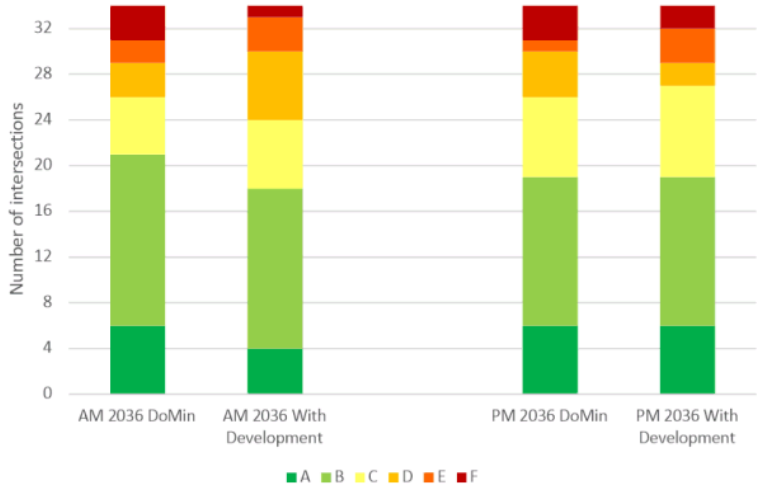

Figure 6.10 : Intersection level of service - 2036 AM do minimum - no development

Figure 6.11 : Intersection level of service - 2036 AM with development

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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Figure 6.12 : Intersection level of service - 2036 PM do minimum - no development

Figure 6.13 : Intersection level of service - 2036 PM with development

6.3.5 Travel times along key routes

This section presents forecast travel times along Victoria Road through the model area, between Silverwater Road and Church Street/Devlin Street. Victoria Road is the key movement corridor in the study area and the efficiency and productivity of trips through the area needs to be maintained.

Figure 6.14 to Figure 6.15 shows a comparison of car travel times along Victoria Road between Silverwater Road and Church Street-Devlin Street for the 2036 AM and PM peak hour for both the 'do minimum' and 'with development' scenarios.

The results of the 'with development' scenarios indicate:

- Travel time through the upgraded intersections at Kissing Point Road and Wharf Road would significantly improve compared to the 2036 do minimum scenario
- Travel time through the remaining sections of the corridor would be slightly higher compared to the 2036 do minimum scenario
- Overall travel time along the corridor would improve in the AM peak and remain comparable in the PM peak

Figure 6.14 : Victoria Road travel time - Eastbound AM

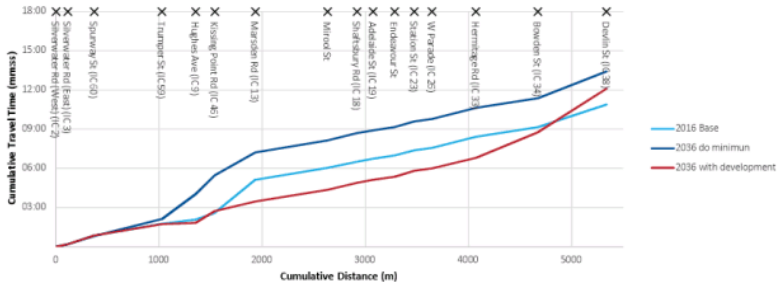
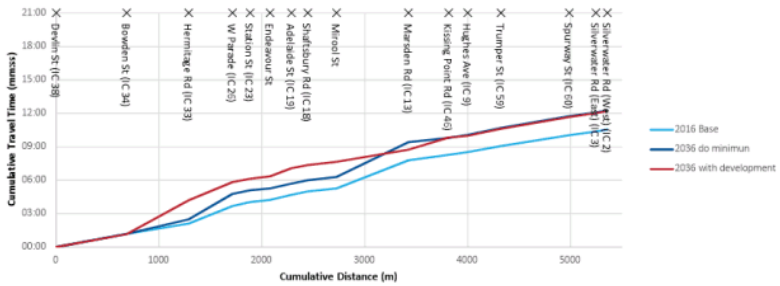


Figure 6.15 : Victoria Road travel time - Westbound PM



6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.3.6 Implications of new bridge across Parramatta River open to vehicular traffic

The provision of a new active and public transport bridge across the Parramatta River has been identified as a key piece of infrastructure which will have a transformative impact for both Melrose Park and the wider GPOP area. Investigations using PTPM were undertaken to assess the impacts of also allowing general traffic on the bridge to understand the wider implications.

Figure 6.16 presents the difference in traffic volumes between a scenario with the bridge open to general traffic and a scenario where the bridge is used by public and active transport only. Whilst the reduction in traffic on Silverwater Road and Church Street may provide some localised benefits, the increases on Wharf Road (almost 400 additional vehicles per hour) and Hope Street would have significant amenity and efficiency impacts on the local road network, affecting both Melrose Park and Wentworth Point. This TMAP has therefore proceeded on the basis that the new bridge across Parramatta River would be open only to public and active transport, as agreed with the PCG.

Figure 6.16 : General traffic use of new bridge - change in peak 1-hour traffic volumes

6.3.7 Overall network statistics

Table 6.2 and Table 6.3 provides a summary of the 'Do-Minimum' and 'With Project' scenario network statistics for the Melrose Park precinct. The results demonstrate the increased travel time and distance expected in all of the future scenarios. The 'With Project' scenario results show that increased travel is expected on the network due to the Melrose Park development. The AM average speed in the network is expected to increase, and the PM remain constant, compared to the Do Minimum scenario, demonstrating the benefits of the infrastructure improvements proposed as part of the Melrose Park structure plans.

6.3.8 Network staging

The full package of road upgrade works as presented in Figure 4.2 would be delivered in stages, in line with the delivery of dwellings. The staging has been developed through iterative traffic modelling of development yields in conjunction with proposed road network upgrades. The performance measures presented in this section have been applied to the various staging scenarios to ensure the road network performs satisfactorily for all stages.

Detailed road network staging is presented in Section 7.2. In general, a new access at Kissing Point Road will be provided followed by Victoria Road intersection upgrades at Wharf Road and Kissing Point Road. The ultimate layout will include a continuous bus lane in each direction on Victoria Road. The staging development process has also remained cognisant of the public transport network stages presented in Section 6.4. The entirety of the road works are proposed to be delivered prior to the implementation of the new bridge over the Parramatta River. This plan ensures that infrastructure is in place as early as possible to support the delivery of dwellings and minimise wider network impacts in the earlier stages of the project before delivery of critical public transport.

Table 6.2 : Network statistics - 6:00am - 10:00am

	2017 AM	2036 Do Min AM	2036 With Project AM
Vehicle km travelled (km)	332,582	378,030	422,657
Vehicle hours travelled (hours)	9,982	14,884	15,375
Average speed (km/hr)	33	25	27

Table 6.3 : Network statistics - 3:00pm - 7:00pm

	2017 PM	2036 Do Min PM	2036 With Project PM
Vehicle km travelled (km)	356,925	413,341	442,792
Vehicle hours travelled (hours)	10,985	16,402	18,095
Average speed (km/hr)	32	25	25

6.4 Public transport

6.4.1 Introduction

The public transport network for Melrose Park has been developed based on a series of key planning principles. These principles will ensure that the network provides the level of service and connectivity demanded of development of this scale and density. The network will provide connectivity to a range of key employment centres within the local and regional area thereby providing a range of choices for the future residents of Melrose Park.

6.4.2 Principles

The public transport principles have been developed to support the key TMAP objectives and physical planning process. These include:

- **Provide a staged network** that supports a high level of accessibility and connectivity from day one of the development, eventually realising its full potential upon full build-out
- **Take advantage** of areas of the existing bus and rail network with spare capacity and leverage additional capacity provided by future new infrastructure investment e.g. Sydney Metro City and South West
- **Connect to destinations and interchanges** within the local and regional area and aim to provide 30-minute public transport access to strategic centres within and outside GPOP
- **Provide accessibility** across the Melrose Park precinct recognising that the precinct itself covers a large area and that multiple access locations to the public transport network will be required
- **Support Melrose Park as a community** that provides for a variety of residents with a variety of economic and social needs

6.4.3 Staging approach

The public transport network for Melrose Park has been split into two key stages based on the development progression and the planned completion of relevant major infrastructure projects such as Parramatta Light Rail Stage 2 and Sydney Metro West. As established throughout the analysis in the TMAP, the bridge across Parramatta River is a key component of the development which will provide a transformative increase in accessibility for the future residents, workers and visitors of Melrose Park. The staging of the network has therefore been based on pre-bridge and post-bridge scenarios.

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.4.4 Stage 1 – Accessible and connected bus network

Stage 1 assumes the following parameters:

- PTPM forecast year is 2026
- Approximately 6,700 dwellings are developed
- Sydney Metro Northwest and City and Southwest are complete providing some relief to the T1 Northern rail line
- Parramatta Light Rail Stage 1 is complete.
- Stage 1 road network infrastructure is delivered as per section 7.2

The Stage 1 public transport network is shown in Figure 6.18 The network builds on the existing bus network to provide the following key improvements.

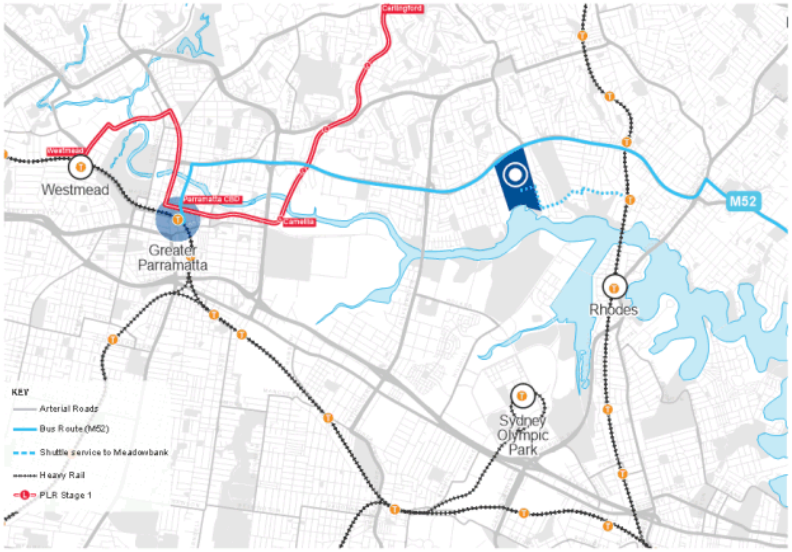
- **M52 bus route:** The AM peak service frequency along Victoria Road will be gradually improved to 20 per hour eastbound and 14 per hour westbound to provide direct connectivity from the northern portion of the precinct to Parramatta CBD and to West Ryde (rail connections to Sydney CBD and Macquarie Park) and Top Ryde. It is noted that service increases to 13 per hour eastbound and 9 per hour westbound would be required even without Melrose Park development based on PTPM demand forecasts.
- **Shuttle bus services to Meadowbank:** The proponent proposes to provide a shuttle bus service between Melrose Park and Meadowbank station to provide a direct connection to the T1 Northern Line. Provision of this service would begin with 1 bus providing 3 services per hour. More buses would be provided in line with the delivery of dwellings to provide an ultimate service headway of 5 minutes.
- **T1 Northern rail line:** Existing congestion on this line will be relieved by the completion of Sydney Metro City and Southwest. The removal of trains operating via the Epping to Chatswood rail link will provide some capacity for providing improved frequency. Connections to West Ryde via improved M52 services and Meadowbank via shuttle bus services will both be available for future Melrose Park residents workers and visitors. Figure 6.17 shows that there will be sufficient spare capacity on the T1 Northern Line in Stage 1. It is noted that 8 suburban services an hour are proposed to run in this stage.

As discussed, Stage 1 assumes that a new bridge across the river is not complete. As such, any development should be focused to the north of the precinct as the M52 bus route along Victoria Road will provide the highest level of accessibility until the bridge is complete.

It is also noted that MPPM public transport demand forecasts exceeds those provided by PTPM outputs. As such, MPPM demands have been used to assess the service requirements for Melrose Park, ensuring the assessment is conservative.

Figure 6.17 : Stage 1 2026 public transport demand (PTPM)

Figure 6.18 : Stage 1 public transport network



6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.4.5 Stage 2 – Integrated network with new bridge over Parramatta River

Stage 2 assumes the following parameters:

- PTPM forecast year is 2036
- Development of the precinct is 100% complete (11,000 dwellings)
- Parramatta Light Rail Stage 2 is complete
- Sydney Metro West is complete

The Stage 2 network is shown in Figure 6.20. The network builds on committed infrastructure to provide the following key improvements:

- **Parramatta Light Rail Stage 2:** A new light rail line will be provided connecting Melrose Park with Parramatta CBD and Olympic Park. Additionally, there will be a major interchange point from the light rail to the new Sydney Metro West at Olympic Park. At least two stops will be provided within Melrose Park to cater for central / northern and southern precinct access to the line.
- **Sydney Metro West:** A new metro rail line is provided connecting Westmead, Parramatta CBD, Olympic Park, the T1 Northern rail line, Bays Precinct and Sydney CBD. There will be a major interchange point from the light rail at Olympic Park. This will be a key connection for Melrose Park residents, particularly connecting to Parramatta CBD and Westmead as this is likely to be the fastest route.
- **M52 bus route:** The AM peak service frequency along Victoria Road will be remain at 18 per hour eastbound and increase to 14 per hour westbound to provide direct connectivity from the northern portion of the precinct to Parramatta CBD and to West Ryde (rail connections to Sydney CBD and Macquarie Park) and Top Ryde.
- **New bus route (Top Ryde to Concord Hospital via Rhodes):** This new route will utilise the bridge and provide connectivity from Melrose Park, including the southern portion, to West Ryde in the north and to Wentworth Point, Rhodes and Concord Hospital in the south. The extension to Concord Hospital is proposed to provide a direct connection from new housing in Melrose Park to a major health precinct. This can support Melrose Park providing for a variety of different workers, rather than a sole focus on knowledge based workers based in centres. Notwithstanding this, an extension of the route to Macquarie Park may be viable and help to improve accessibility to this centre. Final route alignment will be at the discretion of TfNSW.
- **T1 Northern rail line:** Some customers traveling to the Sydney CBD and Macquarie Park would continue to interchange to rail at West Ryde rather than at Olympic Park. Sydney Metro West is likely to provide some relief to the Northern line as some customers on the Northern line may choose to interchange to Sydney Metro West at Concord West / North Strathfield. Capacity should be available on the T1 Northern line to cater for additional demand at West Ryde. Figure 6.19 shows that there will be sufficient spare capacity on the T1 Northern Line in Stage 2. It is noted that 8 suburban services an hour are proposed to run in this stage.

Figure 6.19 : Stage 2 2036 public transport demand (PTPM)

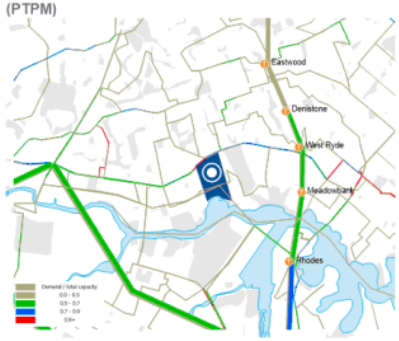
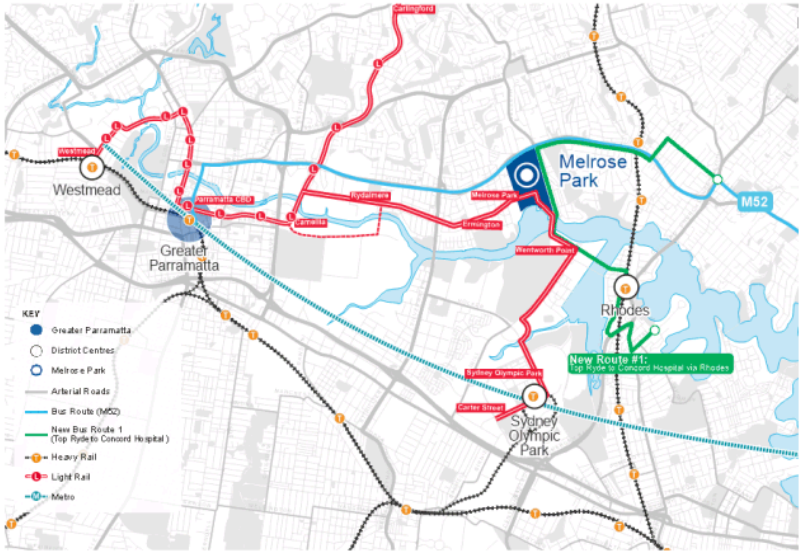


Figure 6.20 : Stage 2 public transport network



6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.4.6 Future public transport performance

The success of the public transport network serving Melrose Park will be measured against the key metrics outlined in Section 4.4. In particular; mode share, 30-minute access, and capacity of key routes will be targeted. An analysis of peak direction demand with and without Melrose Park and required service provision is provided in Table 6.4 and Table 6.5 below. This analysis covers the two key stages.

Some key findings to note include:

- Consideration should be given to the fleet mix of the M52 service, including whether all services will be articulated or whether double deck services would be appropriate. Our capacity assumption of 80 people per bus is based on a mixed fleet with the majority of peak services operating articulated buses with a capacity of 100 people per service.
- Significant bus frequency improvements are required to serve background growth regardless of the Melrose Park development, as shown in Table 6.4 and 6.5.
- Consistency with previous analysis and agreed mode share targets has been achieved by replacing the PTPM Melrose Park boardings with MPPM public transport demands.
- PLR Stage 2 demands are within acceptable LRT capacity thresholds.

The demand and required service capacity represents the ultimate scenario of both stages. It is anticipated that staged service capacity increases will be delivered in line with the development of dwellings.

Table 6.4 : Stage 1 public transport performance (6,700 dwellings - demand from PTPM 2026)

AM Peak 1-hour	M52 – To City	M52 – To Parra	Shuttle to Meadowbank	Other local services
Existing service	6/hr	6/hr	-	
Vehicle capacity (pax)	80	80	30	50
Peak line load without Melrose Park	980	650	-	
Required services without Melrose Park	13/hr	9/hr	-	
Melrose Park boardings[1] (outbound only)	**500[2]**	**370**	**330**	**150**
Peak line load with Melrose Park	1480	1020	330	
Required services with Melrose Park	20/hr	14/hr	12/hr	~3 additional/hr

[1] Melrose Park demand derived from MPPM

[2] Shuttle to Meadowbank not modelled in MPPM. Actual demand of 830 reduced by 330 to reflect redistribution to shuttle bus.

Table 6.5 : Stage 2 public transport performance (11,000 dwellings - demand from PTPM 2036)

AM Peak 1-hour	M52 – To City	M52 – To Parra	PLR S2 – to SOP	PLR S2 – to Parra
Existing services	6/hr	6/hr	-	-
Vehicle capacity (pax)	80	80	300	300
Peak line load without Melrose Park	1170	1150	1330	540
Required services without Melrose Park	16/hr	15/hr	4/hr	1/hr
Melrose Park boardings[1] (outbound only)	**220**	**80**	**1670**	**470**
Peak line load with Melrose Park	1390	1250	3000	1010
Required services with Melrose Park	20/hr	17/hr	10/hr	3/hr

[1] Melrose Park demand derived from MPPM

Bus interchange capacity

Consideration has also been given to the functional performance of bus routes at major interchanges along their respective routes. In particular at the interchange facilities at Parramatta and West Ryde.

At Parramatta, some spare capacity may be available due to service changes to support the introduction of PLR Stage 1. The PLR Stage 1 EIS states that supporting changes may include:

- Modifying services that access the Parramatta CBD
- Truncating some services to better integrate with the project and the broader transport network
- Discontinuing some routes with alternate travel options in place

All of the above may increase available capacity at Parramatta interchange. There is also potential to truncate some Victoria Road services if required to reduce pressure on the interchange whilst maintaining the required frequency through Melrose Park.

At West Ryde, M52 services stop on Victoria Road and do not use the bus interchange facility. The impact of a significant number of interchanging passengers on bus stop requirements has been considered. The westbound stop at Gaza Road in the PM period is considered the critical location due to the large number of boarding passengers interchanging from rail to bus at this location. On-site observations were used to derive a function to relate boardings to dwell time. The maximum forecast boardings of approximately 500 passengers per hour (2026 Stage 1 public transport network) would lead to average dwell times of approximately 60 seconds. The State Transit Bus Infrastructure Guide and TCRP Report 16 provide guidance on bus stop requirements based on bus frequency and average dwell times. Noting the expected service frequency of approximately 25 buses per hour, this leads to the requirement for 2 bus stop bays.

It is noted that the existing bus stop arrangement on Victoria Road at Gaza Road allows for 2 articulated buses and is therefore likely to be sufficient. If dwell times and/or the number of bus services are higher than forecast in the above analysis there is a risk of operational impacts to bus services, general traffic and pedestrians crossing Victoria Road at this location.

Roads and Maritime Services is currently undertaking a corridor study of Victoria Road, which includes examination of bus stop facilities and bus priority measures along the corridor. Should capacity issues arise at this location, the TMAP action plan allows for the provision of additional shuttle buses to intercept rail-to-bus travel demand at Meadowbank Station, reducing demand at West Ryde. Any capacity enhancements at the westbound West Ryde Bus stop should be considered as part of the overall Roads and Maritime Corridor Strategy, as this bus facility is outside of the sphere of influence of Melrose Park and passenger demand from Melrose Park at this stop will peak in 2026, after which time the proposed bridge across Parramatta River would be constructed.

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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Parramatta Light Rail Stage 2

The PTPM model was used to determine peak line loads along the planned PLR Stage 2 route between Parramatta and Sydney Olympic Park (via Melrose Park) as shown in Figure 6.22 and Figure 6.23.

Passenger volumes are highest at the Sydney Olympic Park end of the corridor where it connects to the proposed Sydney Metro West station. The forecast peak line loading into Sydney Olympic Park has spare capacity of approximately 400 passengers per hour. Loadings on services to Parramatta are much lower than in the southbound direction with spare capacity of approximately 1,700 passengers per hour.

Shuttle service to Meadowbank

The shuttle bus proposed under the Stage 1 network is planned to operate between Melrose Park and the western entry to Meadowbank station. This location is preferred as it avoids conflicts with the main bus interchange on the eastern side of the station.

Two stop location options have been identified (see Figure 6.21). Both stop locations have sufficient capacity to cater for the proposed 12 services per hour. It is noted that:

- Option 1 at the current 'kiss and ride' location provides the most direct access to the station.
- Option 2 would require the removal of 1-2 parking spaces and a potential installation of a marked pedestrian crossing across Bank Street.
- Option 1 is the preferred option as it utilities the existing kiss and ride facility and provides the most direct access to the station.
- Swept path analysis and indicative arrangement plans are shown in Appendix C and confirms the shuttle bus can safety negotiate the roundabout at Bank Street and Meadow Crescent.

Figure 6.22 : PLR Stage 2 line load - to Parramatta (2036 AM PTPM)

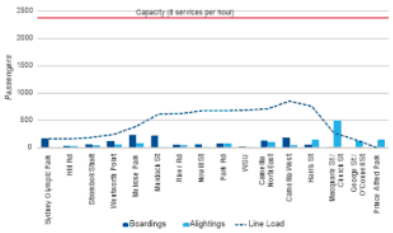


Figure 6.23 : PLR Stage 2 line line load - to Sydney Olympic Park (2036 AM PTPM)

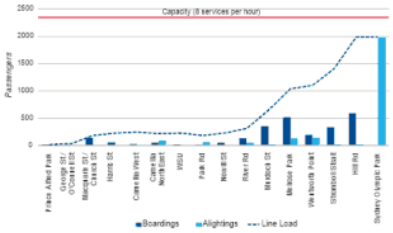
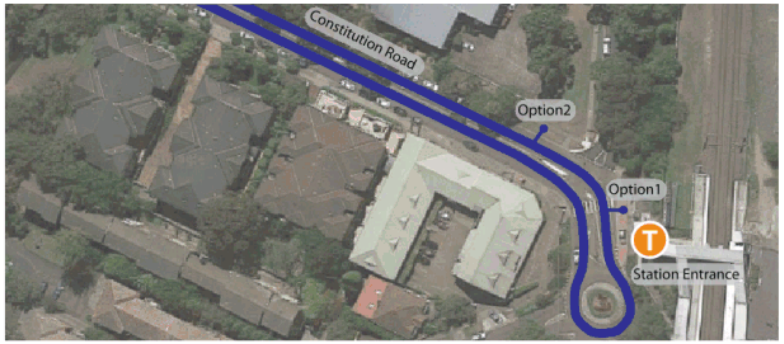


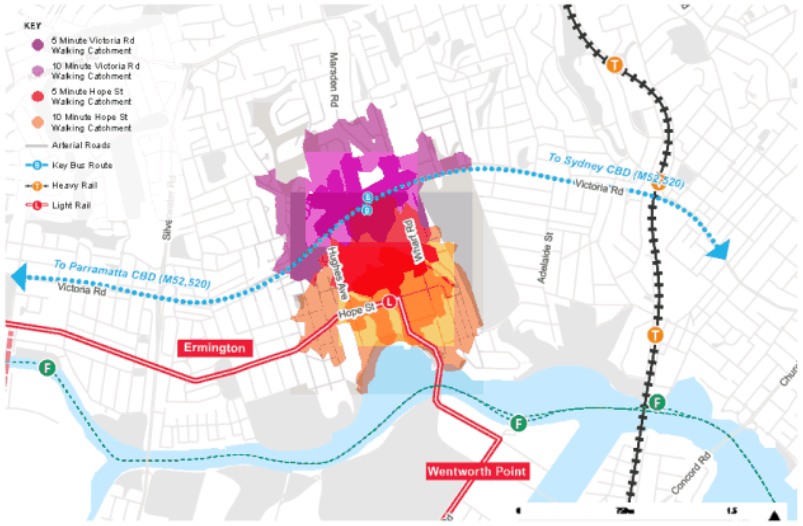
Figure 6.21: Shuttle bus stop location options at Meadowbank



Walking catchment to Public Transport

Another indicator of the function of the public transport network for Melrose Park is the walking catchment to bus and light rail stops of areas within 400 m of a bus stop and 800 m of a light rail station that meet minimum service frequencies. Figure 6.24 below shows that the majority of the Melrose Park precinct meets the minimum coverage area based on the proposed public transport network.

Figure 6.24 : Walking catchments for Victoria Road and Hope Street



6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.4.7 Implications of new bridge across Parramatta River to public transport

The Melrose Park precinct proposes to create a new connection between Melrose Park and Wentworth Point via a new bridge suitable for active transport trips and public transport (bus and/or light rail) services. This is a key transport infrastructure component to create a direct, grade-separated link between the Parramatta River foreshore the southern end of the Melrose Park precinct.

A new bridge across Parramatta River offers a significant future opportunity for a local and regional transport connection between Melrose Park and Sydney Olympic Park / the Sydney CBD. Being separate from local and regional traffic would offer a major improvement in directness and amenity to people walking and cycling. The potential to establish a light rail service through PLR Stage 2 along this line is being considered, but there is also an opportunity to establish an active transport connection which also connects to the Parramatta River and Wentworth Point foreshore shared paths.

The key benefits of a new bridge across Parramatta River include:

- Significantly improved public transport access between Melrose Park and the following key centres:
  - Sydney Olympic Park – including the proposed Sydney Metro West station
  - Carter Street precinct
  - Rhodes business park
- The enabling of key new bus routes between:
  - Top Ryde and Concord Hospital via Wentworth Point and Rhodes
  - Top Ryde and Lidcombe via Sydney Olympic Park
- Improved active transport connections to the southern foreshore of the Parramatta River including the shared path.

The provision of the new bridge will enable a light rail river crossing as part of Parramatta Light Rail Stage 2. This will lead to significant travel time savings for public transport trips between Melrose Park and both Sydney Olympic Park and Parramatta.

As shown in Figure 6.25, trips to Sydney Olympic Park would reduce from 45 minutes to 11 minutes. Trips to Parramatta would reduce from 30 minutes to 20 minutes. These are significant savings which will:

- Enhance the attractiveness of public transport trips between Melrose Park and these key centres.
- Reduce car reliance for future residents of Melrose Park and surrounding suburbs.
- Minimise the impact of the proposed development on the surrounding transport network.

It is noted that the delivery of PLR Stage 2 is yet to be confirmed and a business case is still to be finalised. If PLR Stage 2 was not to proceed, the Melrose Park development could be adequately supported by the provision of high frequency buses over the bridge connecting to Sydney Olympic Park.

Figure 6.25 : Public transport travel time savings resulting from new bridge

Public transport accessibility from Melrose Park

The future accessibility of Melrose Park is highlighted in Figure 6.26, which shows the catchment reachable from Melrose Park within 30 minutes by public transport. Accessibility is greatest in the north-south direction along the proposed PLR Stage 2 route with a new bridge across Parramatta River, reflecting the higher speeds of light rail which is also connected to Sydney Metro West (at Sydney Olympic Park) providing frequency services to Parramatta CBD and Sydney CBD. Accessibility is also enhanced considerably in the east-west direction with key connection opportunities provided with PLR Stage 2 to Parramatta via Rydalmere. The Melrose Park accessibility reflects coverage of the future network design, frequency, and speed of public transport services.

Figure 6.27 shows that approximately 175,000 jobs will be accessible within a 30-minute public transport journey from Melrose Park by 2036. Further, more than 200,000 people will live within a 30-minute public transport journey. This indicates that the proposed public transport network combined with a new bridge over the Parramatta River will ensure that Melrose Park is a highly accessible precinct for both residents and visitors. The delivery of regionally significant infrastructure in conjunction with the Melrose Park development will also have wide reaching benefits for surrounding communities.

Figure 6.27 : 30 minute job and population catchments

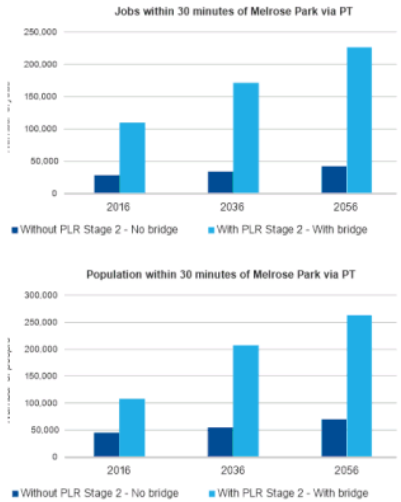
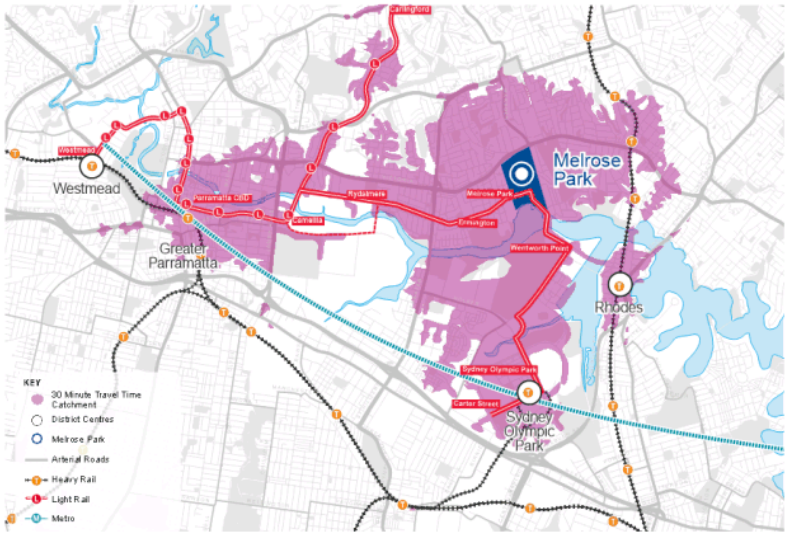


Figure 6.26 : Melrose Park 30 minute PT catchment (2036)



6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.4.8 Ferry services

The current F3 Parramatta River Services provides all-stop services from Parramatta to Circular Quay and Darling Harbour/Barangaroo. The current peak hour frequency is three (3) services per hour. All-stop services to/from Parramatta suffer speed and reliability issues due to tidal and river conditions. The Melrose Park public transport network is set to include bus, light rail and connections to existing heavy railway and the future Sydney Metro system.

In this context, ferry services are not an essential component of Melrose Park transport network. Any new ferry services (private or public) at Melrose Park must stand on its own merits to determine whether new infrastructure and services are viable. The requirements for future ferry services and potential upgrade to the existing wharf at the end of Wharf Road are influenced by a number of considerations including:

- Forecast patronage
- Service frequency and vessel characteristics
- Navigation and safety considerations
- Operational considerations both maritime and land side
- Design parameters and site conditions.

Patronage forecasts

Patronage modelling was undertaken to produce a broad, strategic estimate of potential ferry demand at Melrose Park. Patronage modelling is based on the current service plan and the available information provided by TfNSW during the course of the TMAP. For the purpose of this modelling a new wharf was assumed at Melrose Park. This patronage modelling indicates that:

- Ferry mode share for trips from Melrose Park is projected to be approximately 1%
- Projected patronage in the AM peak hour at Melrose Park in 2036 would be less than 100 people.

The preliminary modelling results indicate fairly low patronage demand at Melrose Park. This suggests that travelling by ferry is generally less attractive when compared with competing land based public transport network on bus/light rail/metro.

Summary

The introduction of a ferry service will have minimal appreciable effect on both future public transport patronage and mode share targets for Melrose Park. For ferry services to provide a viable alternative to private vehicles and to complement the surface public transport network proposed, it must be based on infrastructure needed to enable efficient ferry service operation suitable to the conditions and requirements of its particular location. The location of new ferry wharf on the northern side of Parramatta River (near Wharf Road) to cater for relatively large vessels (i.e. Rivercat), will need to be further examined.

The Melrose Park public transport network has been developed to reflect the demand and growth potential of the precinct without the need for ferry services. Ferry users on the Parramatta River will have access to the newly-upgraded Sydney Olympic Park and Meadowbank wharves, as well as the new proposed ferry wharf proposed at Rhodes East. The proposed new bridge across Parramatta River (at the end of Wharf Road) will also provide the ability for Melrose Park residents to conveniently and comfortably access transport and ferry facilities on the southern side of Parramatta River and, when necessary, transfer between different transport modes.

Table 6.6: Ferry opportunity and constraints

Criterion	Advantages	Disadvantages
Land use	• Integrated with high density mixed use development • Land available for a potential park and ride function at existing wharf.	• New ferry wharf location will be located in sensitive mangroves and coastal salt march • Land acquisition may be required for a new ferry wharf.
Public transport integration	• Strategic opportunity to develop a sustainable transport option • Future light rail stop on Wharf Road (yet to be confirmed) may be within walking distance • Potential to expanding public transport services to address other customer markets (visitors and tourists) • Provides long-term growth and operational flexibility in response to demand.	• Low public transport market share and patronage for commuters • New ferry wharf must provide high level of access between future light rail stops on Wharf Road and ferry wharf • Ferry services are generally very slow and therefore not attractive to commuters who are time sensitive.
Pedestrian access	• Good access via Parramatta River foreshore shared path • Opportunity to integrated with existing Parramatta River foreshore shared path.	• Existing wharf location pedestrian access constrained and through an existing car park.
Road access	• Land available for potential park and ride site to be integrated with the ferry system • Land available to provide a coherent and legible road network.	• Existing car parking and boat ramps is likely to cause potential conflicts • New bridge proposed across Parramatta River (end of Wharf Road) will impact on circulation roadways to/from ferry terminal.
Maritime operations	• Protected from open water • Adjacent to F3 Parramatta River Services and the opportunity to join the broader ferry network for longer trips • Potential to operate on demand services via a private operator.	• Speed and tidal restrictions along Parramatta River may cause disruption to ferry operations particularly towards Parramatta • New bridge proposed across Parramatta River (end of Wharf Road) will impact on location of ferry wharf and vertical clearance requirements • Potential maritime operations issues relating to navigation safety considerations, turning and maneuvering space • Existing boat ramp activities closely spaced with existing wharf location • Water depth along foreshore near existing wharf and may need to be dredged • Significant subsidies required for both the initial investment and operational costs.

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.5 Walking and cycling

6.5.1 Introduction

There are numerous opportunities for walking and cycling in and around the Melrose Park precinct, particularly for short trips to nearby strategic centres. This is in line with one of the customer outcomes of *Future Transport 2056*, which aims to make walking and cycling the most convenient choice for short trips.

6.5.2 Active transport planning principles

Active transport planning for Melrose Park has been informed by a guiding set of planning principles. These aim to ensure that residents of and visitors to Melrose Park have the opportunity to walk and cycle as part of their everyday travel, especially for short trips and as part of multi-modal public transport trips. These include:

- **Encourage walking and cycling for short trips** by providing high quality, comfortable and safe facilities for walking and cycling, encouraging residents, visitors and in particular Melrose Park Primary School students to use active transport.
- **Integrate walking and cycling with public transport access** by providing adequate walking and cycling access and facilities at key public transport nodes, such as light rail stops, heavy rail stations and metro stations, promoting active transport as part of multi-modal public transport trips.
- **Provide connected and permeable walking and cycling networks** by ensuring that the walking and cycling networks are complete, closing existing gaps and improving connections where required. Provide connections to key local destinations such as Melrose Park Primary School and the new town centre. Pedestrian and cycle paths to be separated where feasible.

6.5.3 Walking and cycling network

The street network surrounding Melrose Park is relatively permeable for walking. The Melrose Park precinct will improve permeability by providing new links connecting through the precinct to Victoria Road, Hughes Avenue, Wharf Road and Hope Street. Travel to the north is somewhat constrained by uphill grades.

Major east-west cycling access is currently available along the Parramatta Valley Cycleway, which follows the Parramatta River. This is identified in *Sydney's Cycling Future and Future Transport 2056* as a key strategic cycling corridor, providing access to Parramatta CBD, Western Sydney University at Rydalmere, Meadowbank and Rhodes. Apart from this corridor there are presently limited cycling facilities provided in and around Melrose Park.

A number of new and upgraded active transport facilities are proposed in the precinct:

- *Parramatta Bike Plan 2017* proposes a fully separated cycleway is proposed for Hope Street, providing a new high quality east-west cycle connection through Melrose Park to Rydalmere
- A separated shared path on the western side of Wharf Road, connecting the Hope Street cycleway to the existing Parramatta Valley Cycleway
- Safe and adequate connections to Melrose Park Primary School as identified in the Southern Precinct Structure Plan

A new public and active transport bridge across Parramatta River is proposed which will provide significantly greater walking and cycling access to Sydney Olympic Park and beyond.

Figure 6.28 shows walking and cycling catchments from Melrose Park. The catchment analysis is indicative only and does not take into account locations in the road network which may be difficult for pedestrians and cyclists to traverse, such as major grade separated intersections. It does however provide a useful strategic assessment of active transport accessibility.

The catchment analysis shows:

- **10 minute walking catchment,** with new through-site links through the Melrose Park precinct. This shows that major bus routes on Victoria Road would be accessible within a 10 minute walk from the centre of the Melrose Park site, as well as future light rail services as part of Parramatta Light Rail (PLR) Stage 2. Melrose Park Primary School is within a comfortable walking distance for the entire site and immediate surrounding areas.
- **20 minute cycling catchment,** with a new bridge crossing Parramatta River. The area shaded yellow shows the expanded cycling catchment resulting directly from the new bridge. Stations on the T1 Northern Line would be easily within a 15 – 20 minute ride, as would light rail stops on PLR Stage 1. The new bridge would provide access to Sydney Olympic Park and access to the future Sydney Metro West station in this location.

Active transport connections to key nearby public transport services are shown in Figure 6.29. Meadowbank is able to be accessed by a predominantly off-road route utilising the Parramatta Valley shared path. An on-road/footpath route is also available via Andrews Street. Connections to Rhodes will be possible via the new bridge over Parramatta River and the Bennelong Bridge. The majority of this route is via separated paths or local streets.

Figure 6.28 : Walking and cycling catchments

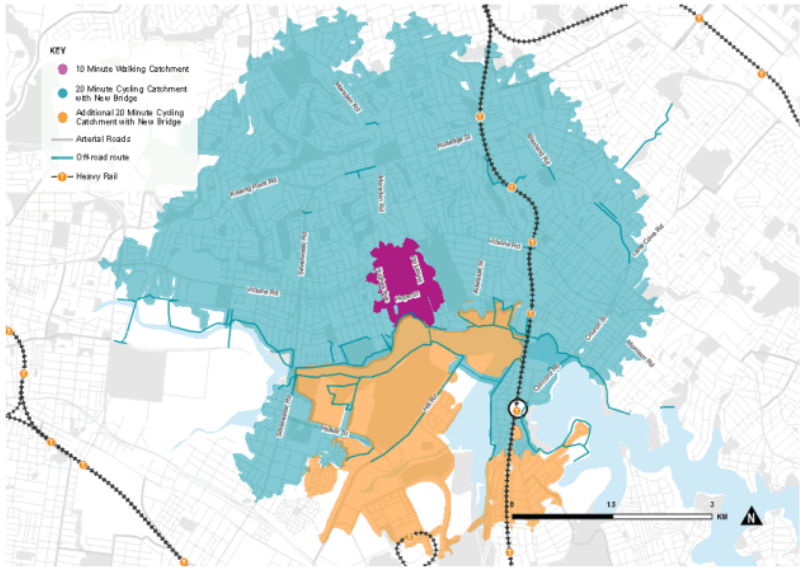

Figure 6.29 : Walking and cycling routes to public transport

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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6.5.4 Integration with other modes

There are several opportunities for multi-modal travel commencing with a walk or cycle trip from Melrose Park. Nearby public transport nodes should be provided with good active transport integration, including:

- Suitable pedestrian treatments at and around bus stops, light rail stops, heavy rail and metro stations. This includes traffic calming treatments to provide safe and easy pedestrian access.
- Provision of adequate bicycle parking facilities at or nearby bus and light rail stops, and bike cages or lockers at heavy rail and metro stations.
- Provision of adequate weather protection at stops and stations for waiting customers.
- Appropriate wayfinding signage in the Melrose Park precinct and at public transport stops and stations, advising customers on location and access points.

6.5.5 Promotion of walking and cycling within Melrose Park

A range of measures are proposed to promote walking and cycling within Melrose Park, including:

- Provide sufficient bicycle parking provision for residents, employees and visitors, including secure bicycle parking for residents
- Provide end of trip facilities for employees and primary school students
- Ensure residents and employees have access to sufficient travel information, including:
  - Maps of the walking and cycling network in and around Melrose Park precinct
  - Recommended walking and cycling routes
  - Average travel times to key destinations.
- Provide wayfinding and signage within the precinct to facilitate walking and cycling trips, and access to bicycle parking facilities
- Provide basic bicycle repair support, such as flat tyre repairs and tyre inflation.

All active transport infrastructure will be designed and implemented in accordance with the Disability Discrimination Act (1992)

Figure 6.30 : Example of supporting facilities for walking and cycling integration with public transport

6.5.6 Bicycle parking provision

An appropriate level of bicycle parking should be provided to support cycling to and from the Melrose Park precinct. The *Parramatta DCP 2011* has been used to develop a set of recommended minimum bicycle parking rates.

Table 6.7 outlines the bicycle parking provision for Melrose Park based on the *Parramatta DCP 2011* rates.

Table 6.7: Recommended minimum bicycle parking provision for Melrose Park (Parramatta DCP 2011)

Melrose Park land use		Minimum bicycle parking provision
Development type	**Dwellings / GFA**	
Residential	11,086 dwellings	**5,543 spaces** (0.5 per dwelling)
Commercial	19,400m² GFA	**97 spaces** (1 per 200m² GFA)
Retail	15,600m² GFA	**78 spaces** (1 per 200m² GFA)

6.6 Parking

6.6.1 Introduction

The Melrose Park structure plan recognises that there is a very strong link between parking provision and travel behaviour, and that it is a critical element of the integrated transport strategy. At the same time, it is necessary to develop a staged approach to parking that will balance the short term needs with the long term objectives for sustainable parking management within Melrose Park. Parking provision in the early stages at Melrose Park will need to balance the imperative of achieving development as early as possible, while parking provision in the later stages (beyond 2020) will need to constrain parking supply as a means of reducing travel by private car and to encourage public transport use. It is proposed to achieve the objectives relating to parking through physical planning, parking design, future trends in mobility as well as parking provision rates that reflect the site's accessibility.

6.6.2 Benchmarking and trends

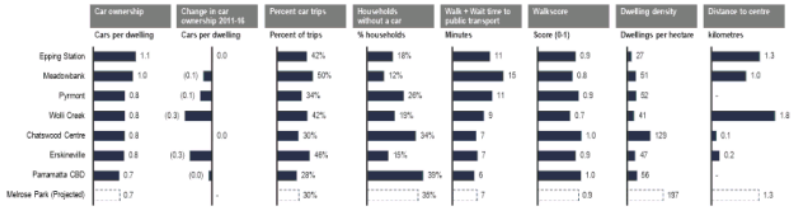
Car ownership patterns

In developing a parking strategy for Melrose Park a benchmarking exercise was undertaken by Kinesis *"An Evidence Base Parking Strategy for Melrose Park"* (06 March 2018) of car ownership and car use patterns for similar high density developments within the Sydney context (refer Figure 6.31).

The results show:

- Car ownership in the selected locations is between 0.7 and 1.1 vehicles per household
- Most areas have seen a decrease in car ownership in the last 5 years.
- 50% of all trips are generally made by car
- Areas with high access to public transport contain a large number of households (30-40%) that don't own a car.

Figure 6.31 : Benchmarking and trends (Kinesis)



6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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Comparison of Parking Provision

Some examples of existing parking rates in selected Sydney councils are shown in Figure 6.30 for residential car parking controls. These councils have been selected as part of the TMAP for the following reasons:

- To reflect different areas or parking policy approaches to parking
- To highlight different parking provision approaches to implementing parking strategies
- To identify and compare a wide spectrum of parking policy from other local government areas within the Sydney Metropolitan spectrum
- To identify parking policy approaches in areas with similar urban and transport environments.

Parking controls across Sydney vary widely by council areas, with some council's providing a more 'best practice' model than others. Generally, adoption of maximum parking rates is considered to be desirable to ensure that there is not an oversupply of parking. Minimum parking rates effectively force proponents and developers to provide a certain number of car spaces and provide no restriction on the overall number.

Parking provision

Parking provision rates specified by the City of Parramatta DCP, Epping Town Centre DCP and the RMS Guidelines have been compared to assess various scenarios the total number of parking spaces required for the Melrose park structure plan and these calculations are provided in Table 6.8 below. It is noted that the RMS rates are recommended only for high density centres with a significantly higher jobs to dwellings ratio than is proposed at Melrose Park. It has however been included in this analysis to demonstrate the variance in total parking requirements as a result of different available rates.

Parking Provision for High Density Developments

Figure 6.32 shows the parking rates for high density residential dwellings from recent survey data provided by TfNSW and RMS. It is observed that the majority of these sites provide between 1.0 and 1.5 spaces per dwelling. The average across all sites is 1.3 spaces per dwelling. The majority of these sites do not have immediate access to mass transit comparable to the access that will be available to future residents of Melrose Park i.e. Parramatta Light Rail Stage 2. Furthermore, unlike Melrose Park, several of these sites are not located within 30 minutes of both the Eastern and Central cities. There is a clear opportunity for Melrose Park to provide parking spaces at a rate towards the lower end of the range presented in these surveys.

Figure 6.32 : Parking provision benchmarking

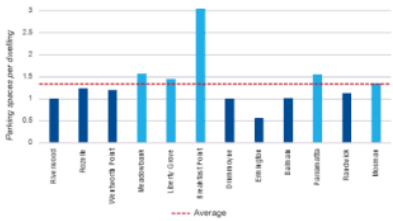

Table 6.8 : Comparison of parking requirements

		City of Parramatta DCP		Epping Town Centre		RMS (High density centre)	
Land use	GFA/ Dwellings	Parking Rate	Spaces	Parking Rate	Spaces	Parking Rate	Spaces
Commercial	19,400m²	1 per 50m²	388	1 per 70m²	277	1 per 40m²	485
Retail	15,600m²	1 per 30m²	520	1 per 60m²	260	1 per 20m²	780
Residential: 1 bed	2,910	1.0	2,910	0.75	2,182	0.6	1,746
2 bed	6,781	1.0	6,781	1	6,781	0.9	6,103
3 bed	1,190	1.2	1,428	1.5	1,785	1.4	1,666
4 bed	205	2	409	1.5	307	1.4	286
Total			12,436		11,592		11,066

It is clear that the application of existing parking controls would result in the provision of a significant amount of on-site parking. This would require significant construction and excavation costs, reducing the affordability of homes whilst also facilitating excessive car use and reducing the livability, vibrancy and sustainability of the precinct.

The current approach to parking provision does not represent industry best practice for an integrated transport network which entails innovative measures to achieve more sustainable access. There are several factors that would warrant a revised approach to parking policy for Melrose Park:

- Proposed future improvements to public transport as proposed by TfNSW, through the implementation of PLR Stage 1/2 and Sydney Metro West services improving connectivity and accessibility to public transport and major strategic centres
- The constraints of the higher order road network surrounding the site to accept a marked increase in traffic projected from other developments, even with improvements to capacity over time
- Planning trends show that residents living in areas of high dwelling density have lower car use and as such, lower car ownership relative to the Sydney Metro average
- Residents living in areas proximate to major centres areas exhibit lower car use relative to the Sydney Metro average. Melrose Park is located:
  - 5km from Rhodes Business Park
  - 8km from Sydney Olympic Park
  - 6km from Parramatta CBD
  - 7km from Macquarie Park
  - 15km from Sydney CBD.
- Melrose Park development includes a town centre with retail shopping, childcare centres and community facilities limiting the need for residents to make short car trips.

6.6.3 Parking provision considerations

Parking provision to public transport facilities

As development densities and public transport options increase at Melrose Park, the rate of parking demand is likely to decline. Public transport infrastructure such as Sydney Metro West, Parramatta Light Rail Stage 2 and new bridge across Parramatta River (suitable for active transport and public transport trips only) will constitute significant elements in the urban structure of the Melrose Park structure plan. Parking levels can be decreased as the public transport system improves and development momentum increases. In this context, the estimated reduction in the number of parking spaces required in major dense urban centres close to public transport facilities is provided in Table 6.9 (Professor Hans Westerman, *Cities for Tomorrow*).

By having development close to public transport infrastructure and services (such as Victoria Road and Hope Street) and by sharing and consolidating parking, overall parking requirements can be realistically reduced by 20%-30% for 'ultimate' build-out of Melrose Park. These parking reductions would need to be rolled out incrementally over time as higher mass, intermediate and active transport options are delivered to Melrose Park and GPOP.

Table 6.9 : Parking reductions near public transport facilities

Location of development	Reduction (estimate)
Transit corridor	5%-10%
Station influence area	15%-20%
Transit interchange	25%-30%
Multi-modal transit hub	60%

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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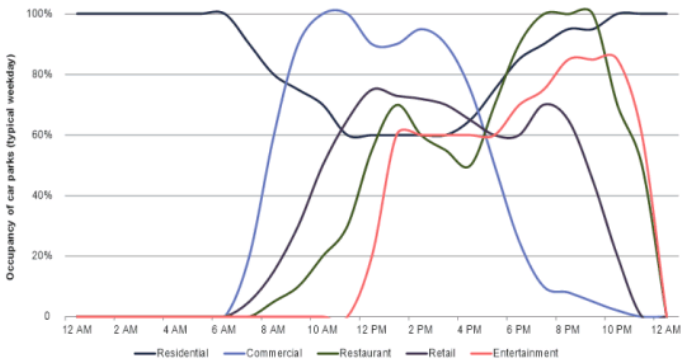
Shared and complementary use of parking

By providing common parking facilities in locations where they can be used for a range of surrounding land uses, it will be possible to reduce the net parking provision as development progresses. Shared parking is parking shared by more than one user, which allows parking facilities to be used more efficiently. This arrangement reduces the potential for over-provision of parking spaces since complementary land uses can effectively use the same spaces. For example, the use of commercial parking for retail activities, since their times of peak demand do not coincide. These relationships are illustrated graphically in Figure 6.32 with parking assigned by type of activity based on time of day variations as reported in Urban Land Institute.

Figure 6.33 : Shared parking opportunities (Urban Land Institute)



Innovation to promote sustainable travel behaviour

Innovative parking solution for Melrose Park needs to respond to the site's level of accessibility but also to future trends in mobility. To complement the innovation incorporated into the structure plan elements of Melrose Park, we have developed a range of innovative approaches aimed at promoting more sustainable travel these include:

1. Unbundled Parking

Unbundled parking is parking that is separated from the cost or rent of a dwelling or building. In this case, residents have the choice to purchase/lease parking rather than it being bundled in the cost of housing. This can also reduce the total amount of parking required for the building. For buildings with unbundled parking, an overall parking rate reduction of 10-30% may be feasible.

2. Decoupled Parking

Decoupled parking is parking that is spatially separated from the building to which the parking services. It is also generally unbundled from the sale or rental of an apartment or building. The benefits of decoupled parking are significant, enabling transition to a low car dependent future and reduce parking rates by up to 10%. Decoupled parking has the potential to deliver the significant and mutually reinforcing benefits of parking. The shift towards lower car ownership rates and emergence of the autonomous vehicle will reduce the need for parking and investment in underground parking. In particular, parking stations/basement parking may lose value as vehicles may no longer need to be parked or housed at origin or destination locations.

3. Car Share and Planning for Reduced Car Ownership

Melrose Park is a multi-decade development and will be built out over the next 10 to 20 years. Encouraging residents to use car share schemes is one approach that can be used to reduce car dependence and ownership levels. A reduction in parking to reflect recent reductions and trends in car ownership could be expected to continue with the emergence and growth of car share, Mobility as a Service (MaaS) and connected autonomous vehicles. This will be initially supported through the delivery of car share spaces across the development and can potentially reduce parking rates by up to 10%.

4. Physical planning and design

Melrose Park will allow for common parking facilities in locations where they can be used for a range of surrounding land uses, it will be possible to reduce the nett parking provision as development progresses. The physical planning and design will incorporate:

- Dedicate parking space for car share programs and electric vehicles
- Parking location, design and access will enable better sharing of spaces and active management of supply. This will improve productivity of parking spaces and assist in achieving transport targets.
- Share mobility pods. Space will be provided within the Melrose Park for car and bike share, as well as emerging forms of share mobility such as e-mobility (electric mopeds etc).
- End of trip facilities for active transport (e.g. a bike hub providing showers, lockers and maintenance equipment).

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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Recommended parking provision

The overall transport objective of Melrose Park is to reduce the impact of the private car and promote alternative modes of transportation. Whilst there is a need to ensure that adequate access can be provided before public transport measures are introduced, in the medium and long term it is a core objective to reduce car parking and promote alternatives modes. This objective is supported by the demand management measures that are discussed above.

It is observed that all areas of the precinct will be within walking distance on high frequency buses and future light rail services on Victoria Road and Hope Street respectively. An 800 metre walking catchment was adopted on the basis that it is a readily accepted land use planning assumption that can be comfortably walked in 10-15 minutes. This also means the location is within close proximity to local services currently existing or planned within the Melrose Park precinct. The combination of the above strategies is expected to enable parking provision for Melrose Park as outlined below.

All parking rates are proposed to be maximum rates consistent with best practice to ensure there is not an oversupply of parking and that developers are not forced to provide additional costly parking that is not required, and which contributes to increased living costs.

It may be appropriate for earlier stages of the development to apply slightly higher rates if deemed appropriate and lower rates applied in the longer term. For this reason, proposed parking rates in Table 6.10 use the existing Parramatta Council DCP rates for short term development with medium to longer term rates representing the overall parking vision for the precinct.

Table 6.10 : Proposed maximum parking rates

	Residential (spaces per dwelling)						Non-residential (GFA per space)	
	Studio	1 bed	2 bed	3 bed +	Visitor	**Total[1]**	Commercial	Retail
Short term	1	1	1	1.2	0.25	**1.27**	50m²	30m²
Med-long term	0	0.3	0.7	1	0.1	**0.73**	50m²	30m²

1. Total residential rate per dwelling based on dwelling mix specified by Melrose Park proponents

Off-street

The parking provision rates set out in the Table 6.11 reflect suggested rates adopted for above which will have good public transport provision when the overall development is completed. The parking rates shown for the Barlett Park site have already been approved. The number of spaces proposed for 'full build-out' (2036) is below the levels required by the City of Parramatta standard parking standards. An overall objective of the Melrose Park development is to reduce the impact of the private car and promote alternative modes of transportation. Whilst there is a need to ensure that adequate access can be provided before public transport measures are introduced, in the medium and long term it is a core objective to reduce car parking and promote alternatives modes. In line with the objectives to reduce the level of car dependency it is recommended that the level of car parking provided on the site is reduced to a total of 9,441 spaces comprising 6,161 and 3,280 spaces for northern and southern precincts respectively.

Table 6.11 : Recommended off-street parking provision for Melrose Park (full build-out)

Land use	Parking Rate	GFA/Dwellings	Spaces
Northern Precinct			
Office/Commercial	1 space per 50m²	15,000m²	300
Retail	1 space per 30m²	12,500m²	417
Residential	0.73 spaces per dwelling	5,650 dwellings	4,125
Residenital (Bartlett Park)[1]	1 space per dwelling + 0.1 visitor spaces per dwelling	1,200 dwellings	1,320
Sub-total			**6,161**
Southern Precinct			
Office/Commercial	1 space per 50m²	4,400m²	88
Retail	1 space per 30m²	3,000m²	100
Residential	0.73 spaces per dwelling	4,236 dwellings	3,092
Sub-total			**3,280**
TOTAL			**9,441**

1. Parking rate as previously approved

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

On-street parking (within Melrose Park)

The amount of on-street parking within the Melrose Park has been raised as an issue by the City of Parramatta (CoP). The majority of residential parking for the Melrose Park precinct will be provided off-street including visitor parking. To cater for greater variability in parking demand for on-street parking in the future, CoP would like to see on-street parking on both sides for all internal streets where possible within the Melrose Park precinct.

The amount of on-street parking within Melrose Park should be time restricted as far as possible to ensure parking spaces are allocated efficiently around key transit nodes and the proposed town centre. This will prevent long term parking for residents and commuters within Melrose Park, in particular when light rail is implemented On-street parking within the internal street network will incorporate parallel kerbside parking either on-carriageway parallel bays and/or indented parallel parking bays. Car share parking spaces are also planned to be on-street that would highlight the presence of these share cars and encourage residents to take up car share instead of purchasing private vehicles. An estimate of the number of on-streets spaces proposed for Melrose Park is summarised below:

- Northern Precinct – approximately 700 spaces
- Southern Precinct – approximately 500 spaces
- Total – 1,200 spaces.

Car share on-street parking (within Melrose Park)

City of Sydney and Leichhardt DCPs have been used in the development of car share rates as these are considered best practice and applicable to the future vision of the precinct (1 space per 40 dwellings). Car sharing rates have been developed using the parking categories outlined above. Car share schemes are generally more successful in higher density areas with limited off-street parking availability and high quality public transport, and this aligns well with the parking categories.

The Melrose Park Parking Strategy (Kinesis 2018) suggests that car share spaces can be provided in lieu of standard car parking spaces. Each car share space can replace up to 5 standard spaces.

Car share spaces will be located in publically accessibility parking spaces and located in strategic sites across the development to enable short walking distances.

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6.7 Travel demand management

6.7.1 Introduction

The success of the overall TMAP requires the identification of demand management options that could potentially address future congestion problems that could be experienced on the transportation system within and around Melrose Park. In order to enable the desired changes to travel behaviour, a number of headline demand management options are discussed in the sections below. All of these support the overall transport network approach outlined in the TMAP.

6.7.2 Approach

The provision of demand management measures has been undertaken based on the following principles:

- Reduce car dependency, improve and maximise the share of travel by public transport, pedestrians and cyclists.
- Support a modal shift from private vehicles to public transport.
- Recognise the competing demands for car parking and set out parking management measures.
- Provide environmental protection through the reductions in total travel and the congestion levels in the transportation system.
- Apply an approach consistent with 'Travel Choices' method adopted by Transport for NSW focusing on re-mode, re-time, re-route or reducing journeys.

6.7.3 Demand Management Measures

There are a broad range of travel demand management options outlined in Table 6.12 that could be applied to Melrose Park. These range from "hard measures", such as parking charges and workplace parking levies through to "soft measures" such as car sharing, car clubs, public transport information, tele-working, etc.

Parking Management and Control

There are a number of ways in which parking management and control can be used to influence demand. These primarily include:

- Parking charges – for all or certain road user categories (i.e. time based pricing, vehicle occupancy pricing).
- Reducing or limiting available parking space for all or certain road user categories (i.e. vehicle size parking to encourage the use of smaller and more environmentally friendly vehicles).
- Variable parking pricing programs during congested hours of the day.
- Improving enforcement and control of available parking.
- De-coupling and/or unbundling of off-street car parking from being 'locked into' specific building structures or rent / ownership arrangements

Table 6.12: Suite of demand management measures

SOFT →				HARD
Providing Information	Encouraging behaviour change	Enabling behaviour change	Discouraging unsustainable behaviour	Preventing unsustainable behaviour
Awareness campaigns	Workplace and school travel plans	Prioritising public transport	Parking charges	Access control
Cycling and walking information	Flexible working hours	Car share schemes	Parking management	Pedestrianisation
Advanced traveller information	Personalised travel planning	Car pooling scheme		
	Opal card with pre-loaded value provided upon occupation	Smart work hubs		

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

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Car-sharing

Car-sharing is an effective approach for encouraging reduced levels of car ownership. Car-sharing is best suited to high density, mixed use environments that provide a range of alternative transport options. Many car share providers provide a membership car share service that enables efficient online car booking and rental for registered users.

The service allows users to book, and have on-demand access to, a shared car or vehicle as their needs require. Cars are accessed through smart card technology with cars located in designated reserved spaces in established strategic locations. For example, GoGet has partnered with Parramatta City and City of Ryde councils to facilitate car share schemes within its boundaries with policy dedicated to promoting car share use including actions orientated towards management of kerbs and off-street car share parking.

Travel Choices

Travel Choices is a simple framework designed to help reduce peak hour travel, allow people to move around more efficiently and improve business productivity.

- *Remode*: use public transport as driving may no longer be your best option.
- *Retime*: avoid travel during the peak, especially between 8-9am and 5-6pm.
- *Reduce*: minimise the number of times you have to travel, especially by car.
- *Reroute*: use the city's preferred driving routes where possible.

Retiming and reducing are effective ways for people to avoid driving in the AM and PM peak. A number of approaches within the Travel Choices framework could be applicable to managing demand for private vehicles in Melrose Park.

Flexible working arrangements

Flexible working arrangements can include:

- *Flexible hours*: changing start or finish times.
- *Flexible patterns*: working longer days to provide for a shorter working week.
- *Flexible rostering*: split shifts.

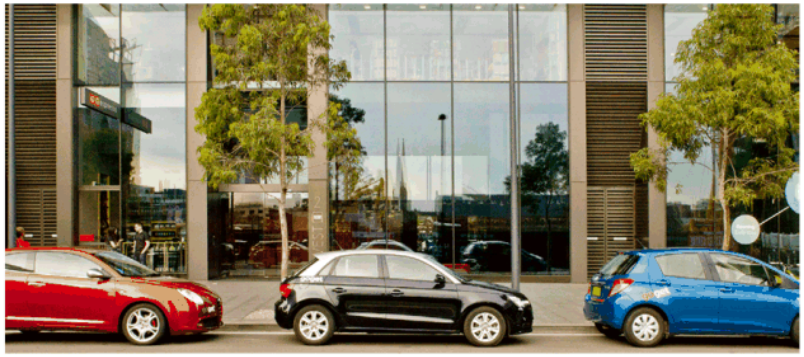
All of these arrangements would require significant support from employers in employment locations of Melrose Park workers e.g. Sydney CBD, Parramatta CBD, Rhodes and Olympic Park.

A 'smart work hub' could be considered in Melrose Park due to the significant commuter population it is likely to contain. A Smart Work Hub offers all the conveniences of a modern office – high speed internet, meeting rooms, videoconferencing facilities, informal lounges and quiet booths – but in close proximity to home. It is a shared workspace with others from small businesses, government and corporate organisations utilising the facilities. Telecommuting allows worker to either eliminate a commute trip altogether by working from home or to reduce trip length by working from a satellite office, such as a smart work hub.

End-User Facilities

The decision to travel to work via walk or cycle tends to be driven in large part by the availability of enduser facilities. These may include showers for cyclists, bike cages or other bicycle parking facilities that ensure safe and secure storage of bicycles, changing rooms and drinking water facilities. These facilities should be incorporated within all employment locations within Melrose Park.

Figure 6.34 : Car-share opportunities (GoGet)



Transport Management Association

The implementation of the Melrose Park TMAP could be supported by the establishment of a Transport Management Association (TMA) charged with managing the delivery and monitoring of the plan's outcomes. The TMA's responsibilities in terms of travel demand management may include, but not be limited to:

- *Personalised Travel Planning*: Personalised travel planning involves the provision of tailored information and incentives directly to households with the aim of influencing travel behaviour and reducing car usage.
- *Travel Information*: Working with transport service providers to provide road users with information about congestion in the surrounding network so the trip characteristics can be altered to avoid congestion.
- *Public Transport Information*: Establishing a marketing campaign and developing a strong, overarching, brand image for public transport has the potential to perform a key role in supporting other demand management options and encouraging modal shift from the private car to public transport alternatives. It is imperative that a good level of public transport service be in place before the promotion and marketing of a route or service can be considered as an effective tool. This could also be supported by a commitment to the early provision of Opal cards by proponents.

Workplace and Green Travel Plans

Workplace travel plans and green travel plans are generally a set of practical initiatives that are put in place by employers or building managers before occupying a new of existing development that encourages staff and residents to choose alternatives to driving that are healthier and more sustainable. For travel plans to be successful in reducing vehicular travel demand, they should be developed in a tailored manner that respects the specific needs to each particular location / organisation.

Elements of such travel plans can include many of the initiatives mentioned above, as well as information programs for sustainable transport, active transport initiatives, flexible work hours, proactive cooperation with transport agencies to tailor public transport facilities to the site and employer initiated parking policy that support public transport use.

A TMA would be charged with supporting the development, delivery and monitoring of all travel plans within the precinct. Expected outcomes of the plans (e.g. mode share targets) will be monitored by the TMA

Recommendations

A summary of the demand management measures recommended as a part of this study area are outlined below

- Implement comprehensive parking management and control approach for Melrose Park including consideration of de-coupling and unbundling off-street parking
- Develop car sharing approach for Melrose Park including parking rates to be delivered for specific developments
- Investigate the provision of a 'smart work hub' within Melrose Park to reduce commuter peak demand
- Provide high quality end-user facilities for all new developments in Melrose Park
- Measures be considered for inclusion in relevent site specific control plans for Melrose Park.

6. APPRAISAL OF MELROSE PARK STRUCTURE PLANS

7. IMPLEMENTATION PLAN

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7. IMPLEMENTATION PLAN

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7. IMPLEMENTATION PLAN

7.1 Overview

The development of an integrated package of measures and strategies for the Melrose Park TMAP has evolved over an ongoing process based upon close consultation with City of Parramatta, Department of Planning & Environment, Transport for NSW, Roads and Maritime Services and key stakeholders.

The implementation plan provides a framework to ensure an integrated and coordinated approach to achieve the objectives set out in the TMAP.

Whilst a number of the specific measures and strategies of this TMAP will be pursued jointly by both local and NSW Government, there will also be a number of measures and that will be taken forward by Melrose Park proponents separately. In implementing the processes outlined in this TMAP, the outcomes across the precinct and wider region will be consistent and coordinated.

7.2 Staging and trigger points for major infrastructure and services

Melrose Park precinct is a multi-decade development and will be developed in stages. The initial staging will be based on land ownership, market demand, cash flow, constructibility, community needs and design considerations.

Melrose Park precinct needs to build in flexibility to accommodate future changes and to ensure land use strategies are closely coordinated with infrastructure delivery. It is important to understand the short, medium and long term changes in demand and service level requirements as the development progress. Although a particular capacity or service level is required for ultimate development, infrastructure will usually be provided in stages to match demand and lower levels of service can be tolerated in the short term.

A key aspect in the timely and cost-effective provision of infrastructure and services is the integration of land release strategies with the delivery of infrastructure. This is to ensure that the use of existing assets and any spare capacity is maximised early in the process to ensure efficient delivery of future infrastructure.

The key aspects of the Melrose Park staging approach include:

- Assessing infrastructure demand over the proposed development period and identifying critical short term, medium and long term demands
- Ensuring public transport services are provided in line with development to encourage sustainable behaviour and reduce car reliance
- Investigation of existing and future infrastructure capacity to identify "trigger" thresholds and timeframes for contribution and implementation
- Preparing an infrastructure staging plan which moderates the development staging plan as required taking advantage of infrastructure capacity.

The detailed staging and sequencing for Melrose Park will be further refined after the planning proposal with development contingent on the delivery of transport infrastructure. The following staging scenarios have been considered:

- An extension of the existing development front from Victoria Road following development occurring at the former Bartlett Park site (Figure 7.1)
- Development occurring on two fronts (i) an extension of the existing Bartlett Park site, and (ii) the proposed new town centre at the south-east corner of the northern precinct (Figure 7.2)

The indicative staging described below has been formulated in conjunction with the establishment of the road network and public transport facilities to ensure that Melrose Park evolves in a coherent and efficient manner.

Dwelling yields for each stage reflect the trigger point for the associated infrastructure. e.g. Stage 1A works are required in order to support a yield of more than 1,100 dwellings. Years shown are indicative only.

Stage 1A: Delivered at approx 1,100 total dwellings (2021)

- Widening of Wharf Road south of Victoria Road
- Left in/left out access from Victoria Road to NSR-2 (i.e. at Kissing Point Road)

Stage 1B: Delivered at approx 1,800 total dwellings (2022)

- Upgrade of Victoria Road/Wharf Road intersection to provide:
  - Additional dedicated left turn lane on eastern Victoria Road approach
  - 4 lanes at the stopline on Wharf Road approach - 1 left, 1 through, 2 right
  - Removal of slip lane on western Victoria Road approach and realignment of stopline to allow for more efficient 'diamond' signal phasing
  - Additional through lane on Marsden Road approach

Stage 1C: Delivered at approx 3,200 total dwellings (2024)

- Upgrade of the Victoria Road/Kissing Point Road intersection to provide:
  - Fully signalised intersection allowing all turning movements.
  - Dual right turn lanes on the eastern and western Victoria Road approach
  - Dual right turn lanes and a shared left/through lane on the southern Kissing Point Road approach
  - 4 lanes at the stopline on the northern Kissing Point Road approach - 1 right, 2 through, 1 left.
  - New signalised pedestrian crossings on the northern, southern and western intersection legs
- Widening of Victoria Road between Kissing Point Road and Wharf Road to allow for a continuous bus lane in each direction

There is potential to provide an indented bus bay for eastbound Victoria Road services directly east of the upgraded Kissing Point Road intersection. It is recommended that the provision of this facility be further investigated at the detailed design stage to ensure that relevant design standards can be met at this location.

Throughout Stage 1

- Provide shuttle buses to service the public transport demand from Melrose Park to Meadowbank Station. Provision of this service will commence with one shuttle bus, with further shuttles to be brought into service in line with delivery of dwellings with a total of 4 buses providing an ultimate Stage 1 frequency of 12 shuttles per hour in the peak periods.
- Staged improvements to frequency of M52 bus services on Victoria Road as described in section 6.4.6 to provide ultimate frequency of 18 per hour in peak direction. (Noting that Melrose Park demand accounts for 5 of the additional 12 hourly services)
- Staged delivery of internal road network and associated pedestrian and cycling infrastructure to provide access to development.

Stage 2: Delivered at approx 6,700 total dwellings (2028)

- New public transport and active transport bridge over the Parramatta River between Melrose Park and Wentworth Point. The bridge will be designed to cater for both bus and light rail vehicles.
- Public transport services as described in section 6.4.6 including maintaining Stage 1 M52 service improvements and also providing services over the new bridge either via Parramatta Light Rail Stage 2 or high frequency bus connections.
- Staged delivery of internal road network and associated pedestrian and cycling infrastructure to provide access to development.

Figure 7.1: Single front staging scenario

Figure 7.2: Two front staging scenario

7. IMPLEMENTATION PLAN

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A summary of the proposed staging and the total dwelling yield able to be supported by each stage is shown in Table 7.1

Table 7.1: Staging summary

Stage	Delivered at (dwellings)	Yield supported (dwellings)
Existing network	N/A	1,100
Stage 1A	1,100	1,800
Stage 1B	1,800	3,200
Stage 1C	3,200	6,700
Stage 2	6,700	11,000

Figure 7.3 to 7.5 set out the staging of identified road infrastructure recommendations for the Melrose Park precinct. Intersection designs and pedestrian crossing facilities will be subject to further refinement at the detailed desgn stage. It is noted that all traffic modelling presented in this TMAP assumes full one-stage pedestrian crossings on all legs of Victoria Road intersections with Kissing Point Road and Wharf Road.

Figure 7.3 : Victoria Road Stage 1A upgrades (Northrop) - Required at approx 1,100 dwellings

Figure 7.4 : Victoria Road Stage 1B upgrades (Northrop) - Required at approx 1,800 dwellings

Figure 7.5 :Victoria Road Stage 1C upgrades (Northrop) - Required at approx 3,200 dwellings

7. IMPLEMENTATION PLAN

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7.3 Implementation plan

The table below sets out a summary of the proposed transport infrastructure and services required to support the Melrose Park development. Detailed staging of these items is outlined in section 7.2

ID	Description	Responsibility	Background	Objective	Timing
Road network					
1	Internal road network	Proponents	The internal road network will be delivered in lockstep with the staged development of Melrose Park. It is proposed to develop internal roads progressively to provide access to core development areas as they come online.	2,5,6	Ongoing
2	Wharf Road intersection upgrade at Victoria Road	Proponents/ RMS	Proposed upgrade to the Victoria Road/Wharf Road intersection will improve access to and from Melrose Park whilst also improving efficiency for buses, freight and general traffic on Victoria Road.	2,4,5,6	Short term
3	Kissing Point Road - new access at Victoria Road	Proponents/ RMS	New left-in/left-out access into the precinct via the Victoria Road/Kissing Point Road intersection. This will be required in the initial stages of the development to allow for local access.	2,4,5,6	Short term
4	Intersection upgrades - As part of PLR Stage 2	TfNSW	Intersections along Hope Street will require adjustments as PLR stage 2 is delivered. This will result in newly signalised intersections at Hughes Avenue, NSR-2 and NSR-3/Waratah Street.	2,4,5,6	Medium term
5	Kissing Point Road - intersection upgrade at Victoria Road	Proponents/ RMS	Full upgrade of the Victoria Road/Kissing Point Road intersection. This will provide full access into and out of the Melrose Park precinct whilst also improving efficiency for buses, freight and general traffic on Victoria Road.	2,4,5,6	Medium term
6	Victoria Road upgrade between Wharf Road and Kissing Point Road	Proponents/ RMS	Widening of Victoria Road between Kissing Point Road and Wharf Road to allow for extended turning lanes and a continuous bus lane in each direction.	2,4,5,6	Medium term
Public transport network					
7	On-demand services	TfNSW	On-demand services to Macquarie Park are currently being trialled in the Melrose Park area. The possible expansion of these services to other hubs will reduce car reliance for Melrose Park residents and workers.	1,2,5,7	Short term
8	Local bus shuttle services	Proponents	The provision of bus shuttle services to promote integration with local bus and rail services at Meadowbank. Staged provision of buses to allow an ultimate Stage 1 (pre-bridge) headway of 5 minutes in the weekday peak period. 4 buses required to support up to 6,700 dwellings. Potential minor works and pedestrian crossing on Bank Street or at kiss and ride facility to support shuttle operations at Meadowbank station.	1,2,5,7	Short term
9	Bus service enhancements	TfNSW	The following improvements will provide efficient and sustainable travel options for residents and visitors of Melrose Park in the short to medium term: • Increased frequency on M52 to cater for both background growth and Melrose Park demand along Victoria Road to Parramatta and the Eastern City • Potential new service Top Ryde to Concord Hospital via a new bridge over Parramatta River • New and upgraded bus stops on Wharf Road to ensure a maximum 400m spacing and to provide increased waiting areas and passenger amenity	1,2,5,7	Short to medium term
10	Ferry services	TfNSW	Investigations into the following ferry service improvements are recommended: • Service improvements for F3 Parramatta River services to cater for future commuter ferry and tourist patronage demand • Investigate and consult with TfNSW and RMS on ferry shuttles between Olympic Park and Parramatta and a potential new wharf at Melrose Park	1,2,5,7	Short to medium term
11	New bridge across Parramatta River	Proponents/ TfNSW	A new bridge connecting Melrose Park and Wentworth Point will have a transformative impact on Melrose Park and the wider region. Rapid transport connections via bus or light rail will directly connect Melrose Park with jobs, services and key transport corridors at Rhodes and Sydney Olympic Park.	1,2,3,4,5, 7	Medium term
12	PLR Stage 2	TfNSW	A new light rail line will be provided connecting Melrose Park with Parramatta CBD and Olympic Park. At least two stops will be provided within Melrose Park to cater for central / northern and southern precinct access to the light rail corridor. The structure plans makes provision for a LRT corridor along Hope Street.	1,2,4,5,7	Medium term
13	Sydney Metro West	TfNSW	New metro line connecting Westmead, Parramatta CBD, Olympic Park, the T1 Northern rail line, Bays Precinct and Sydney CBD. This will be a key connection for Melrose Park residents who can access the line at Sydney Olympic Park via PLR Stage 2.	1,2,4,5,7	Medium term
14	Victoria Road bus improvements	TfNSW	As outlined in Future Transport 2056 - Improvements will include upgrading bus services and infrastructure on the Victoria Road corridor. Improvements will transform the Victoria Road Corridor into a more attractive place to live and work. Improvements would enhance access for Melrose Park residents traveling to Parramatta or the Eastern City. A potential indented bus bay to be investigated eastbound on Victoria Road east of Kissing Point Road.	1,2,4,5,7	Medium term
15	T1 Northern Line improvements	TfNSW	Investigations into capacity improvements for the T1 Northern Line are currently underway. TfNSW has indicated improvements will be necessary within the next 10 years. Improved services would enhance access for Melrose Park residents who could reach West Ryde/Meadowbank via bus or on-demand services before transferring to the T1 Northern Line	1,2,4,5,7	Medium term
16	T1 Western Line improvements	TfNSW	The T1 Western Line Rail Upgrade Program is recommended to be implemented in order to provide more capacity for Northern Line services	1,2,4,5,7	Medium term

7. IMPLEMENTATION PLAN

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ID	Description	Responsibility	Background	Objective	Timing
Active transport network					
17	Walking and cycling infrastructure on internal network	Proponents	The internal road network within the Melrose Park precinct will include provision for safe, efficient and attractive walking and cycling trips, particularly to/from Melrose Park Primary School. A midblock crossing on Hope Street between Wharf Road and Waratah Street is recommended to be investigated to facilitate safe connections between the northern precinct and the school. This will encourage local trips to be undertaken via active modes whilst also enhancing access to nearby public transport services. A shared path will be provided on the western side of Wharf Road.	1,2,3,7	Ongoing
18	Enhanced local connections	Proponents/ CoP	Enhancements to active transport infrastructure linking Melrose Park Precinct to the surrounding activity areas through new connections via the internal road network to the Parramatta River foreshore shared path and to George Kendall Reserve	1,2,3,7	Short term
19	Cycle parking and end of trip facilities	Proponents	End of trips facilities and secure and visible cycle parking should be provided at all commercial centres and other major trip generators Adopt bicycle parking provision of: • 1 per dwelling + 1 visitor space per 10 dwellings • 1 per 150m² commercial GFA + 1 visitor space per 450m² commercial GFA • 1 per 250m²retail GFA + 1 visitor space per 100m² retail GFA	1,2,5,7	Short term
20	Implement and refine Parramatta Bike Plan 2017	Proponents/ CoP	• Fully separated cycleway for Hope Street providing a new high quality east-west connection between Melrose Park and Rydalmere • Painted lanes on Wharf Road connecting Hope Street cycleway to existing Parramatta Valley cycleway • New shared path connecting north-south through the Melrose Park precinct and connecting with the Parramatta Valley cycleway	1,2,3,7	Short to medium term
21	Shared mobility facilities	Proponents	Shared mobility pods to be provided within Melrose Park for bike share, as well as emerging forms of shared mobility such as electric mopeds.	1,5,7	Medium term
22	New bridge across Parramatta River	Proponents/ TfNSW	A new bridge connecting Melrose Park and Wentworth Point will include dedicated walking and cycling infrastructure. This will provide direct active transport connections between Melrose Park and key centres such as Rhodes and Sydney Olympic Park.	1,2,3,4,5, 7	Medium term
23	Walking and cycling facilities to be delivered as part of PLR Stage 2	TfNSW	Improved cycling and pedestrian facilities should be investigated during planning and delivery of PLR Stage 2 along the Hope Street and Waratah Street corridors.	1,2,3,7	Medium term
Policy					

24	Parking policy	CoP/ Proponents	• Consider maximum parking rates for Melrose Park in the long term with parking provision of:
			  • 0.73 spaces per dwelling (average based on currently assumed dwelling mix)
			  • 1 space per 30m² commercial GFA
			  • 1 space per 50m² retail GFA
			• Prioritise on-street car share within Melrose Park at a residential car share rate of 1 space per 40 dwellings
			• On-street parking to be provided within the internal road network and be designed to support the function for the street.
			• Provide real-time parking information along key access streets and the proposed town centre
			• Unbundling /decoupling parking from the sale of apartments, to deliver housing choice and efficient allocation of parking across the development.
			• Monitor on-street parking activity on the surrounding street network at Wharf Road, Hope Street and Hughes Avenue to minimise over flow parking from Melrose Park
				1,6,7	Ongoing

25	Demand management	Proponents	• Ensure that transport information is up to date and liaise with the local residential and business communities on transport issues • Aligning information at stops and streets with digital transport information provided through websites, apps and electronic information displays • Liaise with transport providers to resolve any impediments to their efficient service and promote regular improvements • Enabling significant investment in car share, providing accessible mobility choice to households without parking or who choose not to own a car • Introduce parking management and control measures e.g. parking charges, constraining parking supply, unbundled/decoupled off-street parking • Facilitate car-sharing to reduce the need for private car ownership • Provide shared work spaces and 'smart hubs' to facilitate flexible working arrangements and minimise the need for peak hour commute trips • Provide opal cards to initial residents of the precinct	1,2,6,7	Ongoing

7. IMPLEMENTATION PLAN

8. KEY FINDINGS AND CONCLUSIONS

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8. KEY FINDINGS AND CONCLUSIONS

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8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Overview

The Melrose Park TMAP has examined a wide range of issues in a complex land use and transport planning environment given the strategic location of the precinct within Greater Parramatta Olympic Peninsula (GPOP). The TMAP has sought to address the following key issues:

- The need to achieve a high level of public transport use, cycling and walking in order to achieve the *Future Transport Strategy 2056* broad strategic planning objectives of improved integration of land use and transport planning
- A strong commitment to bring light rail into the precinct as part of PLR Stage 2 and anchored by future connections to PLR Stage 1 and Sydney Metro West at Sydney Olympic Park
- The need to balance transport and access expectations in an environment where the road network, particularly at key intersections surrounding the site, is already close to capacity
- A staged approach to parking provision that will balance the short term needs with the long term objectives for sustainable parking management within the precinct
- To cluster residential, commercial and retail development in such a way that a 'critical mass' of trip generation is established within public transport catchments from the earliest stages of development.

8.2 Key findings

The key findings of the Melrose Park Precinct incorporating 11,000 dwellings in terms of transport infrastructure and services requirements are:

- Based on the nominated service levels for the road network, upgrades to Victoria Road intersections (Wharf Road and Kissing Point Road) will be required in order to efficiently service the Melrose Park precinct
- The road network analysis has identified that the remainder of the existing road network is able to cater for traffic generated by the proposed development, with no significant impacts compared to a future 'do minimum' scenario
- The public transport network for Melrose Park has been planned to cater for the full development without the need for light rail.
- Increased bus service frequencies on Victoria Road are required to support development and achieve mode share targets. Investigations have confirmed the required bus service levels are feasible
- A new bridge crossing (public and active transport only) across the Parramatta River linking Melrose Park to Wentworth Point is required by 2028 (approximately 6,700 dwellings) to enable connections from residential and employment areas to key public transport nodes
- New bus services between Top Ryde and Concord Hospital via Melrose Park are proposed to operate via the new bridge
- Shuttle services between Melrose Park and Meadowbank station are proposed to operate prior to the implementation of the new bridge. Proposed operations can be implemented without signifcant works or impacts
- Ferry user patronage demand from Melrose Park is likely to be small but may play an important role for discretionary trips. A new bridge across the Parramatta River will provide access to Sydney Olympic Park and proposed new ferry wharf at Rhodes East
- A light rail corridor is being proposed by TfNSW established through the core of the development. This would bring light rail services through the heart of Melrose Park with direct access to the proposed Sydney Metro West station at Olympic Park
- The introduction of PLR Stage 2 leads to a number of access implications along Boronia Street, Hope Street and Waratah Street which will need to be carefully managed
- The northern precinct structure plan maintains a corridor on Hope Street between Hughes Avenue and Waratah Street to enable the implementation of light rail. The southern precinct allows for light rail along Waratah Street.
- The entirety of the road works shall be delivered early with all upgrades delivered prior to the implementation of the new bridge over the Parramatta River. This plan ensures that infrastructure is in place to support the development and minimise wider network impacts.
- Key elements of Stage 1 - Prior to bridge (up to 6,700 dwellings:
  - Stage 1A, Stage 1B and Stage 1C road upgrades
  - Enhanced Victoria Road bus services to cater for background growth and Melrose Park demand
  - Shuttle services to Meadowbank Station
- Key elements of Stage 2 - After new bridge (more than 6,700 dwellings)
  - New high frequency services (bus or light rail) over the bridge
  - Continued enhanced Victoria Road bus services to cater for background growth and Melrose Park demand

8.3 Key conclusions

The key conclusions of the Melrose Park TMAP are:

- The scale of development envisaged for Melrose Park (11,000 dwellings) presents very significant, but manageable challenges for road and public transport infrastructure and services
- The package of transport infrastructure and services proposed and assessed in the TMAP is capable of accommodating the Melrose Park development yields (11,000 dwellings) and regional transport requirements as defined in *Future Transport Strategy 2056*
- Sydney Metro West will deliver significant benefits across the entire rail network for residents from Melrose Park with high capacity and more frequent services between Parramatta CBD, Sydney Olympic Park and Sydney CBD
- A new bridge crossing (public and active transport only) across the Parramatta River linking Melrose Park to Wentworth Point is required by 2028 (approximately 6,700 dwellings) to enable connections between multiple trip origins and destinations linking residential and employment areas to key public transport nodes
- Parramatta Light Rail Stage 2 will provide a direct link to and through the Parramatta CBD, and to the broader rail network, for the growing areas of Melrose Park, Wentworth Point, Sydney Olympic Park, North Parramatta and Westmead
- The public transport network needs for Melrose Park Precinct has been planned to match the type and scale of development without the need for light rail. The new bridge across Parramatta River linking Melrose Park and Wentworth Point will provide a key connection and will provide, a fast, direct, high frequency feeder bus services linking Melrose Park to Rhodes Station and future metro station at Sydney Olympic Park
- The signalised intersections within the study area are adequate and will operate at acceptable level of service with the improvements recommended. The TMAP analysis has shown LOS E or better for all the signalised intersections within the study area during the peak hours
- The additional traffic demands as a result of Melrose Park development on the surrounding local road network fall within acceptable capacity thresholds
- Parking provision in the early stages will need to balance the imperative of achieving as much development as early as possible (to contain travel within the area), while parking provision in the later stages will need to constrain parking supply as a means of reducing travel by private car
- The proposed 9,441 off-street parking spaces provided within Melrose Park is considered adequate to cater for the likely parking demand generated from the site at full build-out by 2036, which will be complemented by the public transport initiatives identified in the TMAP
- An integrated package of measures is required to be implemented over the next five to ten years as the development progresses, with the package containing a mix of policy and infrastructure and transport services measures
- The staging of the development will not cause any noticeable degradation of performance on the surrounding road network with the proposed integrated package of mitigation measures
- The staging of infrastructure and services is focused on ensuring high levels of accessibility in the short term. Road network upgrades and significant public transport service improvements are proposed in the early stages of the development.
- The measures presented within the TMAP need to be integrated comprehensively and consistently over the short, medium and long term if the mode split targets are to be achieved, and if the surrounding road network is to continue to function at an acceptable level of service.

APPENDIX A - MELROSE PARK PRECINCT MODEL (MPPM)

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Memorandum

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Subject	**MPPM Spreadsheet model**	**Project Name**	Melrose Park TMAP
Date	12 October 2018	**Project No.**	IA130100

1. Introduction

The purpose of the Melrose Park Precinct Model (MPPM) is to assist in understanding the impacts of proposed developments and the potential travel behaviour for trips to and from the precinct. The model provides forecasts for trip generation, trip distribution, mode choice and trip assignment to and from a development. This memorandum details the process of generating forecasts using the MPPM.

2. Step 1 – Zoning System

The first step is to define the zoning system. The zoning system forms the basis of the four-step analysis that is undertaken in the MPPM. MPPM uses Journey To Work (JTW) data from the 2011 census (the latest available at time of model development) for forecasting demand. As a result, JTW zones are used to define the geography of the model.

All JTW zones are defined into two types: internal and external. Internal zones comprise of the zone containing the development and its surrounding zones (the study area). If necessary, these zones can be further disaggregated to better reflect their public transit network connectivity. In the case of Melrose Park, travel zones between Victoria Road and the Paramatta River are all split into a North and a South zone because the North-South distance between Victoria Road and the Paramatta River is 2km. Therefore, residents in the Southern parts of these zones fall outside of the catchment of bus services running along Victoria Road.

External zones are divided into two types: employment centres, and wider external zones. These zones are created through the amalgamation of appropriate JTW travel zones. Employment centres represent the main places of employment for the residents of the internal zones (e.g. the CBD, Paramatta, Macquarie Park etc.). Employment centres are chosen to capture the majority of work trips which are made by the residents of the internal zones.

The figure above shows the zoning system used in the model. Internal zones are shaded blue, employment centre zones are indicatively shown by the red circles. Wider external zone boundaries are marked by the brown lines, which extend to cover the rest of Sydney (not shown above). Melrose Park is shaded purple. The yellow line marks the location of the split for the zones between Victoria Road and the Paramatta River, including the Melrose Park zone.

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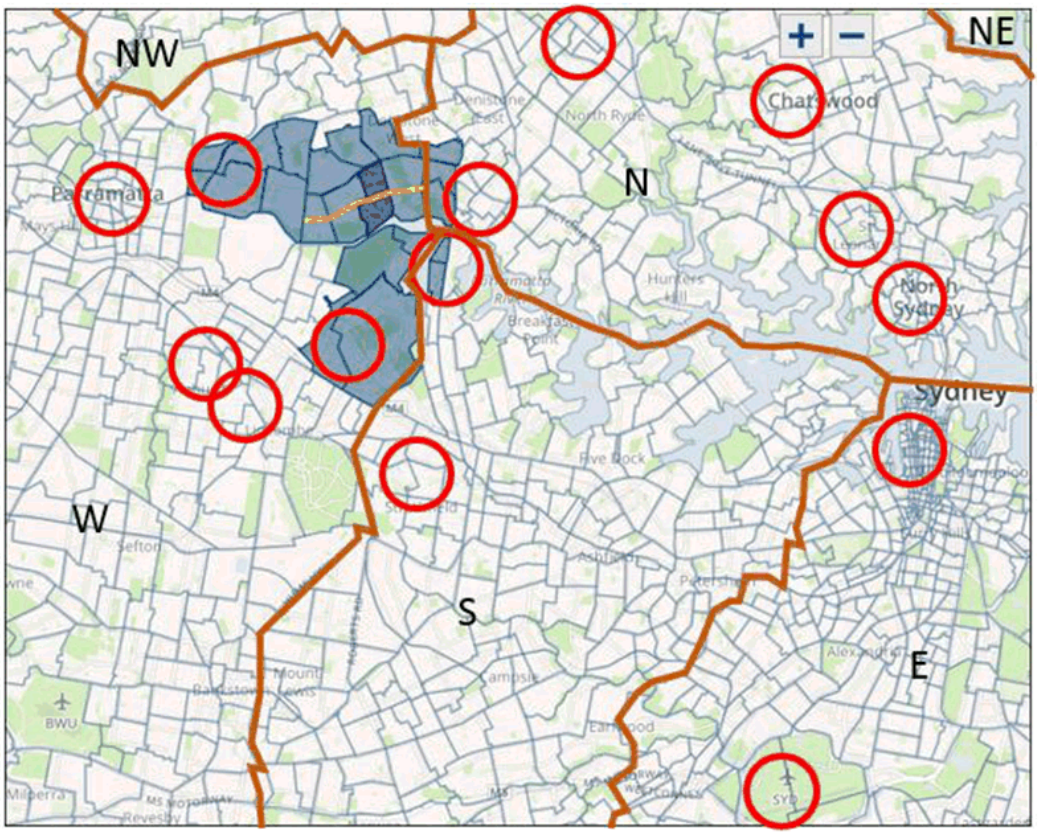
MPPM Spreadsheet model

Figure 2.1: MPPM zoning system



All remaining travel zones are amalgamated into wider external zones. These zones represent large geographic areas (e.g. North West) and are comprised of many zones to which there are a low number of trips from the internal zones.

3. Step 2 – Demand development

Once the zoning system is developed, an origin-destination demand matrix (OD matrix) is created. JTW data provides the number of work trips which take place between every travel zone disaggregated by mode. MPPM uses the sum of all car and public transit trips; modes 1-5 in the JTW. Trips which report modes such as 'other' and 'mode not stated' (modes 6-9 in the JTW) are excluded from the analysis.

The sum of all car and public transit trips is amalgamated to provide OD demand for each OD pair using the zoning system defined in Step 1; with the exclusion of external to external zone pairs, as these do not influence the study area. This provides the base OD matrix for the year 2011.

Census projections are used to factor the base 2011 OD matrix in order to create the base study year matrix (2016) as well as future study year matrices (2026, 2036). The census provides population and employment projections for every JTW travel zone. These projections are split or amalgamated in the same manner as the JTW data to convert them into the MPPM zoning system. Using the reported

2011 employment and population, and the projected future population and employment in each zone, growth factors are derived. These are applied to the 2011 OD matrix to create the base and future year OD matrices.

Each OD pair is factored by two growth factors to arrive at the future OD value.

The population growth factor is simply the percentage by which the population in the origin zone has grown over time. Every origin zone has a growth factor which is applied to all trips originating from that zone.

The employment shift growth factor takes into consideration the fact that not all destination zones will grow at the same pace. First a distribution of trips from each origin zone is created using the 2011 OD matrix. This distribution is then factored by the relative growth in projected employment in each destination zone. This way, the fact that certain destinations, such as Paramatta, grow at a faster rate than others, such as the CBD, and will attract more trips in the future is accounted for. This new distribution of trips is then applied to the trips factored by the population growth factor to arrive at the future year number of trips for each OD pair.

4. Step 3 – Benchmarking

The growth factors used in Step 2 cannot be applied to the development zone as the land use will be completely different than it currently is. Benchmarking is needed to develop an accurate representation for trip generation and trip distribution for this zone. Additionally, any other internal zones where significant change in land use has occurred or is planned to be happen must also be benchmarked.

In the MPPM benchmarking was applied to the development zones in Melrose Park, and the fast-growing zones at Olympic Park and Wentworth Point South.

Firstly, benchmark zones are specified. Benchmark zones of similar location, development level and public transit connectivity are chosen as they will provide the most accurate estimates for the trip generation and distribution for the zones which require benchmarking.

Benchmarking is used to provide an estimate for trip generation and trip distribution. Population and employment projections for other internal benchmark zones can be obtained from the census projections used in Step 2. For the development zones, projections for population and employment are extracted from the development documents.

A weighted average number of JTW trips out per population for the appropriate benchmark zones is calculated and applied to the projected population to obtain the projected total number of trips from the zone. These are then distributed by the weighted average distribution for the appropriate benchmark zones.

Once benchmarking is completed, final OD matrices for the base and future year are created. This completes the process of trip generation and distribution.

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5. Step 4 – Public Transit Generalised Cost

The next step in the MPPM is to assign the trips from the final OD matrix. The MPPM uses a generalised cost binomial logit model to assign all trips for each OD pair to one of two modes: public transit (PT) or car.

To carry out the assignment, generalised cost for each OD pair for PT and car trips are computed. The generalised cost represents a representative average trip for each OD pair.

PT trips are divided into three types: Local to External (LE), External to Local (EL), and Local to Local (LL). LE trips take place between internal and external zones; EL trips the opposite, and LL trips occur between two internal zones. A representative average PT trip is then computed for each PT trip type.

LE trips are broken down into 3 legs. Leg 1 represents the walk to a local bus stop (or local light rail stop in light future light rail scenarios). Each internal zone is served by a local bus stop. All bus services which go through an internal zone stop at the local bus stop. Using GIS, a centroid is estimated for each travel zone based on its land use; i.e. accounting for dwelling density and green spaces. The centroid is taken as the origin of all trips from each zone to represent the average trip.

The distance from the centroid to the local bus stop via the road network is calculated using a GIS network of the area. The generalised cost is expressed in minutes. The formula for calculating Leg 1 costs is shown below:

$$Cost = Walk\ Distance\ x\ Walk\ Speed\ x\ Walk\ Factor$$

The cost of Leg 1 is computed by converting the distance to a walking time using an assumed average walking speed, and applying a factor reflecting the relative desirability of walking as a means of commute. The factor used in the MPPM is 1.5 reflecting the fact that walking is seen as a relatively undesirable means of commute.

Leg 2 represents the trip on a local bus to a gateway. A gateway is a train/ferry/metro/light rail stations inside or near the study area. A representation of bus services running through the study area is created. Each bus service is modelled to stop in each zone and at each gateway through which it passes. The travel times and frequencies are taken from the Transport for New South Wales (TfNSW) timetable for each local bus service. The cost for Leg 2 of the trip is calculated using the formula below:

$$Cost = Wait\ Factor\ x\ 0.5\ x \frac{60}{Frequency} + IVT\ Factor\ x\ IVT + Fare\ Factor\ x\ Fare + Mode\ Transfer\ Penalty$$

Where;

- Wait factor represents the disutility of waiting for a local bus service to arrive
- Frequency is the number of busses per hour
- In vehicle time (IVT) is the time taken for the trip
- IVT Factor represents the relative attractiveness of each mode of travel. It is different for busses, trains, light rai, ferry etc.

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- Fare is calculated using Opal distance bands
- Fare factor converts the monetary value of the fare to a perceived minute cost
- Mode transfer penalty represents the perceived inconvenience in minutes of changing modes of travel at the end of Leg 2

Where zones are served by multiple overlapping services the frequency is the sum of all overlapping services per hour, since travellers would board the first available service.

The centroid of certain zones falls within 1km of a gateway. For these zones, Legs 1 and 2 are replaced by a single walking trip from the zone centroid to a gateway. The cost of the trip is calculated using the same methodology used in Leg 1.

Leg 3 refers to the trip from the gateway to the destination. It is divided in two parts. First, travellers use the rail/light rail/ferry/metro network to travel to a destination station. A destination station is the station which acts as the proxy for an external zone. Each external zone, both employment centre and wider external zone, is represented by a destination station. A representation of the rail/ferry network is created for Leg 3 using the TfNSW General Transit Feed Specification (GTFS). The formula for computing costs in Leg 3 is the same one used in Leg 2; with the exception of the mode transfer penalty, as it was already applied in Leg 2.

The second part of the Leg 3 trip is the trip from the destination station to the destination. Again, an average trip is created to represent the trips from the destination station to the final destination. For employment centres, this trip is a walking trip of various durations to account for the differing sizes of the employment centres. The cost of this part of the trip is computed using the same formula as in Leg 1. For wider external zones, another local bus trip is assumed to take place from the destination station to the destination. The costs of this trip are computed using the same formula as in Leg 2.

The final cost of a local to external public transit trip is calculated by the summation of the costs from all components of the three legs.

External to local trips are equivalent to LE trips but take place in the opposite direction. Since the only change is the order in which the trip is made, their costs are identical for equivalent EL-LE pairs.

Local to local trips also consist of three legs. Leg 1 is the walk to the local bus stop and is the same as in EL trips. Leg 2 consists of taking the local bus to a destination zone. The formula used is the same one as in Leg 2 of EL trips, with the only difference being that the trip is taken to another internal zone instead of a gateway. Finally, Leg 3 is another walking trip from the local bus in the destination zone to the centroid of the destination zone. The cost of this leg is calculated the same as Leg 1. If two zone centroids are within 1km of each other, or if two zones share the same local bus stop, a walking trip from one zone centroid to the other replaces Legs 1-3 of a LL trip.

The final cost of a local to local public transit trip is calculated by the summation of the costs from all components of the three legs.

An important note is that most zones are connected to multiple gateways via multiple local bus services. Each of these alternatives has a different generalised cost. For the purposes of public transit vs car mode choice, the generalised cost of a public transit trip is considered to be the lowest generalised cost of any of the possible public transit trips. Later, when the trips are assigned, they are assigned through a logit model so that trips are distributed via different gateways and via different local bus services.

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6. Step 5 - Car Generalised Cost

Car generalised cost for each OD pair is computed via the following formula:

- $Cost = IVT + Fare\ Factor\ x\ \frac{(Distance\ x\ Car\ Operating\ Cost\ Per\ Km + Toll + Parking\ Cost)}{Car\ Occupancy}$

Where;

- IVT is in-vehicle time (travel time)
- Fare factor is used to convert monetary costs to perceived minute cost. It is the same factor used to convert fares into a perceived minute cost for public transit fares in Step 4

Car travel time, distances and tolls are all obtained from the Sydney Strategic Traffic Model (STM).

Car occupancy cost per km and car occupancy are globally assumed parameters. Parking costs are different for each external zone. Parking costs are chosen to reflect the scarcity of parking at each destination.

7. Step 6 – Mode Choice

A simple binomial choice model is used in the MPPM to calculate mode choice. Specifically, the following formula is sued to calculate the proportion of public transit trips:

$$PT\ Proportion = \frac{e^{-\beta\ x\ GC_{PT}}}{e^{-\beta\ x\ GC_{PT}} + e^{-\beta\ x\ (GC_{car} + ASC_{car})}}$$

Where;

- PT Proportion is public transit mode share
- GCpt is the public transit generalised cost calculated in step 4
- GCcar is the car generalised cost calculated in step 5
- ASCcar is the alternative specific constant for car
- β is the sensitivity parameter

The two parameters used in calibrating the model; the β and the ASCcar, are varied for different trip types. All trips are divided to fall into one of eight trip types. All origin zones are divided into two types – rail walk and rail non-walk, depending on whether the zone falls within the walking distance of a gateway station. Destination zones are divided into 4 types: CBD, other centre, rail walk and rail non-walk, where;

- CBD is the CBD
- Other centre refers to employment centres outside of the CBD
- Rail walk refers to destination zones which are within a walking catchment of a gateway station but are not employment centres

- Rail non-walk refers to destination zones which are not within a walking catchment of a gateway station

Trip types are the combinations of the origin and the destination types and are;

- Rail walk to CBD
- Rail walk to Other Centre
- Rail walk to Rail walk
- Rail walk to Rail non-walk
- Rail non-walk to CBD
- Rail non-walk to Other Centre
- Rail non-walk to Rail walk
- Rail non-walk to Rail non-walk

To ensure the most accurate representation of traveller's behaviour, a unique sensitivity and alternative specific constant for each of the eight trip types because the difference in costs is perceived differently depending on the trip type.

For example, the ASCcar for rail non-walk to rail non-walk trips is negative, indicating a preference for making these trips by car. This occurs because making such trips via public transit requires a minimum of two mode changes. While a mode transfer penalty is applied to each when computing generalised cost, the additional perceived inconvenience of having to change modes twice is not accounted for until the ASCcar parameter is applied. Conversely, the ASCcar for trips to the CBD is positive indicating a preference for public transit on such trips due to the additional perceived cost of spending additional time in congestion and difficulty finding parking at the destination.

The sensitivity parameter is also varied to reflect how strong some of these preferences are. It is lower for trip types where there is a clear preference for one mode over the other, such as the preference for public transit to the CBD or the car for non-walk to non-walk trips, and higher for trip types where there isn't a clear preference and the difference in general costs is the most important factor in mode choice.

Variation of the two parameters based on trip type allows for a better calibration of the model. The model is calibrated based on the 2011 JTW data. The shape of the logit curve represents a limitation for zone pairs where mode share is significantly skewed to either mode. While it would be very easy to replicate the 2011 mode choice using very high parameters, these parameters would not be realistic. Thus, the 2011 JTW mode shares are used a guide rather calibration targets.

The logit model is applied to each zone pair in the model to determine mode share to and from each individual zone. Demand values refer to JTW trips across the 24-hour period. These are converted into all trip purposes over a 3.5 Hr AM peak and then a 1 Hr AM peak using appropriate factors. The factors are derived by comparing the number of JTW trips assigning to the rail network to the total observed 3.5 Hr rail station entries. The 3.5 Hr rail station entries are sourced from the Rail Station Barrier Counts 2013 report authored for the Bureau of Transport Statistics and TfNSW.

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8. Step 7 – Trip Assignment

The mode choice model provides forecasts for public transit trips between each zone pair. Multiple alternative paths exist for public transit trips, as they can be made via multiple gateways. Also, most gateways can be accessed via multiple local bus services. In the trip assignment stage, these trips are assigned to alternative paths through the modelled transit network.

First, the demand for each OD zone pair is distributed to all the possible gateways which can be used to complete each trip. This is done using a simplified version of the binomial choice used in determining mode choice. There is only one parameter in this model – the sensitivity parameter. The alternative specific cost parameter is not used as all of the trips are made using the same mode. The sensitivity parameter used here differs from the one used in the mode choice model. It is calibrated to create a reasonable distribution of trips to each gateway depending on their relative costs for each zone pair. The costs used in this assignment are the cost of making the entire trip via each gateway, not just the cost of leg 3, as the decision of which gateway to use is made at the beginning of the trip and not at the beginning of leg 3.

Next, the demand from each zone to a gateway (or to another internal zone for LL trips) is assigned to the appropriate bus services. Again, a simple binomial choice model is used, with the sensitivity parameter being the only factor. This is another internally calibrated factor based on a reasonable distribution in regards to relative costs of alternative routes which differs from sensitivity parameters used previously. Again, the costs used are for the whole trip made via each service, not just leg 2.

An allowance for park and ride is included at this stage. It is recognised that a certain proportion of public transit trips will be made via park and ride or kiss and ride instead of the local bus network, especially at gateways where significant parking provisions or on-street parking facilities exist such as Meadowbank or West Ryde. The park and ride factor reduces the demand on the local bus services leading to these gateways, while leaving the demand at the gateway unaffected.

Once the trips are assigned to each local bus service, statistics such as demand at gateways or bus on/off diagrams can be reported.

APPENDIX B - AIMSUN CALIBRATION REPORT

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Melrose Park Transport Management and Accessibility Plan (TMAP)

Payce Property

Calibration and Validation Report

Rev B - Final

10 May 2018

Calibration and Validation Report

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Melrose Park Transport Management and Accessibility Plan (TMAP)

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Rev B	10/5/2018	Final	C Arkell/A Minic	I Smith	I Smith

Contents

1. Introduction

1.1 The project

Jacobs have been commissioned by Payce Property to develop a Transport Management and Accessibility Plan (TMAP) for proposed development at Melrose Park. Currently comprised of primarily industrial development, the Melrose Park site presents significant opportunities for redevelopment and rezoning to increase population density.

The Melrose Park TMAP will be informed by operational traffic modelling undertaken using a hybrid mesoscopic and microscopic traffic model using the Aimsun software package. The *Melrose Park Hybrid Traffic Model* will provide a tool for the assessment the impacts of new proposed mixed-use development on travel times and traffic performance through the study area.

Hybrid mesoscopic and microscopic traffic modelling provides the ideal tool to assess the requirements of the surface transportation network, effects of congestion and identification of network constraints.

1.2 Model purpose

The purpose of the model is to provide a strategic assessment of the road-based transport infrastructure requirements to support proposed development at Melrose Park. The wider mesoscopic areas of the model are not for the purposes of detailed road design. The microsimulation area directly impacted by the proposed development will be more detailed in nature and may be used to inform road design activities.

1.3 Modelling process

The Sydney Strategic Travel Model (STM) has been used to provide initial travel demand and will also be used for future demand development.

The *Melrose Park Hybrid Model* has been developed using the Aimsun modelling platform (version 8.2.1) and has been calibrated and validated based on the principles outlined in the *Roads and Maritime Traffic Modelling Guidelines, 2013*, modified for the specific purposes of the model and specified in the *Melrose Park Traffic Model Scoping Report* (23 October 2017) prepared by Jacobs.

Mesoscopic modelling provides sufficient detail to determine the performance of the road network under proposed future land use scenarios and provides guidance on the need for further road infrastructure requirements. In addition, mesoscopic simulation allows for true dynamic equilibrium assignment where vehicles can select their optimal travel routes based on their previous travel experiences. This provides a confidence that the modelled pattern of traffic represents a realistic response to the delays and capacity constraints that would be experienced by traffic on a day-to-day basis.

Additionally, the model includes a microscopic simulation area in the immediate vicinity of the development site in order to better reflect detailed behaviour such as lane-changing and weaving which is best modelled using microscopic simulation.

1.4 Purpose of this report

This report is intended to document the development, calibration and validation of the *Melrose Park Hybrid Model*. It details the process undertaken to calibrate and validate the model and specifies the conformance of the model to relevant modelling guidelines for calibration and validation.

1.5 Assumptions and limitations

1.5.1 Assumptions

The calibration and validation of the *Melrose Park Hybrid Traffic Model* is based on a number of assumptions:

- Peak period private vehicle travel demands supplied from STM are representative of peak period travel demand
- Traffic count data is a true and accurate representation of existing traffic conditions
- Public transport data supplied by Transport for NSW is a true and accurate representation of existing services
- Signal timing data supplied by Roads and Maritime Services from 2017 is a true and accurate representation of existing traffic signal operation
- Travel time data is an acceptable representation of existing delays across the network.

1.5.2 Limitations

The calibration and validation of the *Melrose Park Hybrid Model* documented in this technical report is subject to the following limitations:

- Traffic analysis has been limited to the morning (6-10am) and evening peak (3-7pm) four-hour periods for a typical weekday
- The traffic model development has been limited to mesoscopic modelling of the study area, except for the specified area surrounding the Melrose Park proposed development which was simulated using microscopic modelling
- The zoning system within the model is limited to some subdivision of the Sydney Strategic Travel Model (STM) zone system (TZ11). This subdivision includes detailed zone disaggregation down to the level of local or collector roads.
- Traffic data, including counts, signal timings and travel time surveys were gathered from a number of sources. While every effort has been made to ensure continuity in these sources, some inconsistency in count data is expected which may have an impact on the calibration and validation process.

1.6 Report structure

This report is structured as follows:

- Section 2: *Model development* – Outlines the methodology used in the development of the model and illustrates all supplied transport data
- Section 3: *Demand matrix development* – Details the sources and development of traffic demand
- Section 4: *Model calibration* – Details the calibration procedures and results
- Section 5: *Model validation* – Details validation procedures and results
- Section 6: *Conclusions* – Outlines the conclusions of the calibration and validation process.

2. Model development

2.1 Overview

The *Melrose Park Hybrid Model* has been developed using the Aimsun (version 8.2.1) traffic modelling platform. Aimsun allows for the development of static and dynamic traffic models within a unified platform, performing traditional static macroscopic modelling using volume delay functions as well as more detailed dynamic mesoscopic and microscopic simulation modelling. Dynamic traffic models are useful in modelling congested or capacity-constrained conditions where traffic demand exceeds available capacity and traffic diverts to seek less congested alternative routes. These conditions result in queuing that builds up and dissipates over time and dynamic routing of traffic that is responsive to this build-up of delays.

The model is based on an initial road network and traffic demand supplied by Transport for NSW, converted from the Roads and Maritime Strategic Highway Assignment Model and refined for the study area. This model has been built within the Greater Metropolitan Sydney network as a sub-model.

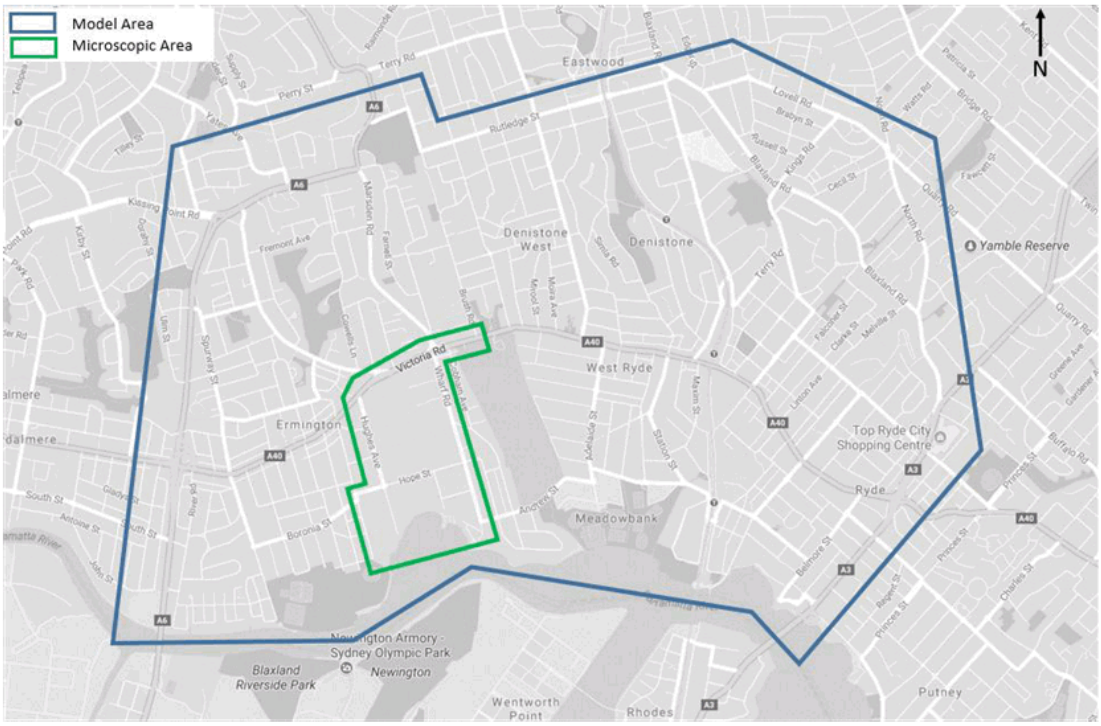
2.2 Model scope

2.2.1 Geographical coverage

A map of the model extents is provided in Figure 2.1. The model extends beyond the immediate area surrounding the proposed development to ensure that all traffic movements potentially related to development at Melrose Park are captured by the model.

Located in Sydney's North-West, Melrose Park is bounded by Victoria Road to the North, Archer's Creek to the East, the Parramatta River to the South and Hughes Avenue to the West.

Figure 2.1 : Aimsun model extents



2.2.2 Temporal coverage

The model covers the morning and evening peak periods from 6:00am to 10:00am and from 3:00pm to 7:00pm respectively. In addition to these simulation periods, a "warm-up" period of an additional 30 minutes has been specified to sufficiently load the network at the start of each analysis period. Results from the warm-up period are not included in the reported model statistics.

Traffic demand has been defined in 15-minute matrices, while signal control plans have been defined per-hour. Signal times were averaged per-hour as minimal phase time variance within the hour was observed for the majority of intersections within the modelled area. The accuracy that would be provided by the use of separate 15-minute signal plans would be minimal, particularly when considering traffic count data and traffic signal data are not from the same day. The profiles of 15-minute traffic counts would not correspond directly to the 15-minute profile of green time; furthermore, under future scenarios, fine-tuning of traffic signal settings at the 15-minute level is not practical.

2.2.3 Vehicle classes

The following four vehicle classes have been explicitly modelled:

- *Cars*: comprised of cars, taxis and light vans (all modelled as the same vehicle class), Austroads classes 1 and 2
- *Trucks*: comprised of small and large rigid trucks, Austroads classes 3, 4 and 5
- *Heavy trucks*: comprised of articulated semi-trailers and B-doubles, Austroads classes 6 and above
- *Buses*: modelled using fixed routes and timetables rather than demand matrices.

2.3 Road network

Key components of the existing road network in the study area are detailed in this section.

2.3.1 Victoria Road

Victoria Road is a state arterial road that provides access between Parramatta and the Anzac Bridge. Near the study area, the Victoria Road experiences moderate to high delays during the morning and evening peak periods, particularly near Kissing Point Road and Marsden Road. Clearways and bus lanes are in effect in both directions during peak periods. Several bus routes run along Victoria Road, including the M52 bus route. Parking is not permitted along Victoria Road, except near the West Ryde.

2.3.2 Silverwater Road

Silverwater Road is an arterial road that connects Dundas Valley to Lidcombe in a north-south direction. Some delays occur during the peak periods at Silverwater Road, south of Victoria Road. Near the study area, the posted speed limit is 80 km/hr and no parking is permitted along Silverwater Road.

2.3.3 Marsden Road

Marsden Road is a sub-arterial road that provides access between Carlingford and West Ryde. The posted speed limit is 60 km/hr and on-street parking is available on both sides of the road. The road generally operates with spare capacity, but experiences moderate delays near Victoria Road and between Morris Street and Stewart Street.

2.3.4 Wharf Road

Wharf Road is a collector road that connects Ermington to Melrose Park. The road experiences minor congestion at the intersection with Victoria Road. The posted speed limit is 50 km/hr and on-street parking is available along some sections of the road.

2.4 Zoning system

The model has a base centroid configuration corresponding with Transport for NSW's Transport Performance and Analytics (TPA) Travel Zones 2011 (TZ11). The TZ11Travel Zones cover large areas and hence have been disaggregated in order to provide sufficient detail and resolution in future scenarios. This disaggregation has been based on observed dwelling within each travel zone.

A summary of disaggregated centroids is shown in Table 2.1.

Table 2.1: Summary of centroid disaggregation

Travel Zone	Name	No. of disaggregated centroids
1113	Lottie Stewart Hospital	2
1118	Ermington	3
1121	Reckitt Benckiser	27
1123	George Kendall Riverside Reserve	4
1124	Ermington_River Rd and Lindsay Ave	2
1582	Marsden High School	2
1583	West Ryde Station_West	2
1585	West Ryde	2
1588	Melrose Park	4

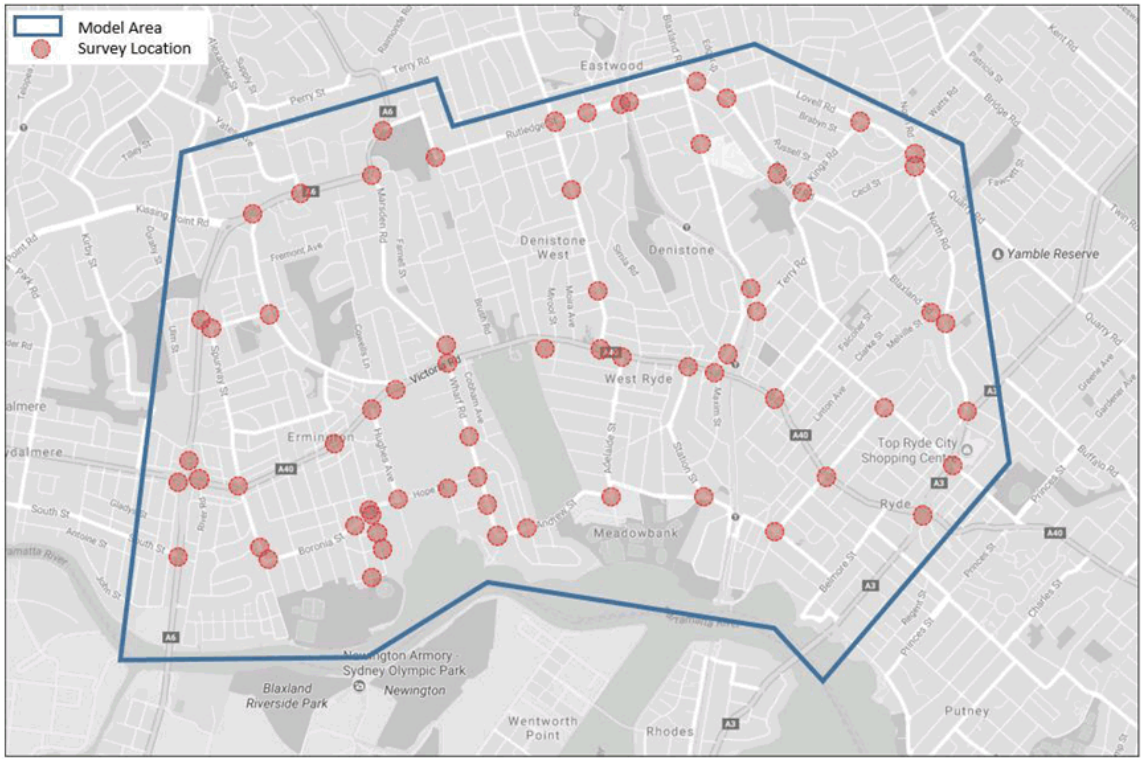
2.5 Model data

Traffic data used in the development of the model was collected from various sources. This section details the collection and analysis of this data.

2.5.1 Turning movement counts

Classified turning movement surveys for 64 intersections were collected at 15 minute intervals during the morning and evening peak and do not identify rigid and articulated heavy vehicles separately. A summary of intersection turning movement counts within the study model area is shown in Figure 2.2. The intersection movements were collected on 1 August 2017.

Figure 2.2 : Intersection survey locations



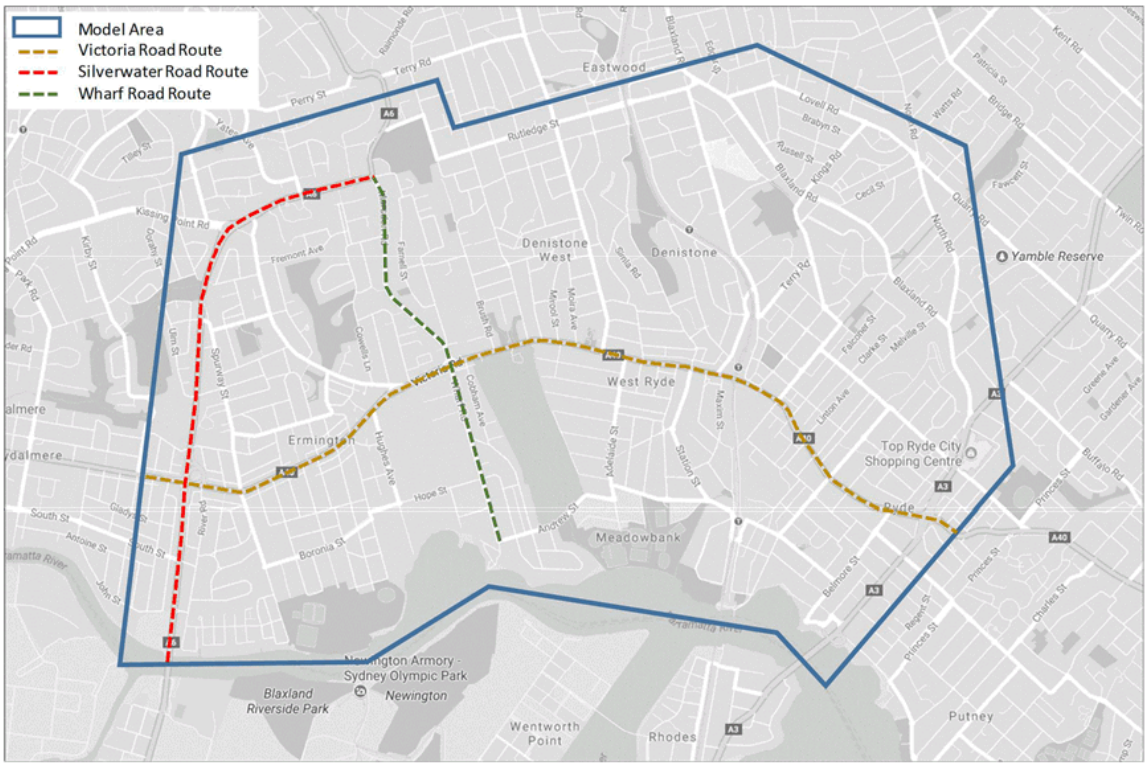
2.5.2 General traffic travel time data

General traffic travel time data was collected in August 2017 for three key routes in the study area using floating car travel time surveys:

- Victoria Road (between Silverwater Road and Devlin Street)
- Marsden Road (between Andrew Street and Silverwater Road)
- Silverwater Road (between Silverwater Bridge and Marsden Road)

These routes are shown in Figure 2.3.

Figure 2.3 : Travel time survey routes



2.6 Development of Real Data Sets

Real Data Sets (RDS) of target volumes were prepared for two purposes:

1) Target volumes against which model calibration is measured
2) Target volumes to guide the matrix adjustment processes

The RDS covers the full four hours of the morning and evening peak model periods. The RDS contains a total of 432 count movements for each hour.

2.6.1 Consistency checks and balancing

To provide a sound basis for calibration and demand adjustment, especially in view of the range of types and dates covered by the surveys, the counts have been checked and adjusted for consistency. This also provides an additional check that the counts have been processed and imported into the model correctly.

For each time interval, the counts have been propagated through the network to identify section volumes based on both upstream and downstream sources, and the turn or midblock counts which contribute to each.

Where a discrepancy is found between the propagated upstream and downstream sources, the contributing counts are adjusted accordingly.

Discrepancies have been adjusted for in cases where the GEH is greater than 2.0 or 50 vehicles per hour (whichever is larger) between adjacent intersections. As quoted in the *Roads and Maritime Traffic Modelling Guidelines version 1.0*, Transport for London (TfL) suggests that the accuracy of observed counts must be

within +/- 50 pcu/hr or within a GEH of two. Adopting this method ensures that the larger counts remain within this range while providing good consistency between the lower volume counts.

2.7 Road network coding

2.7.1 Initial network coding

Coding of the road network was undertaken on the basis of updating Transport for NSW's latest Sydney GMA Aimsun network. In-filling of detail within the study area was undertaken on the basis of site observations, aerial photography and Google Streetview.

Additional time-dependent traffic management policies were coded in the network to reflect features such as school speed zones.

In locations where parking in a traffic lane is allowed across both peak periods, and aerial photographs indicate demand for this parking, the affected lane is not included as a trafficable lane in the model.

2.8 Public transport network coding

Coding of the public transport network was undertaken based on bus stop, bus route and bus timetable data from the Transport for NSW Operational Spatial Database (OSD). This database provides the location of bus stops, bus routes and stopping patterns as well as timetabled arrival times at each stop along each route.

A subset of the OSD was extracted that detailed the stops and routes for all public and school buses passing through the study area during the morning and evening peak periods. These bus stops were imported and bus routes created based on linking stops according to the shortest path between stops. Review and correction of imported routes was also undertaken to ensure that stops were imported in the correct locations and that routes operated along the correct paths.

2.9 Traffic signal settings

The traffic signal times have been derived from SCATS History file data which records the times for individual phases across the peak period. These phase times have been aggregated and imported into the models and manually adjusted to reflect a realistic representation of phase and cycle timings.

A limitation of the SCATS History files is that they do not record gap-out behaviour for diamond overlap phases. This behaviour occurs when there is an imbalance in right turns during a diamond phase, causing SCATS to call a short alternative phase to allow a leading right turn and through movement to run before the main through movement phase. The model flows and operation were observed and where it was determined that this gap-out feature was required to meet observed flows, a leading right turn phase was coded taking time from the recorded diamond phase.

Midblock pedestrian crossing in the study area also showed some variability in operation, with many being called inconsistently during the peak periods. A conservative assumption was made to model these pedestrian crossings as being called every cycle for the purposes of simplicity.

2.10 Behavioural settings

The following behavioural settings were used in the development of the model:

- Look-ahead distance variability: 40%
- Simulation step: 0.8 seconds
- Mesoscopic reaction time (all vehicles): 1.2 seconds
- Mesoscopic reaction time at traffic lights (all vehicles): 1.6 seconds
- Microscopic reaction time (all vehicles): 0.8 seconds
- Microscopic reaction time at traffic lights (all vehicles): 1.1 seconds
- Global arrivals: exponential distribution

The global jam density was set to 180 veh/km, which is the value used in the Sydney Aimsun model and suggested by the developers of Aimsun (TSS). Jam density is measured as number vehicles allowed per kilometre of road. Vehicles under mesoscopic simulation are modelled with instantaneous acceleration and deceleration; to better account for the impact of this behaviour in mesoscopic simulation, the jam density of road sections has been adjusted to more accurately represent delays in areas where driver merge and diverge behaviour is critical to the network, for example Victoria Road before Hermitage Road. The global jam density parameter has been retained for the majority of sections within the network, with the following exceptions:

- Sections of Victoria Road westbound between Mellor Street and West Parade, where jam density is less than 180 veh/km due to a 'lane-drop' from 3 to 2 and a narrowing of the road corridor as vehicles travel under the rail bridge.
- Sections of Victoria Road westbound on approach to Wharf Road/Marsden Road due to observed lane changing/weaving associated with the ending of the bus lane and vehicles preparing to turn right at Kissing Point Road.
- The southernmost section of Church Street where downstream constraints on Concord Road outside of the model area reduce the southbound capacity of the section.

These changes to jam density closer replication of the observed capacity reductions through these parts of the road network.

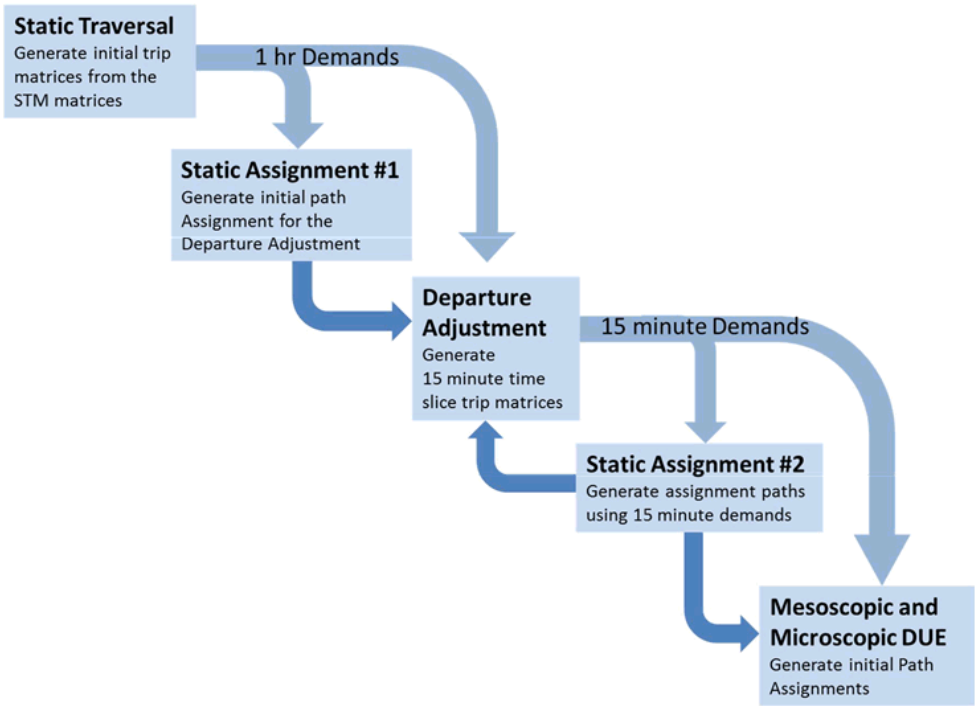
2.11 Traffic assignment and trip demand development

Aimsun allows for a combination of assignment types in combination with different vehicle simulation methods. The Melrose Park model has been developed using the following combinations of assignment and simulation techniques:

1) Static equilibrium assignment using static traffic model
2) Dynamic User Equilibrium (DUE) assignment using mesoscopic simulator
3) Dynamic User Equilibrium (DUE) assignment using hybrid mesoscopic/microscopic simulator

The process for assignment and trip demand is summarised in Figure 2.4.

Figure 2.4 : Assignment and trip demand process



The traffic demands were imported from the STM into Aimsun where it was assigned to the Greater Sydney Aimsun model using static assignment. A static traversal was undertaken to obtain the subarea trip matrices for the study area which were then disaggregated to a finer-grained centroid configuration to allow for modelling of the detailed road network.

The subarea matrices were then assigned to the study area road network as part of the first pass of the static assignment. The assignment results were reviewed to make sure that path assignment through the network was reasonable. The assignment paths were then used to undertake the departure adjustment.

The result of the departure adjustment was then reassigned using the static assignment. This was used to calibrate the initial flat traffic demand across the entire network and provide a starting point for mesoscopic simulation. Mesoscopic Dynamic User Equilibrium (DUE) was then used to fine-tune demand and generate the capacity constrained assignment for input to more detailed hybrid DUE simulation which contains the microsimulation area.

The following settings were used in the final DUE assignment parameters:

- Assignment cycle: 15 minutes
- Number of intervals: 1
- Maximum iterations: 30
- Stopping relative gap: 2%
- Attractiveness weight: 1.0
- User defined cost weight: 1.0
- Maximum paths from path assignment: 3 (the maximum number of assignment paths between any origin and destination pair taken from the static assignment input)
- Maximum paths per interval: 4 (the maximum number of assignment paths used by the DUE between any origin and destination pair)
- Assignment model: Gradient-based
- Path cost: Experienced

3. Demand matrix development

3.1 Traffic demand estimation methodology

Traffic demand estimation was undertaken using the Departure Adjustment method available in Aimsun. The following stages were used in the development of base traffic demand:

- Assignment of the Sydney GMA model and generation of morning and evening peak hour sub-area traversal matrices using static assignment
- Expansion of the single hour traversal matrices in the strategic model zone system to four hour total matrices in the higher-resolution Melrose Park zone system

Manual adjustment of 15-minute matrices to account for differences in static and dynamic assignment

Each of these stages is described in further detail below.

3.1.1 Static demand adjustment

The four-hour flat traffic demand for the sub-area traversal was adjusted to meet observed traffic flows throughout the network according to the hourly counts for each period using static departure adjustment. The departure adjustment procedure is an iterative matrix adjustment procedure that uses the paths and modelled travel time results from a static assignment to adjust the demand matrix and distribute trips in time so that their arrival profiles match observed flow profiles at count locations across the network. The demand adjustment was undertaken on the basis of turning movement counts outlined in Section 2.5.1.

3.1.2 Departure adjustment and slicing

The aim of this process is to adjust and time-slice an origin-destination matrix that considers static assignment travel times to allocate trips to the correct departure matrix in order to reach the desired location at the observed time under dynamic simulations. This resolves the time shift of long trips by considering static travel times in the adjustment. It should be emphasised that this process uses static modelled travel time, and hence dynamic factors such as congestion at signalised intersections are not considered.

The following are the parameters used in this project:

- Interval duration: 900 seconds (15 minutes)
- Matrix weight: 1

The interval duration is the general time duration used for the slicing calculation. The matrix weight provides a limit on the degree to which the original demand matrices can be adjusted, with 1 corresponding to no allowed change and 0 corresponding to complete liberty to change the original matrices.

The 15-minute traffic demands were then manually adjusted as needed for the finer tuning of the calibration in the mesoscopic model to match observed turn flows.

4. Model calibration

4.1 Overview

The calibration of the *Melrose Park Hybrid Model* has been undertaken with a view to meeting the targets for calibration provided in the *Roads and Maritime Traffic Modelling Guideline (2013)*. The calibration has been undertaken based on hourly turning movement counts over the four-hour AM and PM peak periods.

4.2 Calibration targets

The GEH statistic is used in the calibration of traffic models to compare the differences between modelled and observed traffic flows. The GEH statistic is defined as follows:

$$GEH = \sqrt{\frac{(V_{observed} - V_{modelled})^2}{(0.5 \times (V_{observed} + V_{modelled}))}}$$

Based on the calibration and validation guidelines presented in the *Roads and Maritime Traffic Modelling Guidelines, 2013* and the *Melrose Park Model Scoping Report* (23 October 2017) prepared by Jacobs, the following criteria has been adopted:

Whole model

- At least 80% of flow comparisons with GEH less than 5
- At least 95% of flow comparisons with GEH less than 10

Core/microsimulation area

- At least 85% of flow comparisons with GEH less than 5
- 100% of flow comparisons with GEH less than 10

In addition to GEH comparisons, regression analysis of observed versus modelled flows was also undertaken. The following criteria for regression analysis were adopted:

- R^2 greater than 0.95
- Slope between 0.95 and 1.05

The R^2 generally represents the closeness of fit of the observed data points to modelled data points and the slope of the trend line gives an indication of whether the model is general over-assigning (greater than 1) or under-assigning (less than 1) traffic across the network. A total of 432 individual turns were included in this analysis for each one-hour time period.

4.3 Model convergence

The *Melrose Park Hybrid Model* has been developed using dynamic user equilibrium (DUE) assignment. As the dynamic user equilibrium assignment is an iterative process, the relative gap between iterations is a measure of how close the assignment to the "optimal" network equilibrium.

Unlike static models, Aimsun's dynamic user equilibrium measures the relative gap in the path costs for each path assignment cycle period (in this case 15 minutes) in the simulation. As later periods are dependent on the convergence of earlier time periods, later time periods require more iterations to converge. The relative gap reported for the convergence of the model is the mean relative gap for all time periods.

The hybrid DUE assignment was run using initial paths derived from both an initial static equilibrium assignment and a mesoscopic DUE assignment. A summary of the AM and PM peak hybrid DUE convergence for the model is shown in Figure 4.1 and Figure 4.2.

The hybrid DUE convergence shows that the models terminated at a mean relative gap of 2% after 19 and 23 iterations for the AM and PM peaks respectively. This relatively low variation in relative gap over the last 5 iterations gives confidence that the process has identified a stable equilibrium for the particular input parameters.

Figure 4.1: AM peak hybrid DUE convergence

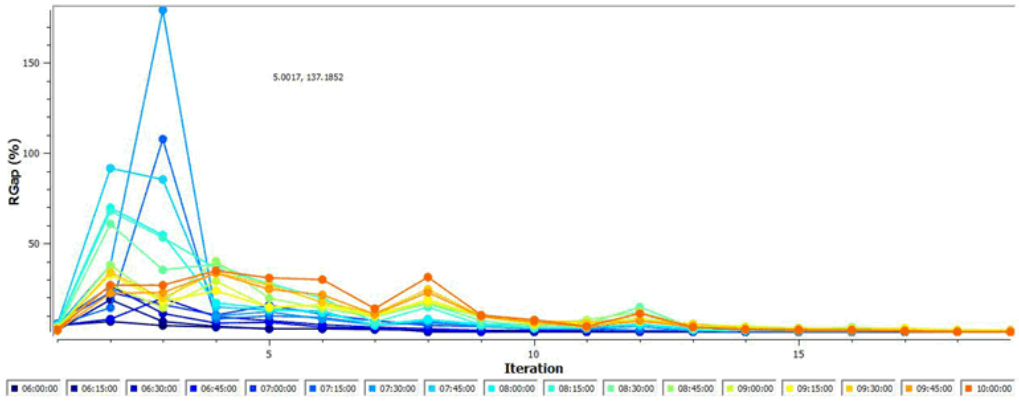
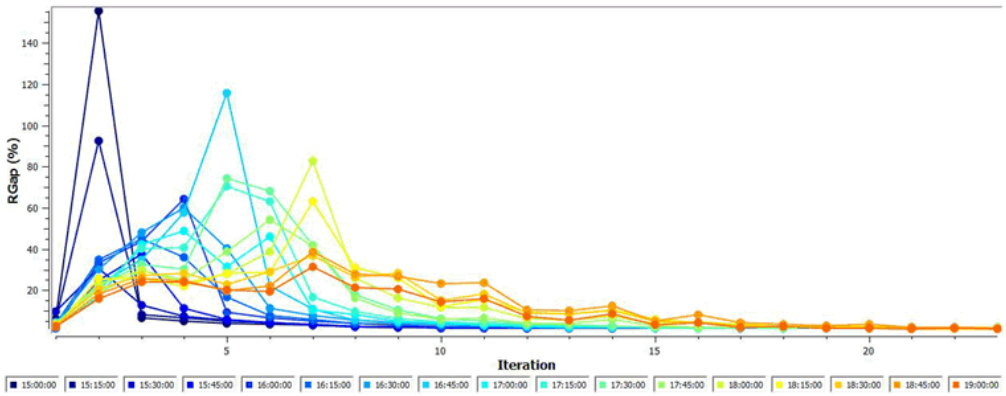


Figure 4.2: PM peak hybrid DUE convergence



4.4 Calibration results

4.4.1 Total traffic volume calibration statistics

A summary of the target count comparison statistics for the DUE assignment is provided in the following section.

Regression analysis

The following section summarises the regression analysis. Figure 4.3 and Figure 4.4 plot the observed traffic flows to the modelled traffic flows, while Table 4.1 provides a summary of the regression analysis statistics for the morning and evening peak by hour.

Figure 4.3: Morning peak modelled vs observed flows 6 – 10am

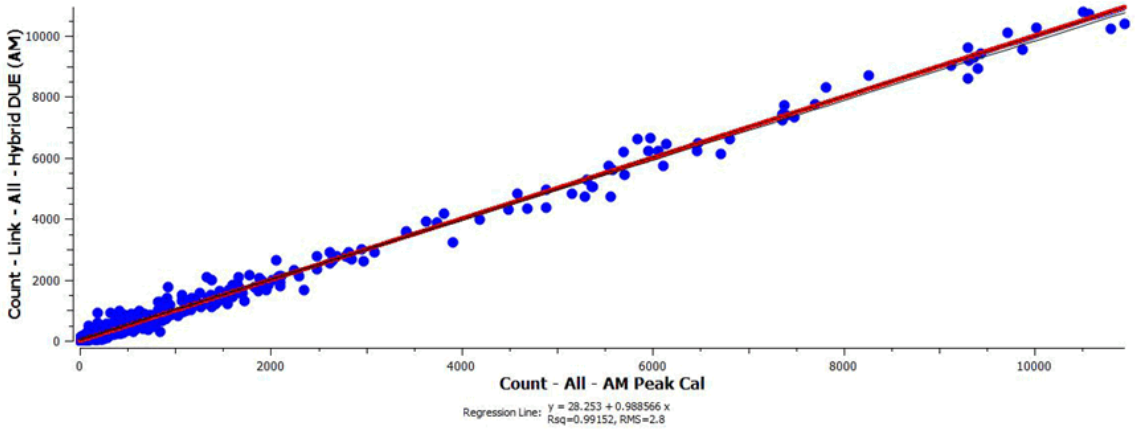


Figure 4.4: Evening peak modelled vs observed flows 3 – 7pm

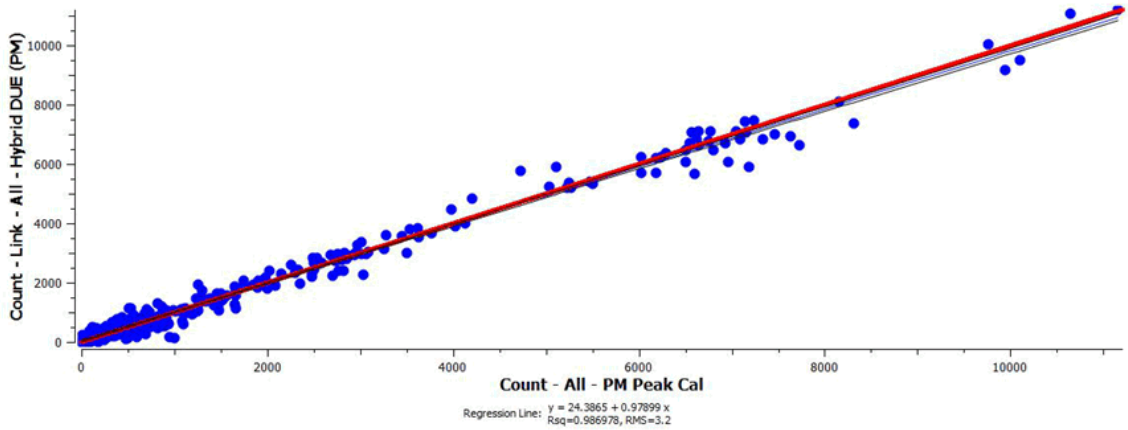


Table 4.1: Summary of model calibration – Regression analysis

Time period	R^2	Slope
6:00 AM to 7:00 AM	0.988	0.974
7:00 AM to 8:00 AM	0.990	0.981
8:00 AM to 9:00 AM	0.981	0.975
9:00 AM to 10:00 AM	0.982	1.014
Total morning peak – all hourly volumes	**0.992**	**0.989**
3:00 PM to 4:00 PM	0.973	0.950
4:00 PM to 5:00 PM	0.986	0.986
5:00 PM to 6:00 PM	0.986	0.989
6:00 PM to 7:00 PM	0.977	0.982
Total evening peak – all hourly volumes	**0.987**	**0.979**

Analysis of the regression parameters show that the targets of R^2 greater than 0.95 and slope between 0.95 and 1.05 are met in each hour.

Based on regression analysis, the model adequately meets the calibration criteria and is a good fit to the observed traffic volumes.

GEH statistics

Table 4.2 and Table 4.3 present a summary of the turn comparison between observed and modelled by GEH statistic. The results indicate the model achieves the adopted GEH criteria for the combined 4 hour periods in both the morning and evening peak periods. On an hour by hour basis, the whole model generally achieves the criteria. Some hourly periods achieve less than 80% for the GEH<5 criteria however no period is lower than 78%.

Similarly, for the core area, all periods achieve the required criteria with the exception of the first hour in both the AM and PM periods. This is not anticipated to affect the findings of the model considering the peak traffic flows occur in the middle 2 hours of the modelled period.

Table 4.2: Summary of turning movement comparisons (morning peak)

Measure	Target	Hour starting				
		All hours	6:00am	7:00am	8:00am	9:00am
Whole model						
GEH<5	80%	84%	78%	80%	78%	80%
GEH<10	95%	99%	99%	98%	95%	98%
Core area						
GEH<5	85%	91%	82%	88%	85%	85%
GEH<10	100%	100%	100%	100%	100%	99%

Table 4.3: Summary of turning movement comparisons (evening peak)

Measure	Target	Hour starting				
		All hours	3:00pm	4:00pm	5:00pm	6:00pm
Whole model						
GEH<5	80%	85%	80%	81%	80%	79%
GEH<10	95%	97%	97%	97%	98%	97%
Core area						
GEH<5	85%	91%	83%	85%	89%	85%
GEH<10	100%	100%	100%	100%	100%	100%

Locations where the GEH comparison statistics exceed 10 are summarised in Table 4.4

Table 4.4: Summary of turn locations exceeding GEH 10

	Location	Comment
AM	Right turn from West Parade into Rutledge Street eastbound	This is at the far north-eastern section of the model and is due to the inability of mesoscopic modelling to depict the delays of this priority turn caused by poor road geometry and sight lines. This causes the turn to be too attractive and hence the modelled volume exceeds the observed counts. This turn will not influence the findings of the modelling.
	Left turn from Bartlett Street into Kissing Point Road northbound	This turn is located in the far north-western section of the model. Some local roads in this area are not included in the model so turning movements are more concentrated at the Silverwater Road/Bartlett Street intersection. The discrepancies at this location are required in order for strategically important upstream and downstream flows on Silverwater Road to match observed counts.
	Left turn from Park Street into Devlin Street northbound	This turn is located at the far eastern section of the model. The zonal system and road networking coding in this area is fairly course and so this turn is used by trips which in reality would be accessing Devlin Street via the Top Ryde car-park exit ramp. Turn flows cannot be accurately met without detrimental impacts to calibration at the downstream Devlin Street/Blaxland Street intersection.
PM	Right turn from West Parade into Anthony Road westbound	These turns are out of/ into a local road in the West Ryde shopping village, 2km from the study area. The zonal system and road networking coding in this area is fairly course and turn flows cannot be accurately met without detrimental impacts to calibration at the nearby Victoria Road intersection.
	Left turn from Anthony Road into West Parade northbound	
	Right turn from Kings Road into Blaxland Road westbound	This turn is located in the far north-eastern section of the model. The zonal system and road networking coding in this area is fairly course and turn flows cannot be met without unrealistic fixed route choice constraints.

4.5 Calibration summary

Based on the model results, the model is considered to be satisfactorily calibrated for the purpose of the Melrose Park TMAP assessment.

5. Model validation

5.1 Overview

Validation of the *Melrose Park Hybrid Model* has been undertaken on the basis of general traffic travel times for routes identified in Sections 2.5.2. As recommended by the *Roads and Maritime Traffic Modelling Guide (2013)*, the target for validation of each route in each hour is for the modelled average travel time for the route to be within 15% or one minute of observed (whichever is larger).

5.2 Validation statistics

5.2.1 General traffic travel time validation results

The travel time validation for general traffic during the morning and evening peak periods are presented in Figure 5.1 to 5.24.

The majority of the travel time observations fall within the 15% upper and lower limits. Some of the modelled times sit outside of the 15% limits, but are still within one minute of the observed travel time.

The delays and travel times at the key areas of project influence along Victoria Road closely match the observed data. The main location where modelled travel times diverge from observed data is on Victoria Road, east of the study area and outside the key areas of influence of the Melrose Park development. At these locations some time periods in the model demonstrate travel times lower than observed data. This is generally due to delays from lane-changing, weaving and merging which cannot be fully captured by mesoscopic modelling. It is also noted that the observed data is highly variable at these locations, with significant differences between the upper and lower 95% confidence intervals.

In summary, these differences between modelled and observed travel times are expected based on the model assumptions and limitations, particularly in the mesoscopic model areas, and do not substantially affect the suitability of the model for assessing impacts of large scale land use changes.

Figure 5.1 : Travel time validation - Victoria Road eastbound 7am-8am

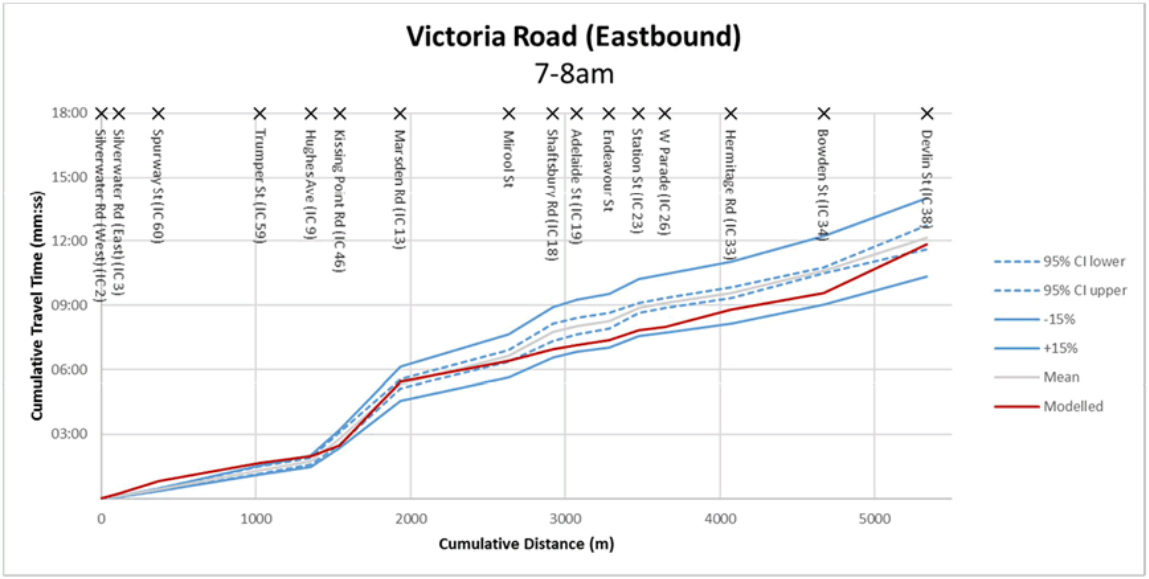


Figure 5.2 : Travel time validation - Victoria Road eastbound 8am-9am

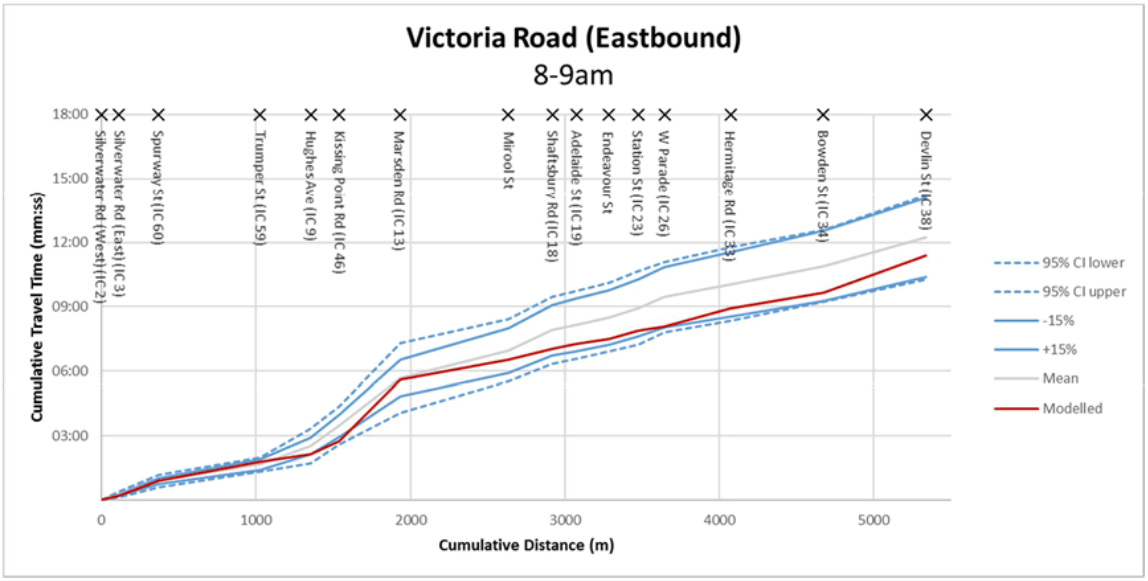


Figure 5.3 : Travel time validation - Victoria Road westbound 7am-8am

Figure 5.4 : Travel time validation - Victoria Road westbound 8am-9am

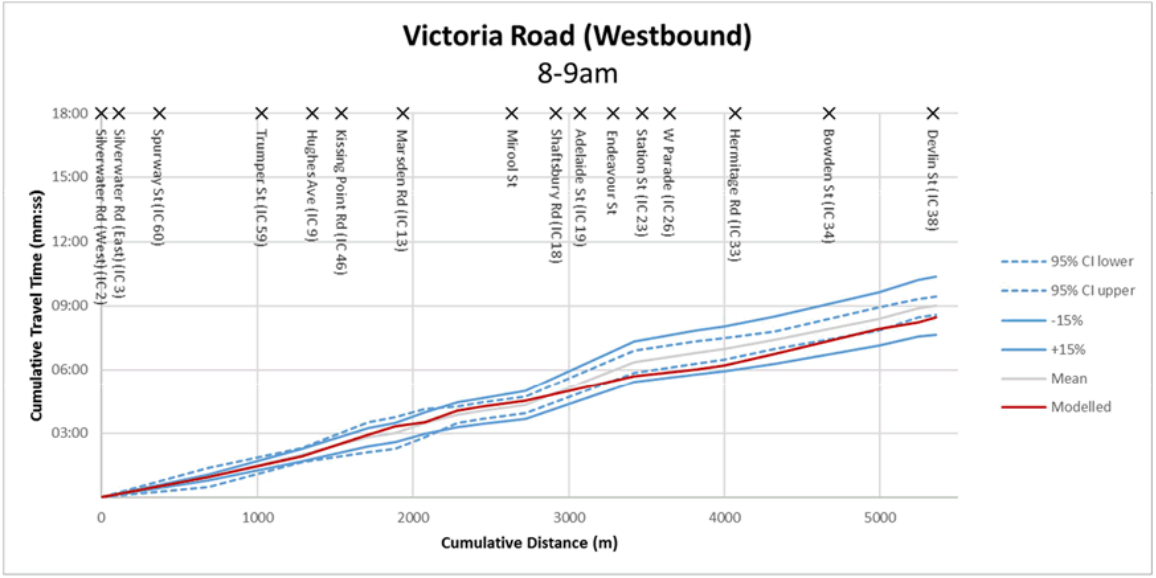


Figure 5.5 : Travel time validation - Victoria Road eastbound 4-5pm

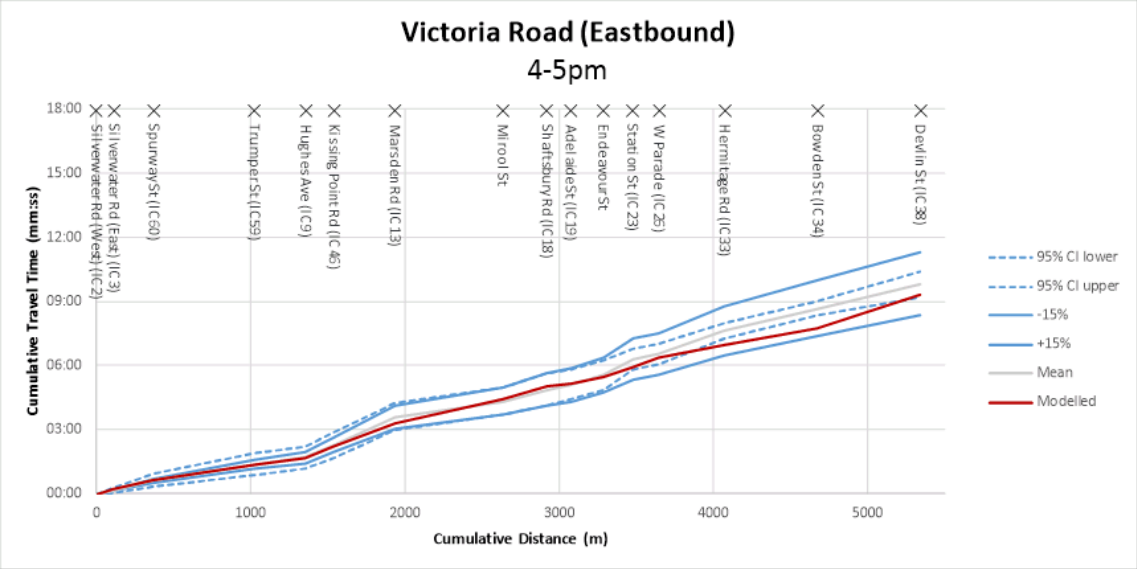


Figure 5.6 : Travel time validation - Victoria Road eastbound 5-6pm

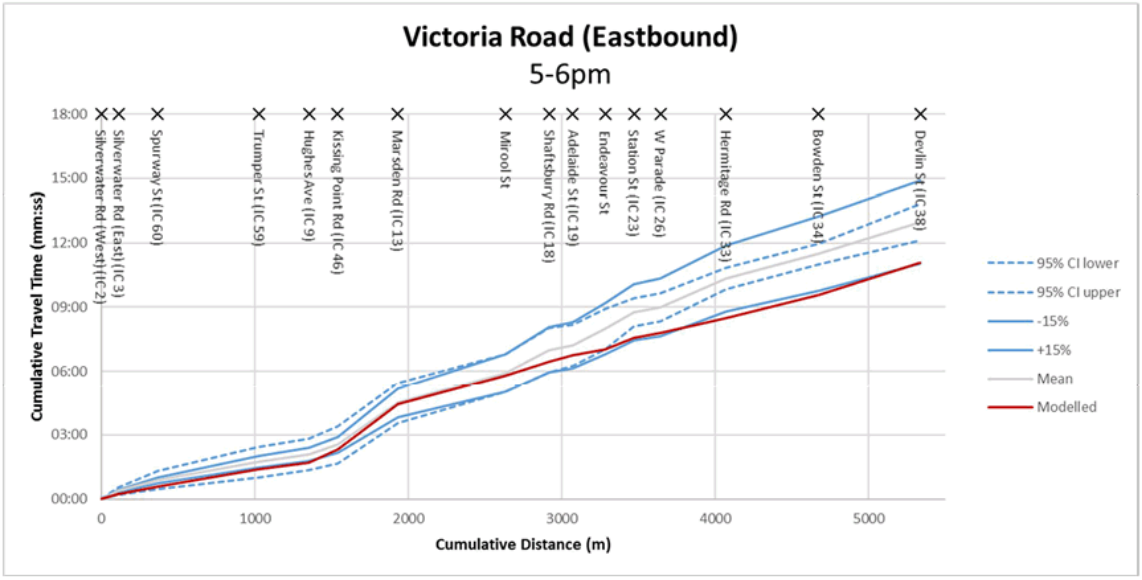


Figure 5.7 : Travel time validation - Victoria Road westbound 4-5pm

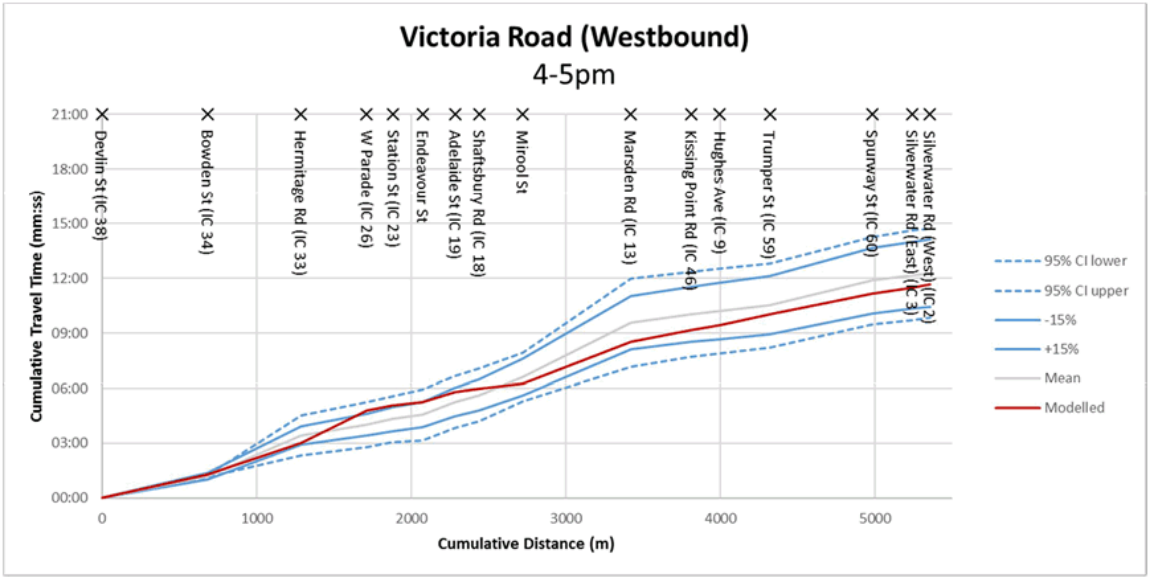


Figure 5.8 : Travel time validation - Victoria Road westbound 5-6pm

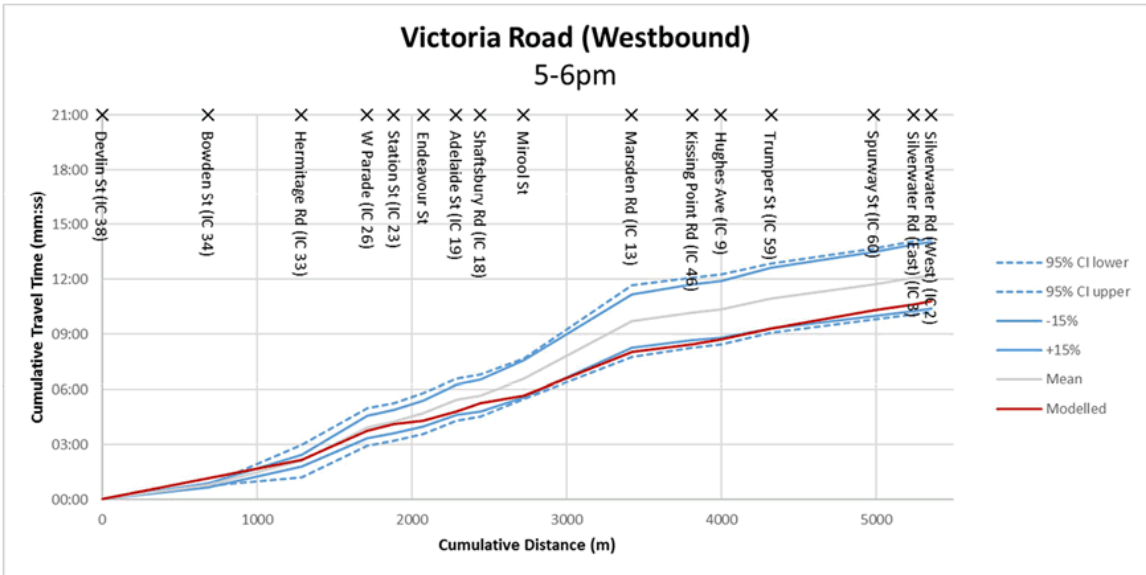


Figure 5.9 : Travel time validation - Silverwater Road northbound 7-8am

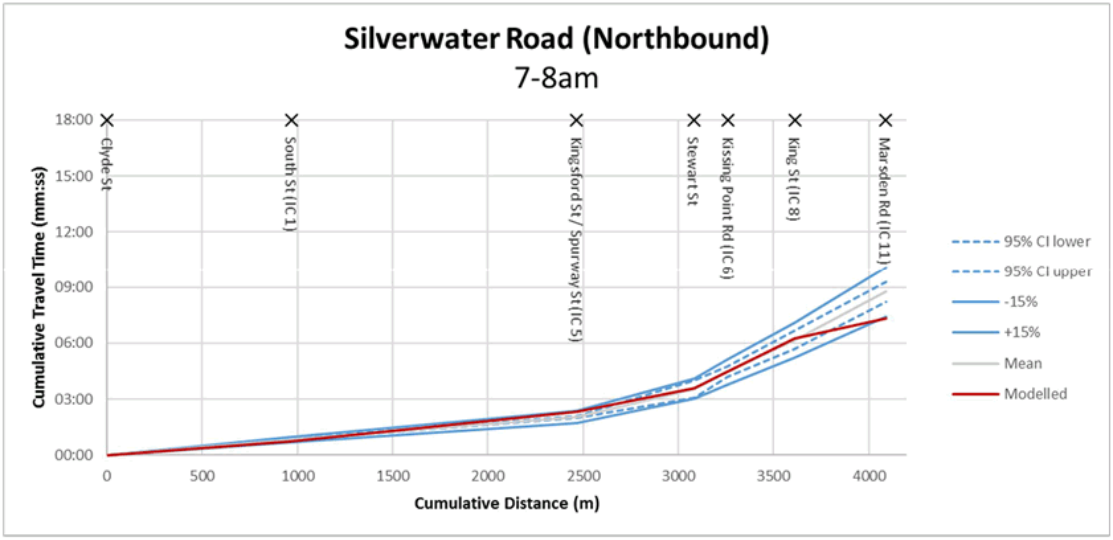


Figure 5.10 : Travel time validation - Silverwater Road northbound 8-9am

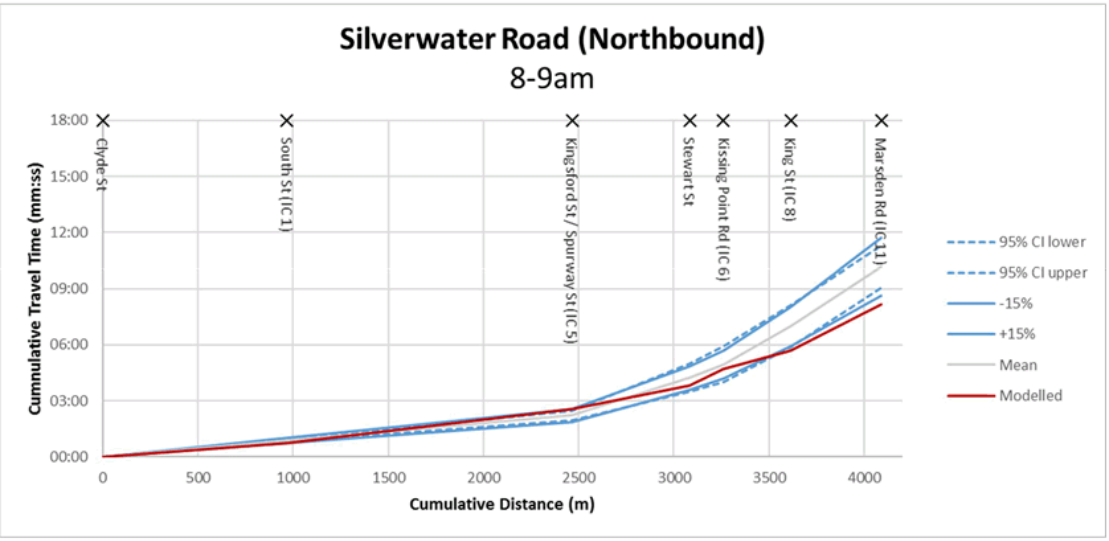


Figure 5.11 : Travel time validation - Silverwater Road southbound 7-8am

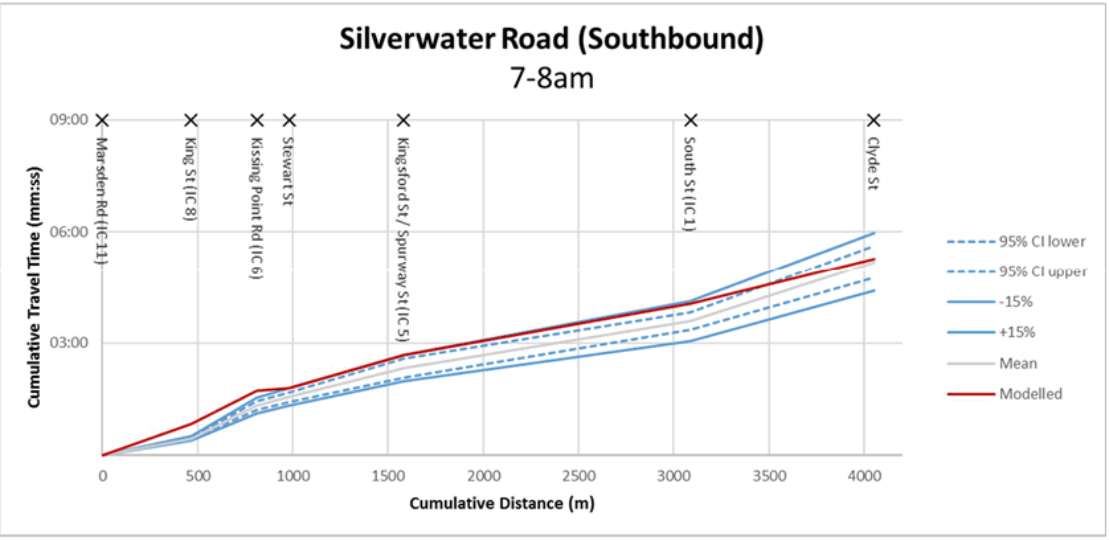


Figure 5.12 : Travel time validation - Silverwater Road southbound 8-9am

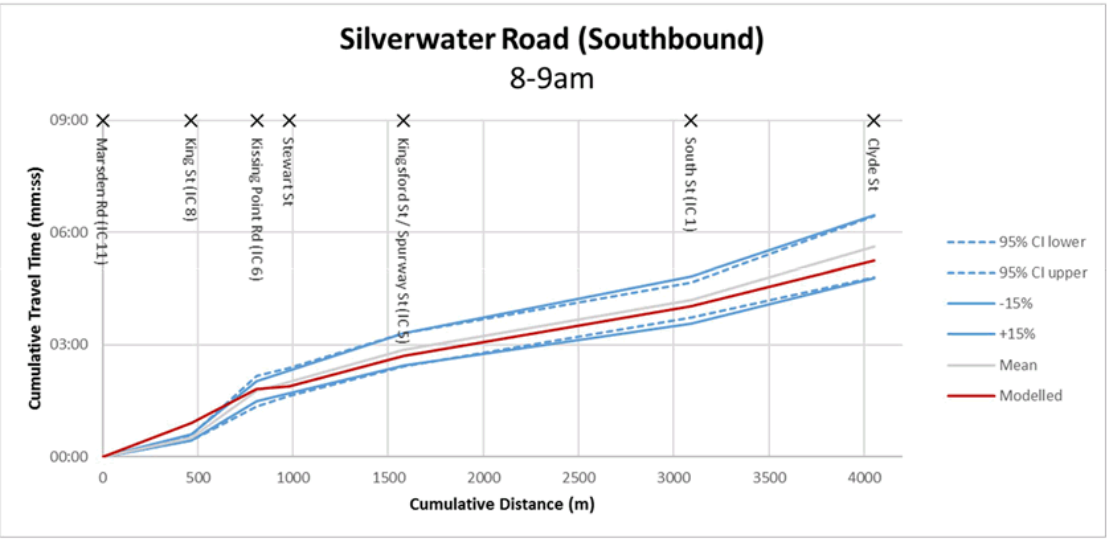


Figure 5.13 : Travel time validation - Silverwater Road northbound 4-5pm

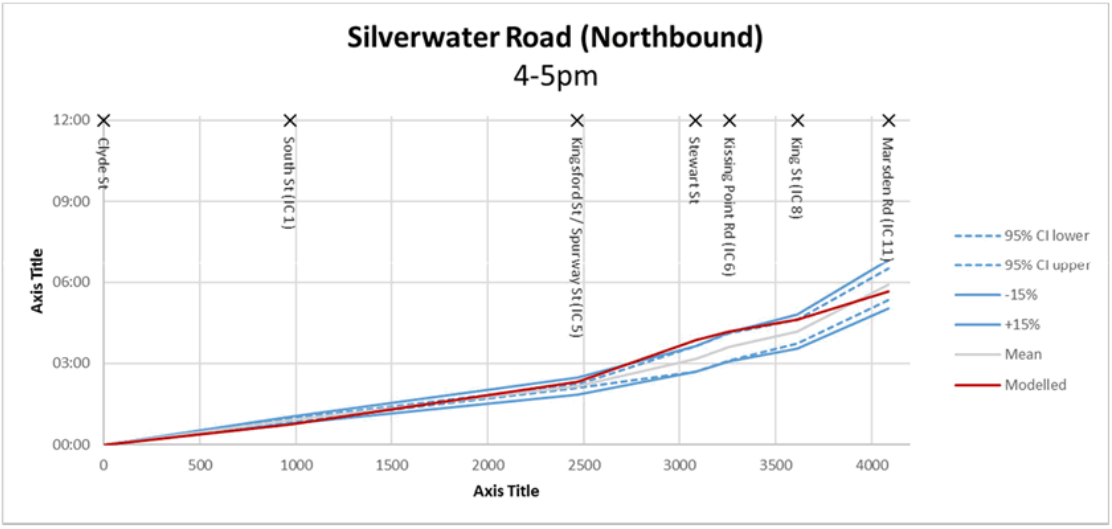


Figure 5.14 : Travel time validation - Silverwater Road northbound 5-6pm

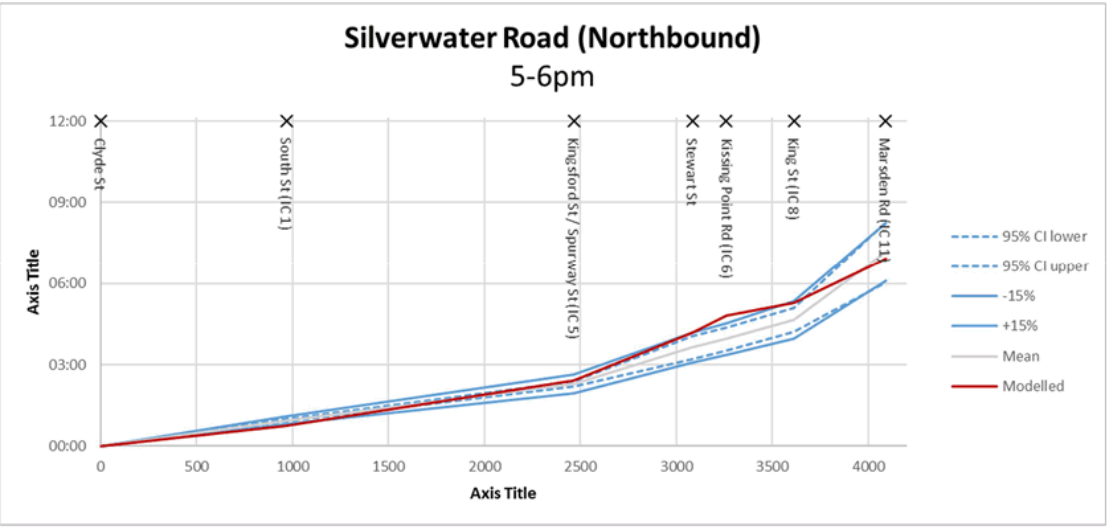


Figure 5.15 : Travel time validation - Silverwater Road southbound 4-5pm

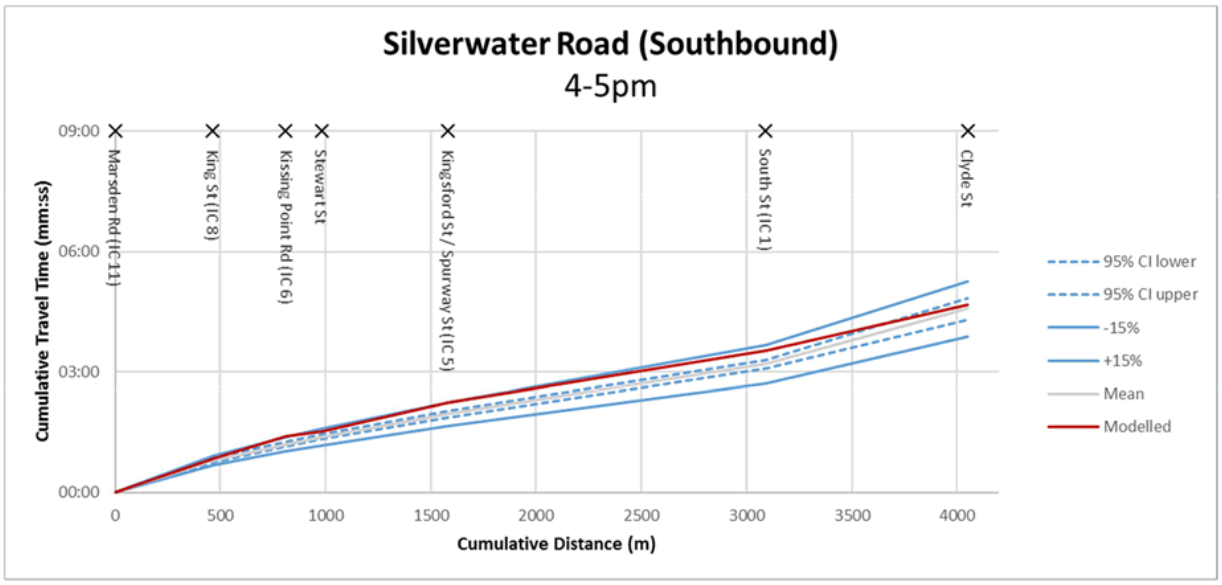


Figure 5.16 : Travel time validation - Silverwater Road southbound 5-6pm

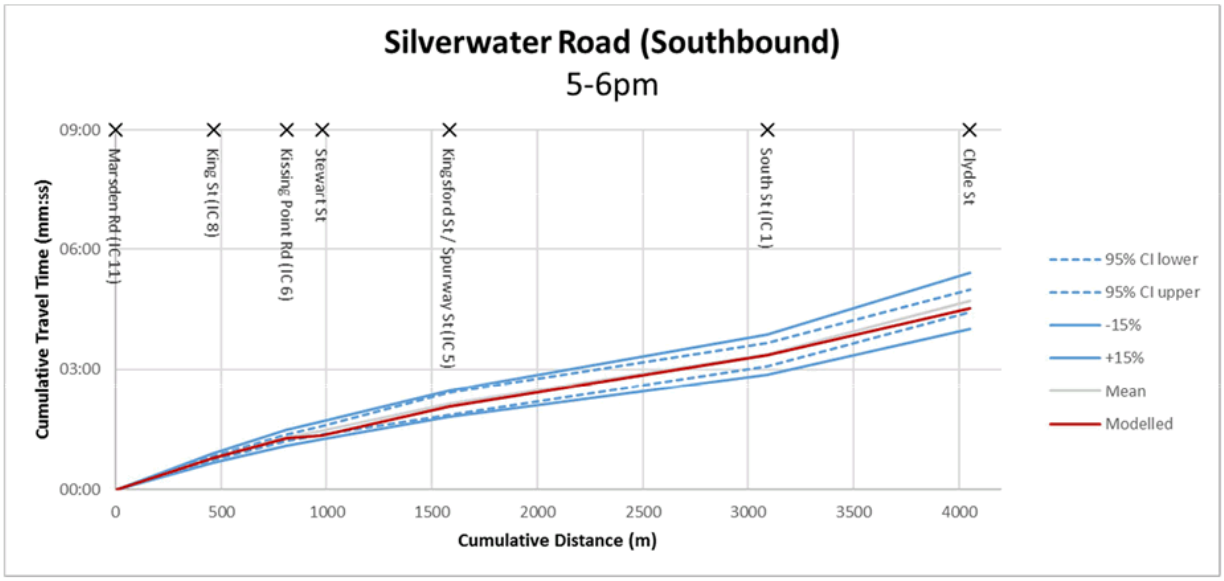


Figure 5.17 : Travel time validation - Wharf Road northbound 7-8am

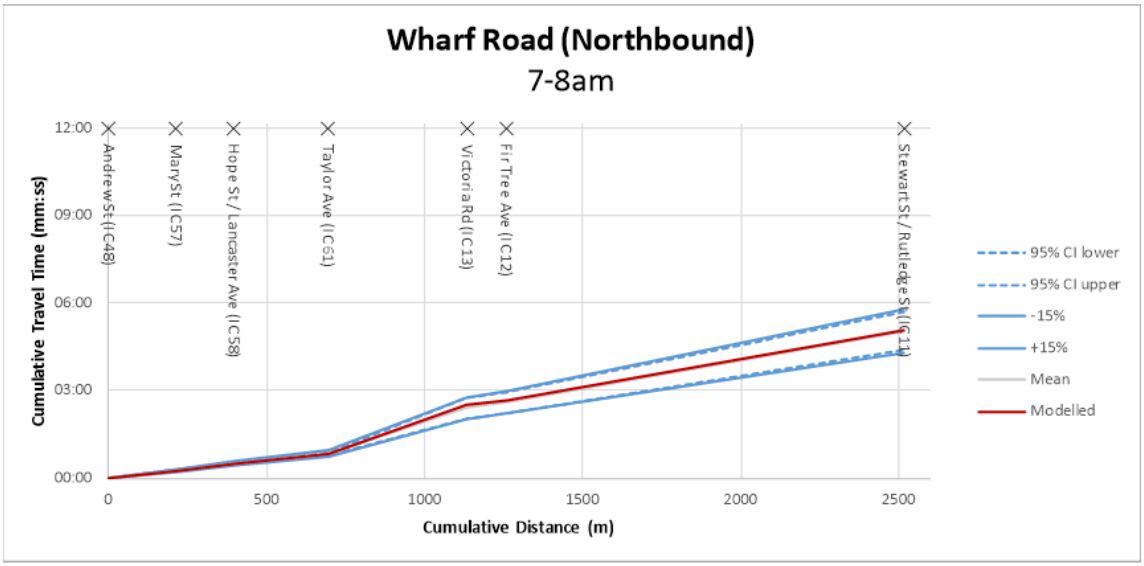


Figure 5.18 : Travel time validation - Wharf Road northbound 8-9am

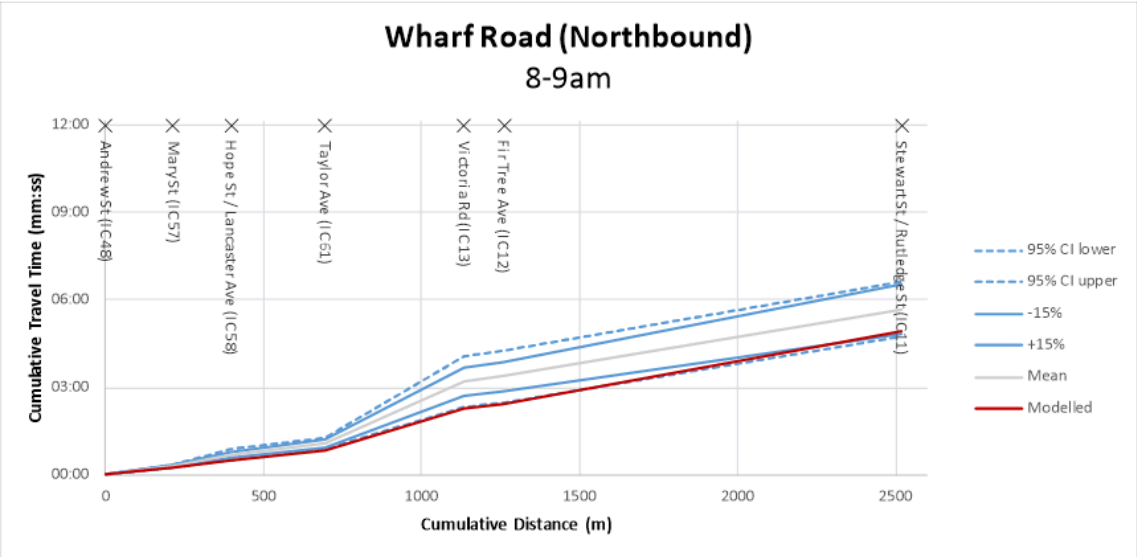


Figure 5.19 : Travel time validation - Wharf Road southbound 7-8am

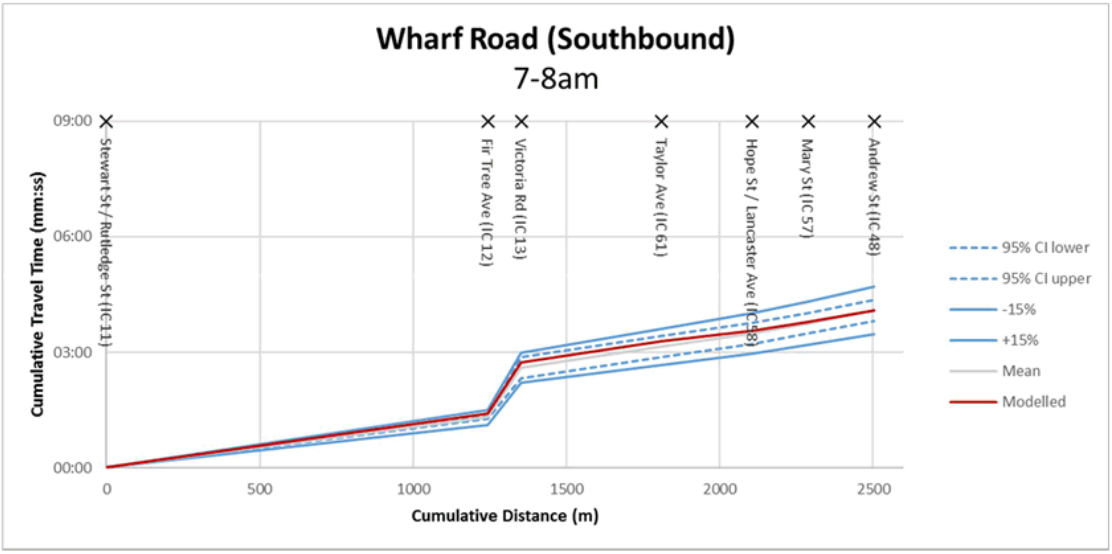


Figure 5.20 : Travel time validation - Wharf Road southbound 8-9am

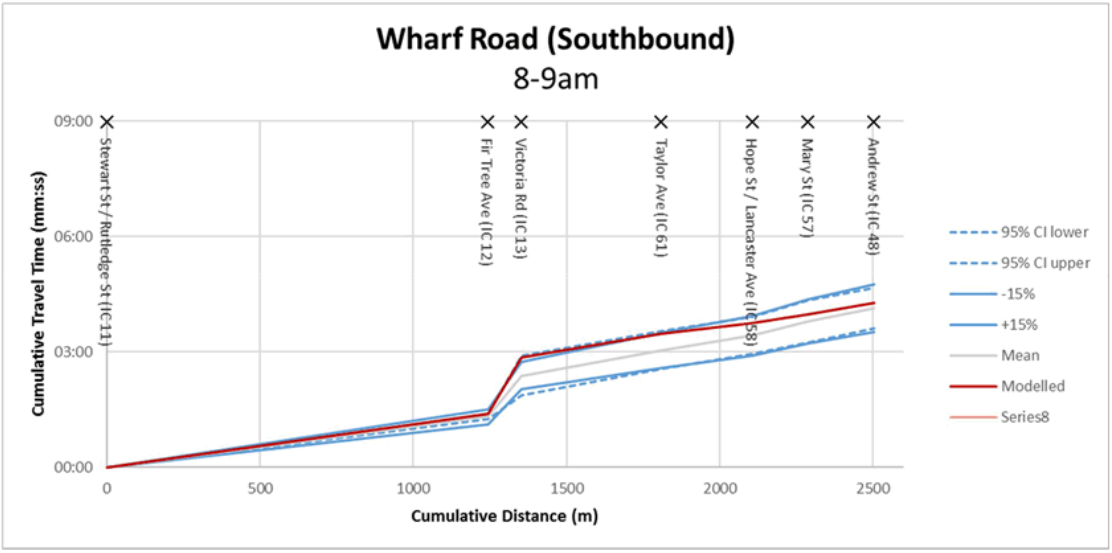


Figure 5.21 : Travel time validation - Wharf Road northbound 4-5pm

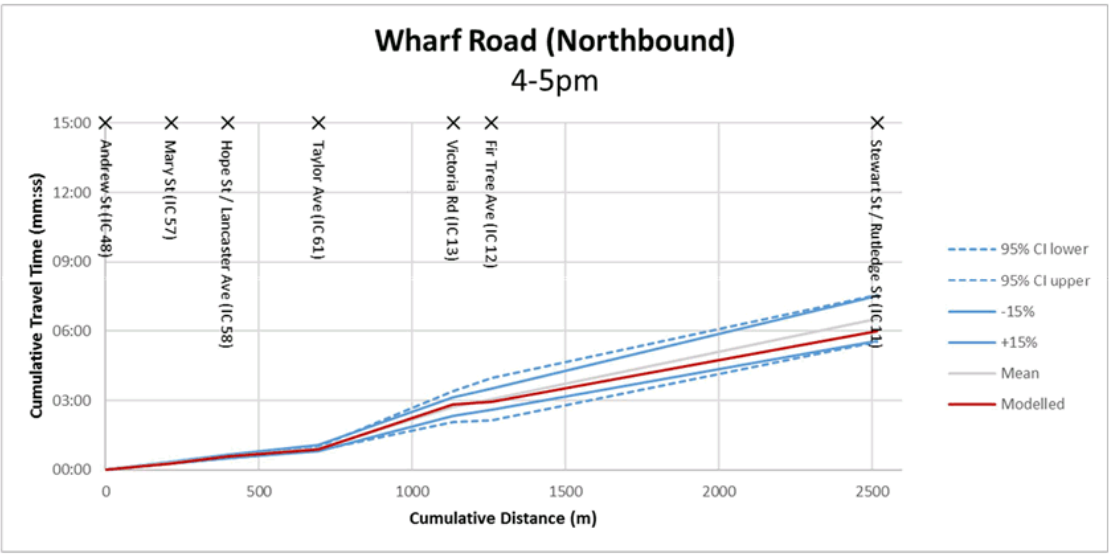


Figure 5.22 : Travel time validation - Wharf Road northbound 5-6pm

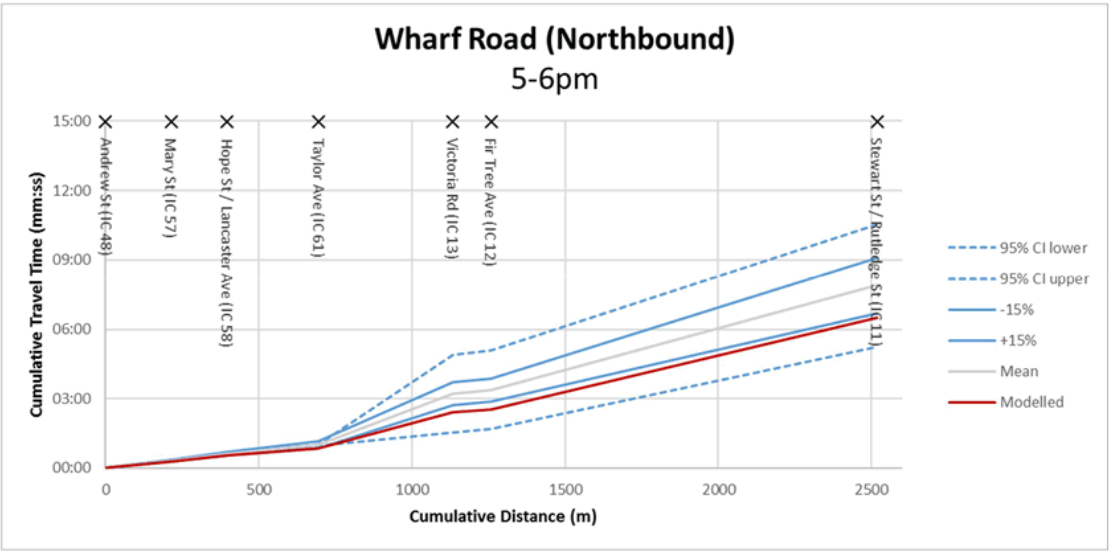


Figure 5.23 : Travel time validation - Wharf Road southbound 4-5pm

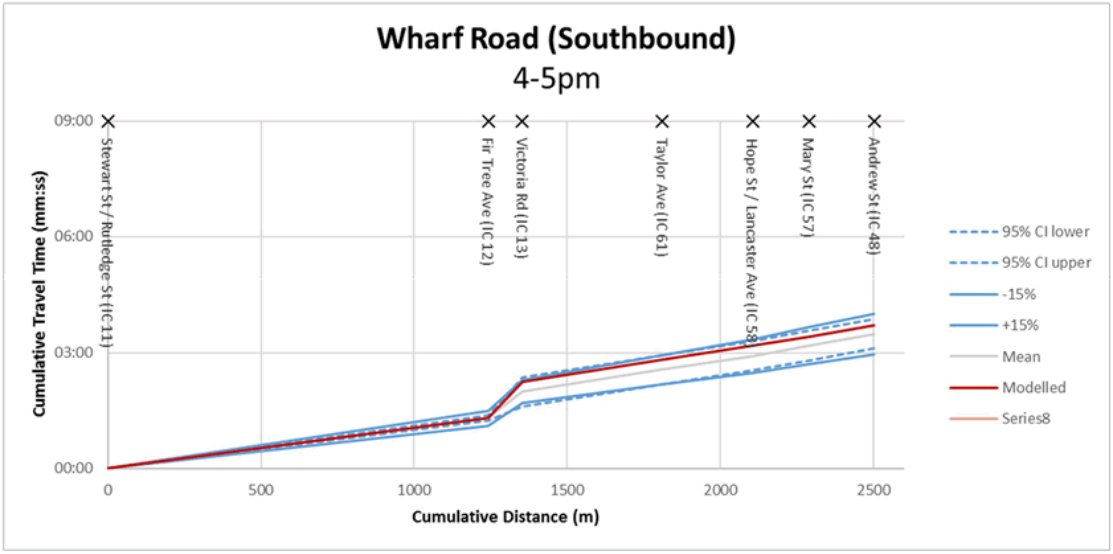
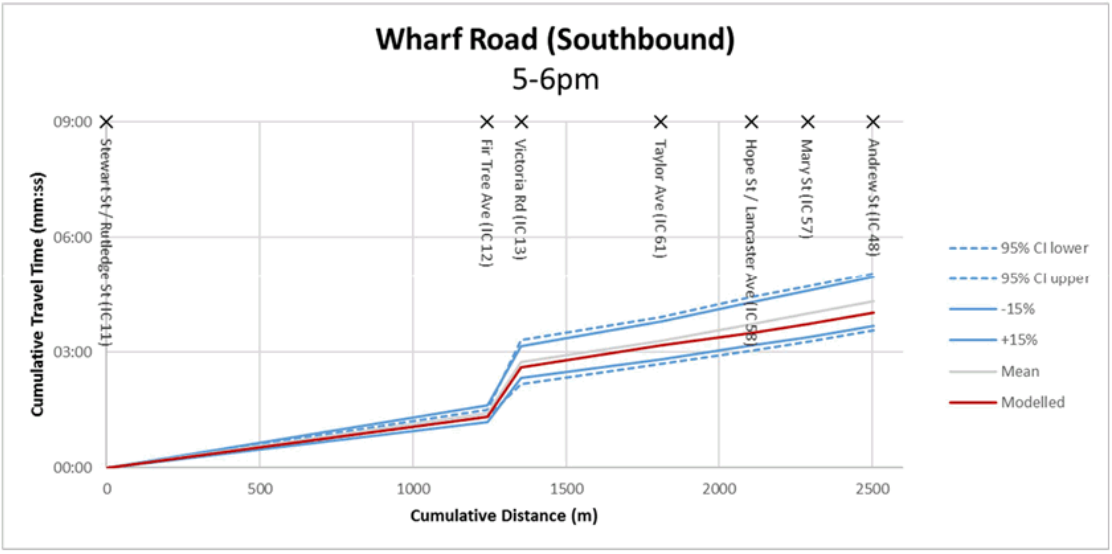


Figure 5.24 : Travel time validation - Wharf Road southbound 5-6pm



5.3 Validation summary

Comparison of the general traffic travel times with observed data shows that the model is generally replicating the pattern of delays and observed cumulative travel times during the peak periods. Minor divergences from the observed data occurs on Victoria Road, east of the study area and outside the key areas of influence of the Melrose Park development. This is generally due to delays which cannot be fully captured by mesoscopic modelling. These differences between modelled and observed travel times are expected based on the model assumptions and limitations, particularly in the mesoscopic model areas, and do not substantially affect the suitability of the model for assessing impacts of large scale land use changes.

6. Summary and conclusions

6.1 Overview

This report covers the calibration and validation results of the base *Melrose Park Hybrid Model*. The base model has been developed to inform the Melrose Park traffic and transport assessment.

The Sydney Strategic Travel Model (STM) has been used to provide initial travel demand and will also be used for future demand development.

Data for the model calibration was obtained from Transport for NSW and consisted of:

- Classified intersection counts
- Travel time surveys
- SCATS history files

6.2 Calibration findings

The model has been developed using the Aimsun modelling platform (version 8.2.1) and has been calibrated and validated based on the criteria adopted in Section 4.2.

The model has targeted regression parameters of R^2 greater than 0.95 and slope between 0.95 and 1.05 and 80% of turning movements with GEH less than 5.

All periods achieve the adopted regression targets. The results indicate the model achieves the adopted GEH criteria for the combined 4 hour periods in both the morning and evening peak periods. On an hour by hour basis, the model generally achieves the criteria. Some hourly periods achieve less than 80% for the GEH<5 criteria however no period is lower than 78%.

6.3 Validation findings

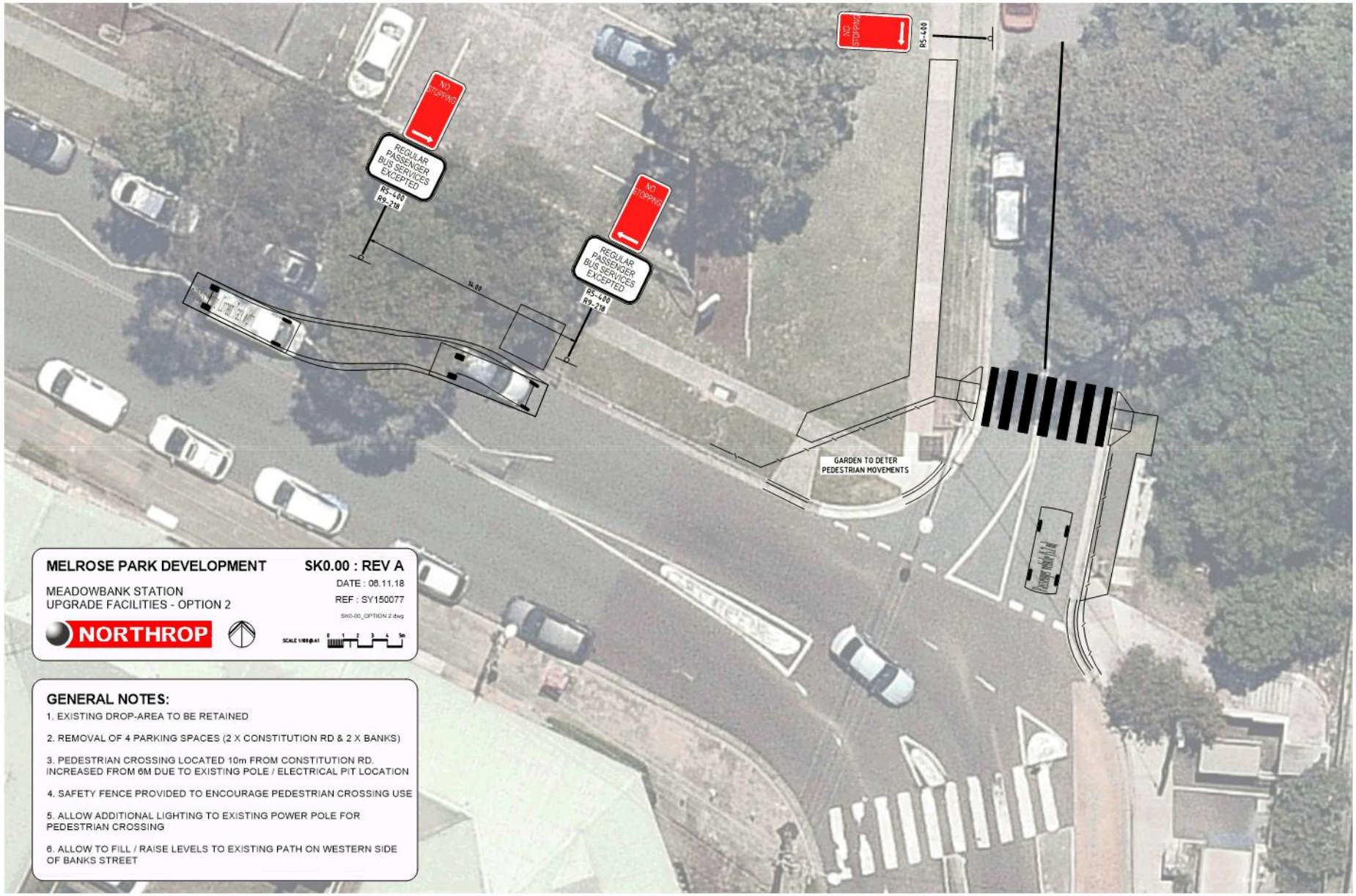
Validation of the model has been undertaken based on general traffic travel times. The travel time validation targets are for modelled times to be within 15% of the average observed travel times.

Comparison of modelled general traffic travel times with observed data shows that the model is replicating the pattern of delays and observed cumulative travel times during the peak period.

APPENDIX C - SWEPT PATH ANALYSIS

JACOBS


MELROSE PARK DEVELOPMENT
SK0.00 : REV A
MEADOWBANK STATION
UPGRADE FACILITIES - OPTION 1
DATE : 06.11.18
REF : SY150077
NORTHROP
GENERAL NOTES:
1. EXISTING DROP-AREA TO BE RETAINED
2. CENTRAL MEDIAN LEADING / TRAILING ENDS TO BE MODIFIED
3. EXTEND PEDESTRIAN CROSSING


NO STOPPING
REGULAR PASSENGER BUS SERVICES EXCEPTED
R5-400
R9-218
14.00
GARDEN TO DETER PEDESTRIAN MOVEMENTS
MELROSE PARK DEVELOPMENT
SK0.00 : REV A
MEADOWBANK STATION
UPGRADE FACILITIES - OPTION 2
DATE : 06.11.18
REF : SY150077
SK0-00_OPTION 2.dwg
NORTHROP
GENERAL NOTES:
1. EXISTING DROP-AREA TO BE RETAINED
2. REMOVAL OF 4 PARKING SPACES (2 X CONSTITUTION RD & 2 X BANKS)
3. PEDESTRIAN CROSSING LOCATED 10m FROM CONSTITUTION RD. INCREASED FROM 6M DUE TO EXISTING POLE / ELECTRICAL PIT LOCATION
4. SAFETY FENCE PROVIDED TO ENCOURAGE PEDESTRIAN CROSSING USE
5. ALLOW ADDITIONAL LIGHTING TO EXISTING POWER POLE FOR PEDESTRIAN CROSSING
6. ALLOW TO FILL / RAISE LEVELS TO EXISTING PATH ON WESTERN SIDE OF BANKS STREET

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