



Metro
Body of
Knowledge

Planning Approval Environmental Review Form

SM-22-00008046

Sydney Metro – Metro Body of Knowledge (MBoK)

Assessment Name:	Sydney Metro – Western Sydney Airport ER009 - Deferral and modification of precinct elements at St Marys, Orchard Hills, Luddenham and Bradfield
Prepared by:	Sydney Metro
Prepared for:	Sydney Metro and contractors
Assessment number	ER009 (SM-WSA)
Type of assessment:	EP&A Act 1979, Division 5.2. EPBC Act 1999, Part 8 and 9
Version:	Final 1.0
Planning approval No. (where relevant):	SSI_10051 Infrastructure approval (NSW) EPBC 2020/8687 (Cth)
Date required:	June 2025
iCentral number	SM-25-00027525

Form information – do not alter

Form number	SM-22-00008046
Applicable to:	Sydney Metro
Document Owner:	Director, Planning Approvals
System Owner:	Executive Director, Environment, Sustainability & Planning
Status:	Final
Version:	2.0
Date of issue:	AUGUST 2023
Review date:	As required

© Sydney Metro 2023

OFFICIAL

Table of Contents

Environmental Review	3
1. Proposed works and justification.....	3
2. Consistency with Conditions of Approval	9
3. Environmental review	15
4. Recommendation	19
5. Certification	19
6. Endorsement.....	20
Appendix A – Sydney Metro transport planning advice email	21

Environmental Review

1. Proposed works and justification

An environmental review is applicable to design changes which are consistent with the conditions of approval and would have negligible impacts on the community and/or the environment. This environmental review is required to demonstrate compliance with the conditions of approval and the Sydney Metro – Western Sydney Airport (SM-WSA) Environmental Impact Statement (EIS), Submissions Report and EPBC Act Final Environmental Impact Assessment of the off-airport proposed action (off-airport Final EIA). A description of activities is listed in Table 1 and an assessment provided in Section 2.

Table 1 Description of proposed works

Description	Overview
Location of works	The precinct elements to be deferred, or modified, are situated within the wider precinct area of Sydney Metro – Western Sydney Airport stations (off-airport stations at St Marys, Orchard Hills, Luddenham and Bradfield). The key deferred or modified scopes are shown in Figures 1 to 6.
Scope of works	<p>The scope of works involves the deferral or modification of specific precinct elements indicated in the Station, System, Trains, Operations and Maintenance (SSTOM) Stage 2 Place, Urban Design and Corridor Landscape Plan (PUDCLP). The deferred elements would be delivered separate from the SM-WSA project after day 1 operations, while elements to be modified will be delivered under the same timeframe as intended. The deferred elements of this proposal do not include any physical works.</p> <p>The changes are described below and displayed in Figures 1 to 6.</p> <p>All precincts (off-airport stations):</p> <ul style="list-style-type: none"> Changes to lighting levels for: transport interchange areas (except at the New Bus Services for Western Sydney [NBSWS] Interchange Zone including adjacent footpaths and cycleways on Innovation East at Bradfield); accessible pathways to transport interchange areas; and open bike storage. This involves (1) removing secondary lighting poles at transport interchanges areas and accessible pathways to transport interchange areas and lighting these areas with road fixtures instead, and (2) reduce the lighting performance levels in accessible pathways to transport interchange areas and open bike storage areas to align with AS1158 – Lighting for Roads and Public Spaces. <p>Orchard Hills and Luddenham:</p> <ul style="list-style-type: none"> Revision of street cross sections to align with requirements by Penrith City Council, which involves the general removal of permeable pavements, tree grates, and strata vaults in the precinct streets, such as under vehicular traffic zones Removal of street furniture located outside the area maintained by the Park Life Metro (PLM) during operation of the project. <p>Orchard Hills only:</p> <ul style="list-style-type: none"> Deferral of Precinct Roads 3 and 8 and the eastern part of Precinct Road 1 (between Precinct Roads 2 and 3). The design of these roads will be completed, including safeguarding for future delivery as part of the development of the adjoining sites. Deferral of the Western Plaza (between the metro station and Kent Road). Reduced width of the Western laneway (between Precinct Road 1 and Lansdowne Road, parallel to the metro station) from 5m to 3.5m. The Western laneway would still maintain pedestrian, cyclist, operations and

OFFICIAL

	<p>emergency vehicle access to the station, and is designed as an interim arrangement until adjacent development occurs.</p> <p>Luddenham only:</p> <ul style="list-style-type: none"> • Deferral of Precinct Road 4 and relocation of kiss and ride facilities to Precinct Road 2. The design of Precinct Road 4 will be completed, including safeguarding for future delivery as part of the development of the adjoining sites but the physical works will not. • The plaza at Luddenham Station has been amended to concentrate the higher amenity landscape in the areas immediately surrounding the station building and station entries. A simplified native-seed landscape treatment is proposed for the wider station setting. <p>Bradfield only:</p> <ul style="list-style-type: none"> • Rationalisation of external footpath finishes to match the footpath finishes by the Bradfield Development Authority (BDA) on Innovation North and Innovation East (western side), change the footpath finish on Southern Station Road and Innovation East (eastern side) to plain concrete. • Reduce the footpath width on Innovation East (eastern side) from 3.5m to 1.5m, with the remaining 2m to be a grassed verge between the cycleway and footpath • Removal of public domain lighting in the bus interchange zone on Innovation East, as the existing lighting poles directly clashed with the bus interchange shelters. Lighting is instead proposed to be integrated through luminaires in the bus shelters.
Justification for works	<p>Sydney Metro are seeking to defer or modify elements of the approved SSTOM Stage 2 PUDCLP. The deferral or modification of elements has occurred in order to:</p> <ul style="list-style-type: none"> • Meet the intent of masterplans under development, and potentially reduce delivery of redundant infrastructure or significant re-work, • Improve precinct outcomes by facilitating an integrated design approach with future development, • Better align with relevant standards, or • Respond to design changes or feedback from stakeholders or other projects in operation <p>The proposed deferral, or modification, of precinct elements would not compromise station access or interchange arrangements and would still provide a safe and functional station for day 1 operations.</p>
Timeframe for works	<p>No physical works are being undertaken as part of the deferred elements of this proposal. As such, there is no applicable timeframe as part of deferred works. Modified elements would take place as per current construction programming. There would be no change to construction program as a result of modifications to PUDCLP elements.</p>
Work hours, workforce and equipment / machinery	<p>No physical works are being undertaken as part of the deferred elements of this proposal. As such, there are no reportable hours, workforce, equipment, or machinery associated with deferred elements.</p> <p>There would be no change to work hours, workforce and equipment / machinery as a result of modifications to PUDCLP elements</p>

Technical Design Targets based on PS Lighting

Arup
Legend

- H - 42 kV | V - 14 kV || Primary Pathway (PP1 + 42 kV) Sydney Metro
- H - 10 kV | V - 1 kV || Secondary Pathways (PP1)
- H - 7 kV | V - 0.3 kV || Service Corridor (PP2)
- H - 7 kV | V - 2 kV || Transport Interchange (PA3) Outside LMA
- H - 3 kV | V - 0.1 kV || Tertiary Pathway (PP3)
- H - 42 kV | V - 14 kV || Open Bike Storage
- V - 32 kV || Pedestrian Crossing (PX2)
- H - Eh 42 kV EPh 14 kV | EpV - 14 kV || STM Bus Depot
- Road Lighting V3
- H - 42 kV | V - 14 kV || Bus Shelter
- Interior Areas / BOH Out of Scope

Footpath meets AS PA3 from road lighting.

Bus shelters lit to meet PS requirements

Footpath meets AS PP1 from road lighting.

Plaza and accessible footpath lit to meet PS requirements

Technical Design Targets based on PS Lighting

Anup

Legend

- H - 42 lux | V - 14 lux || Primary Pathway (PP1 + 42 lux) Outside LMA
- H - 42 lux | V - 14 lux || Primary Pathway (PP1 + 42 lux) Sydney Metro
- H - 10 lux | V - 1 lux || Secondary Pathways (PP1)
- H - 7 lux | V - 2 lux || Transport Interchanges (PA3)
- H - 3 lux | V - 0.1 lux || Tertiary Pathway (PP3)
- H - 42 lux | V - 14 lux || Open Bike Storage
- 32lux PX2/ 16 lux PX3
- Road Lighting V3/V5
- Interior Areas / BOH/ Out of Scope
- H - 42 lux | V - 14 lux || Bus Shelter

32112

Footpath meets AS PA3 from road lighting.

Bus shelters lit to meet PS requirements (42)

- Footpath within LMA to PS requirements. PP1 + 42lux

- Footpath within LMA to PS requirements PP1

ST MARYS

PP3

Bus Interchange zone by TfNSW -
public domain lighting from
integrated shelter lighting

PP1

PP1+

Technical Design Targets based on PS Lighting

Arup

Legend

- H - 42 lux | V - 14 lux || Primary Pathway (PP1 + 42 lux)
- H - 7 lux | V - 2 lux || Transport Interchange (PA3)
- H - 14 lux | V - 4 lux || Public Area (PA2)
- H - 10 lux | V - 1 lux || Pedestrian Pathway (PP1)
- H - 3 lux | V - 0.1 lux || Pedestrian Pathway (PP3)
- H - 20 lux || Emergency/Maintenance Access

Figure 1 Maps showing changes to lighting levels.

OFFICIAL

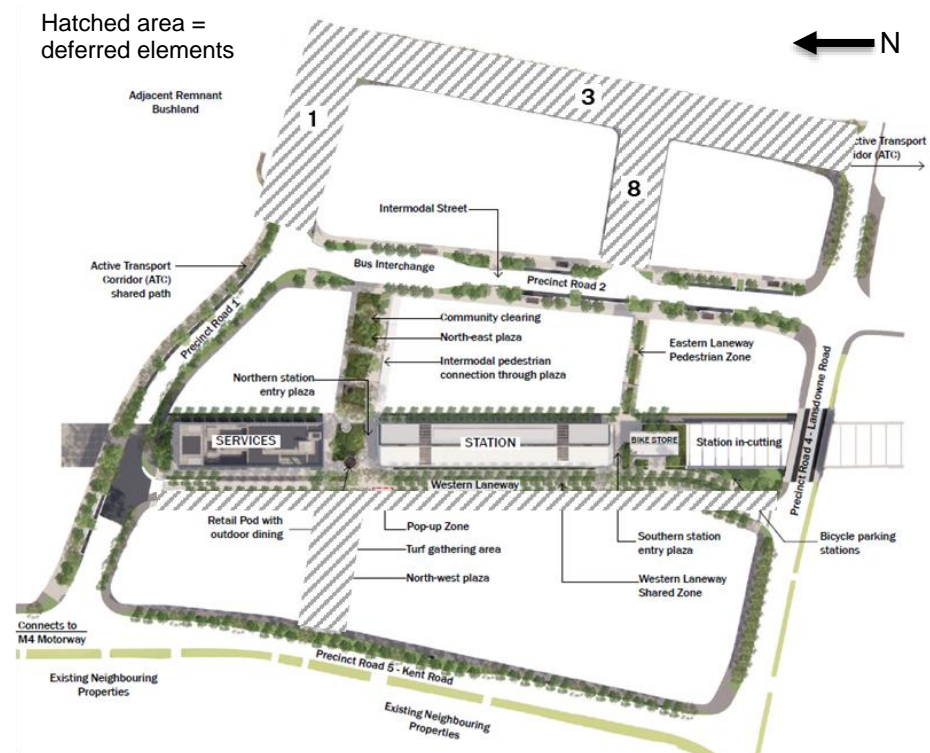


Figure 2 Location of Orchard Hills precinct deferred and reduced elements

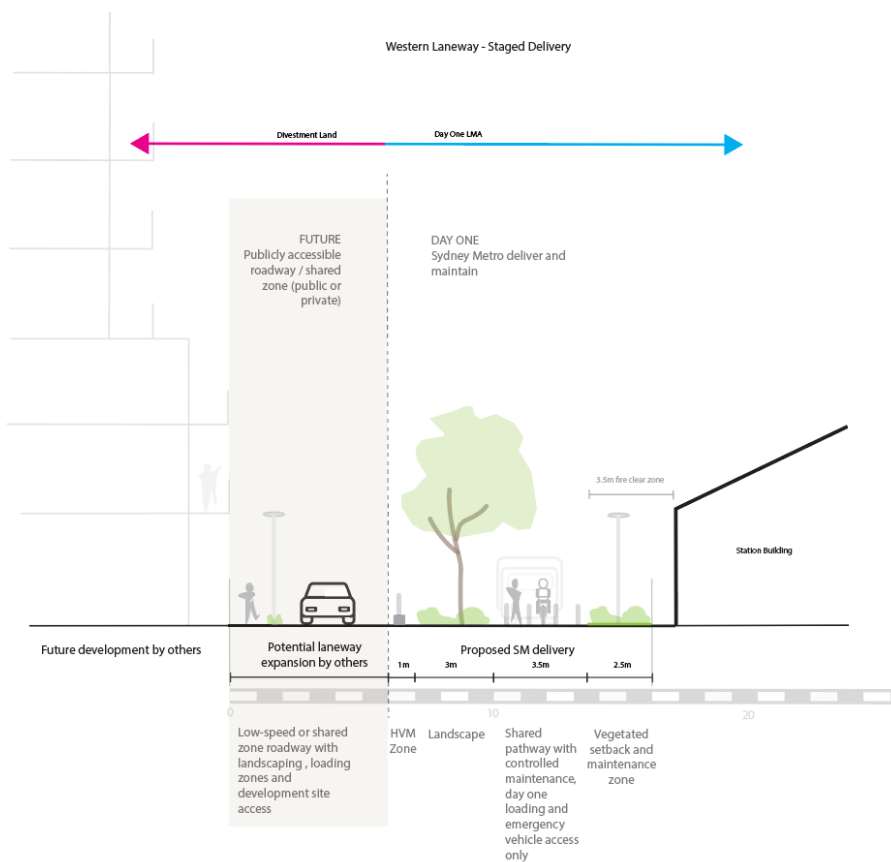


Figure 3 Street cross-section and delivery arrangement for Western Laneway at Orchard Hills.

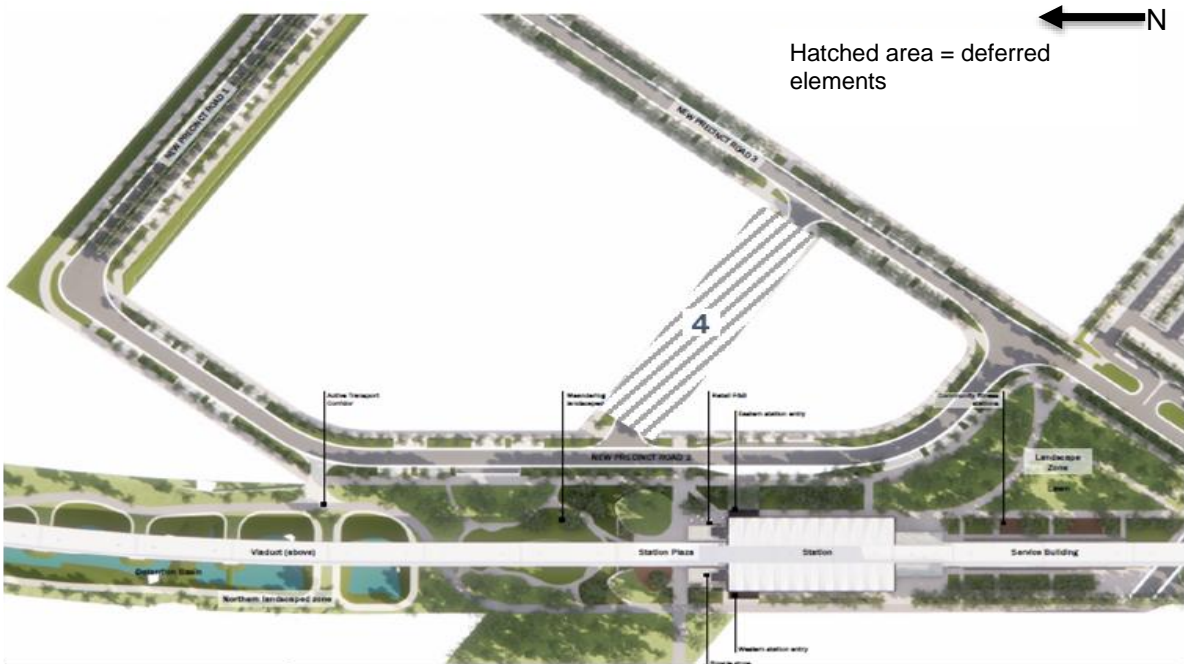


Figure 3 Location of Luddenham precinct and deferred precinct road.

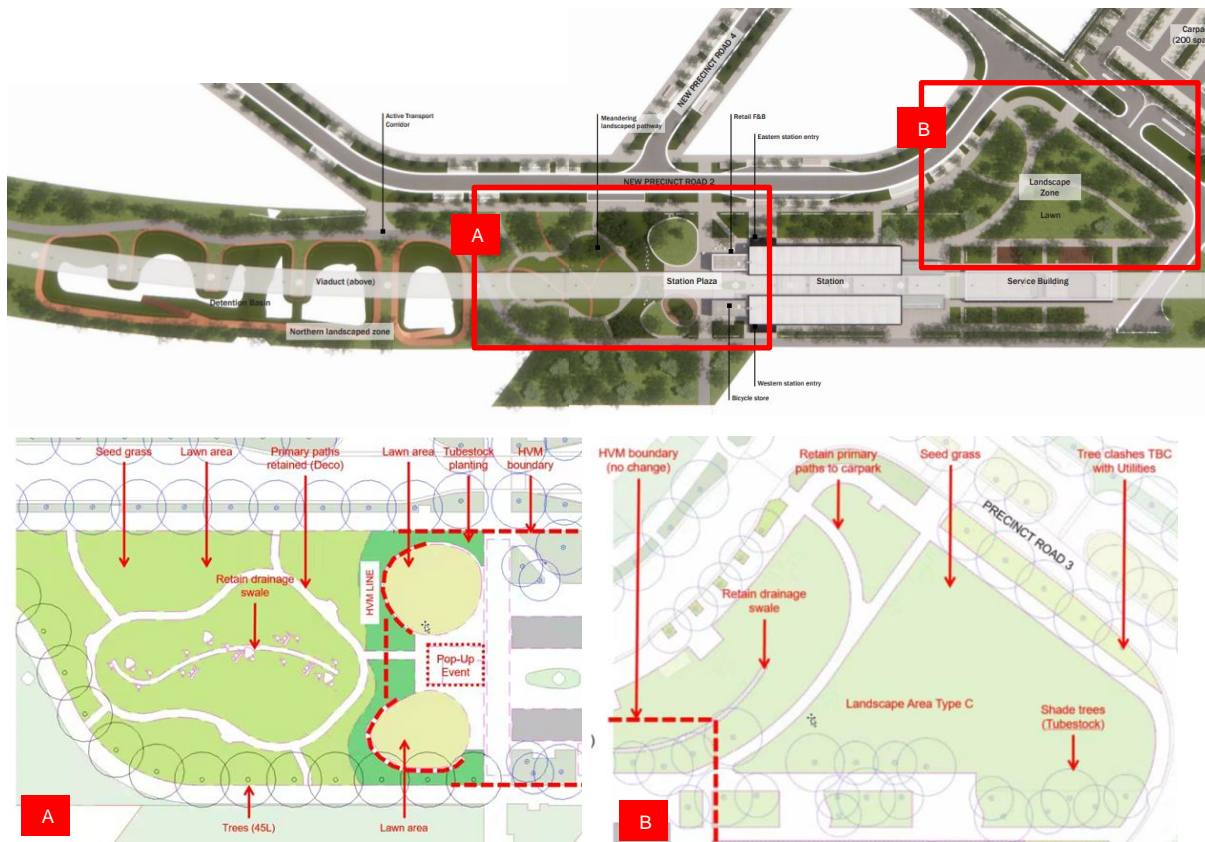


Figure 4 Comparison of the station plaza and landscape treatment at Luddenham between the Stage 2 PUDCLP (top) and the CRS scope (bottom left and bottom right).

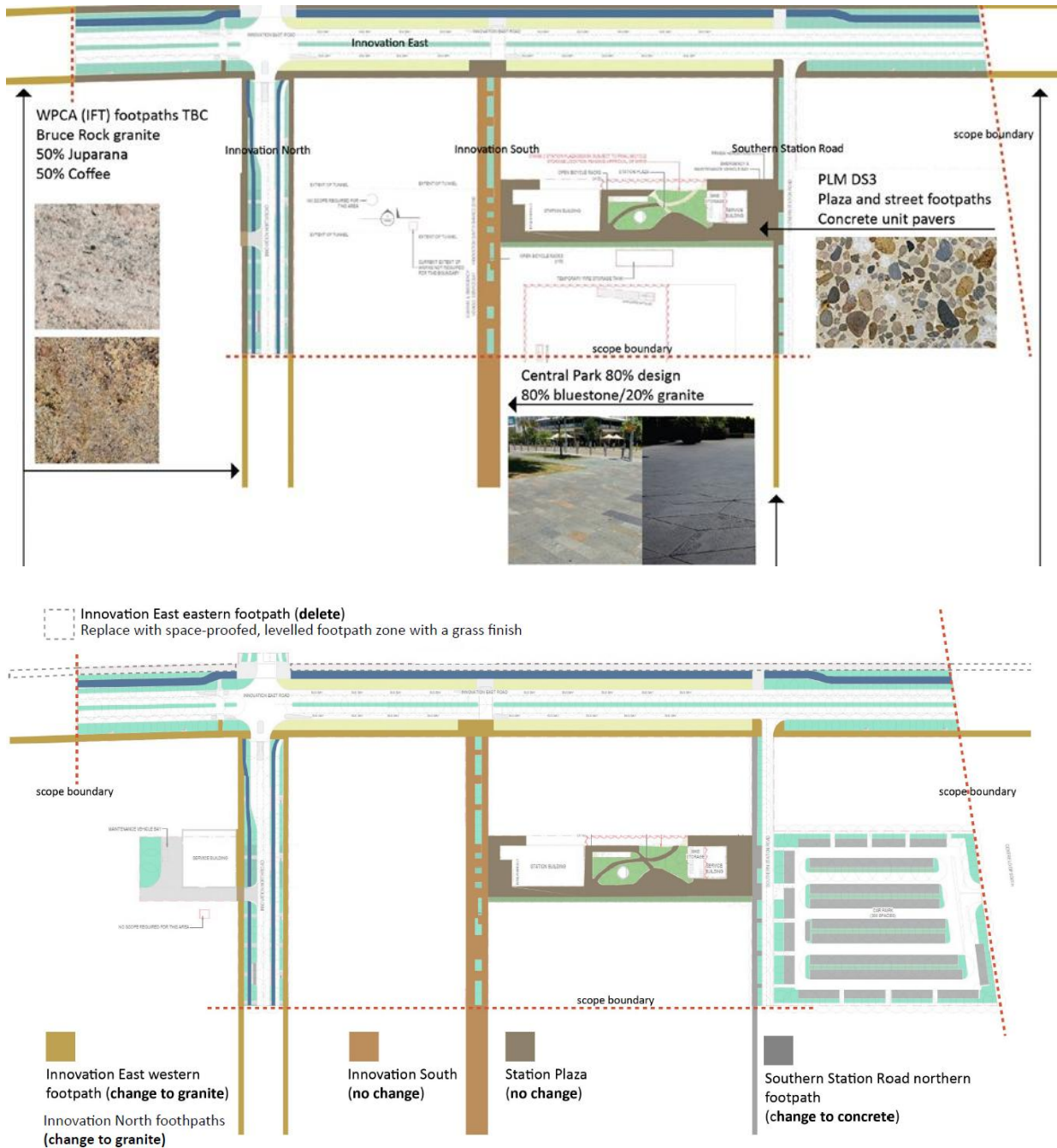


Figure 5 Comparison of external finishes to be delivered by Sydney Metro at Bradfield based on Sydney Metro's design assumptions in May 2023 (top) and rationalisation of external finishes after reaching an agreement with BDA in May 2024 (bottom).

2. Consistency with Conditions of Approval

The following table outlines whether the proposed changes would be consistent with the relevant Conditions of Approval.

Table 2 Comparison of the proposal with relevant elements of the Approved Project

Relevant elements of the Approved Project	Proposed Change
<p><i>Appendix B of the Submissions Report (Revised project description and performance outcomes and mitigation measures)</i></p> <p><i>Section 1.3.4 (Provision for potential future integrated station and precinct development)</i></p> <p>This section outlines property and infrastructure development opportunities delivered as part of, or independently from, the station design and construction. Key considerations include integration with broader land use planning and future strategic vision by State and Local government agencies to ensure stations are supported by appropriate land use, contributing to liveability and public transport use. Opportunities in the wider station precinct would be investigated as part of precinct development focusing on placemaking and disposal of residual land and would be subject to separate planning approval processes.</p>	<p>Elements of the proposed change are a result of the ongoing master planning activities at Orchard Hills and Luddenham and interactions with the SSTOM package of works.</p> <p>The deferral of certain precinct element to be delivered beyond day 1 operations by developers independently from station design and construction, is consistent with the provisions of section 1.3.4 of Appendix B of the Submissions Report.</p>
<p><i>Section 1.4.2 of Appendix B of the Submissions Report (Revised project description and performance outcomes and mitigation measures)</i></p> <p><i>Orchard Hills Station</i> – This section outlines the key features of the Metro Stations during operation and the station precinct and interchange facilities including:</p> <ul style="list-style-type: none"> Transport interchange facilities, including bus bays and shelters, kiss-and-ride bays and point-to point vehicle facilities Upgrades to Kent Road and Lansdowne Road, including intersections with new precinct roads, new pedestrian crossings and creation of a new public plaza/urban domain adjacent to the proposed station entrance <p>Figure 1-19 provides an indicative layout of the station and precinct noting that this is indicative and subject to design development.</p>	<p>The proposed station and precinct layout outlined within the Submissions Report is indicative only and subject to design development.</p> <p>There is no change from the approved project. All required transport interchange facilities would continue to be provided for day 1 operations.</p> <p>Road upgrades, pedestrian crossings and a new plaza adjacent to the proposed station entrance on the eastern side of the station would be provided for day 1 operations.</p>
<p><i>Section 1.4.3 of Appendix B of the Submissions Report (Revised project description and performance outcomes and mitigation measures)</i></p> <p><i>Luddenham Station</i> – This section outlines the key features of the Metro Stations during operation and the station precinct and interchange facilities including:</p> <ul style="list-style-type: none"> Transport interchange facilities including bus bays, associated shelters, bus layover facilities (located under the viaduct structure), 	<p>The proposed station and precinct layout outlined within the Submissions Report is indicative only and subject to design development.</p> <p>There is no change from the approved project. All required transport interchange facilities would continue to be provided for day 1 operations but interchange facilities on Precinct Road 4 would be moved to a different location.</p>

Relevant elements of the Approved Project	Proposed Change
<p>as well as kiss-and-ride bays and point-to-point vehicle facilities</p> <ul style="list-style-type: none"> Upgrades to Luddenham Road where new intersections to the precinct are proposed, new pedestrian crossings and creation of a new public plaza/urban domain adjacent to the proposed station entrance. <p>Figure 1-23 provides an indicative layout of the station and precinct noting that this is indicative and subject to design development.</p>	<p>Road upgrades, pedestrian crossings and a new plaza adjacent to the proposed station entrance would be provided for day 1 operations.</p>
<p><i>Section 1.4.6 of Appendix B of the Submissions Report (Revised project description and performance outcomes and mitigation measures)</i></p> <p><i>Bradfield (formerly Aerotropolis Core) Station</i> – This section outlines the key features of the Metro Stations during operation and the station precinct and facilities including:</p> <ul style="list-style-type: none"> Transport interchange facilities including bus bays, associated shelters, bus layover facilities (located on a bus-only road to the east of Innovation East), kiss-and-ride bays and point-to-point vehicle facilities Construction of new road carriageways to connect the wider precinct including new pedestrian crossings and creation of a new public plaza/urban domain adjacent to the proposed station entrance <p>Figure 1-35 provides an indicative layout of the station and precinct noting that this is indicative and subject to design development.</p>	<p>The proposed station and precinct layout outlined within the Submissions Report within the Submissions Report is indicative only and subject to design development.</p> <p>There is no change from the approved project. All required transport interchange facilities would continue to be provided for day 1 operations.</p> <p>New road carriageways, pedestrian crossings and a new plaza adjacent to the proposed station entrance would be provided for day 1 operations.</p>
<p><i>Section 4.2.10 of Appendix D of the Submissions Report (Design Guidelines)</i></p> <p>Guidelines:</p> <ul style="list-style-type: none"> Paths must comply with Austroads requirements for dedicated and shared bicycle paths with acceptable minimum widths: <ul style="list-style-type: none"> Pedestrian – 2 metres Cycle – 2.5 metres Shared path – 4 metres Paths will have adequate lighting, sign-posting and line-marking. Lighting design must minimise light spill to adjacent properties. 	<p>The proposed change includes a reduction of the footpath on the eastern side Innovation East from 3.5m to 1.5m. Although this no longer meets <i>Section 4.2.10</i> of the <i>SM-WSA Design Guidelines</i>, the reduction was agreed upon between Sydney Metro and BDA.</p> <p>REMM OLU2 required Sydney Metro to consult with key stakeholders (such as BDA) during the design development of the station interchange and precinct.</p> <p>The proposed change also involves changes to lighting levels for transport interchange areas, accessible pathways to interchange areas, and open bike storage. It is noted that the lighting requirements in the original Particular Specification (PS) Requirements (which was mandated by the Stage 2 PUDCLP), were considerably higher than Australian Standards, and the reduced lighting scope remains compliant with AS/NZS 4282:2019 Control of obstructive effects of outdoor lighting and relevant Australian Standards in the series AS/NZS 1158 – Lighting for Roads and Public Spaces.</p>

Relevant elements of the Approved Project	Proposed Change
<p><i>Luddenham Consistency Assessment (SM006)</i></p> <p>A previous consistency assessment (SM006) was prepared to update the precinct layout and boundary at Luddenham to align with master planning.</p>	<p>The proposed change represents further modifications to the Luddenham precinct as described in consistency assessment SM006.</p>
<p>CSSI CoA A1 – The Proponent must carry out the CSSI in accordance with the terms of this approval and generally in accordance with the:</p> <p>(a) Sydney Metro – Western Sydney Airport Environmental Impact Statement dated 21 October 2020; and</p> <p>(b) Sydney Metro – Western Sydney Airport Submissions Report submitted April 2021.</p>	<p>It is likely that deferred elements would be delivered via a separate planning process.</p> <p>The rest of the precinct works will be carried out generally in accordance with the SM-WSA EIS, Submission Report, and Conditions of Approval.</p>
<p>CSSI CoA A2 – CSSI must only be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the documents listed in CoA A1 unless otherwise specified in, or required under, this approval.</p>	<p>It is likely that deferred elements would be delivered via a separate planning process.</p> <p>The rest of the precinct works will be carried out generally in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the documents listed in CoA A1.</p>
<p>CSSI CoA A14 – proposed changes to construction or operation requires a revised staging report to be prepared and submitted to the Planning Secretary for information before commencement of changes to the stage or construction or operation.</p>	<p>The Staging Report will not need to be revised to reflect the deferred precinct elements – precinct elements are generally noted without design detail in the Staging Report and some precinct works are being undertaken for day 1 operations by the contract package. The deferred elements do not require a change to the CSSI Approval or the delivery strategy, therefore a review in accordance with section 5.1 of the Staging Report is not triggered.</p> <p>The precinct elements deferred would be subject to separate planning approvals undertaken by developers.</p>
<p>CSSI CoA E64 – The CSSI must be constructed and operated with the objective of minimising light spill to surrounding properties. All lighting associated with the CSSI must be consistent with the requirements of:</p> <p>(a) <i>ASINZS 4282:2019 Control of the obtrusive effects of outdoor lighting, relevant Australian Standards in the series ASINZS 1158 - Lighting for Roads and Public Spaces;</i></p> <p>[...]</p> <p>Mitigation measures must be provided to manage residual lighting impacts to protect adjoining or adjacent to the CSSI, in consultation with affected landowners.</p>	<p>The proposed change also includes changes to lighting levels for transport interchange areas, accessible pathways to interchange areas, and open bike storage. It is noted that the lighting requirements in the original PS Requirements (which was mandated by the PUDCLP), were considerably higher than Australian Standards, and the reduced lighting scope remains compliant with ASINZS 4282:2019 Control of obtrusive effects of outdoor lighting and relevant Australian Standards in the series ASINZS 1158 – Lighting for Roads and Public Spaces.</p> <p>No change to the Approved Project.</p>
<p>CSSI CoA E77 – A PUDCLP must be prepared to document and illustrate the permanent built works and landscape design of the CSSI and how these works are to be maintained. The PUDCLP must be</p>	<p>The proposed change would mean that a number of deferred elements would not be available for day 1 operations.</p>

Relevant elements of the Approved Project	Proposed Change
<p>[...] (d) implemented during construction and operation of the CSSI.</p> <p><i>Note: The PUDCLP may be developed and considered in stages to facilitate design progression and construction. Any such staging and associated approval would need to facilitate a cohesive final design and not limit final design outcomes.</i></p>	<p>The SSTOM Stage 2 PUDCLP which covers these precinct elements has been prepared in accordance with the condition requirements.</p> <p>The proposed deferred elements from the PUDCLP Stage 2 within the Orchard Hills and Luddenham precincts do not cause the PUDCLP to be inconsistent with the condition requirements, as the wider master-planning and precinct works for Orchard Hills and Luddenham are ongoing and yet to be finalised; therefore, the PUDCLP represents the precinct designs at a point in time.</p> <p>Deferred elements would be delivered beyond first passenger service by a developer independently via a separate planning process. The proposed change does not affect the design considerations undertaken, reviewed, and provided for the PUDCLP submission; only the timing and responsibilities of construction and implementation of these deferred elements will differ.</p>
<p>CSSI CoA E79 – The PUDCLP must include descriptions and visualisations (as appropriate) of:</p> <ul style="list-style-type: none"> (a) design of the permanent built elements of the CSSI, including stabling and maintenance and ancillary facilities, service facilities and tunnel portals (b) plans for station precincts (c) landscaping and building design opportunities to mitigate visual impacts and minimise light spill on nearby residences; [...] (e) landscaping: <ul style="list-style-type: none"> (i) landscape plan, hard and soft elements, for the corridor and the station precincts; (ii) use of native species from the relevant native vegetation community (or communities), where identified as appropriate; (iii) water sensitive urban design initiatives (iv) management and routine maintenance standards and regimes for design elements and landscaping work (including weed management) to ensure the success of the design; [...] (i) the timing and responsibilities for implementation of elements included within the PUDCLP 	<p>Precinct Roads 1, 3 and 8 and Western Plaza at Orchard Hills and Precinct Road 4 at Luddenham are to be deferred only, and no physical works are being undertaken as part of this proposal. As such the proposed change does not affect the design considerations undertaken, reviewed, and provided for the PUDCLP submission; only the timing and responsibilities of construction and implementation of these deferred elements will differ.</p> <p>The changes to lighting levels at transport interchange areas, accessible pathways to transport interchanges and open bike parking minimise the risk of light spill on current/future nearby residential receivers, and the proposed lighting solution remains compliant with AS/NZS 4282:2019 Control of obstructive effects of outdoor lighting and relevant Australian Standards in the series AS/NZS 1158 – Lighting for Roads and Public Spaces.</p> <p>CRS scope proposes for the general removal of permeable pavements, tree grates and strata vaults, as well as street furniture outside the station precinct at Orchard Hills and Luddenham which were described and visualised in the SSTOM Stage 2 PUDCLP.</p> <p>CRS scope also proposes to simplify the design for the station plaza and landscaping treatment at Luddenham and differs from the initial design depicted in the Stage 2 PUDCLP. The wider master-planning and precinct works for Orchard Hills and Luddenham are ongoing and yet to be finalised, therefore the PUDCLP represents the precinct designs at a point in time. While the potential future development of the area's future master-planning would be considered, property and infrastructure opportunities may be delivered as part of or independently of the metro stations and subject to separate planning approvals (SM-WSA Submission Report s1.3.4). The precinct elements deferred would be subject to future planning approval processes undertaken by developers.</p>

Relevant elements of the Approved Project	Proposed Change
CSSI CoA E119 – Permanent road works, including vehicular access, signalised intersection works, and works relating to pedestrians, cyclists, and public transport users must be subject to safety audits demonstrating consistency with relevant design, engineering and safety standards and guidelines.	No change to the Approved Project.
EPBC 2020/8687	Not considered further as the proposal does not include physical works and would not impact protected matters or extend into or affect Commonwealth Land.
Performance outcome The Sydney Metro – Western Sydney Airport Design Guidelines and Design Quality Framework are implemented to deliver a rail corridor, stations and ancillary facilities to achieve the project vision and design objectives.	The proposed change includes a reduction of the footpath on the eastern side Innovation East from 3.5m to 1.5m. Although this no longer meets <i>Section 4.2.10</i> of the <i>Submissions Report (Design Guidelines)</i> , the reduction was agreed upon between Sydney Metro and BDA. REMM OLU2 required Sydney Metro to consult with key stakeholders (such as BDA) during the design development of the station interchange and precinct
Performance outcome Safe and efficient interchanges are provided between transport modes.	No change to the Approved Project. All required transport interchange facilities would continue to be provided for day 1 operations.
Performance outcome Each station and station plaza is provided with sufficient customer capacity to achieve a minimum Fruin's Level of Service C (for 2056 demand).	The proposed change to precinct roads and footpaths and the associated redistribution of forecast pedestrian flows around Orchard Hills, Luddenham and Bradfield include: <ul style="list-style-type: none"> • Deferral of the Western Plaza at Orchard Hills. • A reduction of the Western Laneway at Orchard Hills from 5m to 3.5m. The reduced lane is an interim arrangement until adjacent development occurs. • Deferral of Precinct Road 4 at Luddenham and relocation of Kiss-and-Ride bays from Precinct Road 4 to Precinct Road 2. • Reduction of Innovation East at Bradfield from 3.5m to 1.5m. An additional pedestrian assessment (Refer Appendix A) was completed which determined that the deferral and modification of precinct elements at Orchard Hills, Luddenham and Bradfield are unlikely to adversely impact pedestrian Level of Service and Fruin's LoS C or better will be achieved. Whilst the pedestrian assessment has been undertaken for 2036 and 2056 pedestrian demands (as worst-case scenario), all deferred precinct elements are expected to be completed by 2056. Therefore, each station and station plaza would have sufficient customer capacity to achieve a minimum Fruin's Level of Service C or better for 2056 demand.
REMM OT1 – Interchange access plans (IAP) prepared in consult with the Traffic and Transport Liaison Group (TTLG) and relevant authorities to ensure adequate pedestrian and cycle facilities and	No change to the Approved Project.

Relevant elements of the Approved Project	Proposed Change
other transport interchange infrastructure is provided at each station precinct.	<p>The IAP for Luddenham Station will be updated to reflect changes in location to the interchange elements.</p> <p>There is no change to the IAP for Orchard Hills.</p>
REMM OT3 – Consultation and coordination with Transport for New South Wales (TfNSW) through the TTLG to align planned road and intersection upgrades with the year of opening to enable safe and efficient interchanges between transport modes.	No change to the Approved Project. Sydney Metro will continue to consult with TfNSW through TTLG on planned roads and intersection upgrades to align with requirements for day 1 operations, noting that this proposal removes the deferred precinct elements from scope.
REMM OLU2 – Sydney Metro would continue to consult with key stakeholders during design development of the station interchanges and precincts.	No change to the Approved Project. Sydney Metro have and will continue to consult with key stakeholders on the station interchange and precinct designs, noting that this proposal removes the deferred wider precinct elements from scope.
REMM OLV2 – Lighting at stations would be designed and operated in accordance with AS4282- 2019 Control of the obtrusive effects of outdoor lighting and the <i>National Airports Safeguarding Framework Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports</i> (Australian Government, 2014) (where relevant)	<p>No change to the Approved Project. It is noted that the lighting requirements in the original PS Requirements (which was mandated by the PUDCLP), were considerably higher than Australian Standards, and the reduced lighting scope remains compliant with ASINZS 4282:2019 Control of obstructive effects of outdoor lighting and relevant Australian Standards in the series ASINZS 1158 – Lighting for Roads and Public Spaces.</p> <p>No change to the Approved Project.</p>

3. Environmental review

The following table provides a risk review of the potential environmental impacts of the proposed works.

Table 3 Environmental review

Environmental review	Yes / No	Description of impacts (including consideration of safeguards required by the Approved Project)
Is the proposal to take place outside of the construction footprint of the project	N	The precinct elements are situated within the approved construction footprint of the project in the Stage 2 PUDCLP design.
Is the location of works within the existing EPL premise boundary	N	The precinct elements are situated within the approved construction footprint of the project in the Stage 2 PUDCLP design. Where PUDCLP elements are modified the existing SSTOM EPL is applicable to the proposal.
Will the works take longer than 2 weeks to complete.	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there is no timeframe applicable to deferred elements of this proposal. Modified works would not cause a change to the construction program but would take longer than two weeks to complete.
Does the work require OOHW approval	N	The precinct elements that are to be deferred with no physical works being undertaken as part of this proposal. As such, there are no OOHW applications applicable to this proposal. Modified works would not cause any changes to the work hours already approved under the CSSI or environmental protection licence.
Will the works impact an EEC or threatened species	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there will be no impact on an EEC or threatened species from deferred works. Modified works would not result in additional impacts to EEC.
Will works impact on native vegetation	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there will be no impact on native vegetation from deferred works. Modified works would not result in additional impacts to native vegetation.
Will the works impact on habitat trees	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there will be no impact on habitat trees from deferred works. Modified works would not result in additional impacts to habitat trees.

Environmental review	Yes / No	Description of impacts (including consideration of safeguards required by the Approved Project)
Will clearing of non EECs or ground disturbance be of High / moderate condition vegetation. What is the area of impact.	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there will be no clearing of non EECs or ground disturbance to vegetation as part of deferred works. Modified works would not result in additional impacts to vegetation.
Will the works result in medium / high noise or vibration impacts Will noise and vibration impacts on sensitive receivers be greater than that predicted in the EIA	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there will be no noise or vibration as part of deferred works. Modified works would not result in additional noise or vibration impacts on sensitive receivers.
Will the works result in medium/ high air quality impacts	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there will be no impacts to air quality as part of deferred works. Modified works would not result in additional air quality impacts.
Will the activity be located adjacent to or in close proximity to sensitive receivers	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, while the location of the precinct elements to be deferred are near to sensitive receivers at Orchard Hills, there will be no additional impacts as part of deferred works. Modified works do not move works closer to sensitive receivers and would not result in additional impacts to sensitive receivers that are located adjacent to or in close proximity to the proposal.
Would there be additional impact from what was predicted in the EIS on an Aboriginal / Historic heritage site as a result of the works	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, there will be no additional impacts on Aboriginal or historic Heritage sites from what was predicted in the EIS and Submissions Report, as part of this proposal. Modified works would not result in any additional impacts to Aboriginal / Historic heritage.
Are works within 10m of a watercourse	N	The works do not occur within 10m of a watercourse.
Are works in an area of known contamination	N	The location of the proposed deferred precinct elements has been cleared, and where necessary remediated, under the SM-WSA CSSI approval. The precinct elements are to be deferred with no physical works being undertaken as part of this proposal. As such, there will be no impact on any potential contamination in the area or require remediation as part of this proposal. The location of proposed precinct elements to be modified has been cleared, and where necessary remediated, under the SM-WSA CSSI approval.

Environmental review	Yes / No	Description of impacts (including consideration of safeguards required by the Approved Project)
Will the works result in temporary or long-term traffic impacts	N	<p>The precinct elements proposed to be deferred and not delivered as part of day 1 operations are described above.</p> <p><u>Traffic Impact</u></p> <p>The precinct elements proposed to be deferred and delivered beyond day 1 operations involve no physical works being undertaken as part of this proposal. While active transport modes on Precinct Roads 1 (between Precinct Roads 2 and 3), 3 and 8 as well as Western Plaza are deferred at Orchard Hills, Precinct Road 2 and the Western Laneway provides a more direct and alternative route to the station, alongside other routes. Vehicular traffic accessing the station is not expected to use the deferred precinct streets (i.e. Precinct Roads 3 and 8, and the eastern part of Precinct Road 1 between Precinct Roads 2 and 3). The Western Laneway is also proposed to be reduced to provide minimum required access for maintenance and functionality.</p> <p>Deferral of Precinct Road 4 at Luddenham requires relocation of Kiss & Ride bays from Precinct Road 4 to Precinct Road 2, which will result in all vehicles now entering via the Precinct Road 1/ Precinct Road 3 intersection and departing via the future Precinct Road 1/ Precinct Road 2 intersection. This change in traffic distribution will have a negligible change in traffic performance with the intersection of Precinct Road 1/ Precinct Road 3 continuing to operate at a LOS A.</p> <p><u>Pedestrian Impact</u></p> <p>Further pedestrian assessment (Refer Appendix A) determined that the deferral and modification of precinct elements at Orchard Hills, Luddenham and Bradfield are unlikely to adversely impact pedestrian Level of Service, that is, Fruin's LoS C or better will be achieved.</p> <p>Whilst the pedestrian assessment has been undertaken for both 2036 and 2056 pedestrian demands (as worst-case scenario), all deferred precinct elements are expected to be completed by 2056.</p> <p>Therefore, each station and station plaza would have sufficient customer capacity to achieve a minimum Fruin's Level of Service C or better for 2056 demand.</p> <p>Interchange elements will be amended from the Stage 2 PUDCLP IAP to ensure a functioning station interchange for Day 1 operations.</p> <p>Modified works would not result in any adverse temporary or long-term traffic impacts.</p>
Will the works result in visual impacts to sensitive receivers	Y	<p>Construction</p> <p>The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. As such, the impacts from construction of the precinct elements under the CSSI will be reduced and there is no increase of visual impacts from modified works to what was assessed in the EIS and Submissions Report, as part of this proposal.</p> <p>Operation</p>

Environmental review	Yes / No	Description of impacts (including consideration of safeguards required by the Approved Project)
		There are a number of precinct elements that are to be deferred and will be delivered beyond commencement of day 1 operations by a developer independently at Orchard Hill and Luddenham station precincts, which would be viewed by the station users accessing the stations. These elements are subject to future planning approval processes undertaken by developers.
Will the works involve significant earthworks	N	The precinct elements that are to be deferred involve no physical works being undertaken as part of this proposal. Modified works would not result in additional impacts to earthworks.

4. Recommendation

Based on the above assessment, and with reference to the SM-WSA EIS and Submissions Report, including the conditions of approval and associated CEMP and plans, it is recommended that:

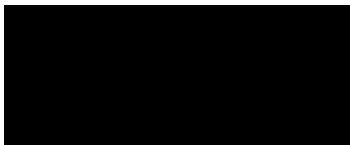


The proposed design/construction change is consistent with the Approved Project SM-WSA EIS and Submissions Report, including the conditions of approval, has negligible impacts on the community and environment and no further assessment is required.

5. Certification

The above information provides a true and fair review of the proposed works.

Prepared by (signed):




Date: 5 June 2025

Name: [REDACTED]

Position: Planning Approvals Officer



6. Endorsement

I have reviewed the above review and provide the following endorsement:

	The proposed design/construction change is consistent with the SM-WSA EIS and Submissions Report, has negligible impacts on the community and environment and no further assessment or modification of the planning approval is required.
	The proposed design/construction change is likely to be consistent with the SM-WSA EIS and Submissions Report, however more than negligible impacts are expected on the community and environment and further assessment is required.
	The proposed design/construction change constitutes a project modification and requires further assessment and approval.

This endorsement is conditional on the following:

1. The change in scope must be communicated to the community and relevant stakeholders in accordance with the Overarching Community Communications Strategy (OCCS).

Comments (if any):	
Signed:	
Endorsed by:	 A/Senior Manager Planning Approvals
Date:	5 June 2025

Appendix A – Sydney Metro Pedestrian Modelling Technical Memo

SM-WSA Deferral and modification of precinct elements at Orchard Hills, Luddenham and Bradfield – Pedestrian Assessment

Introduction

The scope of works involves the deferral or modification of specific precinct elements. The deferred elements would be delivered separate from the SM-WSA project after day 1 operations, while elements to be modified will be delivered under the same timeframe as intended.

The purpose of this assessment is to understand any impacts on pedestrian level of service (LoS) due to the deferral and modification of precinct elements at Orchard Hills, Luddenham and Bradfield.

Background Information

Orchard Hills

At Orchard Hills, the Western Plaza has been deferred. Figure 1 below shows the areas at Orchard Hills that will be deferred.



Figure 1 Orchard Hills Precinct

Figure 2 shows the changes to the Western Laneway. This will be reduced from 5 metres to 3.5 metres for Day 1 provision. This is a shared path so it is assumed that the full shared path width is available for pedestrians to use.

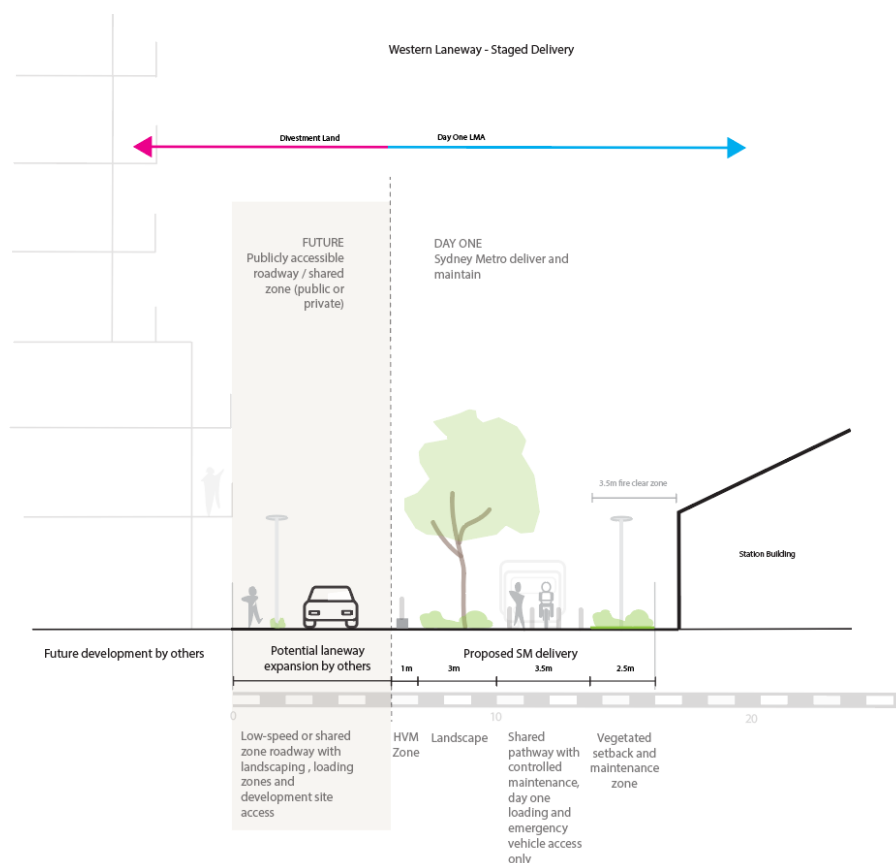


Figure 2 Proposed Western Laneway Reduction

Figure 3 shows the precinct in its end state with the 2056 forecast pedestrian flows based on the different access modes.

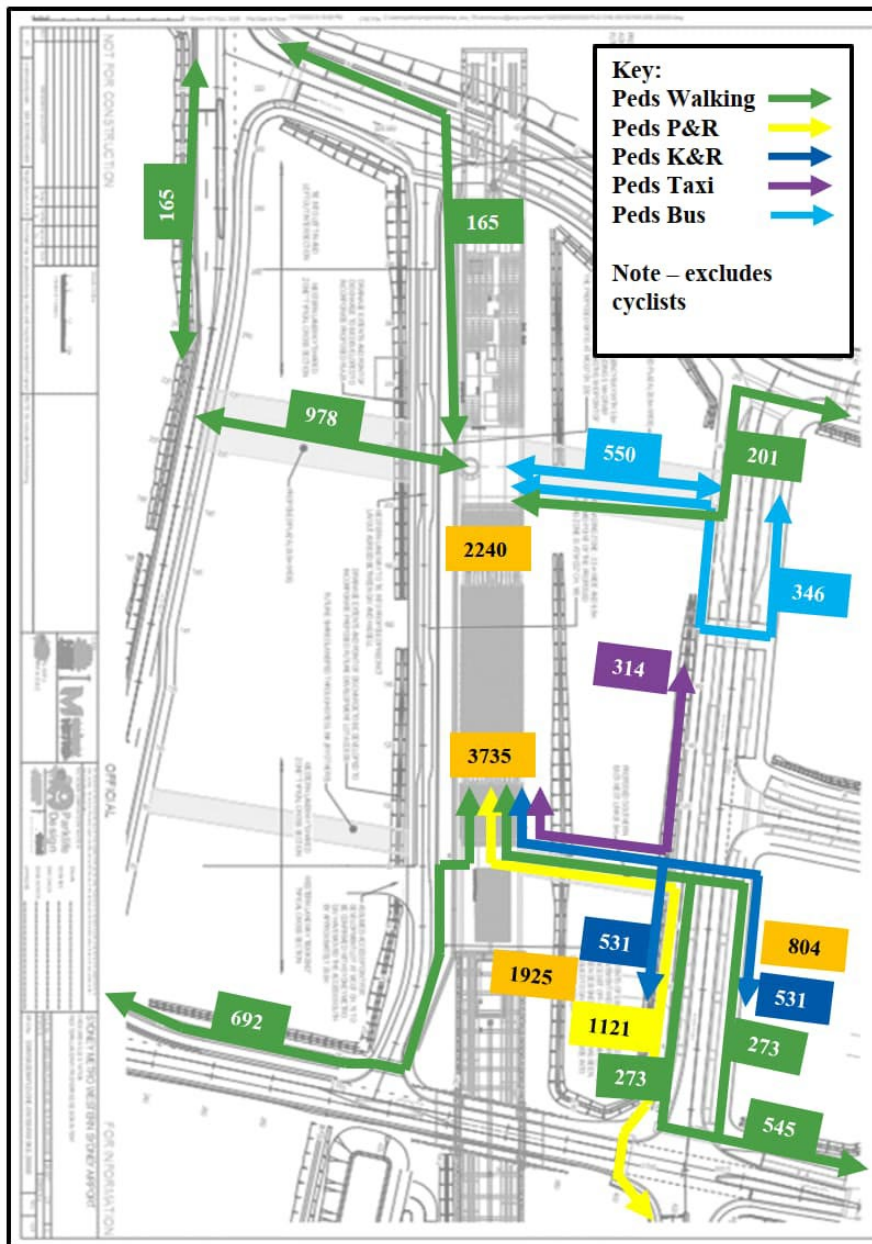


Figure 3 Forecast pedestrian movements at Orchard Hills in 2056
 (Source: Appendix O of SMWSASSM-PLD-OHE-SN150-CV-RPT-000002 (Figure 13))

Based on Figure 3, 978 people will be rerouted from Western Plaza. This value includes the 165 people on Kent Road.

978 people were added to the forecast 165 people in Western Laneway (1,143 people total) and assessed using Fruins Level of Service based on the reduced footpath width.

Bradfield

At Bradfield, the eastern footpath on Innovation East will be reduced from 3.5 metres to 1.5 metres. The precinct layout is shown below in Figure 4.

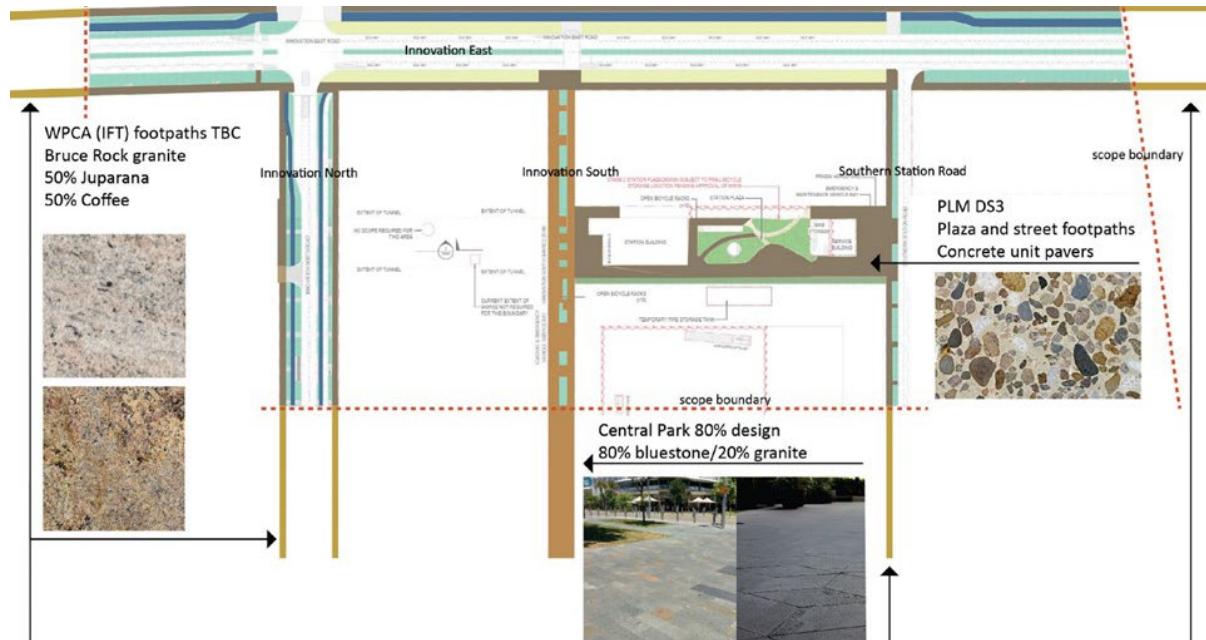


Figure 4 Changes at Bradfield precinct

Figure 5 shows the forecast pedestrian flows in 2056. Note these only consider pedestrian movements associated with the Metro station and do not consider any background pedestrian movement.

AM COMBINED ACCESS AND EGRESS

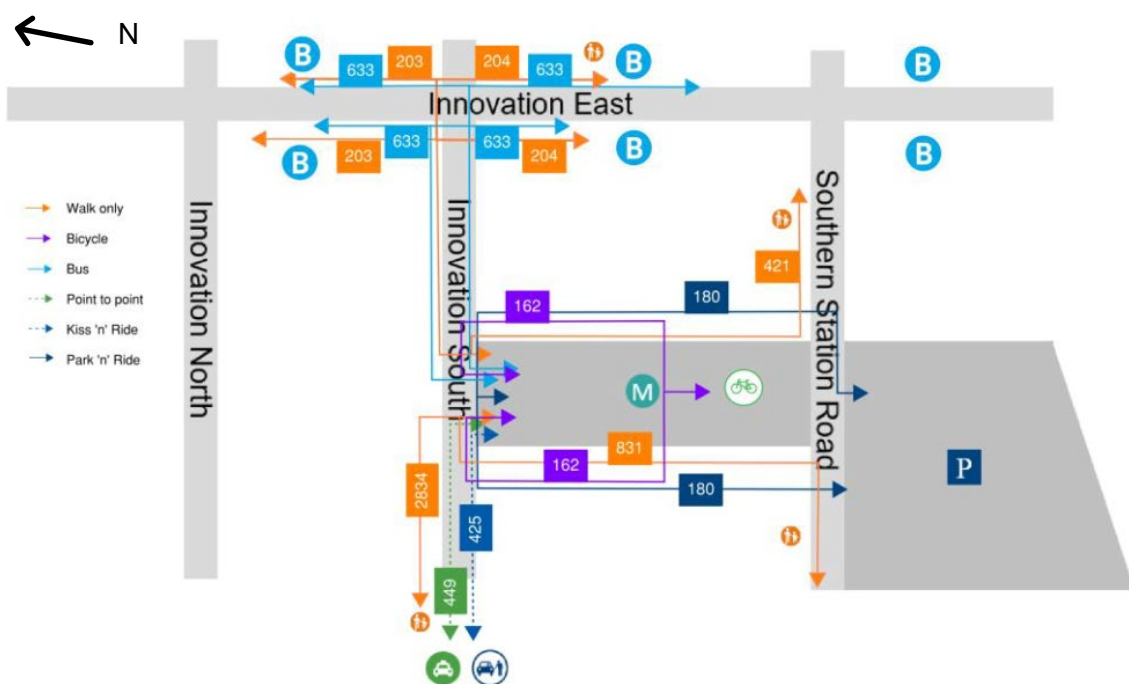


Figure 5 Forecast pedestrian movements at Bradfield in 2056

(Source: Appendix G4 of SMWSASSM-PLD-AEC-SN450-RW-RPT-000001.01.S5.01.01 (Figure 13))

Figure 5 shows that in theory 836 people will be affected on either side of Innovation East by the reduced footpath width on the eastern side of Innovation East. In practice pedestrians are expected to use the 6m width of the bus shelter/landscaping area which offers weather protection to disperse to the north and south on the eastern side of Innovation East. This sheltered area is 6m wide so would offer a high level of service. The 1.5m footpath is temporary and will be replaced by a wider path when Stage 3 of the Bradfield City development is undertaken.

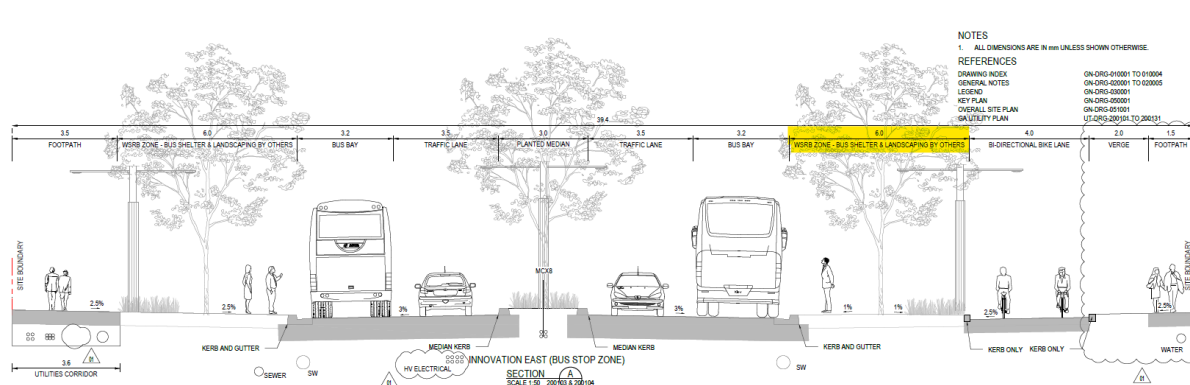


Figure 6 Typical cross-section Innovation East
(Source: SMWSASSM-PLD-AEC-SN450-RW-DRG-400001)

Luddenham

At Luddenham, the Kiss & Ride bays are being moved from Precinct Road 4 which has been deferred. The bays will be relocated to two locations on Precinct Road 2:

- The western side of Precinct Road 2, near the intersection with Precinct Road 3.
- The eastern side of Precinct Road 2, north of the intersection with Precinct Road 4.

Location of Kiss & Ride bays are shown in Figure 7.

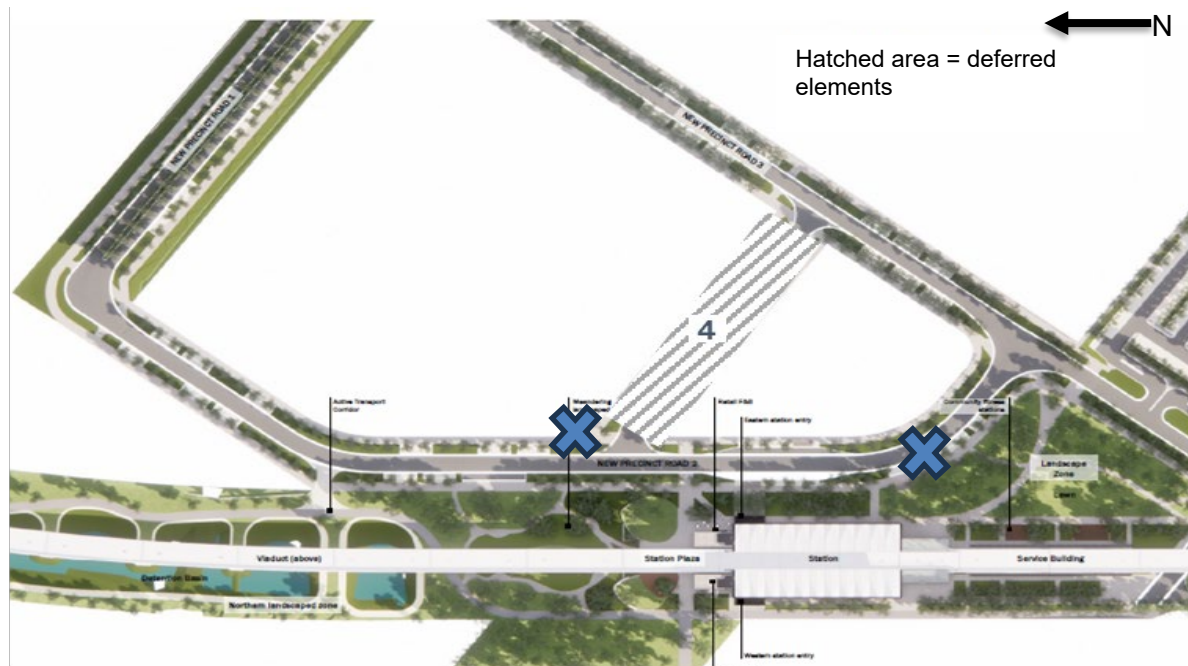


Figure 7 Changes at Luddenham precinct

A reassessment of the pedestrian performance is required due to these proposed changes.



Figure 8 Forecast pedestrian movements at Luddenham in 2056
(Source: Appendix P of SMWSASSM-PLD-LDN-SN250-CV-RPT-000001.E.S4.E.01 (Figure 13))

With these Kiss & Ride changes, it is assumed that Kiss & Ride demand remains evenly split between the two locations. The 168 people associated with walking on both sides of Precinct Road 4 are assumed to be redistributed at either ends on both sides of Precinct Road 2. This adds 84 people to the analysis. This means the forecast demand changes are:

- 870 people on the eastern footpath of Precinct Road 2
- 935 on the western footpath of Precinct Road 2.

Assessment

As the site is a greenfield site and there are no pedestrian surveys available, background pedestrian movement not associated with the Metro station has been excluded.

The performance of the footpaths was assessed with Fruins Level of Service (LoS) walkways (street). A descriptor of ranges based on flow is shown below in Table 1.

Table 1 Fruin's Level of Service (walkways street)

LoS (walkways street)	Range of flow (people per minute per metre)
A	<13
B	13 to 23
C	23 to 33
D	33 to 49
E	49 to 82
F	>82

A sensitivity test was carried out on an assumed 2036 demand. 2036 demand was assumed by reducing 2056 demand numbers by 30% (i.e. 2036 demand numbers are 70% of 2056 demand numbers).

A peak factor of 30% in the peak 15 minutes has been applied in this analysis. This is consistent with the station modelling assessments carried out on other assessments.

The following edge effects have been assumed/not assumed at each location for the following reasons:

- Orchard Hills: No edge effects due to the shared path being bound by low planting.
- Bradfield: 0.3 metres applied to one side as the path is bound by a development and the nature of the development is not yet confirmed.
- Luddenham: No edge effects as the footpath is surrounded by landscaping. The effective width is applied to the footpath, not any kerb extensions.

Orchard Hills

Table 2 shows the Fruin's LoS analysis at Orchard Hills.

Table 2 Fruin's LoS assessment at Orchard Hills

Demand year	Hourly demand	Peak factor	Peak minute demand	Effective width	People per minute per metre	Fruin's LoS (walkways)
2036 (70% of 2056 demand)	800	30% in the peak 15 minutes	17.3 people per minute	3.5 metres	4.9	A
2056	1,143	30% in the peak 15 minutes	24.8 people per minute	3.5 metres	7.1	A

When the reduced footpath width is assessed using Fruin's LoS, the footpath still performs at LoS A in 2036 and 2056.

Bradfield

Table 3 shows the Fruin's LoS analysis at Bradfield.

Table 3 Bradfield Fruin's LoS assessment

Demand year	Hourly demand	Peak factor	Peak minute demand	Effective width	People per minute per metre	Fruin's LoS (walkways)
2036 (70% of 2056 demand)	585	30% in the peak 15 minutes	11.7 people per minute	1.2 metres	9.8	A
2056	836	30% in the peak 15 minutes	16.7 people per minute	1.2 metres	13.9	B

Using Fruin's LoS, a reduced footpath width still performs at LoS A in 2036 and LoS B in 2056.

Luddenham

Table 4 shows the Fruin's LoS analysis at Luddenham.

Table 4 Luddenham Fruin's LoS assessment

Location	Demand year	Hourly demand	Peak factor	Peak minute demand	Effective width	People per minute per metre	Fruin's LoS (walkways)
The western side of Precinct Road 2	2036 (70% of 2056 demand)	655	30% in the peak 15 minutes	13.1 people per minute	3.5 metres	3.7	A
	2056	935	30% in the peak 15 minutes	18.7 people per minute	3.5 metres	5.3	A
The eastern side of Precinct Road 2	2036 (70% of 2056 demand)	609	30% in the peak 15 minutes	12.2 people per minute	3.5 metres	3.5	A
	2056	870	30% in the peak 15 minutes	17.4 people per minute	3.5 metres	5.0	A

Conclusions

The deferral and modification of precinct elements at Orchard Hills, Luddenham and Bradfield are unlikely to adversely impact pedestrian LoS. All demand scenarios at all three precincts scored Fruin's LoS C or better.

This means under all demand scenarios pedestrians are forecast to be able to move safely around each of the three precincts analysed. Note these only consider pedestrian movements associated with the Metro station and do not consider any background pedestrian movement.

Whilst the pedestrian assessment has been undertaken for 2036 and 2056 demands (as worst case scenario), all deferred precinct elements are expected to be completed by 2056. Therefore, each station and station plaza would have sufficient customer capacity to achieve a minimum Fruin's Level of Service C or better for 2056 demand.

Reference Material

- Fruin's Level of Service
- Orchard Hills
 - SMWSASSM-PLD-OHE-SN150-CV-RPT-000002 OHE – Roadworks & Precinct – Civil Design Report
- Bradfield
 - SMWSASSM-PLD-AEC-SN450-RW-RPT-000001.01.S5.01.01
- Luddenham
 - SMWSASSM-PLD-LDN-SN250-CV-RPT-000001.E.S4.E.01