

Urban Design and Landscape Plan

Ring Road Completion
August 2024



Attachment 4: Urban Design Overshadowing and Overlooking Assessment




Document Control - Revision History

Attachment 4: Urban Design Overshadowing and Overlooking Assessment

Plan Control and Amendment

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1	25/09/2023	Public Exhibition	AMA / M80-RRA
2	21/12/2023	UDLP Final Submission IEA	AMA / M80-RRA
3	29/01/2024	UDLP Final Submission for Review	AMA / M80-RRA
4	02/08/2024	UDLP Final Submission IEA	AMA / M80-RRA
5	21/08/2024	UDLP Final Submission	AMA / M80-RRA

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Overview

Attachment 4 contains an urban design overshadowing and overlooking assessment associated with the Ring Road Completion.

The overshadowing assessment illustrates the expected overshadowing of the Project and is based on shadow modelling as measured on the 22 September (spring equinox).

The overlooking assessment provides an analysis of overlooking from elevated structures including from shared use path overpasses and ramps. The overlooking analysis is based on the current design which has been informed by consultation during the development of the UDLP. Ongoing consultation with all directly affected property owners and occupiers will continue throughout the design development phase in accordance with Environmental Performance Requirement (EPR) Land Use Planning 4 (LP4).

This assessment demonstrates how overshadowing and overlooking have been minimised to achieve compliance with the Urban Design Strategy (UDS) and relevant EPRs including:

Map R1: M80

- Requirement 3A: Minimise overlooking and overshadowing to residential properties adjacent to M80 Ring Road interchange in the south-west, including Gillingham Street
- Requirement 3G: Minimise overshadowing to residential properties to the south of the M80 Ring Road.

Map R2: M80 Interchange

- Requirement 3L: Minimise overlooking and overshadowing to residential properties adjacent to M80 Ring Road interchange in the south-west, including at Gillingham Street
- Requirement 3M: Minimise overshadowing to residential properties to the south of the Greensborough Bypass
- Requirement 3N: Minimise overlooking and overshadowing to residential properties to the east and west of Yando Street shared use overpass.

Map R4: Watsonia Neighbourhood Centre

- Requirement 3B: Minimise overlooking to residential properties from proposed walking and cycling bridges at Nell Street and Watsonia Station.

Detailed Requirements and Benchmarks

- 1.3 Multi-span bridges – Minimising impacts
- 2.5 Road bridges – Minimising impacts
- 9.6 Walls, fencing, barriers & screens – Visual connectivity and solar access
- 14.4 Walking & cycling bridges – Minimising impacts

EPR: LP4

- Minimise overshadowing from noise walls and elevated structures and overlooking from elevated structures.

EPR: LV1

- Design to be in accordance with the Urban Design Strategy (UDS).
 - Avoid or minimise landscape and visual, overlooking, and shading (with reference to EPR LP4) impacts in extent, duration and intensity
 - Identify residential areas with the potential for high visual impact and develop targeted design options to avoid or minimise amenity impacts on these areas, including as a result of the proposed noise walls
 - Detailed design to ensure landmark elements balance visual impact with minimal overshadowing.

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Overshadowing and Overlooking Assessment

The purpose of the Urban Design Overshadowing and Overlooking Assessment is to identify and assess expected overshadowing and overlooking caused as a result of the Ring Road Completion infrastructure. Overshadowing refers to the shadow cast by a building or a structure onto nearby properties. Overlooking considers whether project works enable views into adjacent homes or gardens.

The overshadowing analysis is based on shadows cast by non-transparent structures during the September equinox, which occurs in the Southern Hemisphere between September 21 to 24 each year.

The assessment is prepared in accordance with the EPR LP4 as follows:

Minimise overshadowing from noise walls and elevated structures and overlooking from elevated structure.

Overshadowing from elevated structures and noise walls to residential properties (including existing solar panels), community facilities, open spaces, waterways and valuable natural habitats must be minimised through detailed design. Consultation must occur with directly affected property owners and occupiers to inform formulation of parameters for these structures including location, design and materials.

Unless with the consent of an affected landowner or in exceptional circumstances, the extent of additional overshadowing of residential properties from non-transparent structures:

- Should be no greater than the existing shadowing of secluded private open spaces associated with residential properties cast by existing structures including existing noise walls and other structures (e.g., elevated walkways) between the hours of 9:00 am to 3:00 pm as measured on September 22
- If additional overshadowing occurs it must not be greater than 50% of the secluded private open space or 40 sqm, whichever is the greater, between the hours of 9:00 am to 3:00 pm as measured on September 22.

Overlooking from elevated structures, especially within a distance of 15 metres to secluded open space and habitable room windows of residential properties, must be minimised through detailed design as far practicable. Consultation must occur with directly affected property owners and occupiers to inform formulation of parameters, designs and materials for these structures.

The assessment also considers the EPR, Landscape and Visual 1 (LV1): Design to be in accordance with the UDS. Specifically, the UDS seeks to 'avoid or minimise landscape and visual, overlooking, and shading... impacts in extent, duration and intensity' and 'detailed design to ensure landmark elements balance visual impact with minimal overshadowing'.

The UDLP has been designed to be in accordance with the UDS, including requirements to minimise overlooking and overshadowing.

Refer to *UDLP Attachment 1: Architecture and Urban Design* For design drawings relating to elevated structures, noise wall and screening details and finishes, and noise wall alignment.

1.1 Methodology

The following methodology has been employed for the assessment:

- Development of a 3D terrain model created using one metre contour data
- Development of a 3D model of the current design which is informed by ongoing consultation and design development
- Utilising modelling software to undertake overshadowing analysis on September 22nd
- Utilising modelling software to develop overlooking diagrams and analysis in line with design development.

Overshadowing diagrams are presented at the following scales to provide a comprehensive visual representation:

- **Area Wide:** Provides a zoomed-out area wide assessment undertaken at 9am, 12pm, and 3pm to locate areas of overshadowing. This Project wide analysis is used to inform locations for focused analysis of directly affected properties (including existing solar panels), and other sensitive areas including community facilities, open spaces, waterways and valuable natural habitats (as required by LP4). Wall and screening heights are based on assumed 'worst case scenario' using max heights shown within the UDLP design and presented as solid non-transparent materials.
- **Focused Analysis:** Provides a zoomed-in analysis of overshadowing on specific locations and depicts overshadowing for all relevant hours throughout the day at 1-hour intervals. Noise wall and

screening heights in these areas have been reduced as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing .

- **Detailed Analysis:** Provides a closer detailed analysis of individual properties where the total percentage of SPOS directly affected by shadowing is more than 50% of the secluded private open space (SPOS). Analysis includes shadows cast by both existing and proposed structures to show the total extent of shadow. The detailed analysis is based on the 1-hour intervals captured in the Focused Analysis.

Overlooking analysis has been depicted to show direct effects from elevated structures undertaken at a standard eye height of 1.7-metres and at an angle of 45 degrees from eye level. Properties located within 15-metres of elevated structures have been used to guide the overlooking analysis with direct affects to surrounding properties also considered within the assessment.

1.2 Limitations

While every effort has been made to create an accurate model, the limited resolution of the contour data and the approximation of dwelling height and form means that the overshadowing and overlooking output should only be used as a guide to inform ongoing consultation and the application of mitigation measures to be used and finalised during design development.

In some cases, approximations were made off external data sources to determine the location and dimensions of elements where data is not readily available, such as the use of high-resolution aerial imagery for determining the extent of SPOS, footprint of houses, and approximate height of residential buildings.

The output is conservative as it does not take into account existing vegetation, minor built forms such as trees, gantries, light poles, and low-height retaining walls, or proposed landscape treatments due to the potential for these items to alter over time. Where tinted transparent acrylic noise walls would assist with reducing the extent of overshadowing, this has been referenced in the analysis.

Where the use of tinted transparent acrylic noise walls have been applied, a typical noise wall Type C has been used which details two-thirds acrylic and one-third

weathered steel (non-transparent). For noise wall design details refer *UDLP Attachment 1: Architecture and Urban Design*.

Where an overlooking screen Type C has been applied, the materials and extent of application are to be finalised during the design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overshadowing and overlooking are progressively assessed throughout the design development subject to detailed site surveys and further noise assessments used to determine if the extent of overshadowing can be further reduced. Ongoing consultation with all directly affected property owners will be undertaken, informed and supported by this more detailed level of design information.

The design of elevated structures and noise walls will progress based on consultation outcomes used to inform the design of elevated structures and noise walls, including specific materials, heights and alignment and, where relevant, the detailed design application of mitigation measures which balance both overlooking and overshadowing impacts including screen types.

Agreement and consent to the proposed design will be obtained from directly affected landowners where the overshadowing conditions of EPR LP4 cannot, or will not, be achieved. The Project will make all reasonable endeavours to reach an acceptable design outcome and obtain land owner consent. If this cannot be achieved exceptional circumstance will apply.


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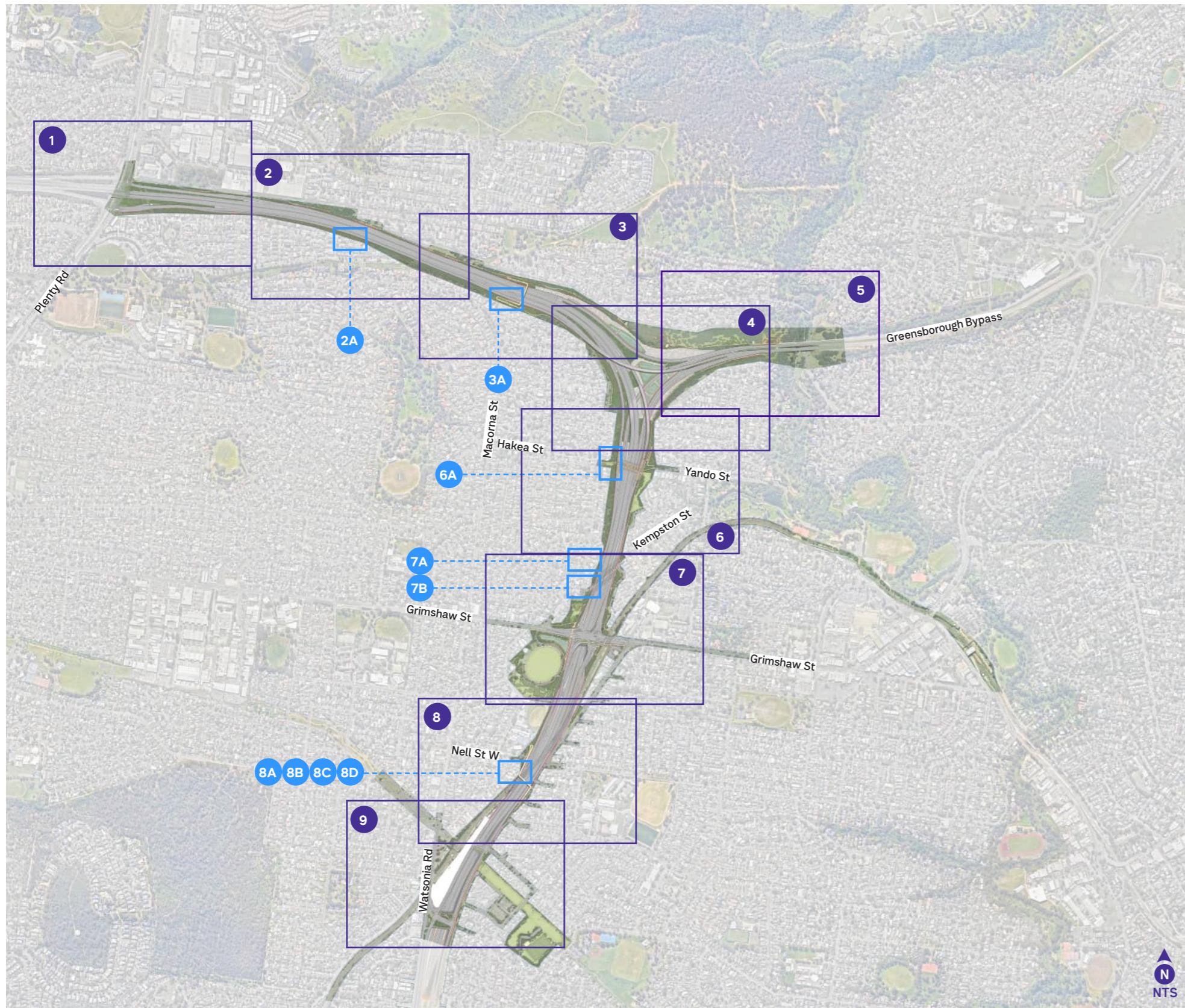
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Overshadowing Assessment

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Drawing Number	Location
1	Area Wide: M80 Ring Road 1
2	Area Wide: M80 Ring Road 2
2A	Focused Analysis: Tevlin Court and Chappell Drive
3	Area Wide: M80 Interchange 1
3A	Focused Analysis: Macorna Street and Edmund Rice Parade
4	Area Wide: M80 Interchange 2
5	Area Wide: M80 Interchange 3
6	Area Wide: Greensborough Road 1
6A	Focused Analysis: Sellars Street Area 1
7	Area Wide: Greensborough Road 2
7A	Focused Analysis: Sellars Street Area 2
7B	Focused Analysis: Sellars Street Area 3
8	Area Wide: Greensborough Road 3
8A	Focused Analysis: Ibbottson Street and Nell Street West
8B	Detailed Analysis: 229 Nell Street West
8C	Detailed Analysis: 50 Ibbottson Street
8D	Detailed Analysis: 48 Ibbottson Street
9	Area Wide: Watsonia Precinct 1

Figure 1: Site Overall Plan - Overshadowing

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1. Area Wide: M80 Ring Road 1

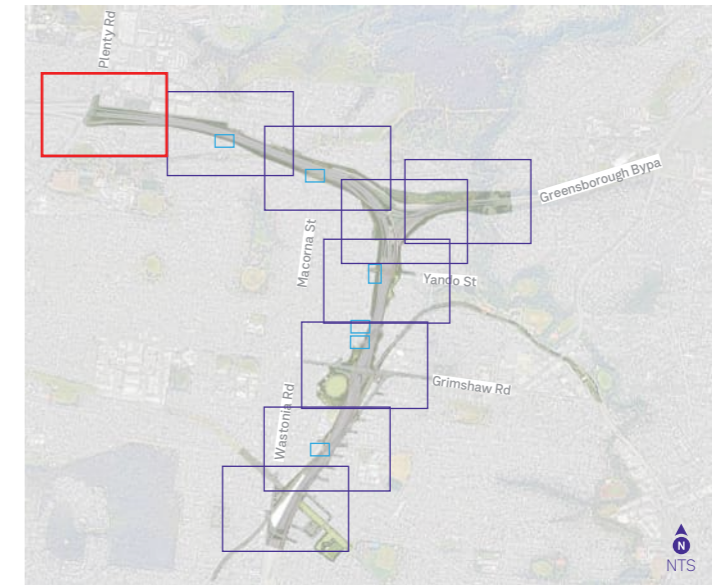
1.1 Overshadowing Analysis

Within M80 Ring Road 1, the noise walls are modelled as worst case scenario at a maximum height of 6-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*.

There are no new shadows cast from elevated structures or noise walls into the SPOS of residential properties as shown in Figures 2, 3, and 4. This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of the SPOS.

1.2 Overlooking Analysis

There are no elevated structures within M80 Ring Road 1 that pose overlooking concerns.



22nd September 9am (AEST)



Figure 2: Area Wide: M80 Ring Road - 22nd September 9am (AEST)

22nd September 12pm (AEST)



Figure 3: Area Wide: M80 Ring Road - 22nd September 12pm (AEST)

22nd September 3pm (AEST)



Figure 4: Area Wide: M80 Ring Road - 22nd September 3pm (AEST)

LEGEND

- EXTENT OF OVERSHADOWING
- PROJECT BOUNDARY

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

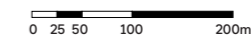
Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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2. Area Wide: M80 Ring Road 2

2.1 Overshadowing Analysis

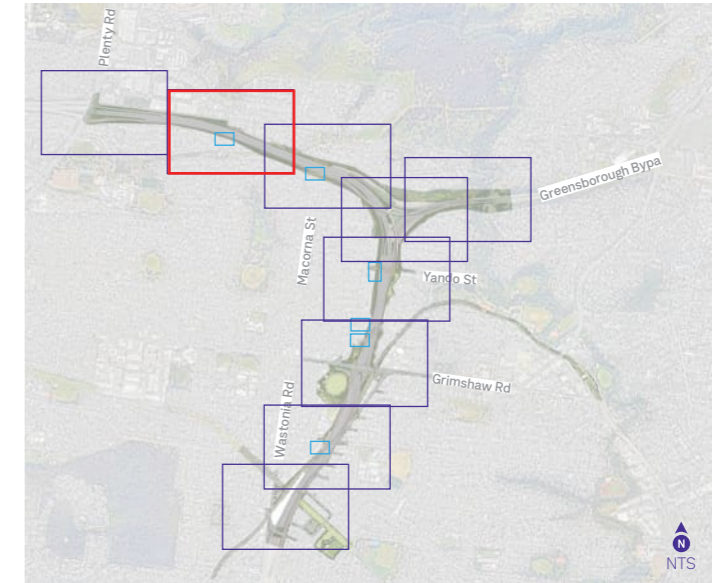
Within M80 Ring Road 2, the noise walls are modelled as worst case scenario at a maximum height and vary between 5.5-metres and 7-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*.

Shadows cast within this area are predominantly located within the Project boundary, however overshadowing can be observed within the SPOS of residential properties along Tevlin Court and Chapell Drive between the hours of 9am and 12pm. This can be observed in Figures 5 and 6. There is no observed overshadowing to open space north of the M80 Ring Road.

Based on this Area Wide analysis, a focused analysis has been undertaken for these directly affected areas and includes the application of design solutions to mitigate overshadowing. Refer to section 2A.

2.2 Overlooking Analysis

There are no elevated structure within M80 Ring Road 2 that pose overlooking concerns.



22nd September 9am (AEST)

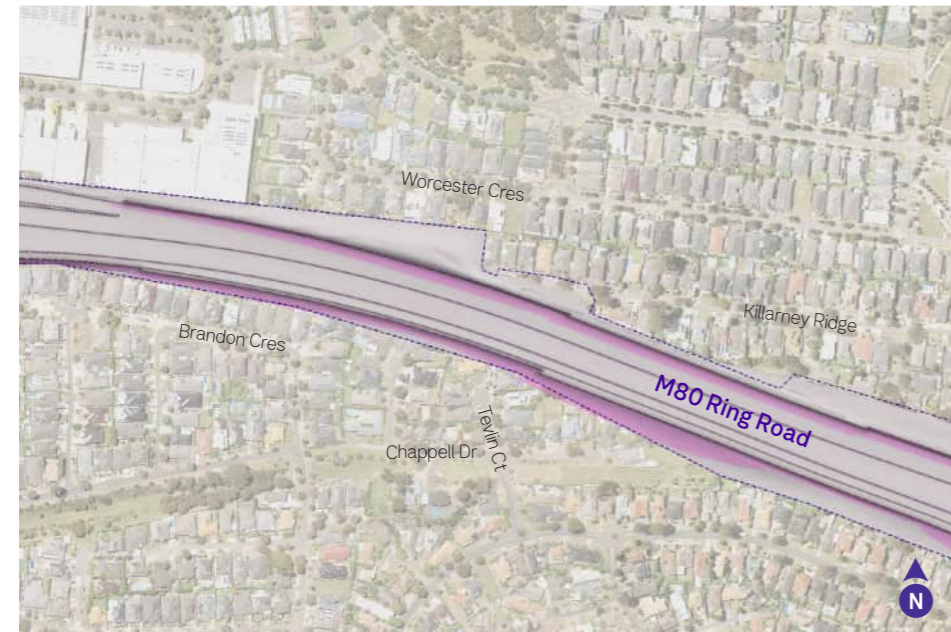


Figure 5: Area Wide: M80 Ring Road 2 - 22nd September 9am (AEST)

22nd September 12pm (AEST)



Figure 6: Area Wide: M80 Ring Road 2 - 22nd September 12pm (AEST)

22nd September 3pm (AEST)

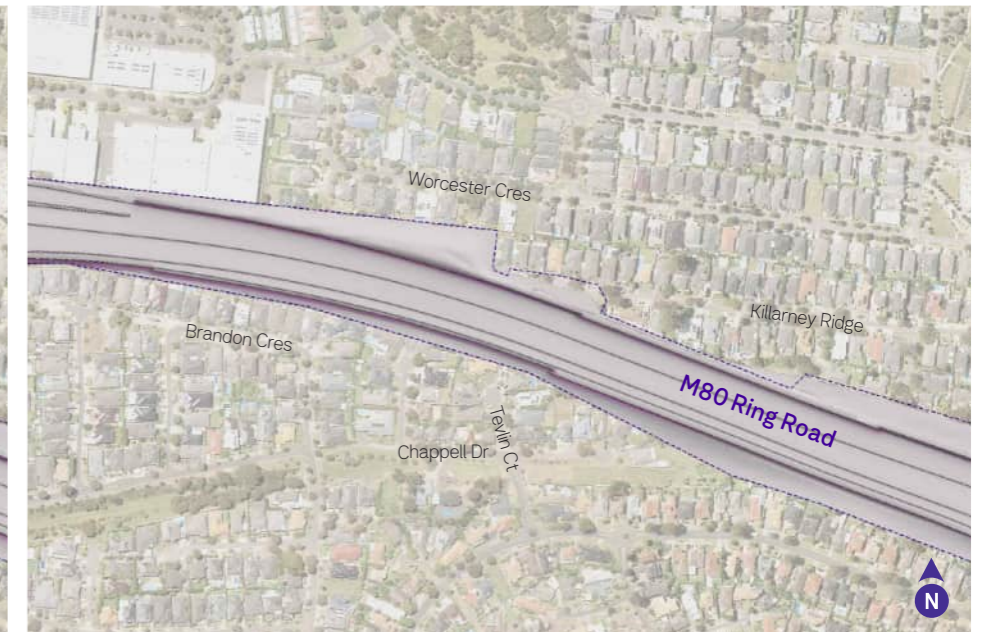


Figure 7: Area Wide: M80 Ring Road 2 - 22nd September 3pm (AEST)

- LEGEND**
- EXTENT OF OVERSHADOWING
 - PROJECT BOUNDARY

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Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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2A. Focused Analysis: Tevlin Court and Chappell Drive

22nd September 9am (AEST)

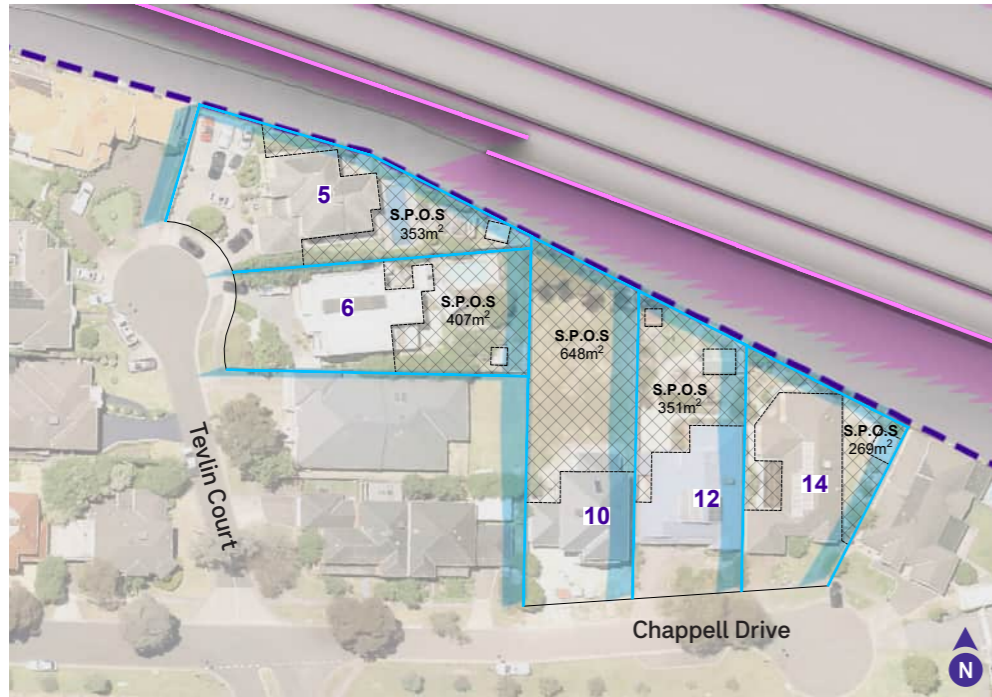


Figure 8: Focused Analysis: Tevlin Court and Chapell Drive - 22nd September 9am (AEST)

22nd September 10am (AEST)

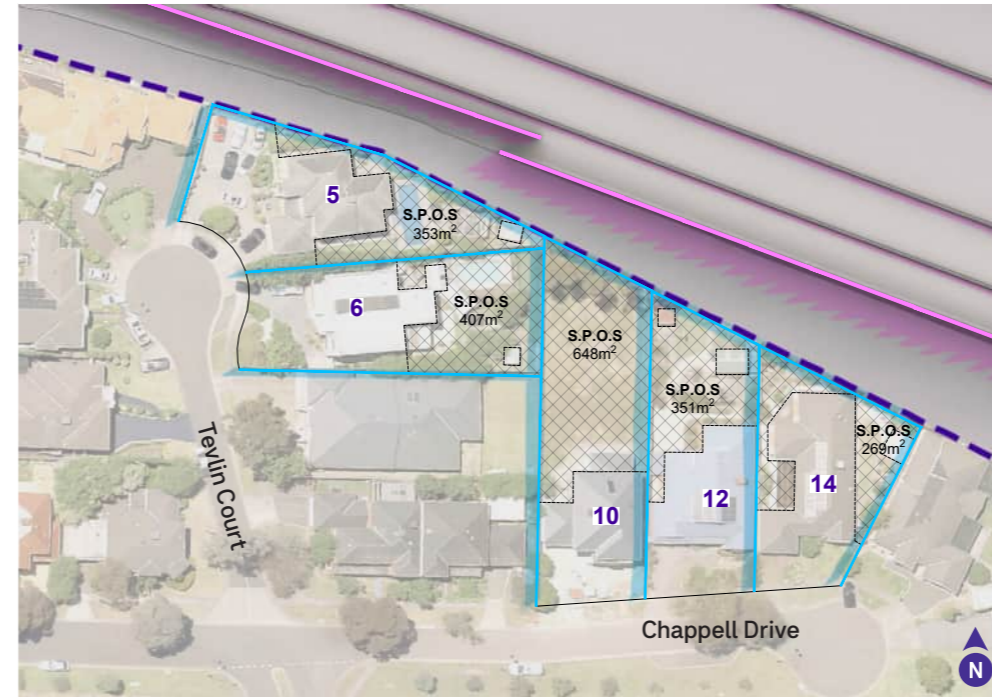


Figure 9: Focused Analysis: Tevlin Court and Chapell Drive - 22nd September 10am (AEST)

22nd September 11am (AEST)

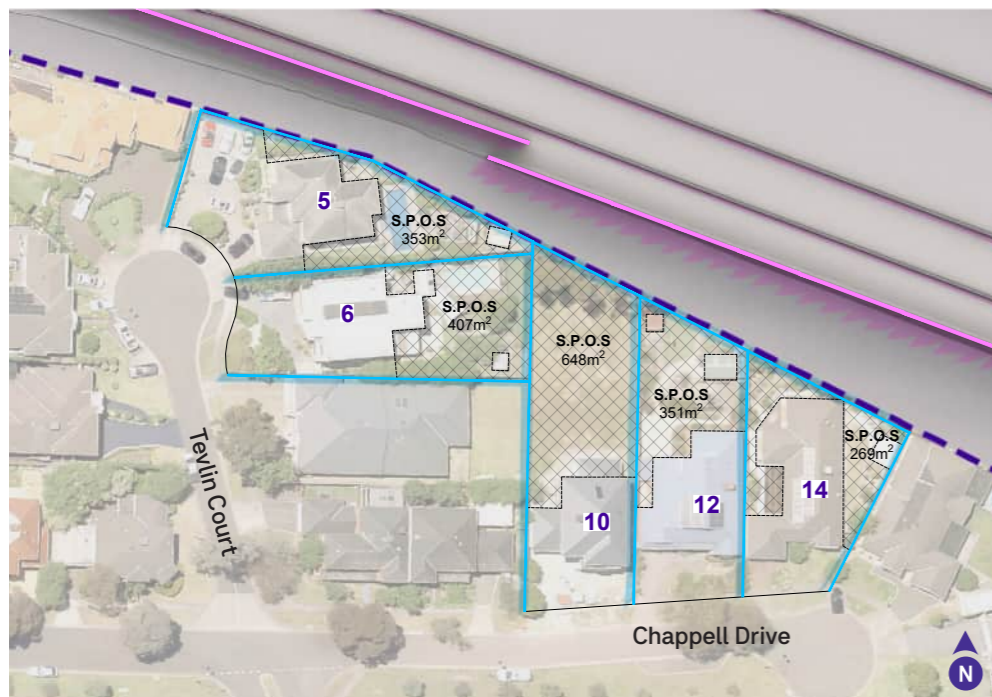
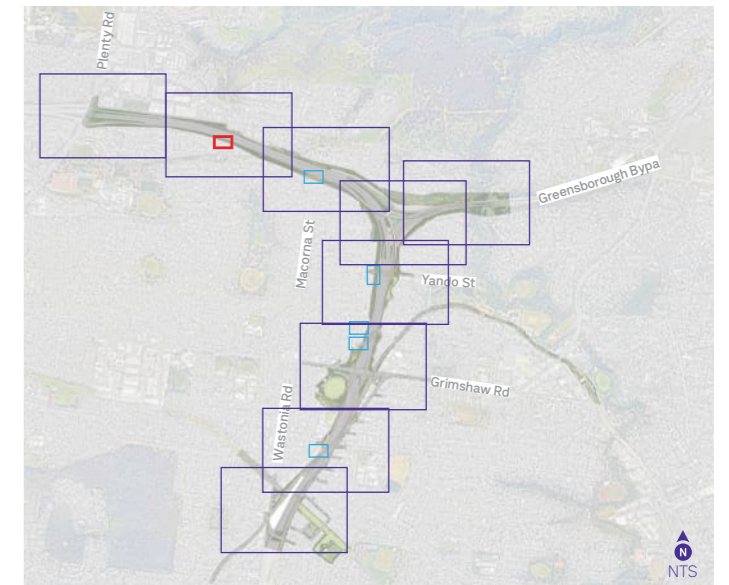


Figure 10: Focused Analysis: Tevlin Court and Chapell Drive - 22nd September 11am (AEST)



LEGEND

- PROJECT BOUNDARY
- EXISTING FENCE LINE SHADOW
- SECLUDED PRIVATE OPEN SPACE (S.P.O.S)
- PROPOSED NOISE WALL
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- PROPOSED STRUCTURE SHADOW
- EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- 50 PROPERTY NUMBER

Focused Overshadowing Analysis

The Focused Analysis of properties along Tevlin Court and Chappell Drive revealed no overshadowing following the application of a partially acrylic noise wall Type C within the design. This can be seen in Figures 8, 9 and 10.

Although there are no shadows cast from elevated structures or noise walls, properties have been identified as directly affected by the use of acrylic panels casting tinted light into SPOS. Ongoing consultation will be undertaken with these properties.

This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of the SPOS.

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.



NOISE WALL TYPE C
MAX HEIGHT OF 7m

DESIGN SUBJECT TO RELEVANT CODES AND STANDARDS

© North East Link Program		SCALE 1:1250		0 10 15 20 30 40 50m		DOT No.:																																									
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3. Area Wide: M80 Interchange 1

3.1 Overshadowing Analysis

Within M80 Ring Interchange 1, the noise walls are modelled as worst case scenario at a maximum height and vary between 5-metres and 6.5-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*.

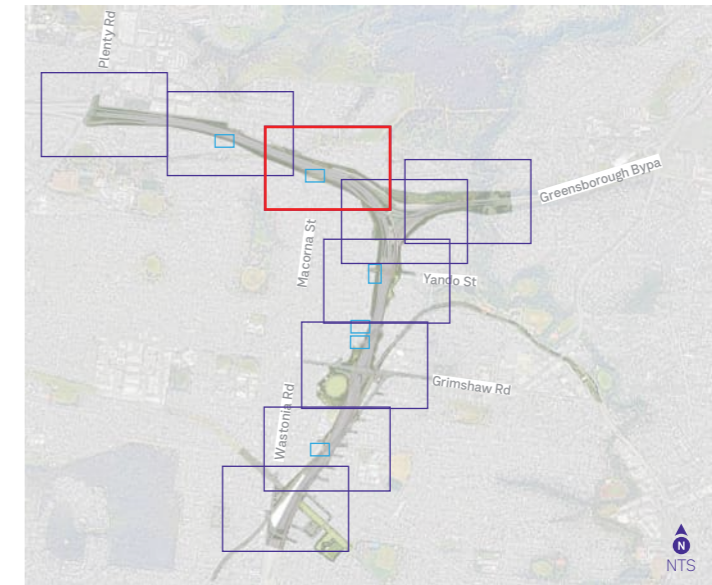
The new Macorna Street shared use path bridge has been offset from residential properties along Macorna Street to minimise overshadowing and overlooking, however the ramp screens produce overshadowing into the adjacent SPOS. This can be observed between the hours of 9am and 12pm as shown in Figures 11, 12 and 13. There is no observed overshadowing to open space north of the M80 Interchange.

Based on this Area Wide analysis, a focused analysis has been undertaken for these directly affected areas and includes the application of design solutions to mitigate overshadowing. Refer to section 3A.

3.2 Overlooking Analysis

Possible overlooking from the Macorna Street shared use path bridge have been identified for both the northern and southern ramps.

For detailed analysis of these directly affected areas including the application of design solutions to mitigate overlooking refer to section 10 and 11.



22nd September 9am (AEST)

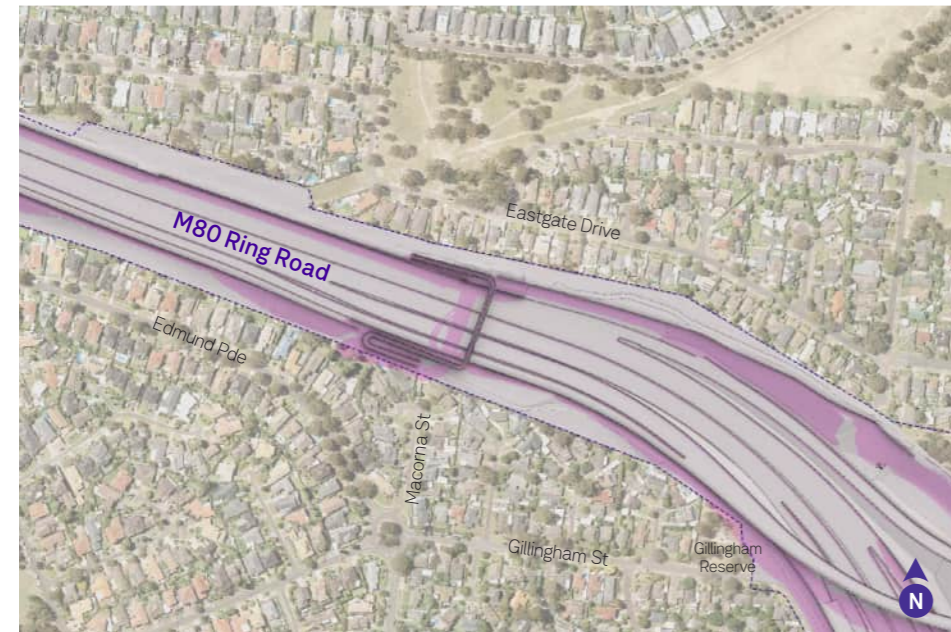


Figure 11: Area Wide: M80 Interchange 1 – 22nd September 9am (AEST)

22nd September 12pm (AEST)

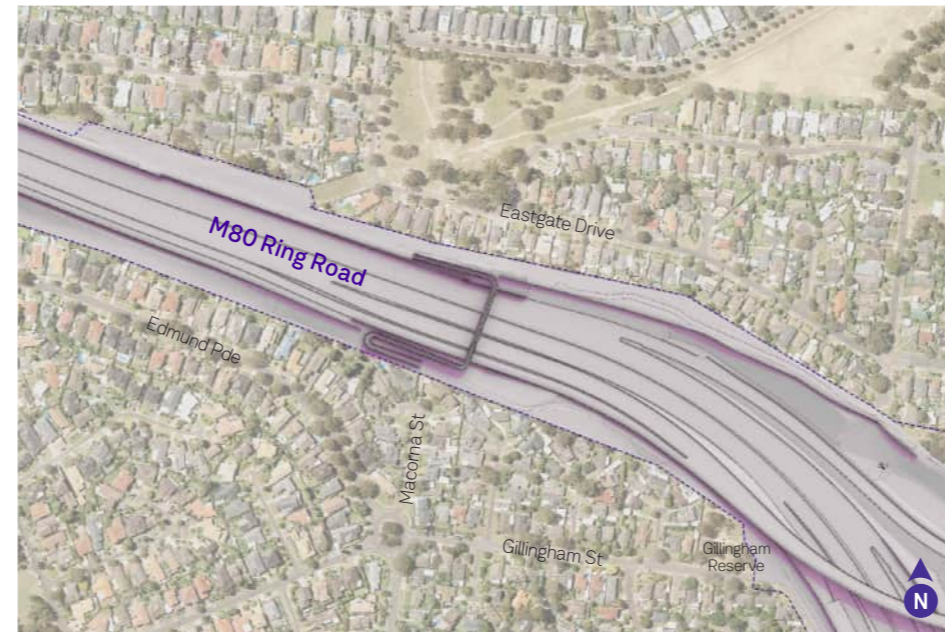


Figure 12: Area Wide: M80 Interchange 1 – 22nd September 12pm (AEST)

22nd September 3pm (AEST)

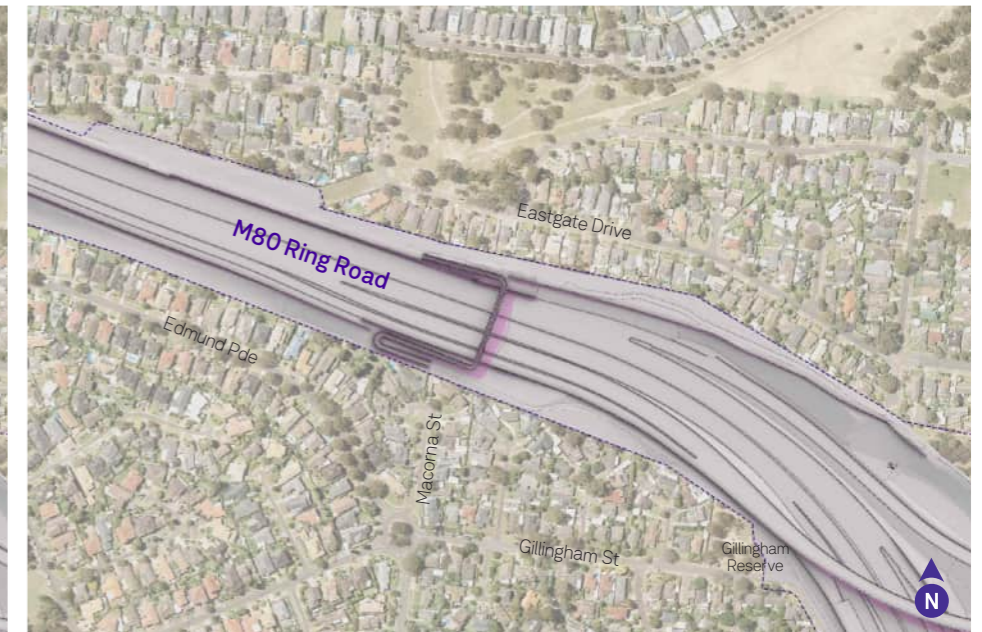


Figure 13: Area Wide: M80 Interchange 1 – 22nd September 3pm (AEST)

LEGEND

- EXTENT OF OVERSHADOWING
- PROJECT BOUNDARY

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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REVISIONS		APPROVALS		PROJECT CONTRACT: NORTH		NELP DRAWING No.: NEL-NTH-NNA-3900-EPU-DRG-4007	
				SUIT. CODE: NORTH		REVISION: 4	

3A. Focused Analysis: Macorna Street and Edmund Rice Parade

22nd September 9am (AEST)

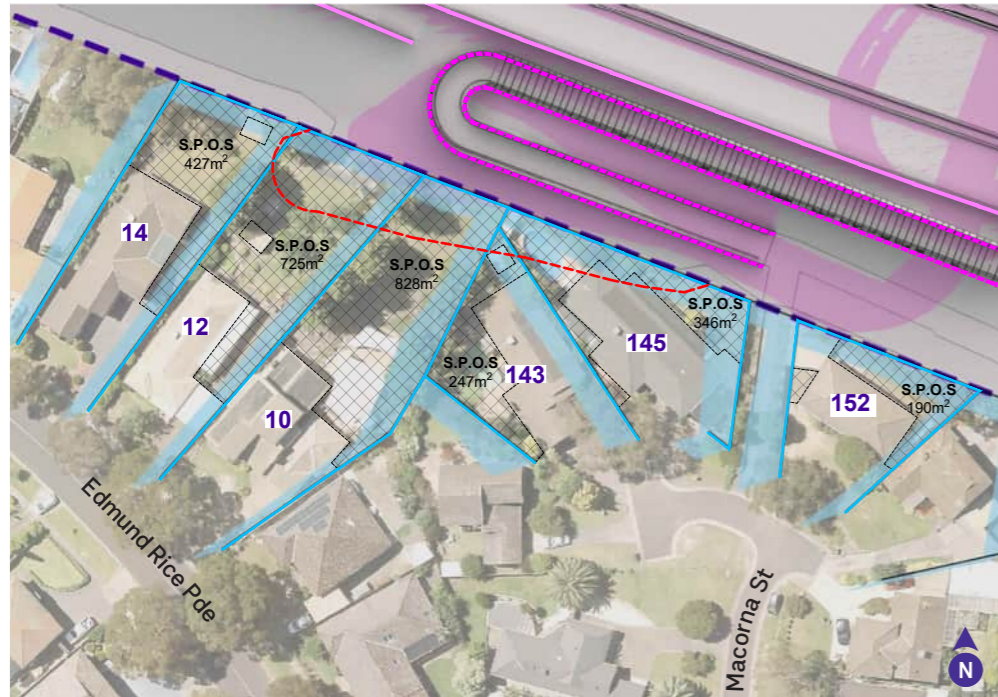


Figure 14: Focused Analysis: Macorna Street and Edmund Rice Parade - 22nd September 9am (AEST)

22nd September 10am (AEST)



Figure 15: Focused Analysis: Macorna Street and Edmund Rice Parade - 22nd September 10am (AEST)

22nd September 11am (AEST)

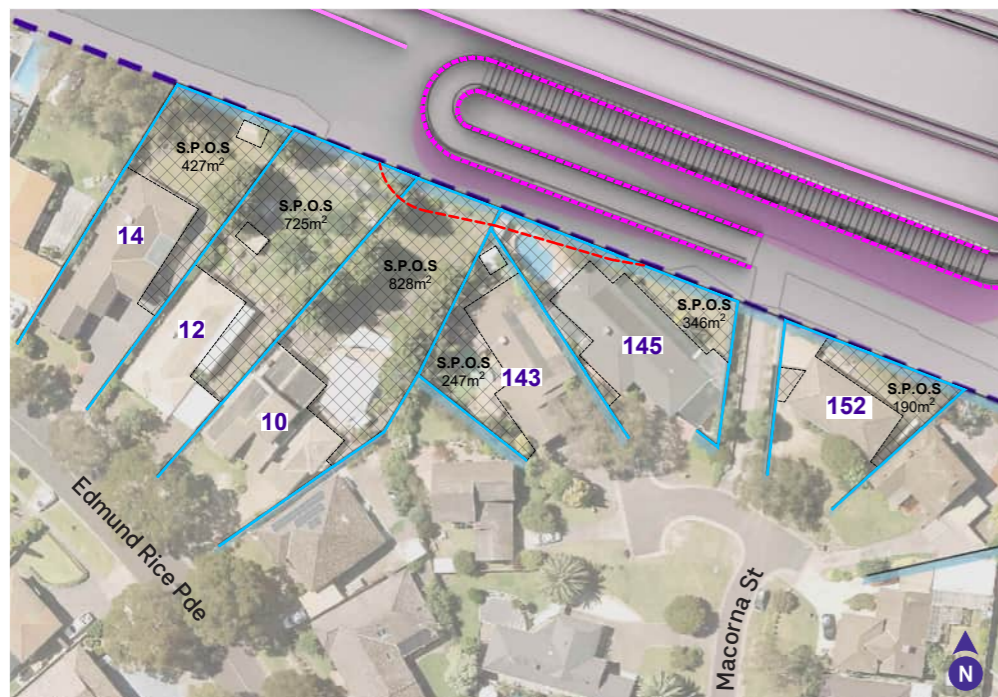


Figure 16: Focused Analysis: Macorna Street and Edmund Rice Parade - 22nd September 11am (AEST)

Focused Overshadowing Analysis

The Focused Analysis of properties along Macorna Street and Edmund Rice Parade revealed no overshadowing from noise walls following the application of a partially acrylic noise wall Type C.

Although there are no shadows cast from noise walls, properties have been identified as directly affected by the use of acrylic panels casting tinted light into SPOS. Ongoing consultation will be undertaken with these properties.

Indicative overshadowing has been identified with the use of overlooking screening Type C on bridge ramps. Ongoing consultation with directly affected properties will inform the screening type used in this location.

The use of anti-throw screen Type A or B would mitigate overshadowing in this location. This can be seen in Figures 14, 15 and 16.

This complies with the requirements of EPR LP4.

Disclaimer Notes:

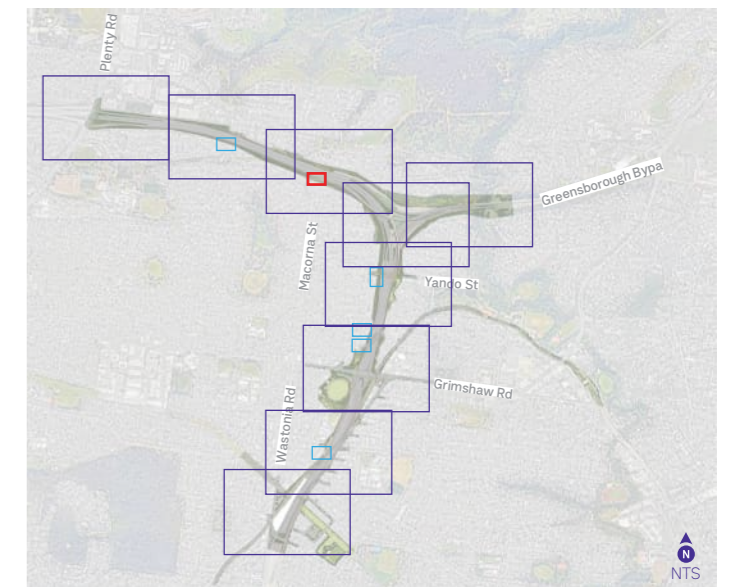
Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

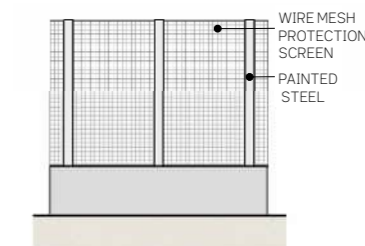
Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

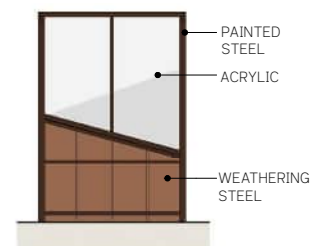


LEGEND

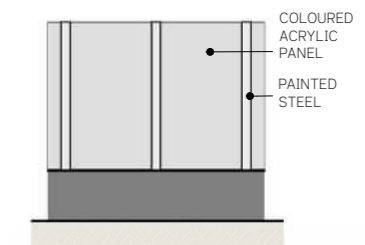
- PROJECT BOUNDARY
- ▨ SECLUDED PRIVATE OPEN SPACE (SPOS)
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- - - PROPOSED SCREEN
- - - INDICATIVE EXTENT OF OVERLOOKING SCREENING SHADOW
- EXISTING FENCE LINE SHADOW
- PROPOSED NOISE WALL
- PROPOSED STRUCTURE SHADOW
- - - EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- 50 PROPERTY NUMBER



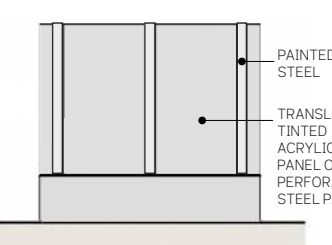
ANTI-THROW SCREEN TYPE A



NOISE WALL TYPE C
MAX HEIGHT OF 6.5m



ANTI-THROW SCREEN TYPE B



OVERLOOKING SCREEN TYPE C

SCALE 1:1250 0 10 15 20 30 40 50m

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4	UDLP FINAL SUBMISSION	02.08.2024	DRAFTING CHECKED BY: L. ORJALO	02.08.2024		Security Classification: OFFICIAL: Sensitive CAD FILE: -	PROJECT CONTRACT: NORTH		NELP DRAWING No.: NEL-NTH-NNA-3900-EPU-DRG-4008		SUIT. CODE	REVISION
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4. Area Wide: M80 Interchange 2

4.1 Overshadowing Analysis

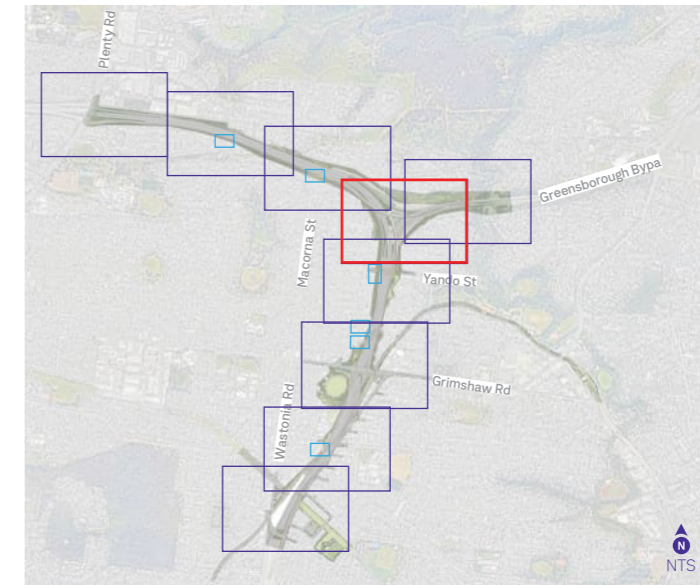
Within M80 Interchange 2, the noise walls are modelled as worst case scenario at a maximum height and vary between 4-metres and 6.5-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*.

Shadows cast by noise walls and elevated structures are predominantly located within the Project boundary as shown in Figures 17, 18 and 19, however minor shadow to Gillingham Reserve are visible between the hours of 9am and 10am. Overshadowing will be minimised through the application of partially acrylic noise wall types within the design. This has minimised the overshadowing to the open space at Gillingham Reserve.

There are no new shadows cast from elevated structures or noise walls into the SPOS of residential properties. This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of the SPOS.

4.2 Overlooking Analysis

There are no elevated structures within M80 Interchange 2 that pose overlooking concerns.



22nd September 9am (AEST)

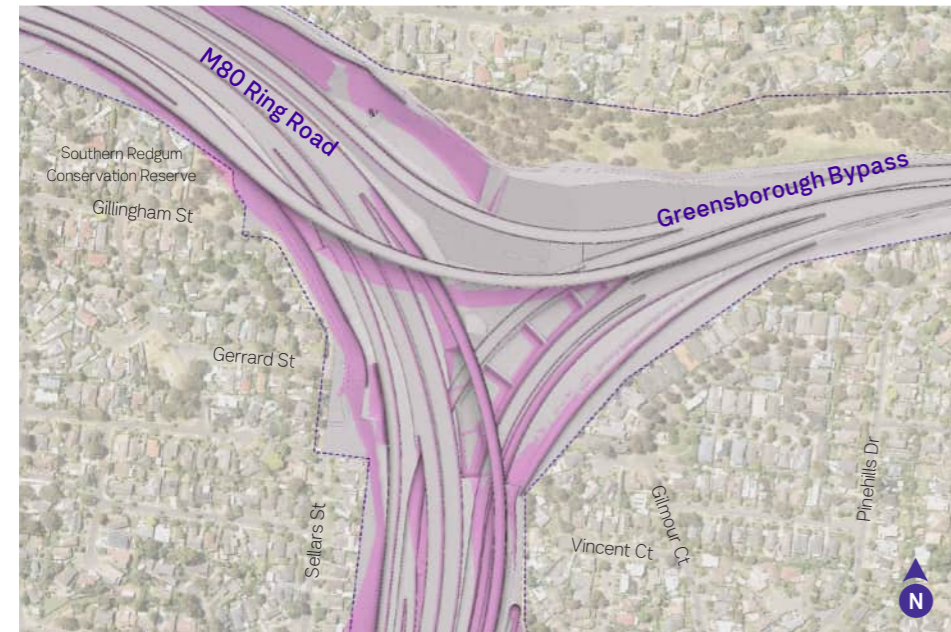


Figure 17: Area Wide: M80 Interchange 2 - 22nd September 9am (AEST)

22nd September 12pm (AEST)



Figure 18: Area Wide: M80 Interchange 2 - 22nd September 12pm (AEST)

22nd September 3pm (AEST)

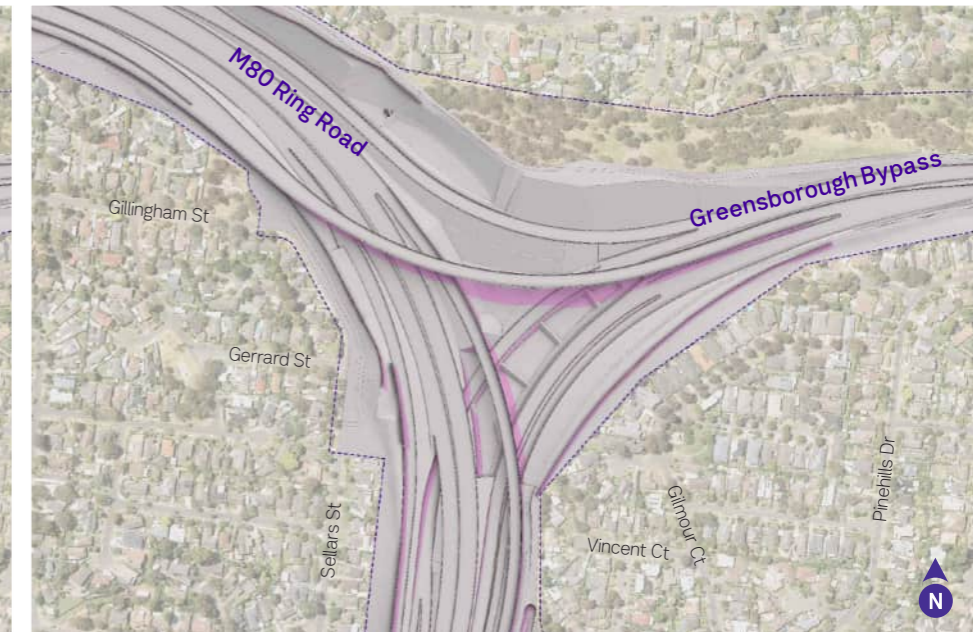


Figure 19: Area Wide: M80 Interchange 2 - 22nd September 3pm (AEST)

LEGEND
 EXTENT OF OVERSHADOWING
 PROJECT BOUNDARY

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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5. Area Wide: M80 Interchange 3

5.1 Overshadowing Analysis

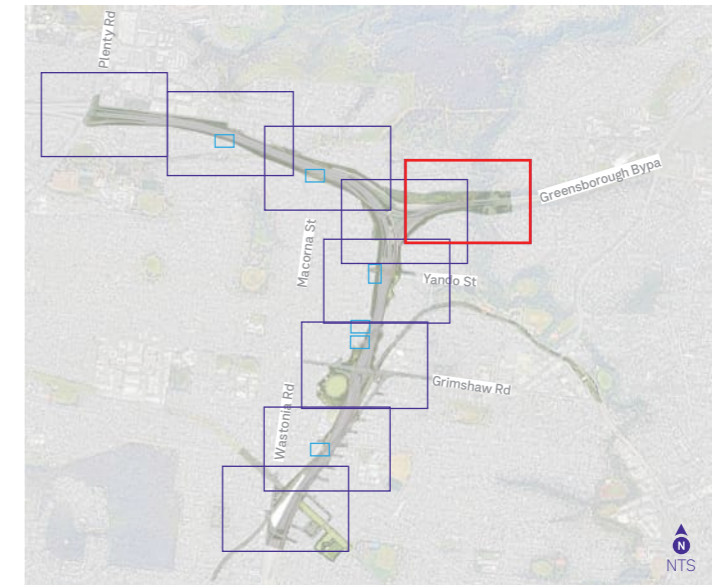
Within M80 Interchange 3, the noise walls are modelled as worst case scenario at a maximum height of 3-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*.

Shadows cast by noise walls and associated road infrastructure are located within the Project boundary as shown in Figures 20, 21 and 22, with no observed overshadowing to residential properties or open space and associated natural habitat north of the M80 Interchange.

There are no new shadows cast from elevated structures or noise walls into the SPOS of residential properties as shown in figures 20, 21, and 22. This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of the SPOS.

5.2 Overlooking Analysis

There are no elevated structures within M80 Interchange 3 that pose overlooking concerns.



22nd September 9am (AEST)

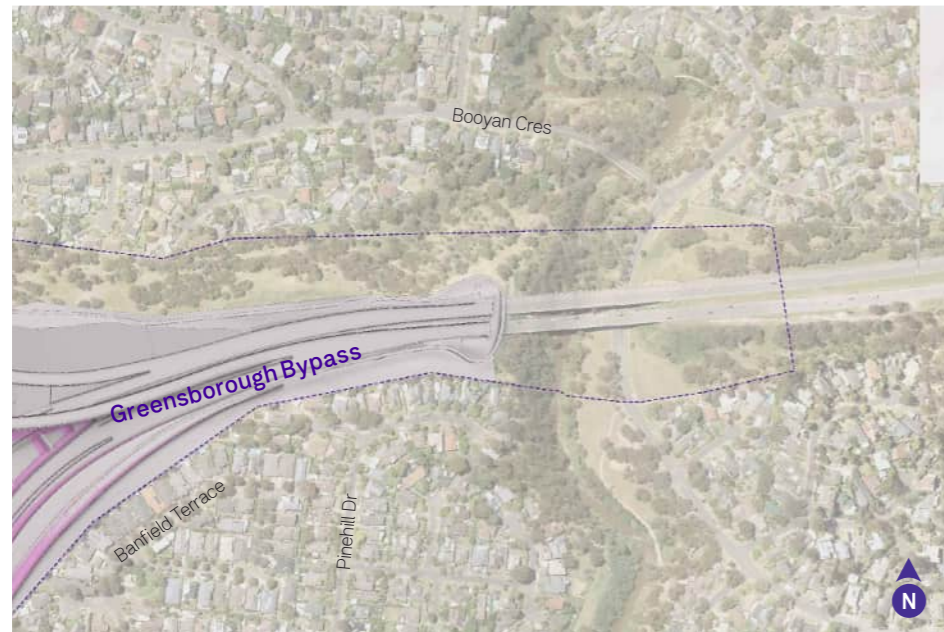


Figure 20: Area Wide: M80 Interchange 3 - 22nd September 9am (AEST)

22nd September 12pm (AEST)

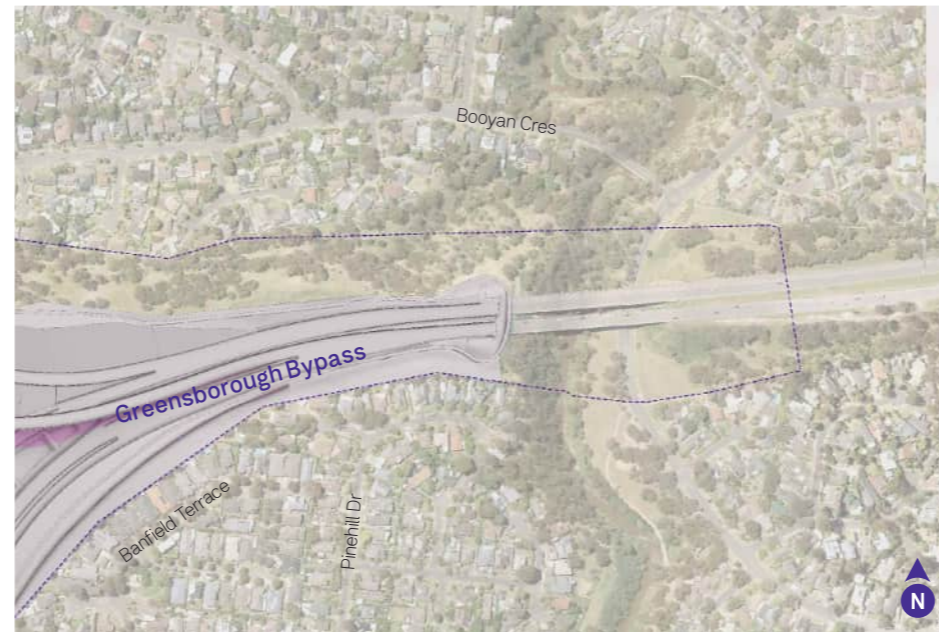


Figure 21: Area Wide: M80 Interchange 3 - 22nd September 12pm (AEST)

22nd September 3pm (AEST)



Figure 22: Area Wide: M80 Interchange 2 - 22nd September 3pm (AEST)

LEGEND

- EXTENT OF OVERSHADOWING
- PROJECT BOUNDARY

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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6. Area Wide: Greensborough Road 1

6.1 Overshadowing Analysis

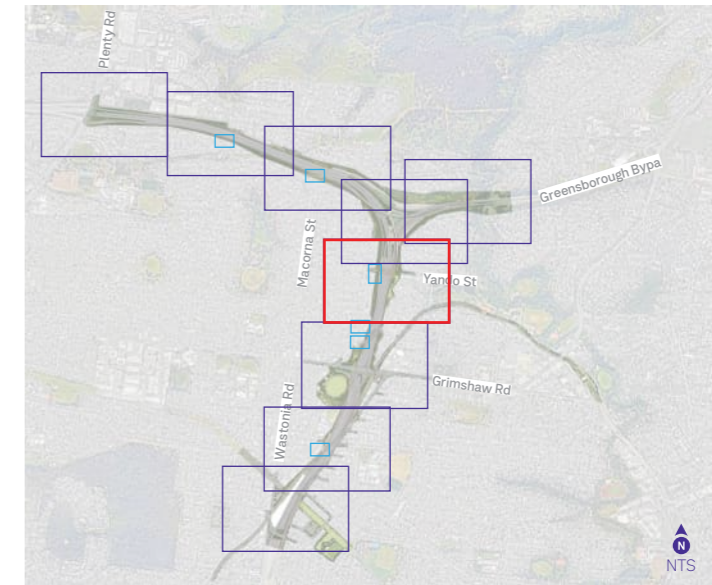
Within Greensborough Road 1, the noise walls are modelled as worst case scenario at a maximum height and vary between 4-metres and 9-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*.

Shadows within this area are predominantly cast within the Project boundary, however overshadowing can be observed within the SPOS of residential properties along Sellars Street at 9am. This can be observed in Figures 23, 24 and 25.

Based on this Area Wide analysis, a focused analysis has been undertaken for these directly affected areas and includes the application of design solutions to mitigate overshadowing. Refer to section 6A.

6.2 Overlooking Analysis

There are no elevated structures within Greensborough Road 1 that pose overlooking concerns.



22nd September 9am (AEST)



Figure 23: Area Wide: Greensborough Road 1 - 22nd September 9am (AEST)

22nd September 12pm (AEST)

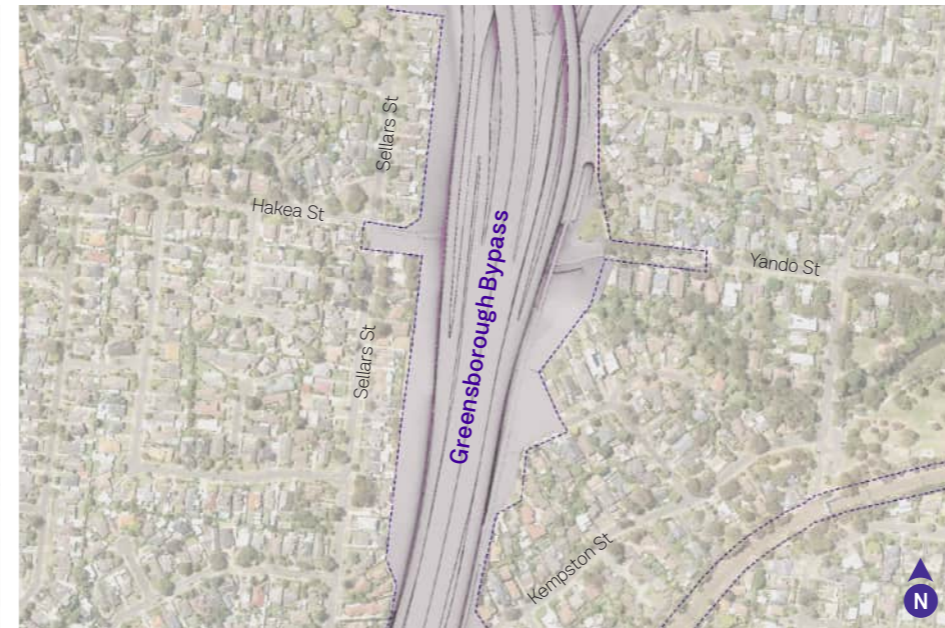


Figure 24: Area Wide: Greensborough Road 1 - 22nd September 12pm (AEST)

22nd September 3pm (AEST)



Figure 25: Area Wide: Greensborough Road 1 - 22nd September 3pm (AEST)

- LEGEND**
- EXTENT OF OVERSHADOWING
 - PROJECT BOUNDARY

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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6A. Focused Analysis: Sellars Street Area 1

22nd September 9am (AEST)

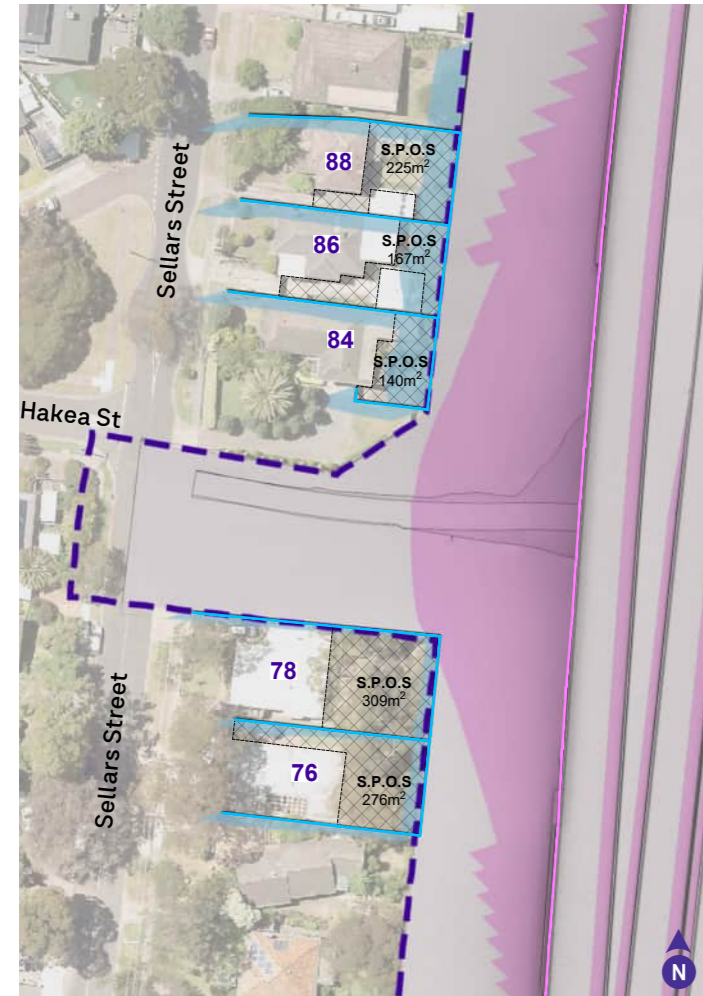


Figure 26: Focused Analysis: Sellars Street Area 1 - 22nd September 9am (AEST)

22nd September 10am (AEST)

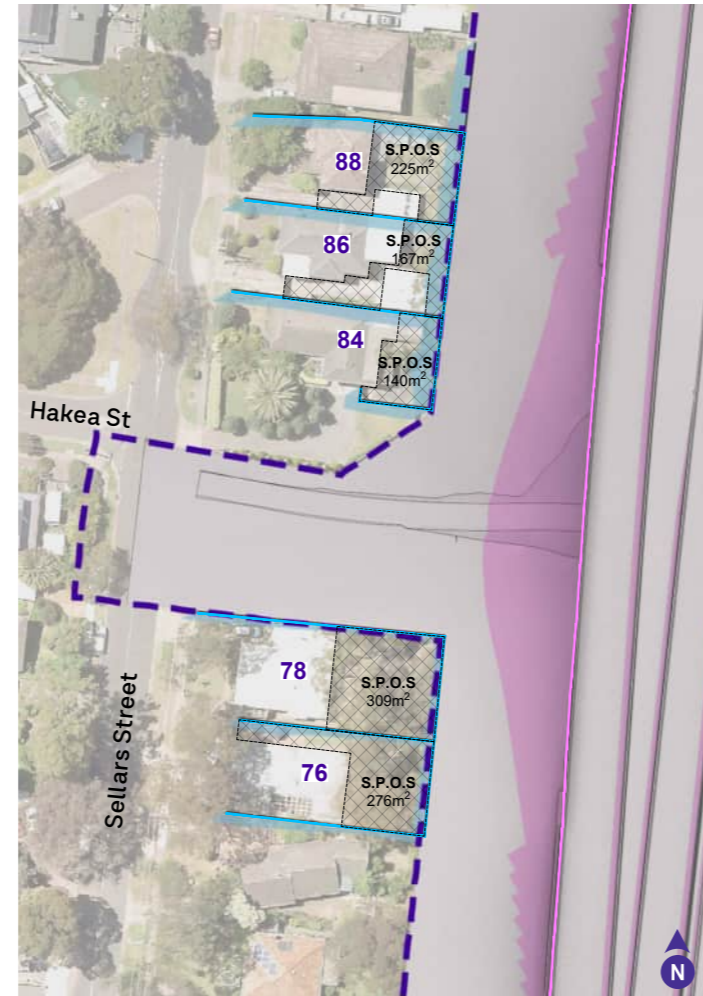


Figure 27: Focused Analysis: Sellars Street Area 1 - 22nd September 10am (AEST)

22nd September 11am (AEST)

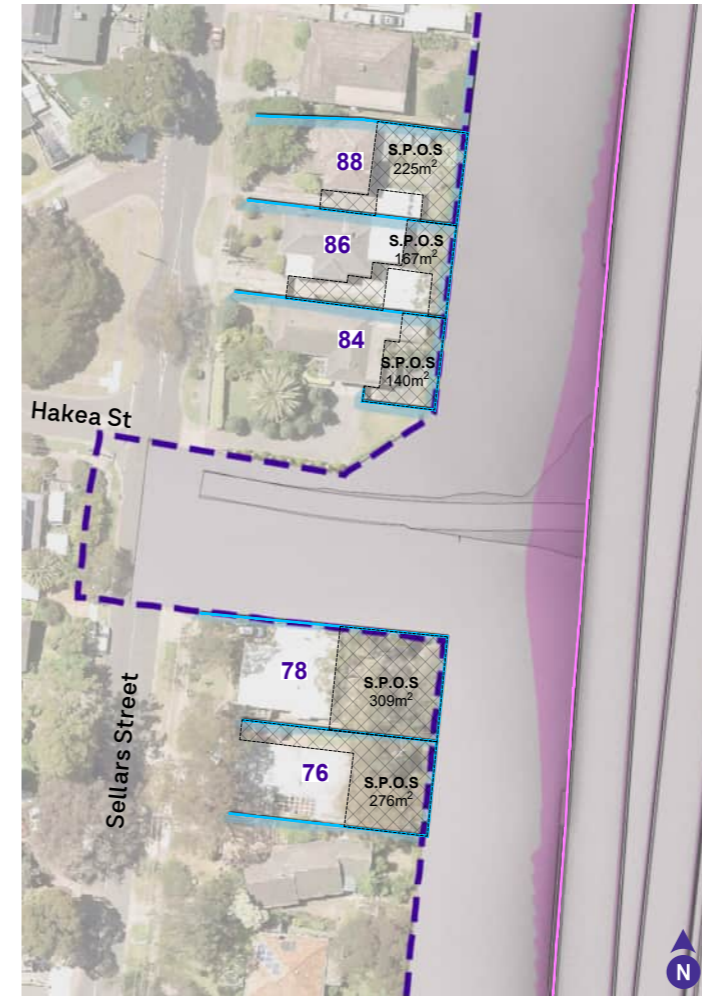
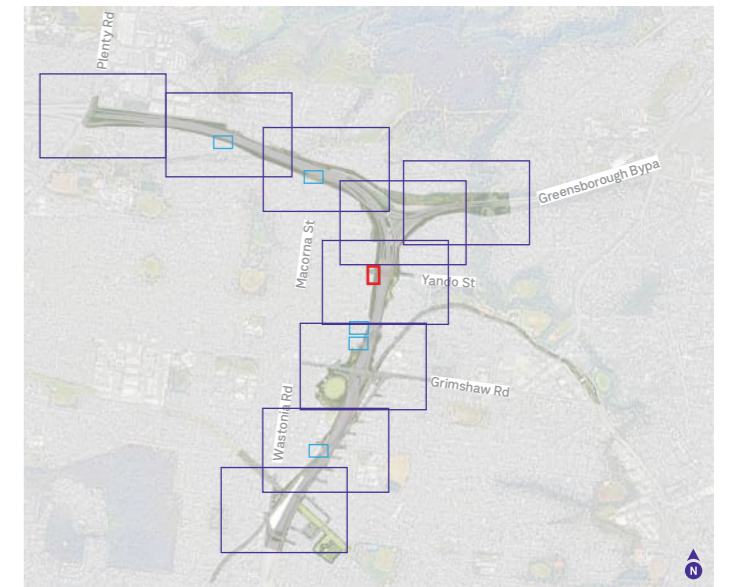


Figure 28: Focused Analysis: Sellars Street Area 1 - 22nd September 11am (AEST)



LEGEND

- PROJECT BOUNDARY
- ▨ SECLUDED PRIVATE OPEN SPACE (SPOS)
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- EXISTING FENCE LINE SHADOW
- PROPOSED NOISE WALL
- PROPOSED STRUCTURE SHADOW
- ▨ EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- 50 PROPERTY NUMBER

Focused Overshadowing Analysis

Although there are no shadows cast from elevated structures or noise walls, properties have been identified as directly affected by the use of acrylic panels casting tinted light into SPOS. Ongoing consultation will be undertaken with these properties.

This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of the SPOS.

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

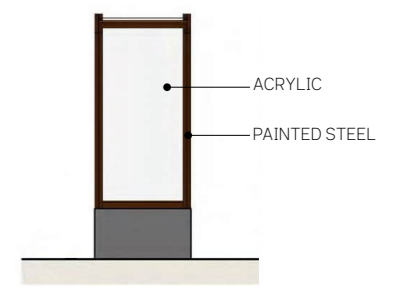
This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.



NOISE WALL TYPE C
MAX HEIGHT OF 6.5m



NOISE WALL TYPE B3
MAX HEIGHT OF 4m

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NORTH EAST LINK PROGRAM
ATTACHMENT 4:
URBAN DESIGN OVERSHADOWING AND OVERLOOKING ASSESSMENT
FOCUSED ANALYSIS: SELLARS STREET AREA 1

PROJECT CONTRACT: NORTH

NELP DRAWING No.: NEL-NTH-NNA-3900-EPU-DRG-4012

SUIT. CODE: 4

REVISION: 4

7. Area Wide: Greensborough Road 2

7.1 Overshadowing Analysis

Within Greensborough Road 2, the noise walls are modelled as worst case scenario at a maximum height and vary between 2-metres and 7-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*.

Shadows cast within this area are predominantly located within the Project boundary, however overshadowing can be observed within the SPOS of residential properties along Sellars Street between the hours of 9am and 12pm. This can be observed in Figures 29, 30 and 31.

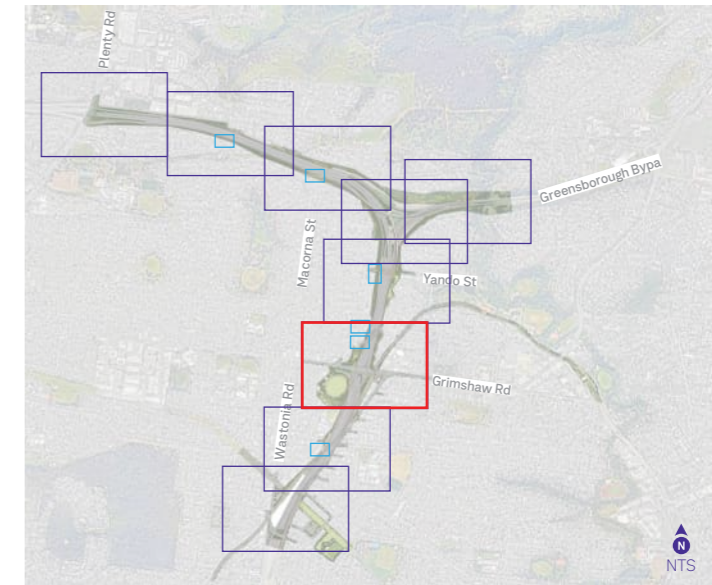
Overshadowing will be minimised through the application of partially acrylic noise wall types within the design. This has minimised the overshadowing to residential properties and the open spaces at AK Lines Reserve and Trist Street Reserve.

Based on this Area Wide analysis, a focused analysis has been undertaken for these directly affected areas and includes the application of design solutions to mitigate overshadowing. Refer to section 7A and 7B.

7.2 Overlooking Analysis

Possible overlooking from the Kempston Street shared use path ramp to residential properties along Kempston Street and Hamlet Street has been identified.

For detailed analysis of these directly affected areas including the application of design solutions to mitigate overshadowing refer to section 12.



22nd September 9am (AEST)



Figure 29: Area Wide: Greensborough Road 2 - 22nd September 9am (AEST)

22nd September 12pm (AEST)



Figure 30: Area Wide: Greensborough Road 2 - 22nd September 12pm (AEST)

22nd September 3pm (AEST)

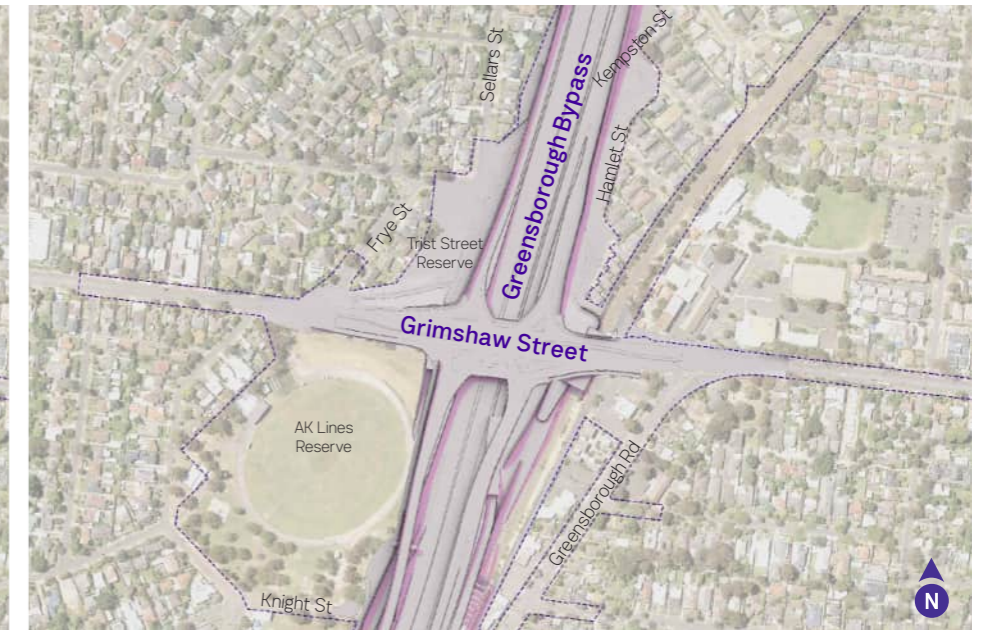


Figure 31: Area Wide: Greensborough Road 2 - 22nd September 3pm (AEST)

LEGEND

- EXTENT OF OVERSHADOWING
- PROJECT BOUNDARY

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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7A. Focused Analysis: Sellars Street Area 2

22nd September 9am (AEST)



Figure 32: Focused Analysis: Sellars Street Area 2 - 22nd September 9am (AEST)

22nd September 10am (AEST)

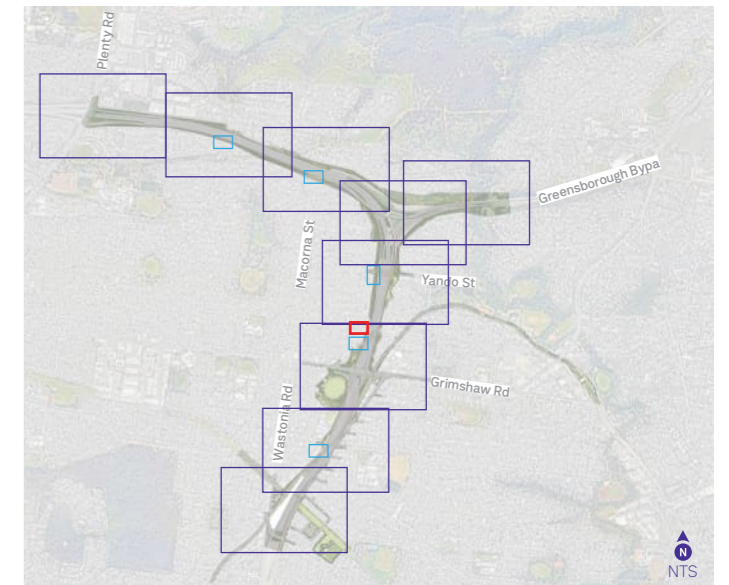


Figure 33: Focused Analysis: Sellars Street Area 2 - 22nd September 10am (AEST)

22nd September 11am (AEST)



Figure 34: Focused Analysis: Sellars Street Area 2 - 22nd September 11am (AEST)



LEGEND

- PROJECT BOUNDARY
- SECLUDED PRIVATE OPEN SPACE (SPOS)
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- EXISTING FENCE LINE SHADOW
- PROPOSED NOISE WALL
- PROPOSED STRUCTURE SHADOW
- EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- 50 PROPERTY NUMBER

Focused Overshadowing Analysis

The Focused Analysis of properties along Sellars Street (Area 2) revealed no overshadowing following the application of a partially acrylic noise wall Type C within the design. This can be seen in Figures 32, 33 and 34.

Although there are no shadows cast from elevated structures or noise walls, properties have been identified as directly affected by the use of acrylic panels casting tinted light into SPOS. Ongoing consultation will be undertaken with these properties.

This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of the SPOS.

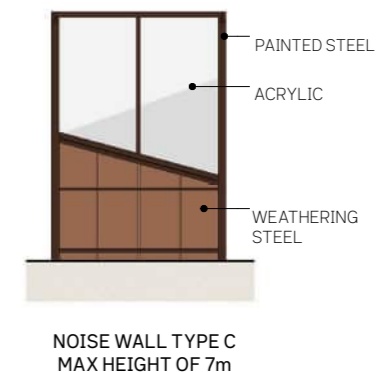
Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.



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		ENGINEERING CHECKED BY: R. LEWIS 02.08.2024		DISCIPLINE		PROJECT CONTRACT:	
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7B. Focused Analysis: Sellars Street Area 3

22nd September 9am (AEST)



Figure 35: Focused Analysis: Sellars Street Area 3 - 22nd September 9am (AEST)

22nd September 10am (AEST)

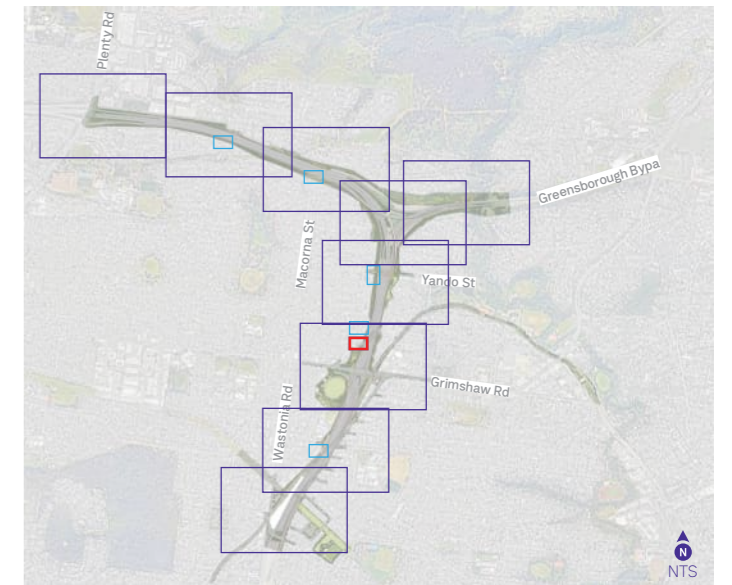


Figure 36: Focused Analysis: Sellars Street Area 3 - 22nd September 10am (AEST)

22nd September 11am (AEST)



Figure 37: Focused Analysis: Sellars Street Area 3 - 22nd September 11am (AEST)



LEGEND

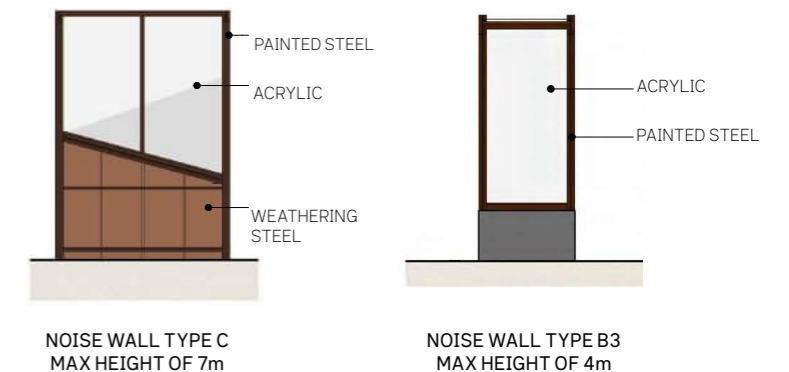
- PROJECT BOUNDARY
- ▨ SECLUDED PRIVATE OPEN SPACE (SPOS)
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- EXISTING FENCE LINE SHADOW
- PROPOSED NOISE WALL
- PROPOSED STRUCTURE SHADOW
- EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- 50** PROPERTY NUMBER

Focused Overshadowing Analysis

The Focused Analysis of properties along Sellars Street (Area 3) revealed no overshadowing following the application of a partially acrylic noise wall Type C and a full acrylic noise wall Type B3 within the design. This can be seen in Figures 35, 36 and 37.

Although there are no shadows cast from elevated structures or noise walls, properties have been identified as directly affected by the use of acrylic panels casting tinted light into SPOS. Ongoing consultation will be undertaken with these properties.

This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of the SPOS.



Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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		ENGINEERING CHECKED BY: R. LEWIS 02.08.2024		DISCIPLINE		PROJECT CONTRACT:	
		VERIFIED BY: L. EVANS 02.08.2024		BACKDRAFTED/CORRECTED		NORTH	
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8. Area Wide: Greensborough Road 3

8.1 Overshadowing Analysis

Within Greensborough Road 3, the noise walls are modelled as worst case scenario at a maximum height and vary between 4-metres and 9-metres as shown in *UDLP Attachment 1: Architecture and Urban Design*

Shadows cast within this area are predominantly located within the Project boundary, however overshadowing can be observed within the SPOS of residential properties along Ibbottson Street and Nell Street West between the hours of 9am and 12pm. This can be observed in Figures 38, 39 and 40.

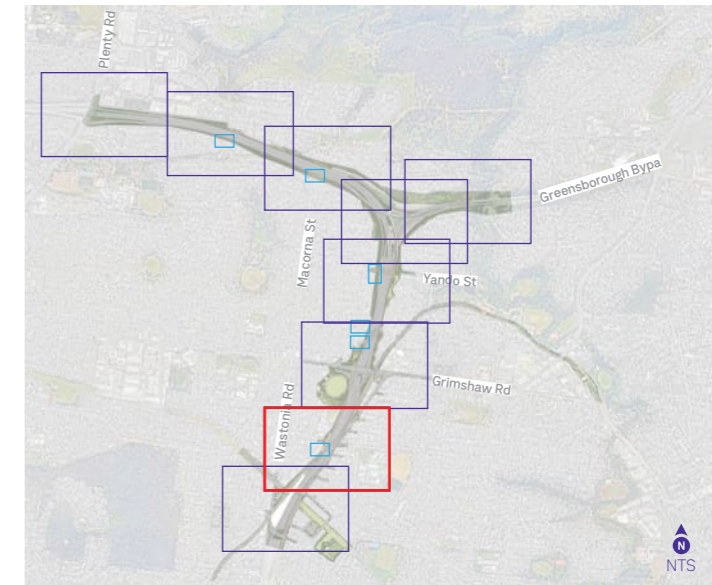
Overshadowing will be minimised through the application of partially acrylic noise wall types within the design. This has minimised the overshadowing to residential properties and the Watsonia Primary School oval.

Based on this Area Wide analysis, a focused analysis has been undertaken for these directly affected areas and includes the application of design solutions to mitigate overshadowing. Refer to section 8A, 8B, 8C, and 8D.

8.2 Overlooking Analysis

Possible overlooking from the Nell Street shared use path bridge ramps have been identified to residential properties along Ibbottson Street, Nell Street West and Greensborough Road.

For detailed analysis of these directly affected areas including the application of design solutions to mitigate overlooking refer to section 14 and 15.



22nd September 9am (AEST)



Figure 38: Area Wide: Greensborough Road 3 - 22nd September 9am (AEST)

22nd September 12pm (AEST)



Figure 39: Area Wide: Greensborough Road 3 - 22nd September 12pm (AEST)

22nd September 3pm (AEST)



Figure 40: Area Wide: Greensborough Road 3 - 22nd September 3pm (AEST)

LEGEND

- EXTENT OF OVERSHADOWING
- PROJECT BOUNDARY

Disclaimer Notes:

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from non-transparent major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Overshadowing analysis has been developed based on assumed 'worst case scenario' wall heights and the final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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8A. Focused Analysis: Ibbottson Street and Nell Street West

22nd September 9am (AEST)

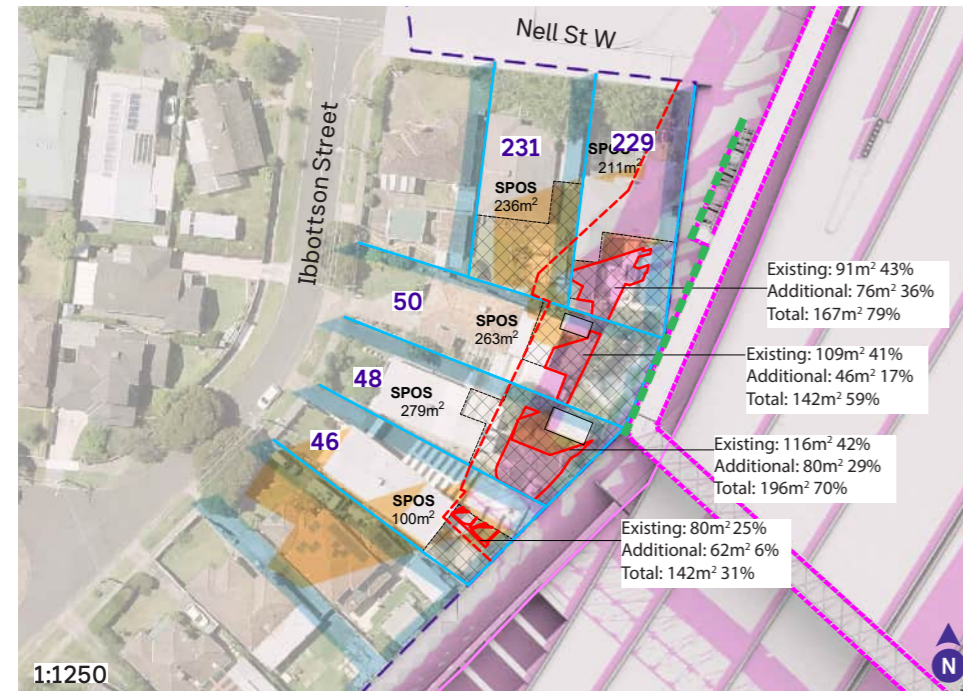


Figure 41: Focused Analysis: Ibbottson Street and Nell Street West - 22nd September 9:00am (AEST)

22nd September 10am (AEST)

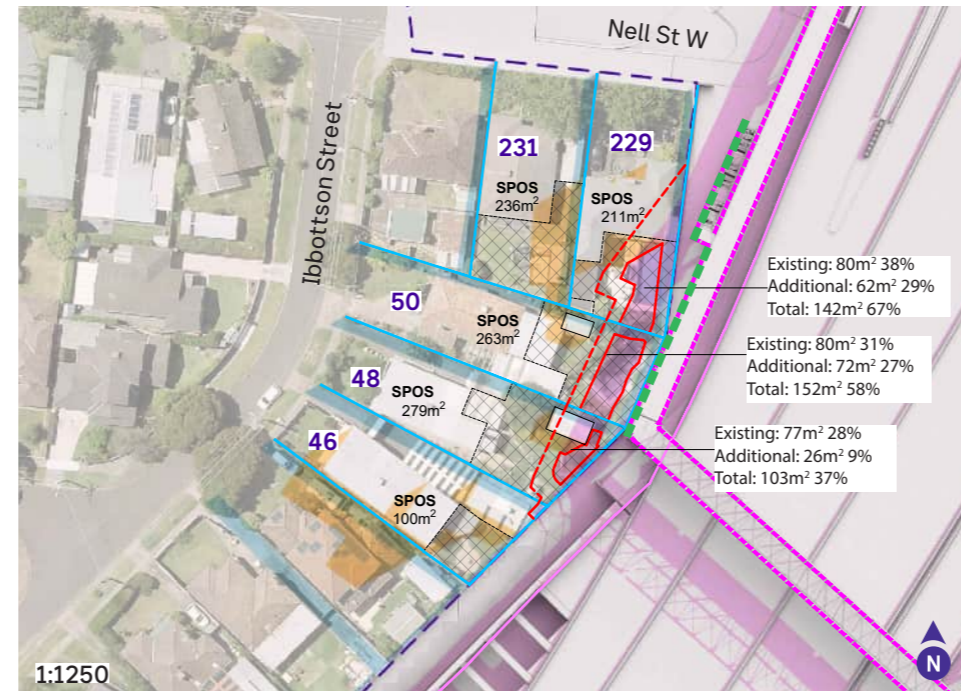


Figure 42: Focused Analysis: Ibbottson Street and Nell Street West - 22nd September 10am (AEST)

22nd September 11am (AEST)

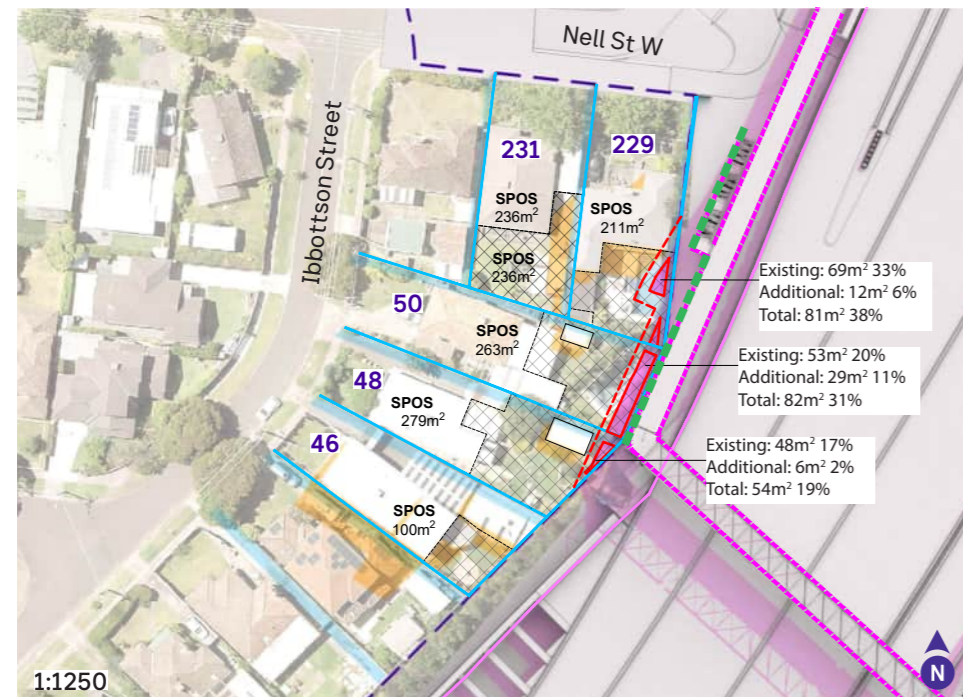


Figure 43: Focused Analysis: Ibbottson Street and Nell Street West - 22nd September 11am (AEST)

Focused Overshadowing Analysis

Focused analysis of properties along Ibbottson Street and Nell Street West revealed overshadowing from the bridge structure into the SPOS of properties at 229 Nell Street West and 46, 48 and 50 Ibbottson Street following the application of a partially acrylic noise wall Type C. Properties have also been identified as directly affected by the use of acrylic panels casting tinted light into SPOS.

Indicative overshadowing has been identified with the use of overlooking screening Type C on bridge ramps. Ongoing consultation with directly affected properties will inform the screening type used in this location. The use of anti-throw screen Type A or B would reduce overshadowing in this location. This can be seen in Figures 41, 42 and 43. Overshadowing as follows:

229 Nell Street West - Maximum shadow assessed at 9am - Total SPOS 211m²

The existing shadows are 80m², and new shadows cast from elevated structures and noise walls are 62m². Therefore, there is additional overshadowing within the SPOS. The combined shadows result in a total of 142m², equivalent to 67% overshadowing to the SPOS. This requires further consultation and consent to be obtained from the affected landowner unless exceptional circumstances apply in accordance with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is more than 50% of SPOS.

50 Ibbottson Street - Maximum shadow assessed at 9am - Total SPOS 263m²

The existing shadows are 109m², and new shadows cast from elevated structures and noise walls are 46m². Therefore, there is additional overshadowing within the SPOS. The combined shadows result in a total of 142m², equivalent to 59% overshadowing to the SPOS. This requires further consultation and consent to be obtained from the affected landowner unless exceptional circumstances apply in accordance with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is more than 50% of SPOS.

48 Ibbottson Street - Maximum shadow assessed at 9am - Total SPOS 279m²

The existing shadows are 116m², and new shadows cast from elevated structures and noise walls are 80m². Therefore, there is additional overshadowing within the SPOS. The combined shadows result in a total of 196m², equivalent to 70% overshadowing to the SPOS. This requires further consultation and consent to be obtained from the affected landowner unless exceptional circumstances apply in accordance with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is more than 50% of SPOS.

46 Ibbottson Street - Maximum shadow assessed at 9am - Total SPOS 100m²

The existing shadows are 80m², and new shadows cast from elevated structures and noise walls are 26m². Therefore, there is additional overshadowing within the SPOS. The combined shadows result in a total of 103m², equivalent to 37% overshadowing to the SPOS. This complies with the requirements of EPR LP4, as the total percentage of SPOS directly affected by shadowing is less than 50% of SPOS.

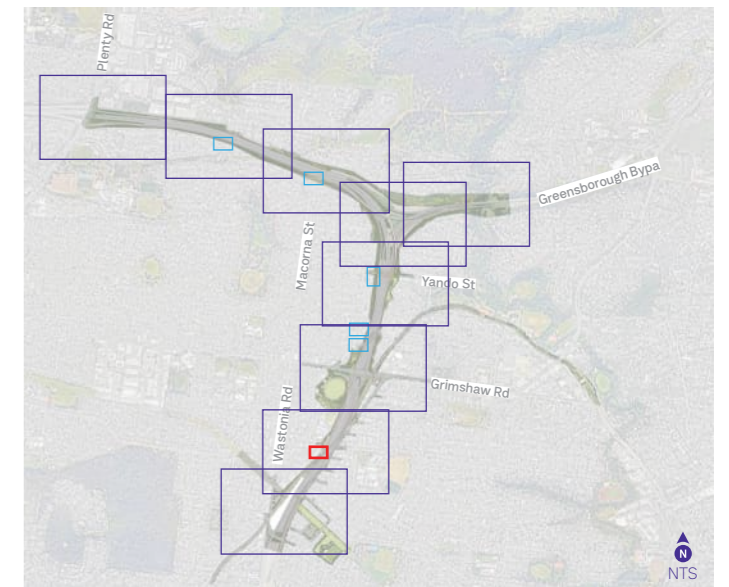
Overshadowing to properties can be seen in Figure 41, 42 and 43. Further detailed analysis of properties directly affected by more than 50% of SPOS can be seen in 8B for Detailed Analysis of 229 Nell Street West, 8C for Detailed Analysis of 50 Ibbottson Street, and 8D for Detailed Analysis of 48 Ibbottson Street.

Disclaimer Notes:

Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

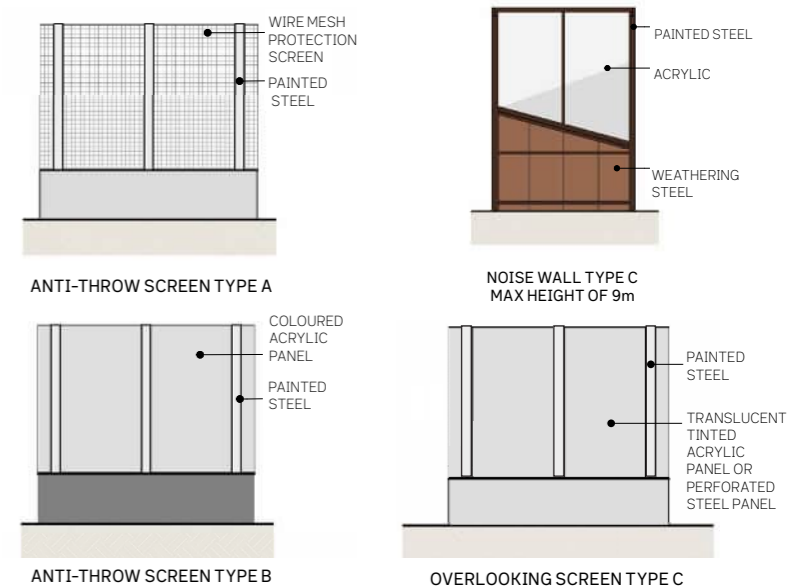
Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.



LEGEND

- PROJECT BOUNDARY
- SECLUDED PRIVATE OPEN SPACE (SPOS)
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- EXISTING BUILDING SHADOW
- PROPOSED SCREEN
- EXISTING FENCE LINE SHADOW
- PROPOSED NOISE WALL
- PROPOSED STRUCTURE SHADOW (SPOS)
- EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- INDICATIVE EXTENT OF OVERLOOKING SCREENING SHADOW
- 50 PROPERTY NUMBER
- OVERLOOKING SCREEN TYPE C



Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

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8B. Detailed Analysis: 229 Nell Street West

229 Nell Street West

The Detailed Analysis of 229 Nell Street West revealed that the total percentage of SPOS directly affected by shadowing is greater than 50% of the secluded private open space.

This requires further consultation and consent to be obtained from the affected landowner unless exceptional circumstances apply in accordance with the requirements of EPR LP4.

Indicative overshadowing has been identified with the use of overlooking screening Type C on bridge ramps. Ongoing consultation will inform the screening type used in this location. The use of anti-throw screen Type A or B would reduce overshadowing in this location.

Disclaimer Notes:

Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

LEGEND

- PROJECT BOUNDARY
- EXISTING BUILDING SHADOW
- PROPOSED STRUCTURE SHADOW
- SECLUDED PRIVATE OPEN SPACE (SPOS)
- EXISTING FENCE LINE SHADOW
- EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- PROPOSED NOISE WALL
- 50 PROPERTY NUMBER
- - - PROPOSED SCREEN
- - - INDICATIVE EXTENT OF OVERLOOKING SCREENING SHADOW

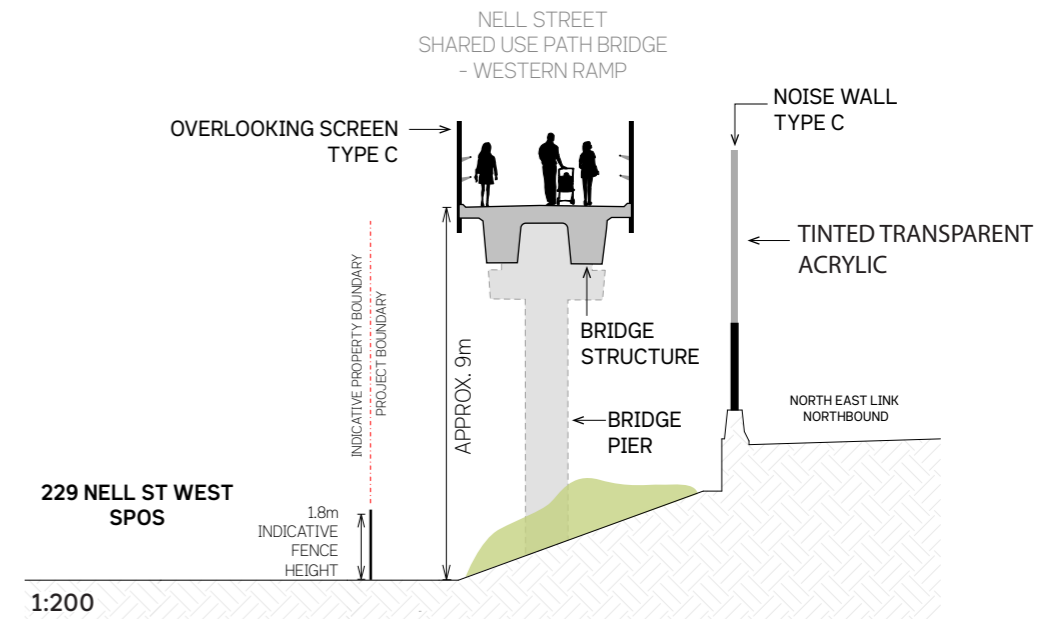


Figure 44: Detailed Analysis: Section A - Proposed architectural and structural elements adjacent to 229 Nell Street West

22nd September 9am (AEST)

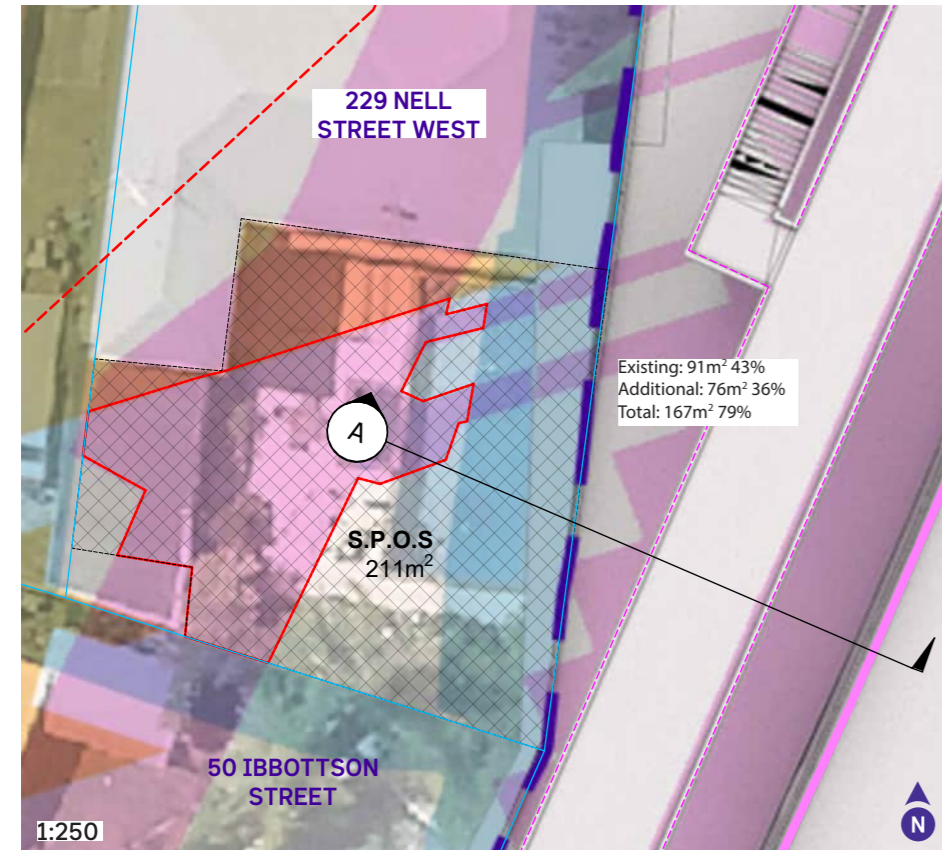


Figure 45: Detailed Analysis: 229 Nell Street West - 22nd September 9am (AEST)

22nd September 10am (AEST)

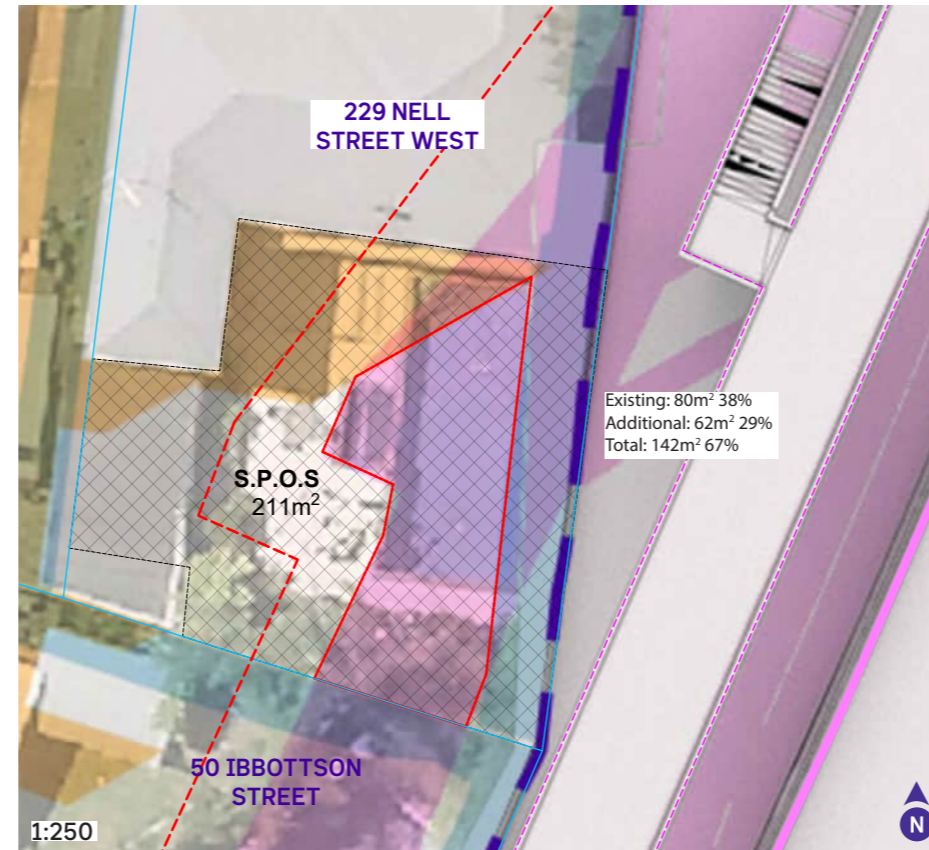


Figure 46: Detailed Analysis: 229 Nell Street West - 22nd September 10am (AEST)

22nd September 11am (AEST)

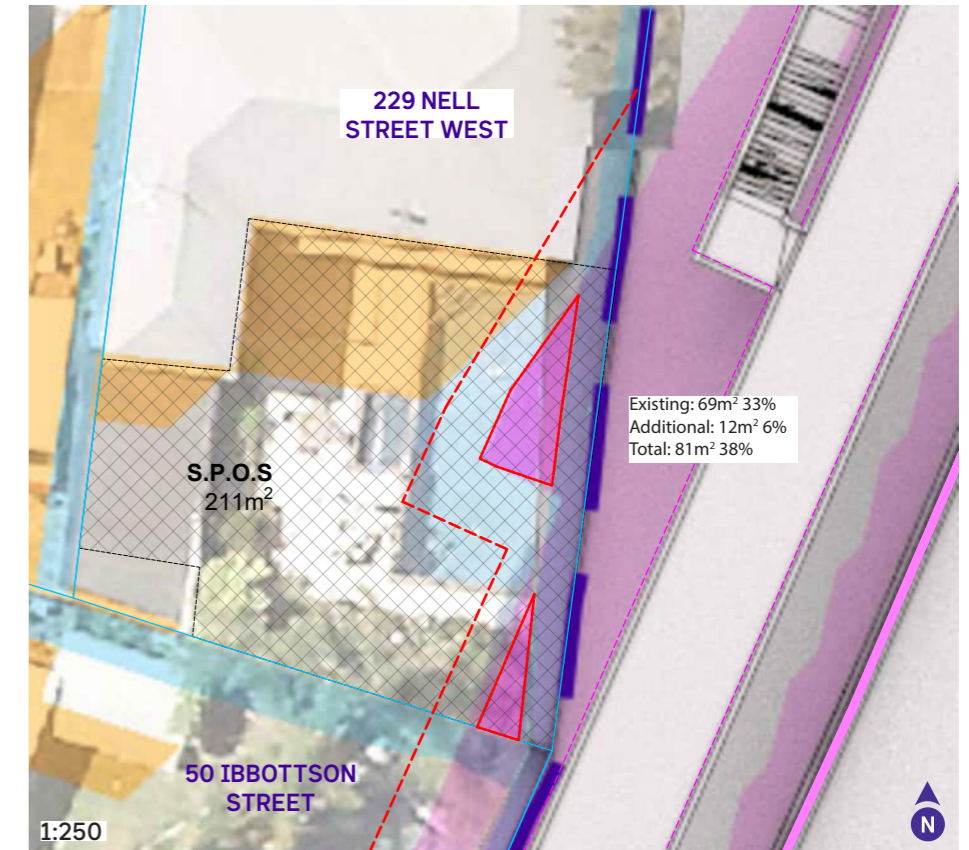


Figure 47: Detailed Analysis: 229 Nell Street West - 22nd September 11am (AEST)

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<p>NORTH EAST LINK PROGRAM</p> <p>ATTACHMENT 4: URBAN DESIGN OVERSHADOWING AND OVERLOOKING ASSESSMENT DETAILED ANALYSIS: 229 NELL STREET WEST</p>		<p>PROJECT CONTRACT: NORTH</p> <p>NELP DRAWING No.: NEL-NTH-NNA-3900-EPU-DRG-4018</p> <p>SUIT. CODE: 4</p> <p>REVISION: 4</p>																																	

Note: * Indicates signed documents as drawings will not have wet signatures.

8D. Detailed Analysis: 48 Ibbottson Street

48 Ibbottson Street

The Detailed Analysis of 48 Ibbottson Street revealed that the total percentage of SPOS directly affected by shadowing is greater than 50% of the secluded private open space.

This requires further consultation and consent to be obtained from the affected landowner unless exceptional circumstances apply in accordance with the requirements of EPR LP4.

Indicative overshadowing has been identified with the use of overlooking screening Type C on bridge ramps. Ongoing consultation will inform the screening type used in this location. The use of anti-throw screen Type A or B would reduce overshadowing in this location.

Disclaimer Notes:

Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overshadowing diagrams have been drafted for the purposes of depicting shadowing effects from major built structures and therefore do not illustrate shadows cast from minor elements including trees, gantries, light poles and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties.

Shadow analysis has been developed based on a reduction in overall noise wall and screen heights as far as practicable and include the use of tinted transparent acrylic to minimise overshadowing. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

LEGEND

- PROJECT BOUNDARY
- EXISTING BUILDING SHADOW
- PROPOSED STRUCTURE SHADOW
- SECLUDED PRIVATE OPEN SPACE (SPOS)
- EXISTING FENCE LINE SHADOW
- EXTENT OF ADDITIONAL OVERSHADOWING INTO SPOS
- EXISTING FENCE LINE (INDICATIVE 1.8m HIGH)
- PROPOSED NOISE WALL
- INDICATIVE EXTENT OF OVERLOOKING SCREENING SHADOW
- PROPOSED SCREEN
- 50 PROPERTY NUMBER

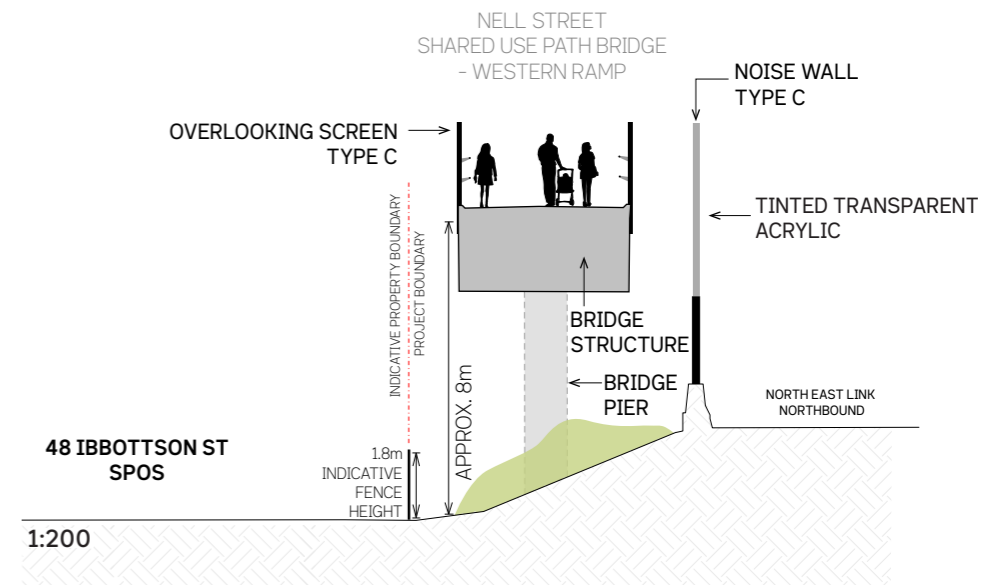


Figure 52: Detailed Analysis: Section C - Proposed architectural and structural elements adjacent to 48 Ibbottson Street



Figure 53: Detailed Analysis: 48 Ibbottson Street - 22nd September 9:00am (AEST)

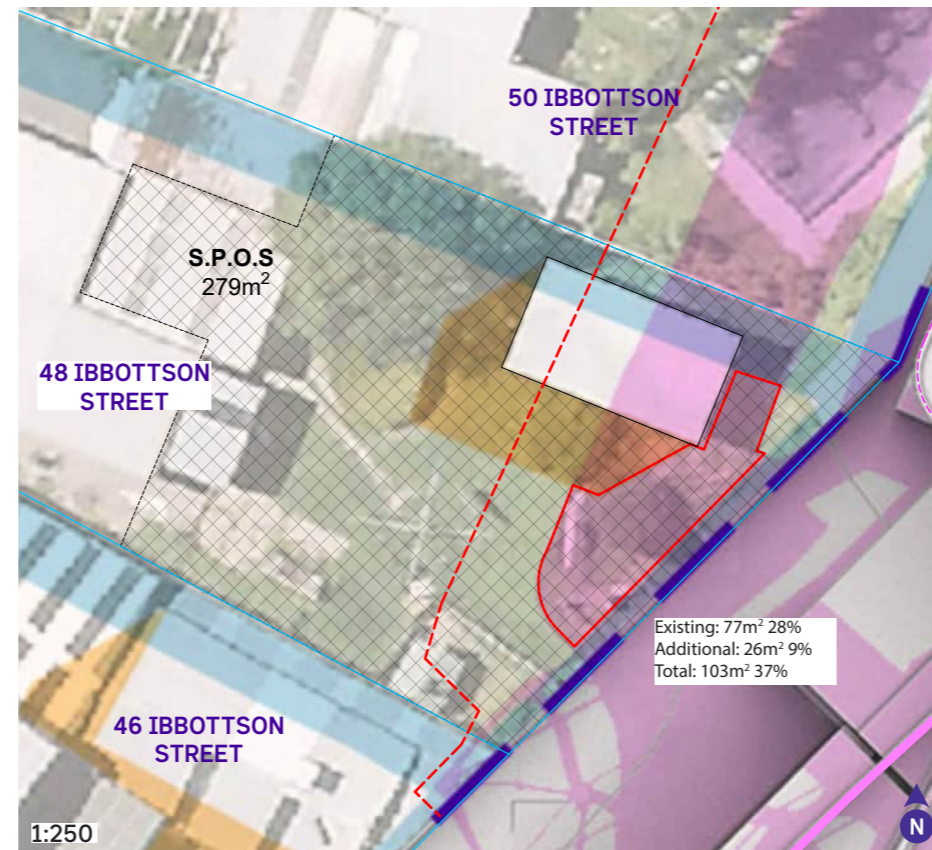


Figure 54: Detailed Analysis: 48 Ibbottson Street - 22nd September 10:00am (AEST)

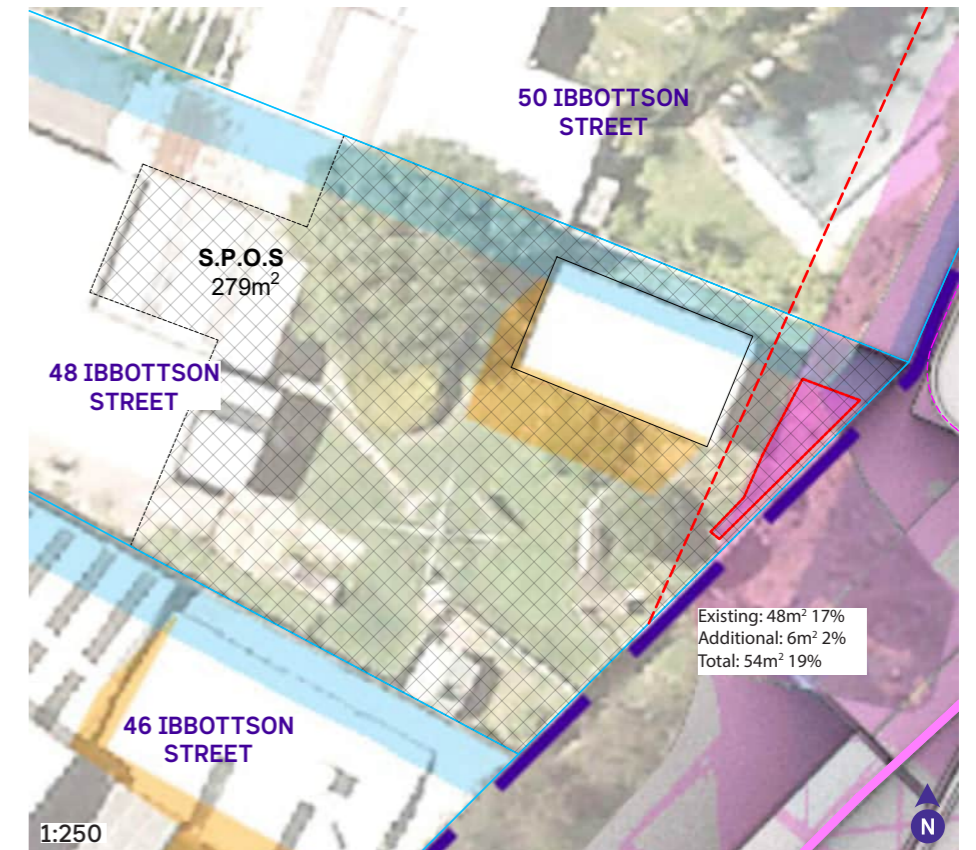



Figure 55: Detailed Analysis: 48 Ibbottson Street - 22nd September 11:00am (AEST)

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DRAFTING CHECKED BY: R. HORE-WATERHOUSE 02.08.2024 DESIGNED BY: L. ORJALO 02.08.2024 ENGINEERING CHECKED BY: R. LEWIS 02.08.2024 VERIFIED BY: L. EVANS 02.08.2024 APPROVED BY: Z. CVITKOVIC 02.08.2024		NELP DISCLAIMER Conditions of Use: This Document has been developed for the purposes of the North East Link Project. Recipients of this document: - are subject to obligations of confidentiality in relation to this document; and - may not rely upon the information contained in this document, and must rely absolutely on their own opinion and professional advice.			
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Overlooking Assessment

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			R. HORE-WATERHOUSE	02.08.2024	Conditions of Use: This Document has been developed for the purposes of the North East Link Project. Recipients of this document: - are subject to obligations of confidentiality in relation to this document; and - may not rely upon the information contained in this document, and must rely absolutely on their own opinion and professional advice.			READY FOR ISSUE <input type="checkbox"/> INITIAL DATE						
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Drawing Number	Location
10	Focused Analysis: Macorna Street Shared Use Path Bridge - Northern Ramp Overlooking Analysis
11	Focused Analysis: Macorna Street Shared Use Path Bridge - Southern Ramp Overlooking Analysis
12	Focused Analysis: Kempston Street Shared Use Path Bridge - Overlooking Analysis
13	Focused Analysis: Nell Street Shared Use Path Bridge - North Western Ramp Overlooking Analysis
14	Focused Analysis: Nell Street Shared Use Path Bridge - Western Ramp Overlooking Analysis
15	Focused Analysis: Nell Street Shared Use Path Bridge - Eastern Ramp Overlooking Analysis

Figure 59: Site Overall Plan - Overlooking

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VERIFIED BY		L. EVANS		02.08.2024					NEL-NTH-NNA-3900-EPU-DRG-4023
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Note: * Indicates signed documents as drawings will not have wet signatures.

10. Focused Analysis: Macorna Street Shared Use Path Bridge - Northern Ramp Overlooking Analysis

10.1 Overlooking Analysis

Focused analysis of the Macorna Street shared use path northern ramp shows properties on Killarney Ridge and Eastgate Drive may be directly affected by overlooking into SPOS as shown in Figure 60 and 61.

Properties require overlooking mitigation from the proposed shared use path ramp to be undertaken in consultation with property owners.

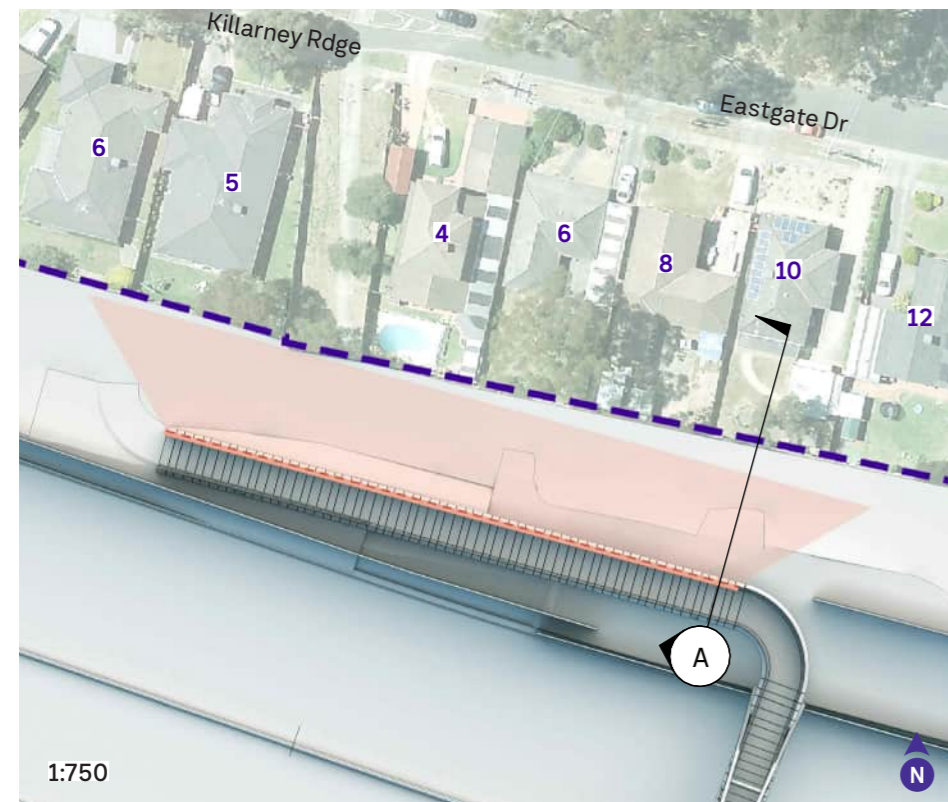


Figure 60: Focus Analysis: Macorna Street Shared Use Path Bridge - Northern Ramp Overlooking Analysis Plan

10.2 Mitigation Measures

The following mitigation measures will be applied to minimise possible overlooking into SPOS and habitable room windows at Macorna Street shared use path bridge northern ramp:

- Maximising bridge setback from adjacent properties
- Consultation with directly affected properties to inform the detailed design of screening types, materials, and level of visually permeability.

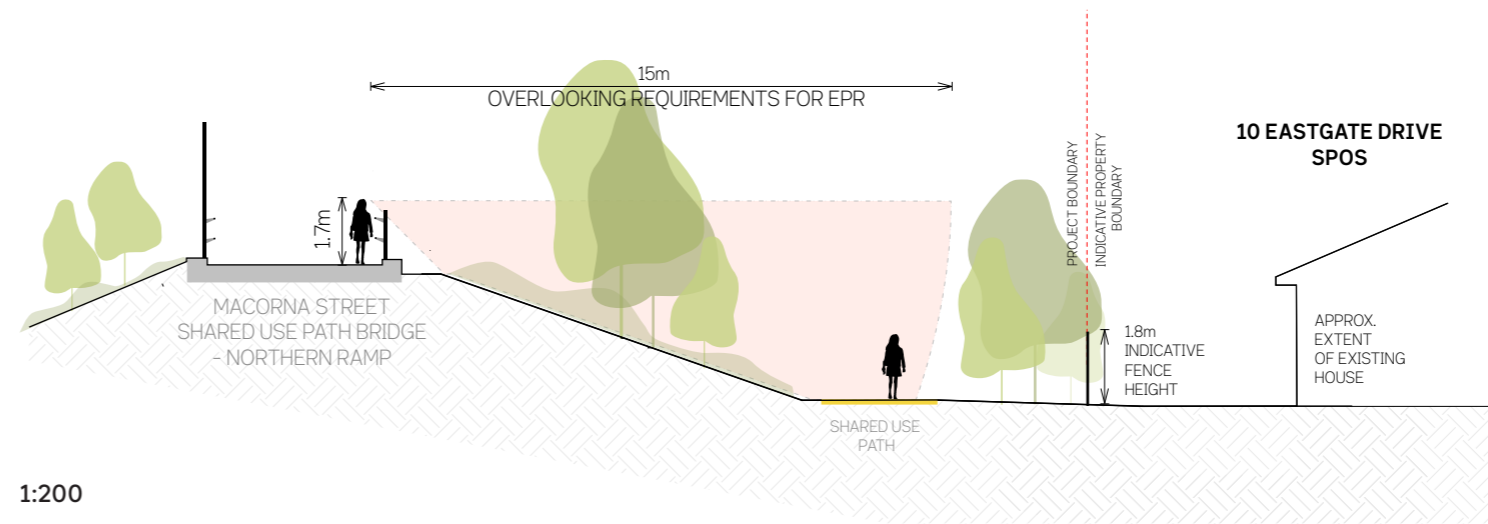


Figure 61: Focus Analysis: Macorna Street Shared Use Path Bridge - Northern Ramp Overlooking Analysis Section

LEGEND

 15m OVERLOOKING REQUIREMENT FOR EPR	 50 PROPERTY NUMBER	 PROJECT BOUNDARY
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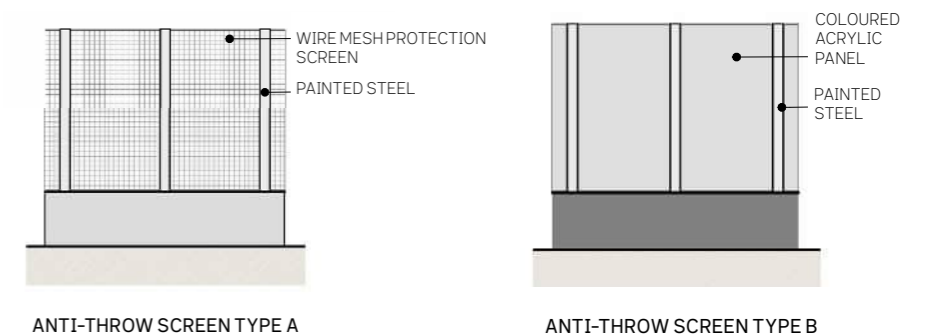
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Disclaimer Notes:

Overlooking diagrams have been drafted for the purposes of depicting overlooking effects from elevated structures, in particular those within a distance of 15 metres of SPOS and habitable room windows of residential properties. Therefore, these do not illustrate overlooking from minor elements including gantries and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.



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11. Focused Analysis: Macorna Street Shared Use Path Bridge - Southern Ramp Overlooking Analysis

11.1 Overlooking Analysis

Focused analysis of Macorna Street shared use path southern ramp, shows overlooking to the SPOS of properties located at 143 and 145 Macorna Street following the application of throw screen Type A or B as shown in Figures 62 and 63.

Properties require overlooking mitigation from the proposed shared use path ramp to be undertaken in consultation with property owners.

11.2 Mitigation Measures

Proposed mitigation measures at Macorna Street shared use path bridge southern ramp include:

- Maximising bridge setback from adjacent properties
- Application of overlooking screen Type C as shown in Figure 64
- Consultation with directly affected properties as required to inform the detailed design of screening types, materials, and level of visually permeability.

Based on the analysis undertaken, this focused area is compliant with the overlooking requirements of EPR LP4.

Disclaimer Notes:

Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overlooking diagrams have been drafted for the purposes of depicting overlooking effects from elevated structures, in particular those within a distance of 15 metres of SPOS and habitable room windows of residential properties. Therefore, these do not illustrate overlooking from minor elements including gantries and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

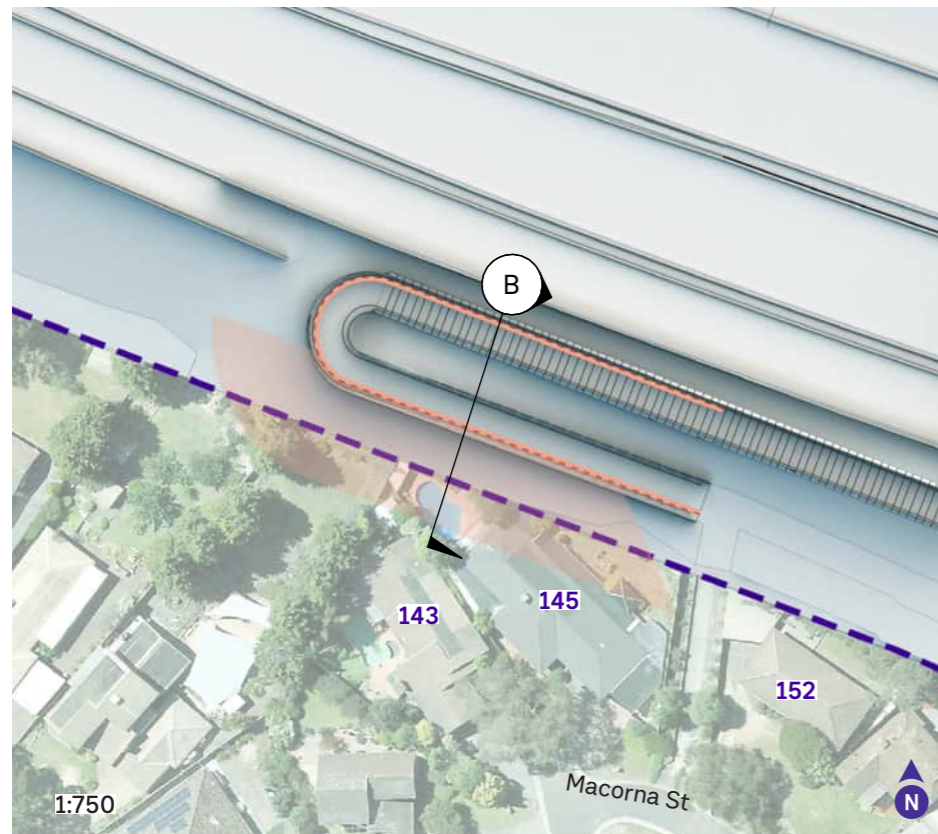


Figure 62: Focus Analysis: Macorna Street Shared Use Path Bridge - Southern Ramp Overlooking Analysis Plan - throw Screen Type A or B application (no overlooking mitigation)

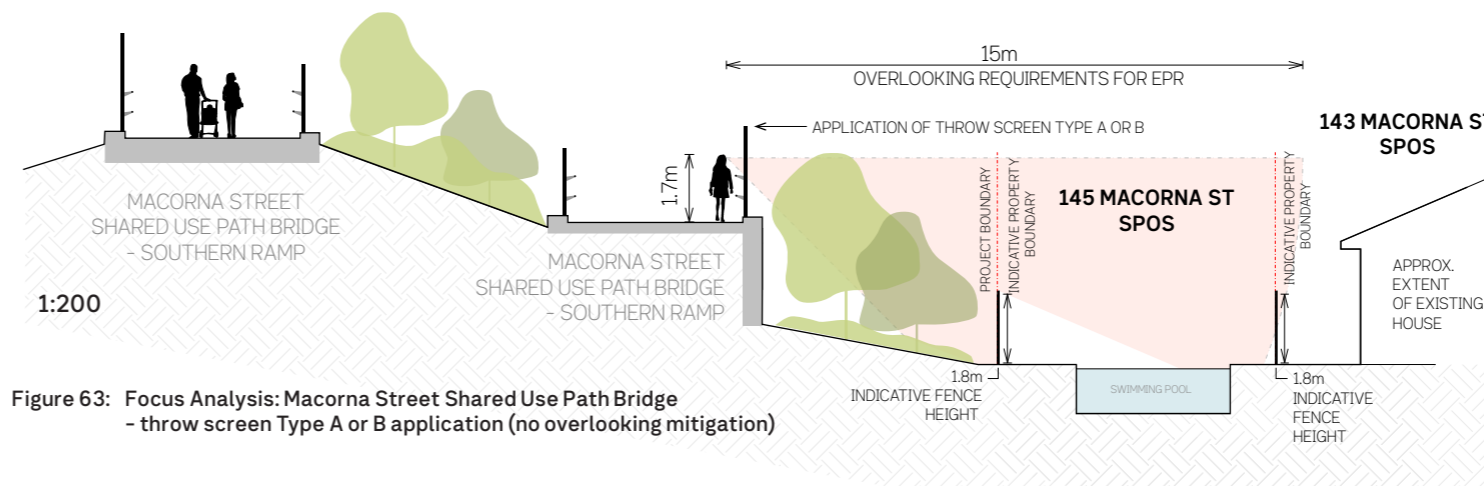


Figure 63: Focus Analysis: Macorna Street Shared Use Path Bridge - throw screen Type A or B application (no overlooking mitigation)

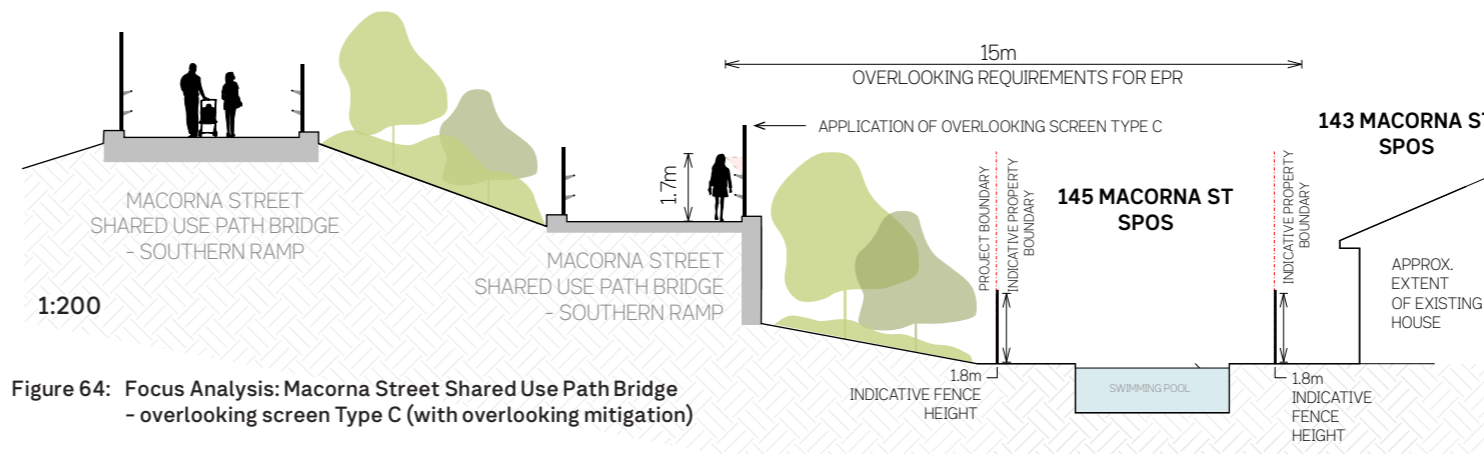
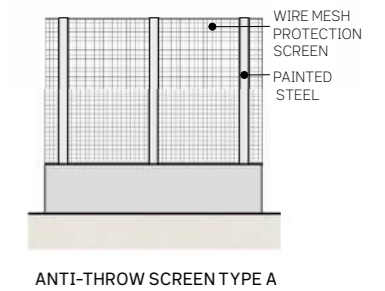
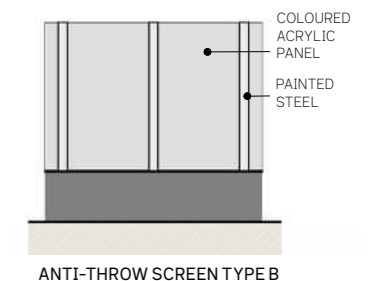


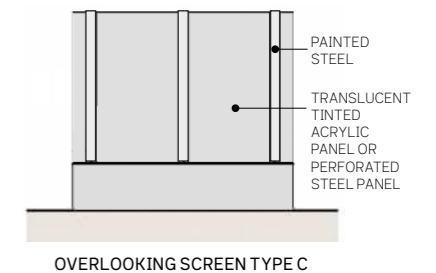
Figure 64: Focus Analysis: Macorna Street Shared Use Path Bridge - overlooking screen Type C (with overlooking mitigation)



ANTI-THROW SCREEN TYPE A



ANTI-THROW SCREEN TYPE B



OVERLOOKING SCREEN TYPE C

LEGEND
 15m OVERLOOKING REQUIREMENT FOR EPR
 50 PROPERTY NUMBER
 --- PROJECT BOUNDARY

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12. Focused Analysis: Kempston Street Shared Use Path Bridge - Overlooking Analysis

12.1 Overlooking Analysis

Focused analysis of the Kempston Street shared use path, shows overlooking to the SPOS of properties located at 1 Hamlet Street and 23 and 25 Kempston Street following the application of throw screen Type A or B as shown in Figures 65, 66 and 67.

Properties require overlooking mitigation from the proposed shared use path ramp to be undertaken in consultation with property owners.

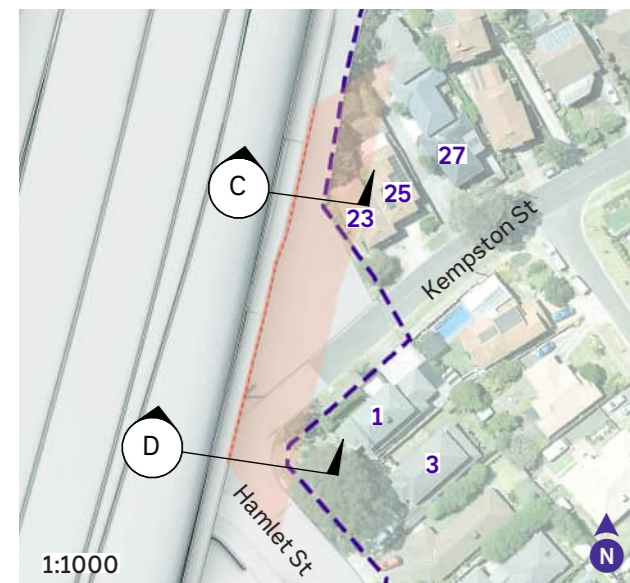


Figure 65: Focus Analysis: Kempston Street Shared Use Path Bridge - Overlooking Analysis Plan - throw screen Type A or B application (no overlooking mitigation)

12.2 Mitigation Measures

Proposed mitigation measures at the Kempston Street shared use path bridge include:

- Maximising bridge setback from adjacent properties
- Application of overlooking screen Type C as shown in Figure 68 and 69
- Consultation with properties as required to inform the detailed design of screening types, materials, and level of visually permeability.

Based on the analysis undertaken, this focused area is compliant with the overlooking requirements of EPR LP4.

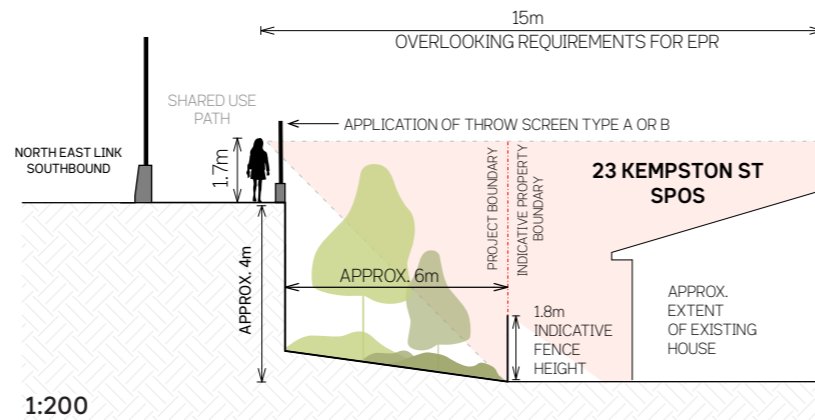


Figure 66: Focus Analysis: Kempston Street Shared Use Path Bridge - Overlooking Analysis Section C - throw screen Type A or B application (no overlooking mitigation)

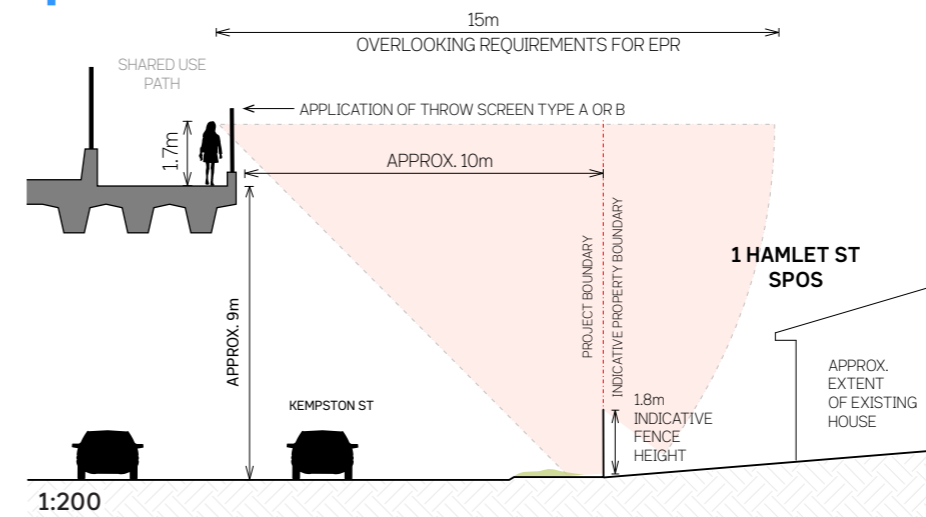


Figure 67: Focus Analysis: Kempston Street Shared Use Path Bridge - Overlooking Analysis Section D - throw screen Type A or B application (no overlooking mitigation)

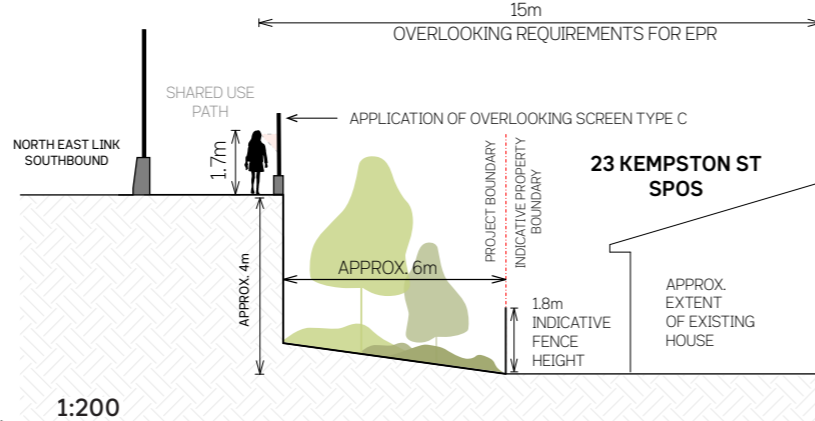


Figure 68: Focus Analysis: Kempston Street Shared Use Path Bridge - Overlooking Analysis Section C - overlooking screen Type C application (with overlooking mitigation)

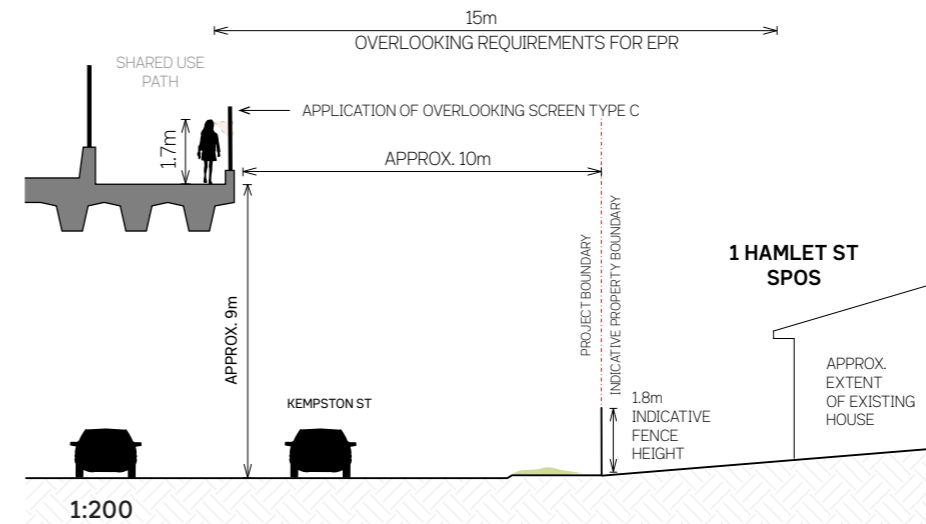


Figure 69: Focus Analysis: Kempston Street Shared Use Path Bridge - Overlooking Analysis Section D - overlooking screen Type C application (with overlooking mitigation)

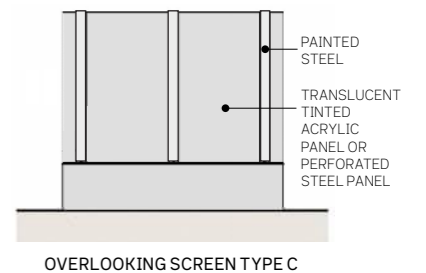
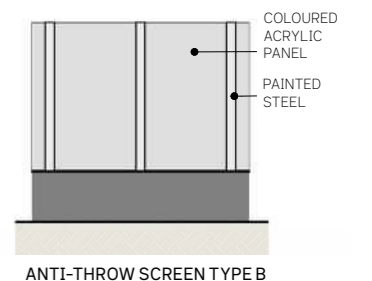
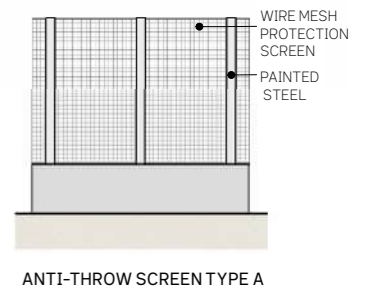
Disclaimer Notes:

Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overlooking diagrams have been drafted for the purposes of depicting overlooking effects from elevated structures, in particular those within a distance of 15 metres of SPOS and habitable room windows of residential properties. Therefore, these do not illustrate overlooking from minor elements including gantries and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.



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13. Focused Analysis: Nell Street Shared Use Path Bridge - North Western Ramp Overlooking Analysis

13.1 Overlooking Analysis

Focused analysis of Nell Street shared use path bridge north-western ramp shows overlooking to the Watsonia Primary School following the application of throw screen Type A or B as shown in Figures 70 and 71.

Watsonia Primary School is considered a sensitive receptor, and mitigation measures are proposed for the shared-use path ramp. These measures will be informed through consultation with the school.

13.2 Mitigation Measures

Proposed mitigation measures at the Nell Street shared use path bridge north-western ramp include:

- Maximising bridge setback from adjacent properties
- Application of overlooking screen Type C as shown in Figure 72
- Consultation with directly affected properties as required to inform the detailed design of screening types, materials, and level of visually permeability.

Based on the analysis undertaken, this focused area is compliant with the overlooking requirements of EPR LP4.

Disclaimer Notes:

Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overlooking diagrams have been drafted for the purposes of depicting overlooking effects from elevated structures, in particular those within a distance of 15 metres of SPOS and habitable room windows of residential properties. Therefore, these do not illustrate overlooking from minor elements including gantries and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

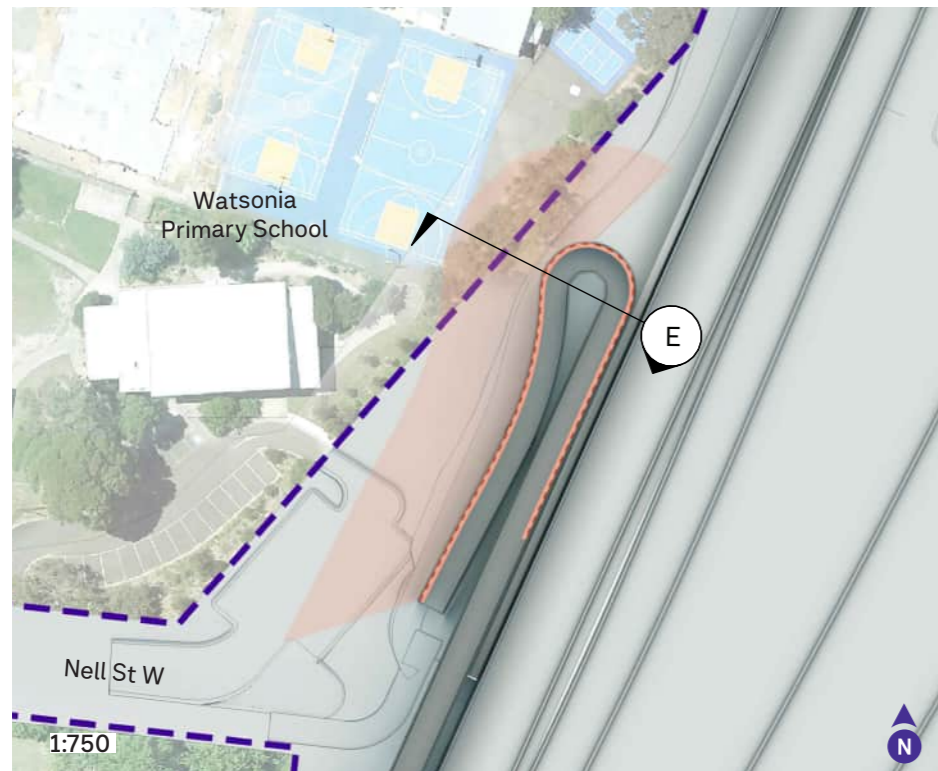


Figure 70: Focus Analysis: Nell Street Shared Use Path Bridge - North Western Ramp Overlooking Analysis Plan - throw screen Type A or B application (no overlooking mitigation)

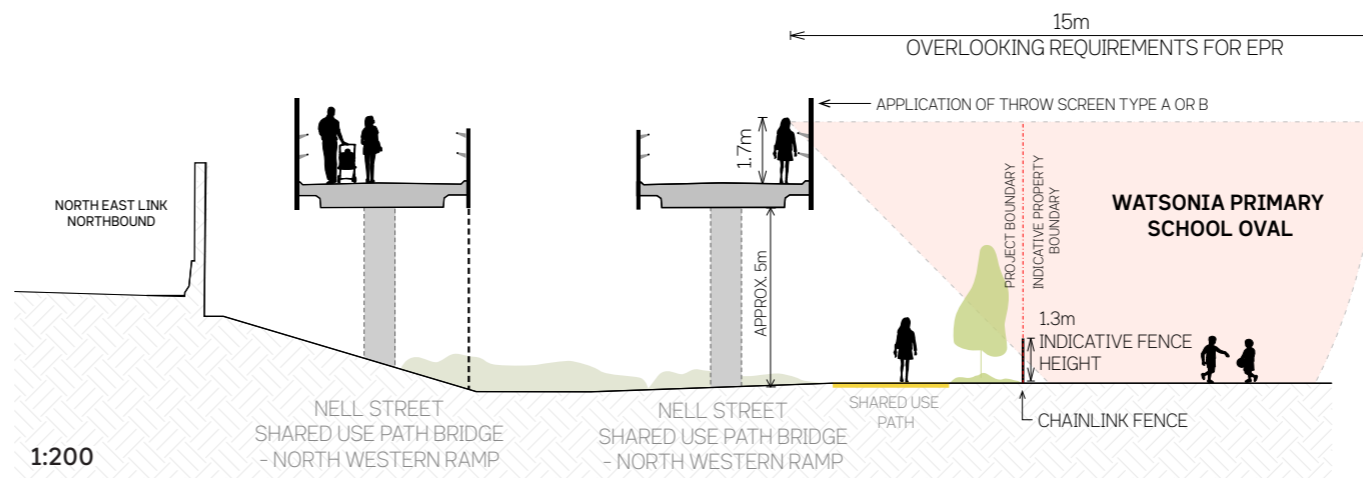


Figure 71: Focus Analysis: Macorna Street Shared Use Path Bridge - North Western Ramp Overlooking Analysis Section E - throw screen Type A or B application (no overlooking mitigation)

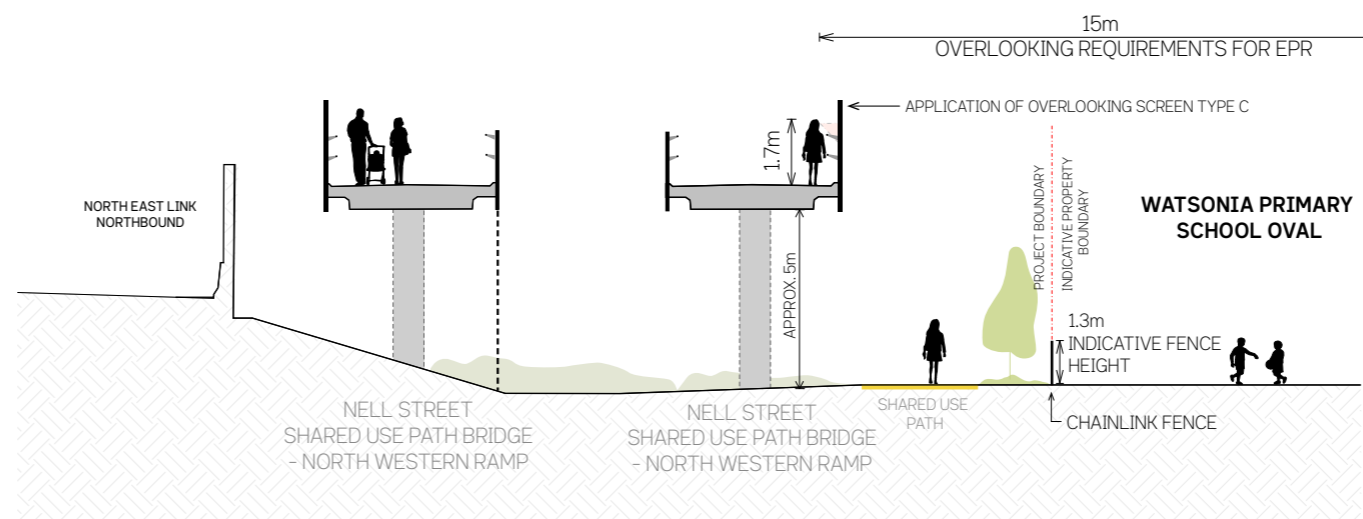
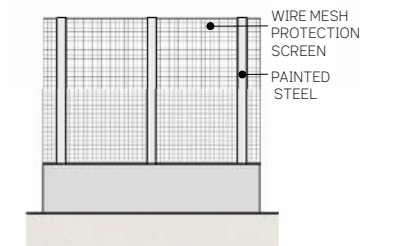
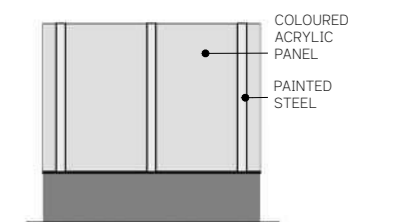


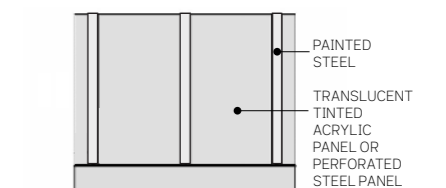
Figure 72: Focus Analysis: Macorna Street Shared Use Path Bridge - North Western Ramp Overlooking Analysis Section E - overlooking screen Type C application (with overlooking mitigation)



ANTI-THROW SCREEN TYPE A



ANTI-THROW SCREEN TYPE B



OVERLOOKING SCREEN TYPE C

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14. Focused Analysis: Nell Street Shared Use Path Bridge - Western Ramp Overlooking Analysis

14.1 Overlooking Analysis

Focused analysis of the Nell Street shared use path bridge western ramp shows overlooking to the SPOS of properties located at 229 Nell Street West and 50 and 48 Ibbottson Street following the application of throw screen Type A or B as shown in Figures 73 and 74.

Properties require overlooking mitigation from the proposed shared use path ramp to be undertaken in consultation with property owners.

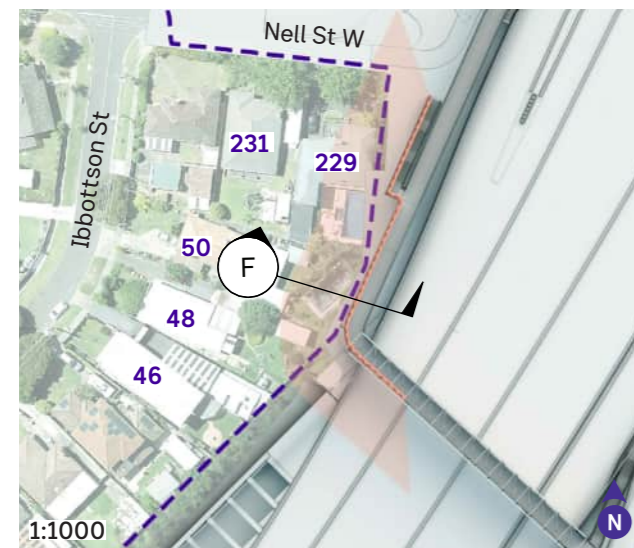


Figure 73: Focus Analysis: Nell Street Shared Use Path Bridge - Western Ramp Overlooking Analysis Plan - throw screen Type A or B application (no overlooking mitigation)

14.2 Mitigation Measures

Proposed mitigation measures at the Nell Street shared use path bridge western ramp includes:

- Application of overlooking screen Type C as shown in Figure 75
- Consultation with properties as required to inform the detailed design of screening types, materials, and level of visually permeability.

Based on the analysis undertaken, this focused area is compliant with the overlooking requirements of EPR LP4.

Disclaimer Notes:

Overlooking screen Type C materials and extent of application are to be finalised in design development phase in consultation with directly affected properties to achieve compliance with the requirements of EPR LP4.

Overlooking diagrams have been drafted for the purposes of depicting overlooking effects from elevated structures, in particular those within a distance of 15 metres of SPOS and habitable room windows of residential properties. Therefore, these do not illustrate overlooking from minor elements including gantries and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

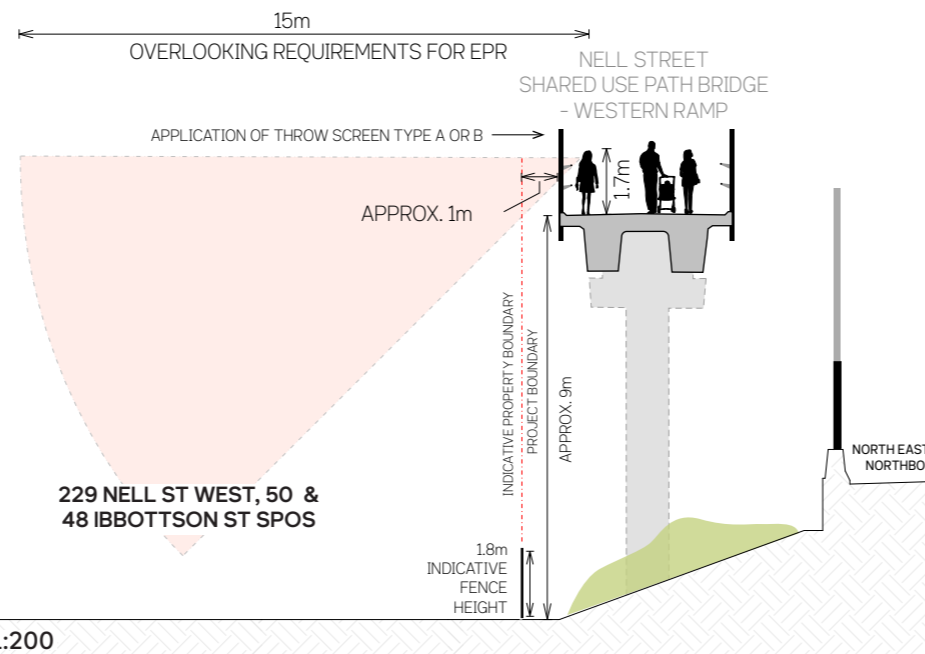


Figure 74: Focus Analysis: Nell Street Shared Use Path Bridge - Western Ramp Overlooking Analysis Section F - throw screen Type A or B application (no overlooking mitigation)

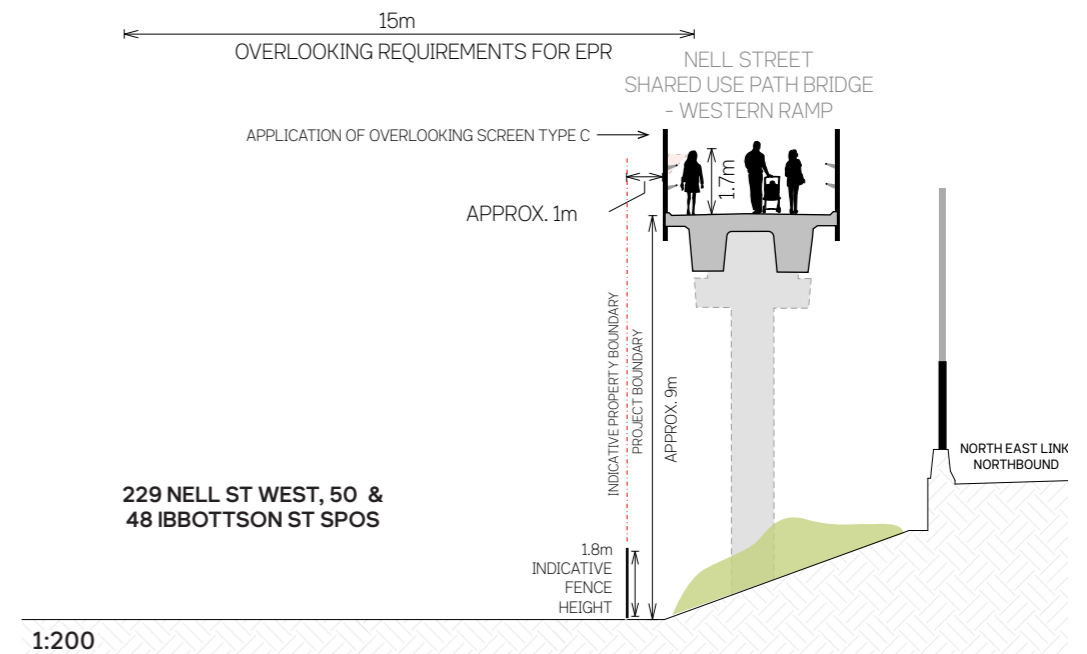
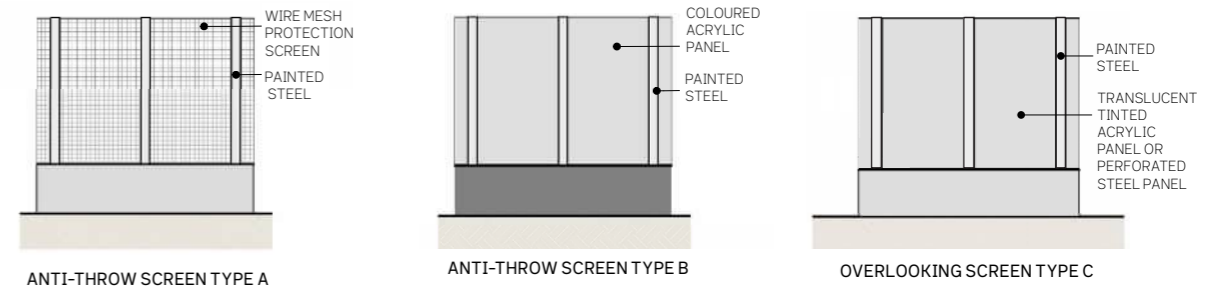


Figure 75: Focus Analysis: Nell Street Shared Use Path Bridge - Western Ramp Overlooking Analysis Section F - overlooking screen Type C application (with overlooking mitigation)

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15. Focused Analysis: Nell Street Shared Use Path Bridge - Eastern Ramp Overlooking Analysis

15.1 Overlooking Analysis

Focused analysis of the Nell Street shared use path bridge eastern ramp shows overlooking to properties at 460 and 462 Greensborough Road following the application of throw screen Type A or B as shown in Figures 76 and 77.

Properties require overlooking mitigation from the proposed shared use path ramp to be undertaken in consultation with property owners.

15.2 Mitigation Measures

Proposed mitigation measures at the Nell Street shared use path bridge eastern ramp include:

- Maximising bridge setback from adjacent properties
- Application of overlooking screen Type C as shown in Figure 78
- Consultation with directly affected properties as required to inform the detailed design of screening types, materials, and level of visually permeability.

Based on the analysis undertaken, this focused area is compliant with the overlooking requirements of EPR LP4.

Disclaimer Notes:

Overlooking diagrams have been drafted for the purposes of depicting overlooking effects from elevated structures, in particular those within a distance of 15 metres of SPOS and habitable room windows of residential properties. Therefore, these do not illustrate overlooking from minor elements including gantries and low height retaining walls.

This analysis is subject to site surveys which are to be undertaken during the design development phase of the Project. Surveys will be used to verify site information including the location of existing buildings and associated SPOS, heights of existing fences, site levels and habitable room windows. Following development of detailed surveys, additional overlooking assessments will be undertaken and will inform consultation with relevant directly affected properties. The final design may vary pending ongoing engineering advice, acoustic noise wall modelling, design development and consultation.

Refer to UDLP Attachment 1: Architecture and Urban Design for current proposed noise wall and screen designs.

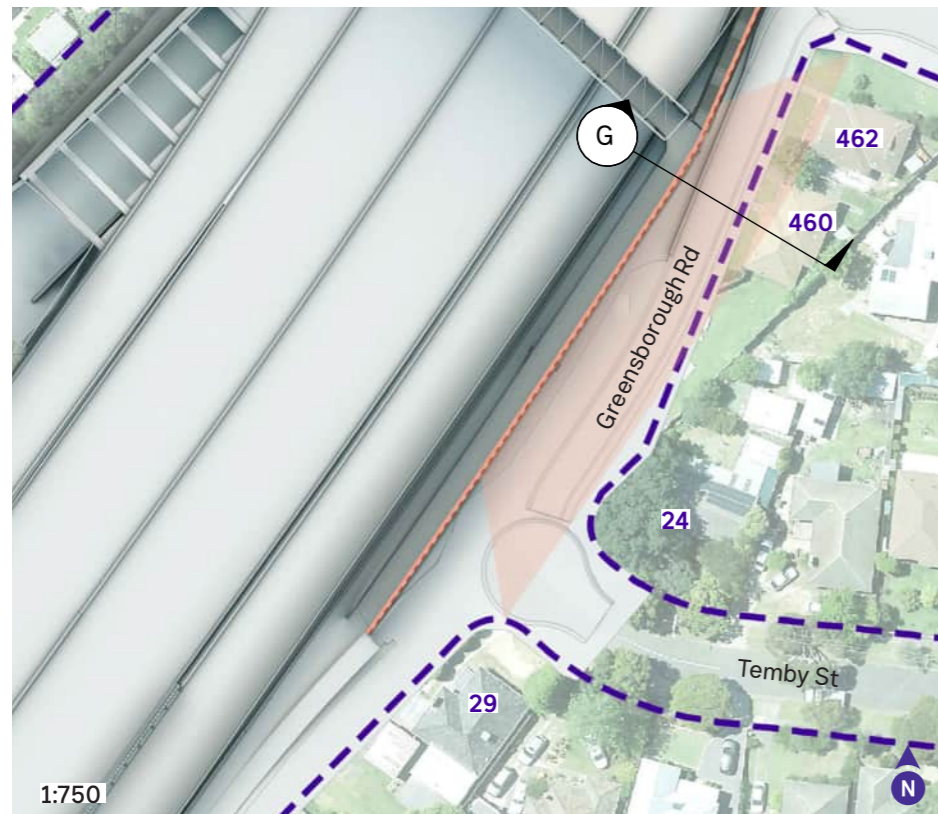


Figure 76: Focus Analysis: Nell Street Shared Use Path Bridge - Eastern Ramp Overlooking Analysis Plan - throw screen Type A or B application (no overlooking mitigation)

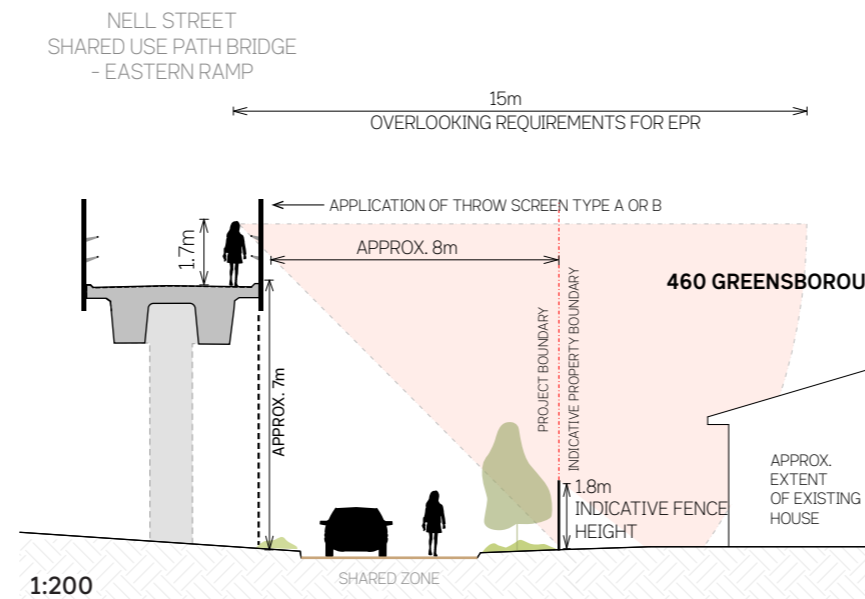


Figure 77: Focus Analysis: Nell Street Shared Use Path Bridge - Eastern Ramp Overlooking Analysis Section G - throw screen Type A or B application (no overlooking mitigation)

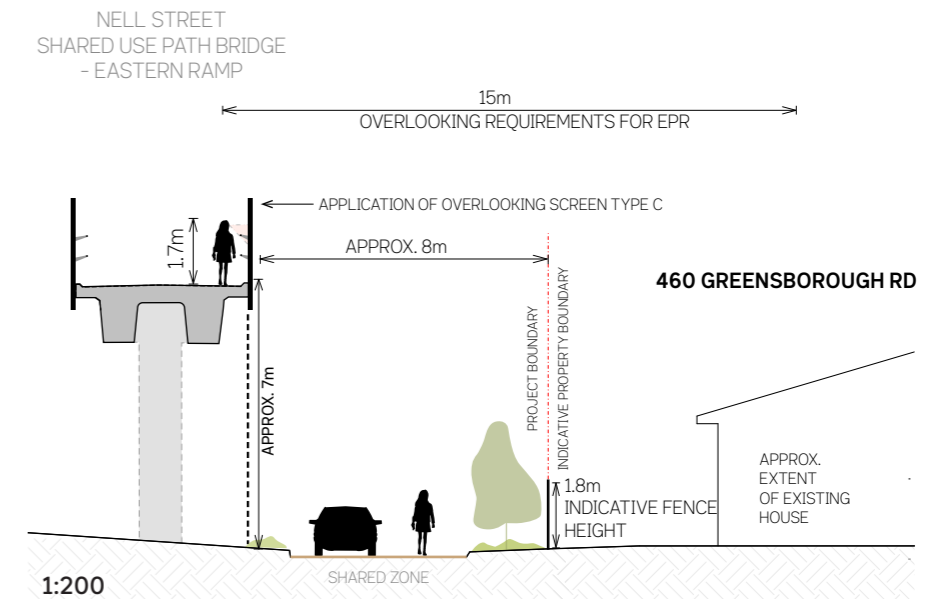
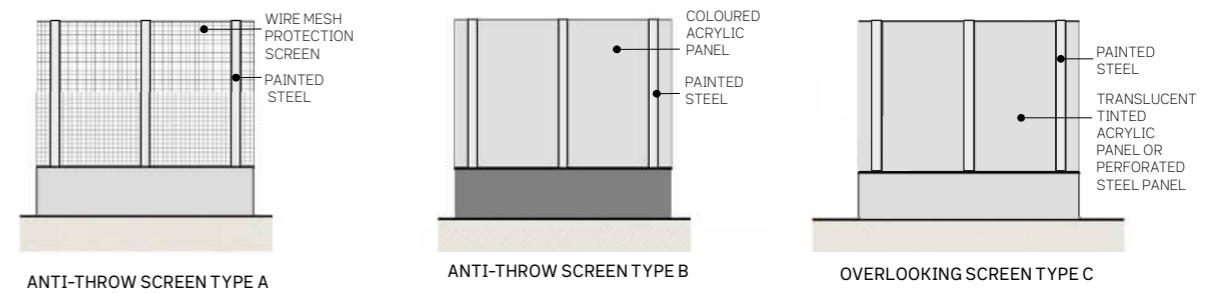


Figure 78: Focus Analysis: Nell Street Shared Use Path Bridge - Eastern Ramp Overlooking Analysis Section G - overlooking screen Type C application (with overlooking mitigation)

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