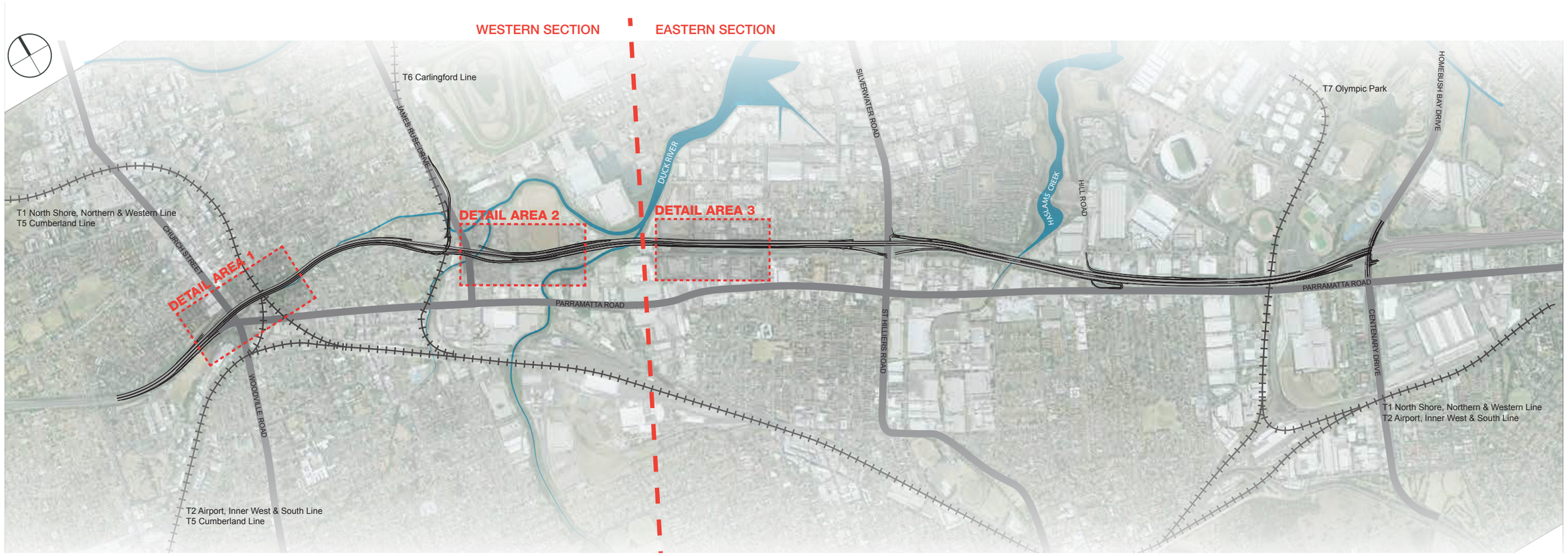
8.0 CONCEPT DESIGN DETAILED AREAS

This chapter pinpoints key areas and components along the proposal site where further urban design work has been undertaken at a detailed scale. In assessing the overall proposal the site has been split between the western and eastern sections, based upon the spatial setting of the motorway.



location plan for detailed areas

Figure 8.1 Location Plan for detailed areas

8.1 THE WESTERN SECTION

The western section of the proposal is mainly comprised of a viaduct structure extending from Church Street to Duck River, east of James Ruse Drive. This emulates the existing situation, hence the urban design within this section focuses in particular on built form elements, vegetative screening opportunities, creek rejuvenation strategies and urban renewal strategies.

DETAIL PLAN SHEET 1- CHURCH STREET/A'BECKETT CREEK AREA

Key urban design elements incorporated in the plan include:

- New viaduct will be sited to minimise impacts upon the creek/channel.
- Planting restoration works to affected areas of A'Beckett Creek and channel to re-establish the original riparian species to enhance biodiversity and improve aesthetics of the area.
- Implementing strong tree planting each side of the viaducts at Church Street to assist in creating a stronger entrance to Church Street, as entrance to Parramatta.
- Opportunity to explore possibilities of creating gentler batter slopes to creek and channel where possible to enable vegetation to establish successfully.
- Integrating planting of hardy native grasses and low shrubs to the edges of viaducts, where feasible.

WestConnex

DETAIL PLAN SHEET 1

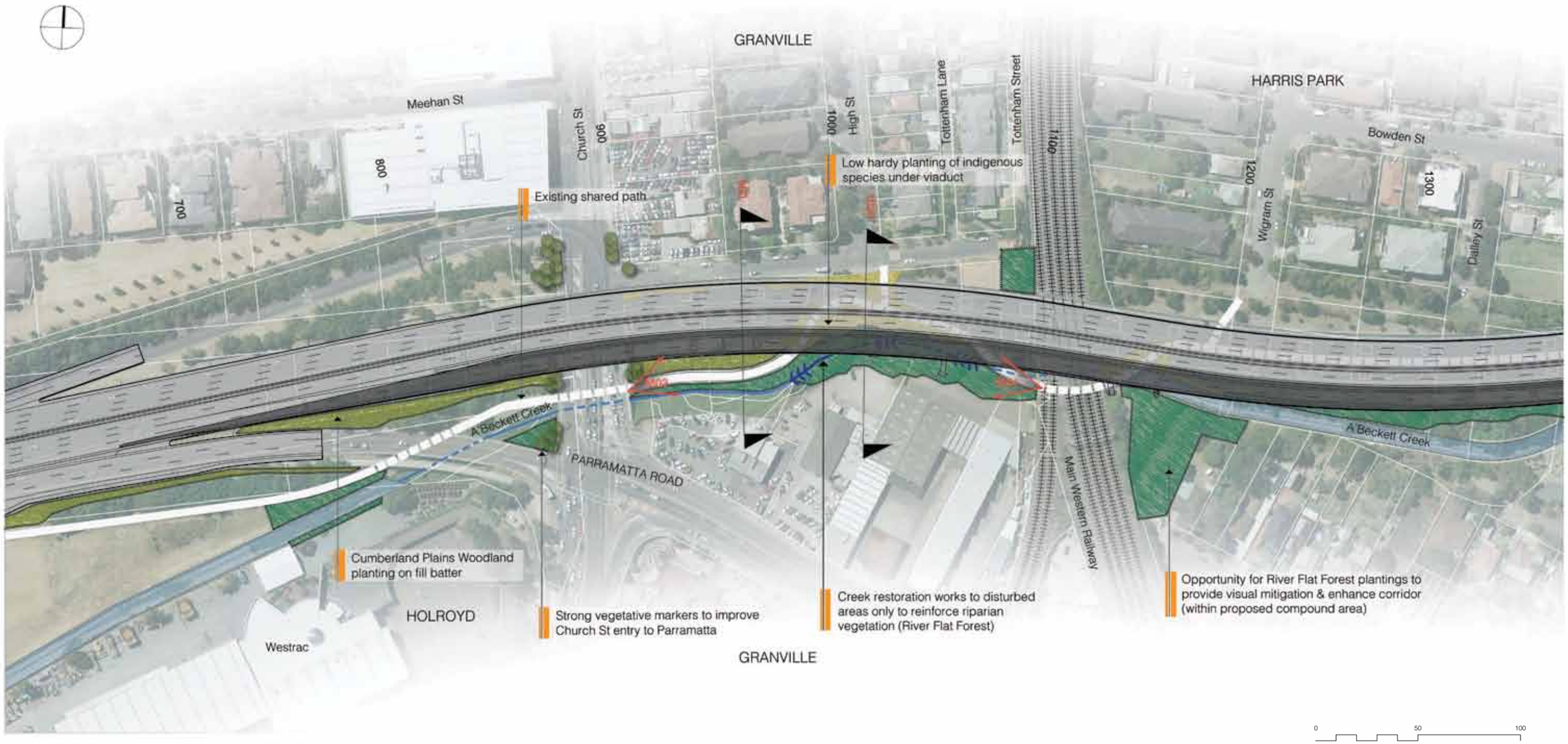


Figure 8.2 Detail Plan - Sheet 1

Building for the future

Transport WestConnex Delivery Authority

SECTION - CH 960

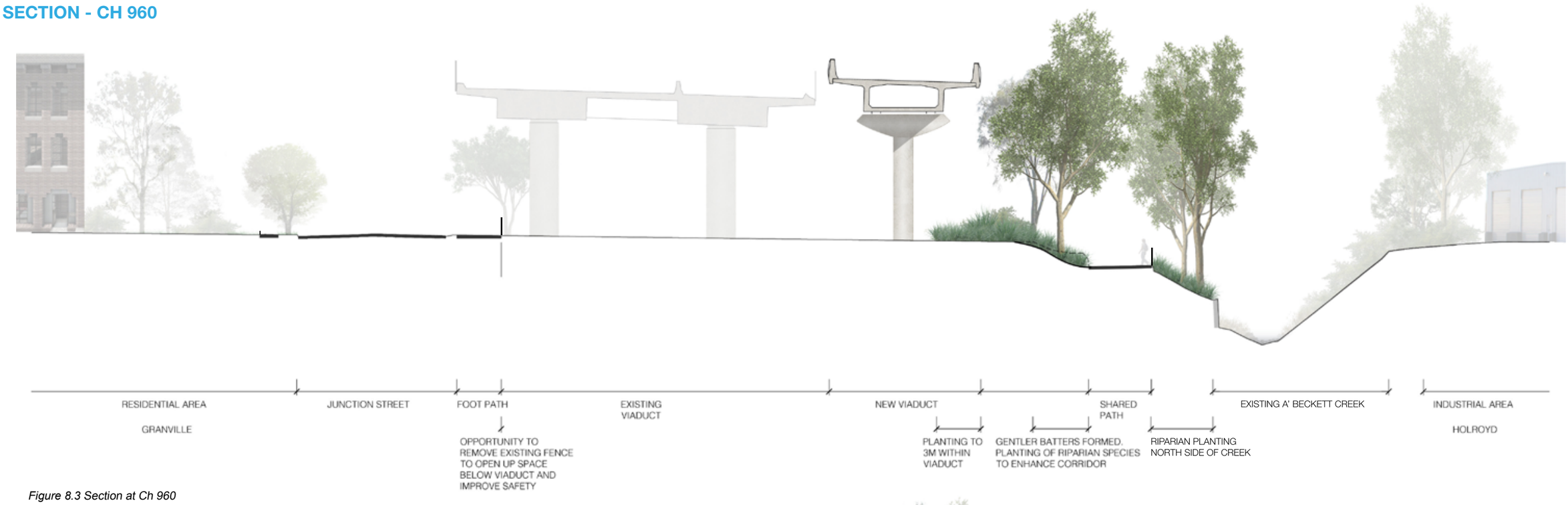


Figure 8.3 Section at Ch 960

SECTION - CH 1020

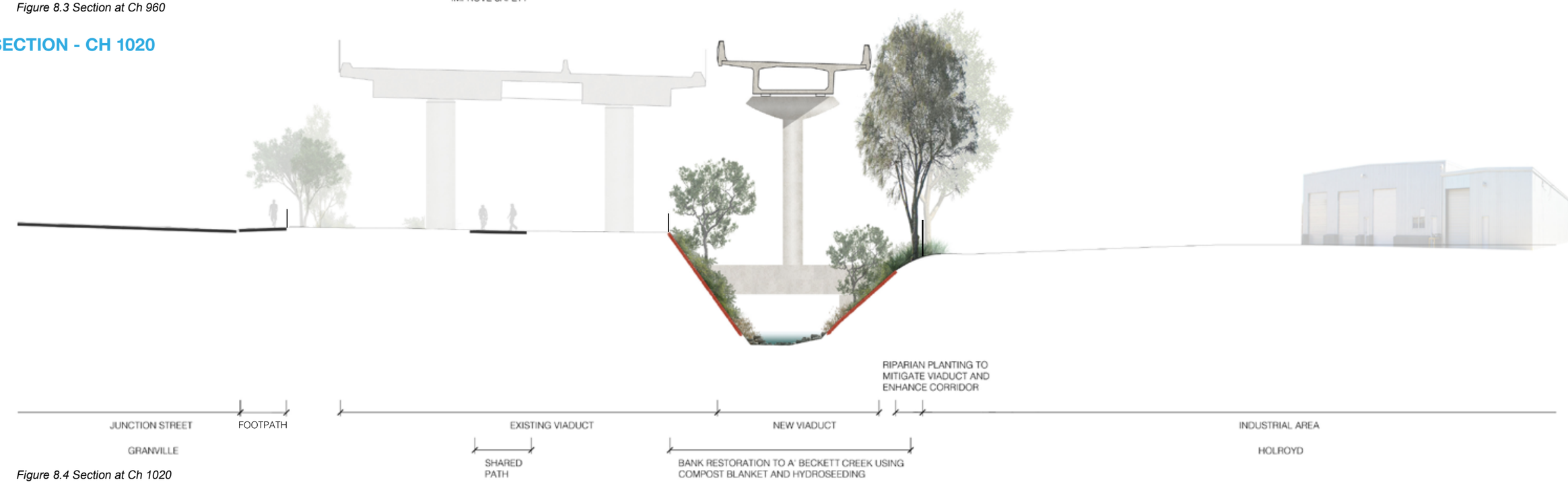


Figure 8.4 Section at Ch 1020

PHOTOMONTAGES

Figure 8.5 Photo: Existing view looking east along A'Beckett Creek toward the existing M4 Motorway viaduct.

Figure 8.6 Indicative Photomontage M03: The new viaduct alongside the existing M4 Motorway viaduct and A'Beckett Creek is shown. Planting enhancements north of channel and between cycle path and viaduct.

Figure 8.8 Indicative Photomontage M04: The new viaduct with noise wall above is shown alongside the existing structure. Landscape remediation to disturbed areas of creek environs will enhance corridor.

Figure 8.7 Photo: Existing view looking along the shared path west of the Cumberland Rail Line as it goes beneath the existing M4 Motorway viaduct.

URBAN RENEWAL UNDER THE VIADUCT

Opportunities for the enhancement of existing spaces beneath the viaduct to create a more inviting, interesting environment and provide light for safety would be explored. The introduction of linear lighting would enhance safety and add character to the space and minimise the strobe effect for cycleway users using the existing facilities.

The concept design envisages the introduction of this linear lighting through the use of uplights and LED lighting situated within the existing recess of the existing viaduct structure, between the two carriageways. The images included in this report are indicative only.

Figure 8.9 Photo of the existing spaces beneath the viaduct

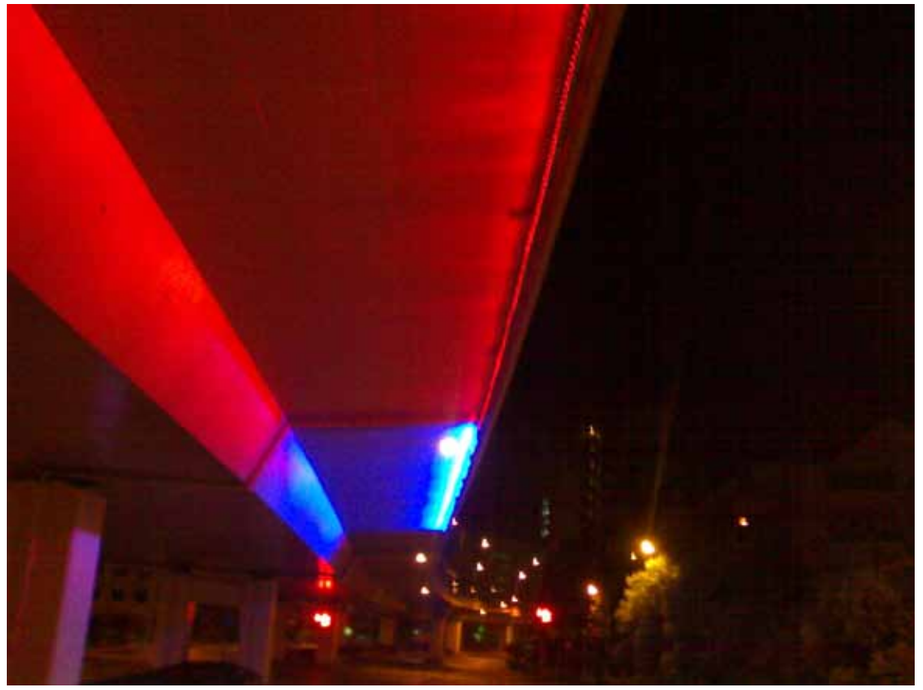


Figure 8.10 Indicative Image. Introducing feature and linear lighting can add interest to the spaces below the viaduct. Image Source: http://www.kc-lighting.com/Article/Article_171.html

WestConnex

Figure 8.11 Reinforcing greenery to create a more vibrant environment.

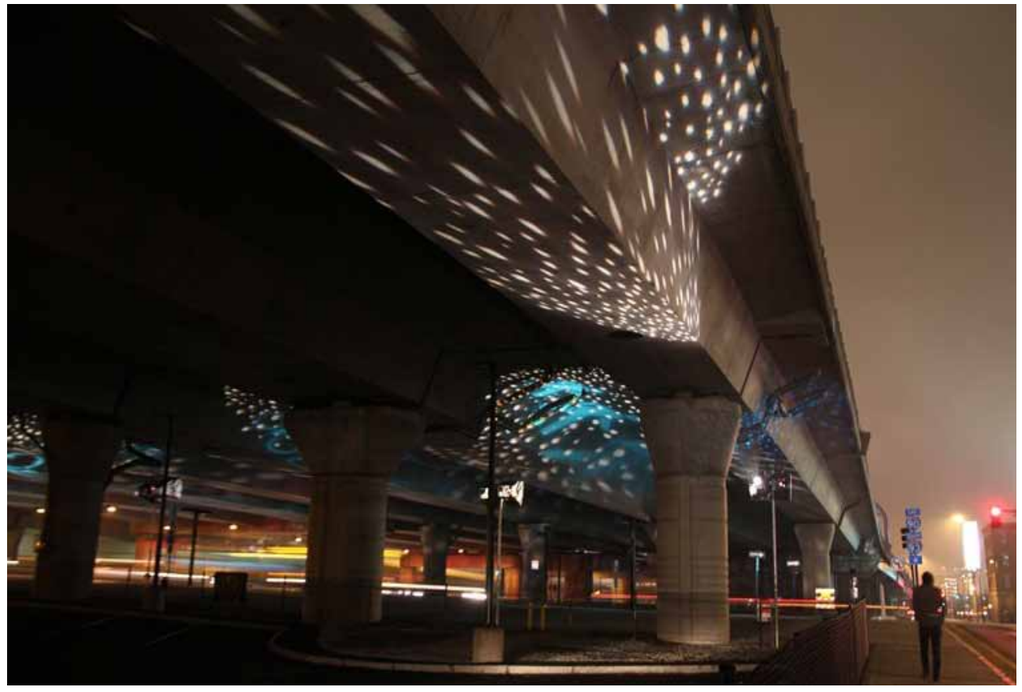


Figure 8.12 Indicative image only, illustrating featuring lighting using LEDs. Boston redevelopment I-93 Viaduct.

THE VIADUCT

The resolution of the viaduct is based on a box girder type structure with typical spans of approximately 31 metres with the exception of a few spans near railway or road crossings. The typical superstructure may be a launched match cast concrete box girder. However, the type of superstructure may vary in key locations depending on span, access, clearance and construction methodology. This situation occurs over the Main Western Railway line where precast girders may be proposed and at James Ruse Drive, where steel trough girders may be proposed. The result is a viaduct with a variety of superstructure typologies and deck cantilevers.

The pier arrangement design is typically based on a single circular pier that matches the existing situation and a headstock has been incorporated to minimise the bulk of the pier, whilst catering for the various superstructure typologies and maximising the visual permeability under the viaduct.

The headstock has been designed as a sculptural feature element with a sculptural form that provides flexibility for the various geometric scenarios whilst retaining a coherent appearance.

In some cases, the span lengths conflict with key infrastructure elements such as the existing cycleway, on-load ramps and drainage channels. In order to minimise these impacts, the headstock design has been lengthened in some cases and an “A” frame type pier introduced.

The launched match casting concrete box girder construction methodology would limit impacts to the ground below, avoiding disruption to local traffic and maximising the retention of screening vegetation by avoiding any scaffolding works. It would also provide a simple and bold solution by having the superstructure in the form of a box girder.

The following Figures 8.15 to 8.20 are 3D studies to indicate massing and relationships with the existing structure.

Figure 8.13 3D study and refinement of the headstock, its shape contributes to the character of the motorway as a whole.

Figure 8.14 The headstock has been purposely designed as a feature element.

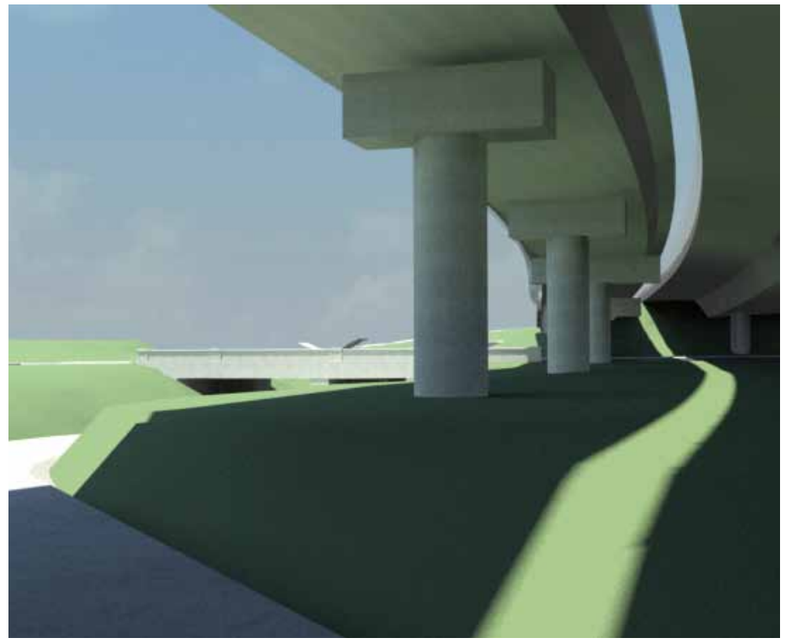


Figure 8.15 Ordinary headstock.

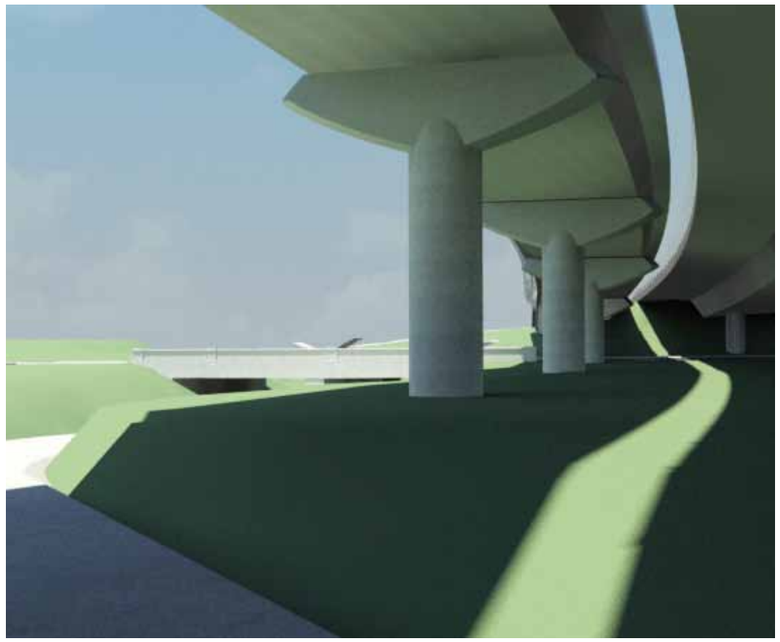


Figure 8.16 Refined headstock form to create a softer appearance and add identity to the structure.

Figure 8.17 Ordinary headstock as a portal frame.

Figure 8.18 Ordinary portal frame makes the structure appear static.

Figure 8.19 Headstock as a portal “A” frame makes the structure appear more dynamic and visually relates to the typical headstock.

Figure 8.20 The “A” frame headstock allows the structure to be less dominant in its setting, creating a more playful character whilst adapting to the various situations.

INTERFACES WITH THE SHARED USER PATH

The “A” frame pier configuration may be adopted at key areas where the viaduct piers would interface with the shared user path. This approach simplifies structural components and maintains consistency with the overall scheme.

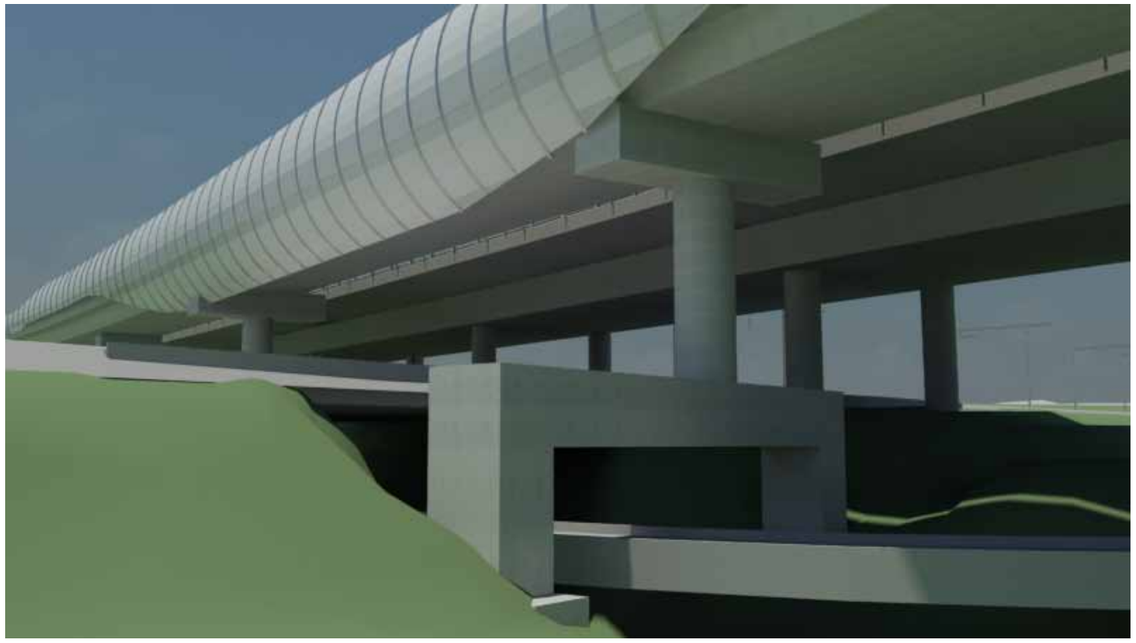


Figure 8.21 Ordinary resolution of the viaduct pier and the cycleway interface, creating visual clutter.

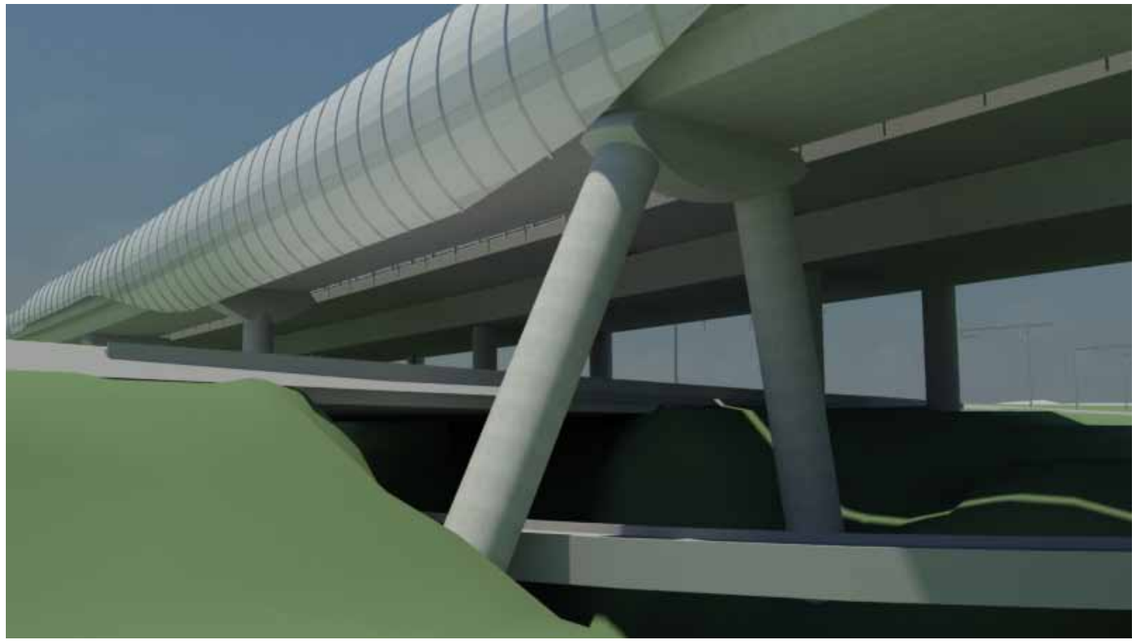


Figure 8.22 The use of a ‘A’ frame allows a simplified structural form that is legible.

NOISE WALLS

The urban design aims at rationalising visual inconsistencies of other components, such as in the case when a different superstructure typology is used for the viaduct. The form language of the bridges has been developed to create a unifying and bold composition by visually integrating other roadside components into a unifying design resolution. This is achieved by integrating the noise walls along the viaduct to appear as part of the overall bridge composition.

The noise walls are proposed as curved elements with a smooth top edge. The curved shape presents a softer appearance that, when combined with the curvilinear horizontal alignment of the motorway, creates a sculptural shape when seen from the community side.

The noise wall may consist of segmented panels, either as compressed fibre cement panels (CFC) or as opaque acrylic panels.

In locations where the viaduct's superstructure differs from the typical concrete box girder, the noise wall may be extended below the bridge's deck to screen these elements. This approach introduces movement and interest to the structure.

Towards the end point of the noise wall, the top of wall transitions and tapers away, exposing the parapet which echoes the curved shape of the noise wall, sliding past this element at transition points. The curvilinear language of the motorway, noise wall, parapet, headstock and pier unify the different built form elements.

LIGHTING

Where new light poles are required on the new viaduct, the poles would be designed to compliment the other built form elements. The curvilinear language of the motorway, noise wall, parapet, headstock and pier would unify the different built form elements into a legible ensemble.

Figure 8.23 The form language of the noise walls visually relate to the headstocks to create a sculptural element.

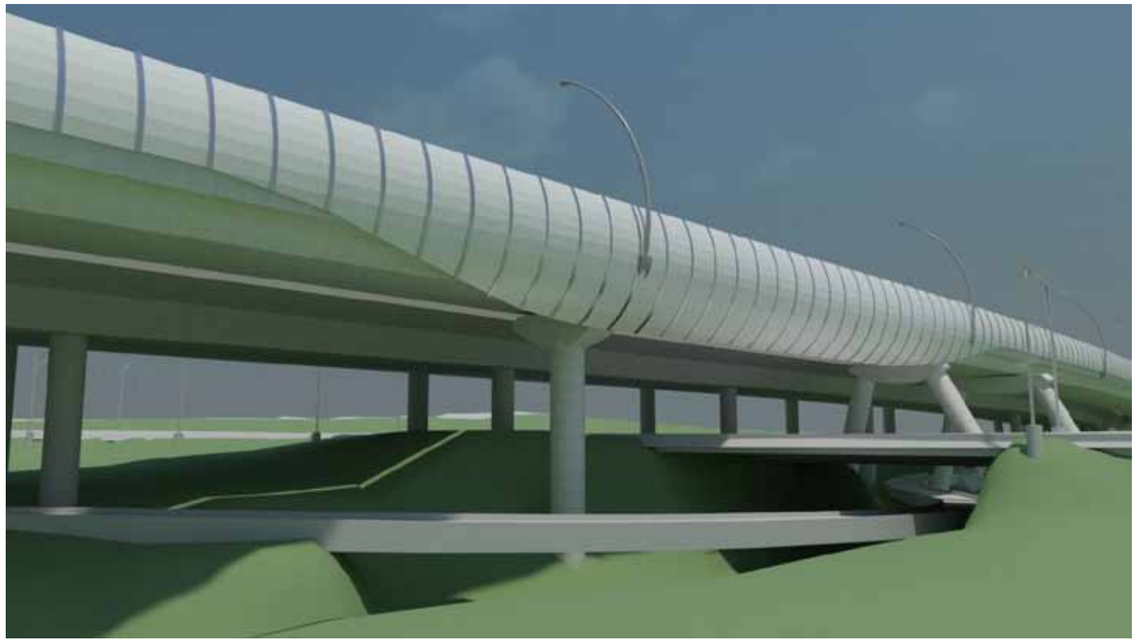


Figure 8.24 The noise wall screens in some situations where a different superstructure would be used. This maintains a consistent character and reinforces its sculptural quality providing a consistent appearance.

A number of options have been considered in the termination of noise walls with the aim to demonstrate the application of design principles. The termination points could be treated to add interest and identity to the motorway. Such treatment can, in particular, also act as a visual marker at the intersection of James Ruse Drive.

Transitions in noise wall heights relate to the overall design scheme and can add interest to the overall composition.

Some indicative designs are shown here.

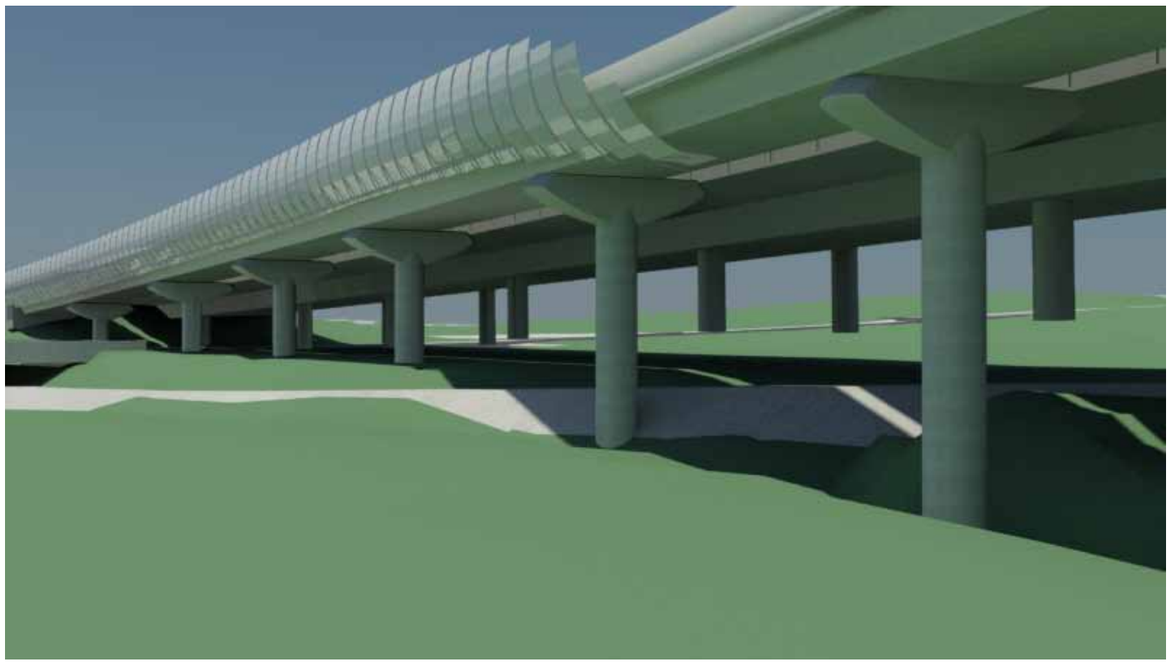


Figure 8.25 Alternative option - termination by 'introducing a 'sliding' effect to the noise wall.

Figure 8.26 Option illustrating the treatment when variations in noise wall heights are required. Note that the treatment abstractly echoes the existing noise walls to help unify the existing motorway with the new works.

Figure 8.27 Termination by 'wrapping' the noise wall towards the superstructure.

Figure 8.28 Base option, ‘expressing the ‘wrapping’ effect of the noise wall

Figure 8.29 Alternative option with a linear expression.

Figure 8.30 Alternative option by ‘fragmenting’ the noise wall.

From within the motorway, the termination points should add interest to the journey experience.

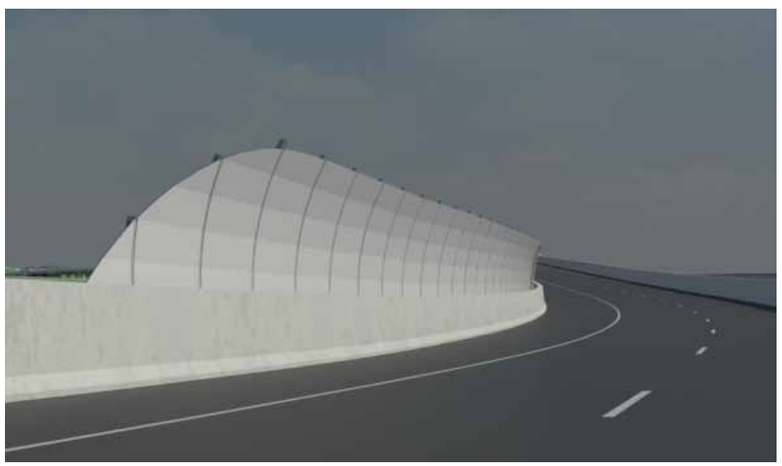


Figure 8.31 Base option, the expression of smooth lines reinforces the dynamic setting of the motorway.

Figure 8.32 Alternative option with a linear expression that reinforces the linear quality of the setting.

Figure 8.33 Alternative option that adds interest and playfulness to the journey experience.

ARTWORK

Consideration should be given to the introduction of interpretive art along the corridor. Key areas of consideration include along the viaduct.

There is the opportunity to express Parramatta as a major centre of the metropolitan area in context with the Parramatta River which runs parallel to the motorway. This would provide visual interest and context to the driver. Figure 8.34 shows an indicative pattern, one of the many options that may be considered.

The areas beneath the viaduct provide a great opportunity for interpretative art. For example, introducing art on the piers could enliven these public spaces. Figure 8.35 echoes the treatment displayed in Figure 8.34 in an abstract way, whereby the Parramatta River is displayed along a series of piers and the overall composition would only be visible from a certain viewing point. The options illustrated are indicative only.

Figure 8.34 An example of graphics for the noise walls on the new viaducts.

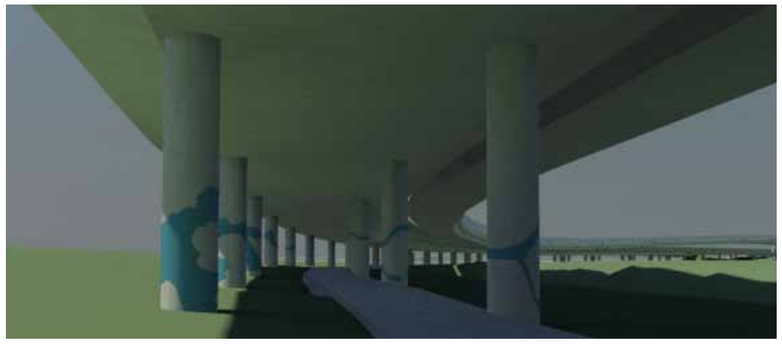


Figure 8.35 An example of interpretative art work displayed on the piers which echoes the treatment above the viaduct.

RETAINING WALLS

There is a limited number of retaining walls along the proposal. The most prominent location is between Wentworth Street and Deniehy Street, east of James Ruse Drive.

Anti-graffiti paint would be applied to built form elements such as retaining walls, bridge piers and noise walls to limit vandalism and maintenance issues.

SYDNEY SPEEDWAY

Along the northern verge between Wentworth Street and Deniehy Street, the motorway would be expanded, encroaching into the existing verge and may require a retaining wall.

If required the retaining wall would be situated away from the motorway, allowing the introduction of a batter and the possible construction of a reinforced soil wall. This provides the opportunity to re-instate screening planting along the verge, limiting the visual exposure of the motorway in the long term.

The wall situated at the base of the batter, would be predominantly screened by existing vegetation within the speedway.

The reinforced soil wall is based on precast panels with a bold horizontal expression that visually mitigates the height of the wall. The form language, compliments other built form elements of the proposal. The wall would act as a fence towards the motorway and the limited visual exposure of the wall, predominantly screened by existing vegetation from the speedway, would likely limit any issues with vandalism. In this regard, it is important to fence the motorway property along Wentworth and Deniehy Street to make access as difficult as possible.

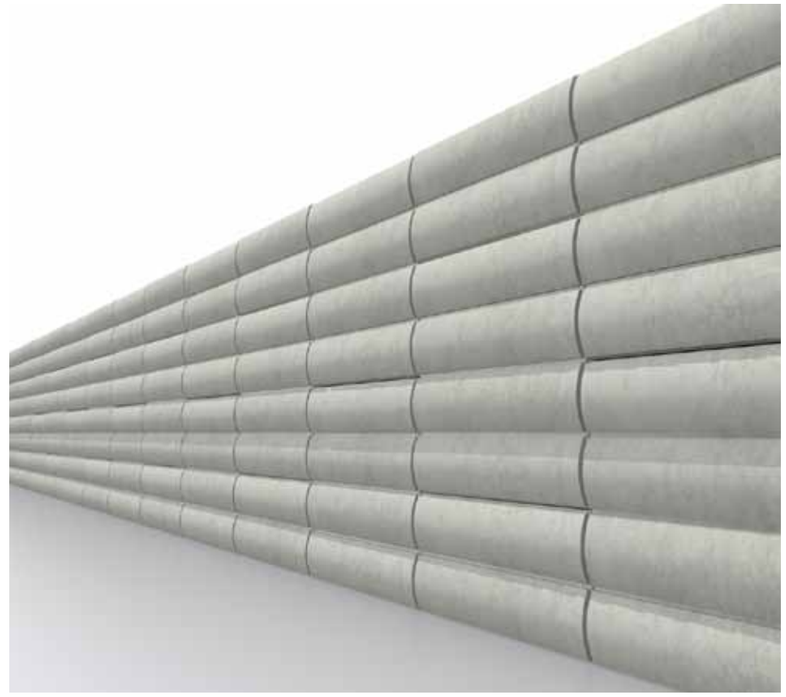


Figure 8.36 Indicative 3D study for a reinforced soil wall panel treatment. The form language follows other built form elements of the proposal.

MARTHA STREET

The urban design proposal intentionally disregards the existing walls in this area due to their tired and outdated appearance. Hence new retaining walls follow the urban design language established by the other new built form components of the proposal.

The retaining walls are conceived as horizontal elements that reinforce the form language of the viaduct. Due to the constraint interface of the structure and streetscape below, the motorway expansion partially overhangs past the retaining wall at key locations along Martha Street.

Depending on the construction methodology, the wall could be either formed in situ or with precast panels. In both cases, the base of the wall is required to be located at the base of the batter.

The horizontal texture of the wall is expressed in a progression from highly textured towards the base, increasing in size towards the top of the wall. This progression adds movement to the structure and acts as a graffiti deterrent whilst visually integrating with the form language of the viaduct.

Figure 8.37 Indicative Photomontage M05: looking along Martha Street towards the new retaining wall from the corner of Wentworth Street, illustrating streetscape improvements. The motorway expansion overhangs the retaining wall in this location.

Figure 8.38 Photo: Existing view looking along Martha Street from the corner of Wentworth Street showing the existing abutment and tall,dense Eucalypts.

DETAIL PLAN SHEET 2 - MARTHA STREET & ENVIRONS

Streetscape Strategy

Due to the widening of the motorway, a significant loss of vegetation along Martha Street would result in significant impacts to the streetscape setting. A streetscape strategy has been developed to limit the likely visual and landscape character impacts to the surrounding local streetscape. Key design improvements to this area could include:

- Relocate the existing kerb line by approximately half to one metre, to allow the introduction of greenery and improve (through widening to consistent width) the existing sub-standard cycleway. The kerb would be moved to ensure a consistent road width for Martha Street, that at present has varying widths.
- Relocate the existing cycleway to the new kerb line to allow as much vegetative screening as possible in front of the wall.
- Introduce blisters to allow for the re-establishment of tree planting to both sides of the road to create an avenue of trees, that will also act as a visual screen for the commercial properties along the southern verge of the road.
- Plant small scaled trees - eg *Callistemon* species to complement the existing species present on the southern verge, due to the presence of above ground power.

The strategy requires further investigation in the detailed design phase to avoid clashes with potential existing services and to seek community and local council feedback.

Viaduct and creek improvements

Key improvements could include:

- Planting of Cumberland Plain species to provide visual mitigation to the new viaduct.
- Reinforcement of the River Flat Forest species along Duck River, in between the viaducts - to be undertaken in liaison with councils and authorities.
- Explore opportunity to integrate lighting, and artworks under the viaduct areas and to enhance the cyclist experience.

Figure 8.39 The existing shared path/cycleway along the northern verge of Martha Street.

Figure 8.40 The image shows the existing state of Duck Creek beneath the viaduct. The cycleway viaduct is to the right of the image.

Figure 8.41 Areas beneath the viaduct either side of the cycleway could be improved.

Figure 8.42 The northern verge of Martha Street could be enhanced through the implementation of street tree planting and improvements to the overall streetscape.

WestConnex

DETAIL PLAN SHEET 2

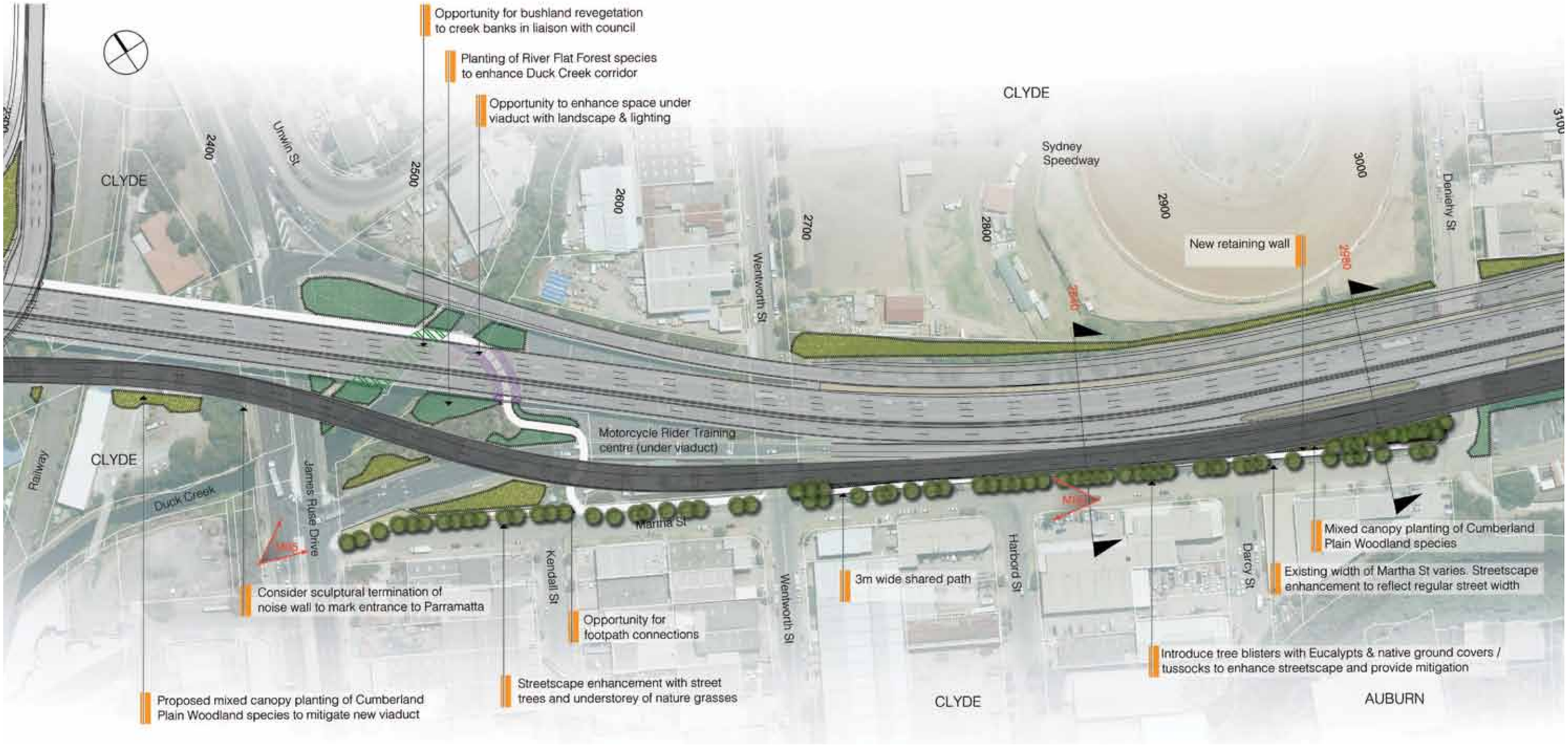


Figure 8.43 Detail Plan - Sheet 2

Building for the future

Transport WestConnex Delivery Authority

SECTION - CH 2840

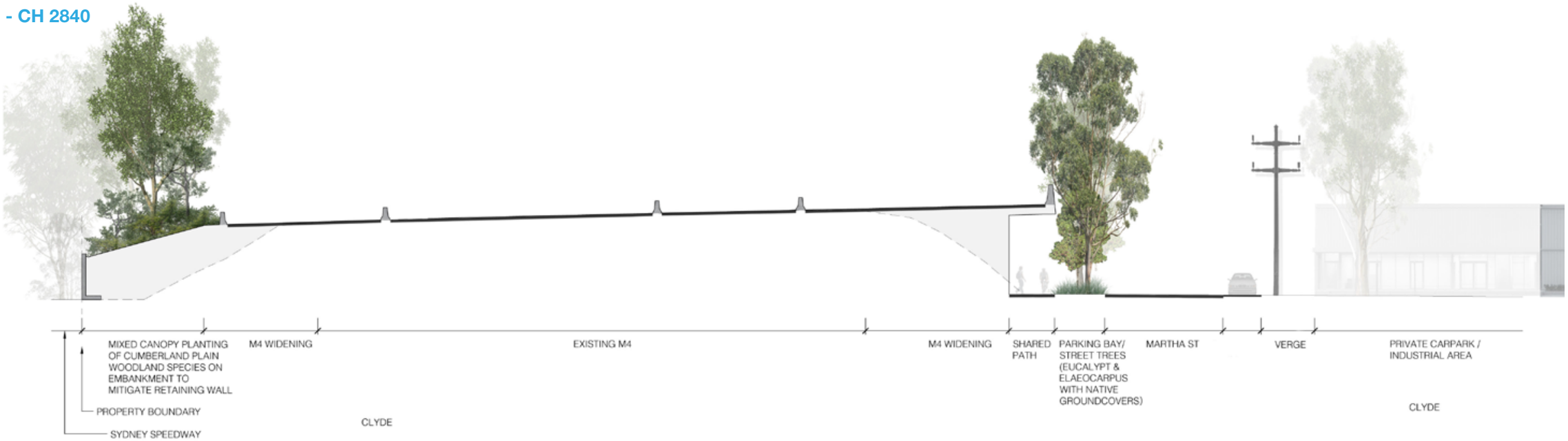


Figure 8.44 Section at Ch 2840

SECTION - CH 2980

Figure 8.45 Section at Ch 2980

PHOTOMONTAGES

Figure 8.46 Indicative Photomontage M05: view looking east across James Ruse Drive towards the M4 Motorway and new viaduct.

Figure 8.47 Photo: Existing view looking east across James Ruse Drive towards the M4 Motorway.

Figure 8.48 Indicative Photomontage M06: view looking west along Martha Street illustrating the new retaining wall for the M4 Widening project.

Figure 8.49 Photo: Existing view looking west along Martha Street.

DUCK RIVER BRIDGE

Based on concept design the superstructure of the bridge would be similar to the viaduct structure further to the west based on a box girder type structure with typical spans of approximately 34 metres with the exception of a few spans of 26.5 and 25 metres. This approach would ensure consistency in appearance and construction methodology.

The piers may not align with the existing ones due to the span limitation of the proposed superstructure. However, this situation is not considered critical as the bridge is situated in an enclosed setting with limited views towards it from beyond and it would be less noticeable to shared path users due to the overall scale of the structure.

The piers are conceived as blade piers that emulate the existing ones of the adjacent bridge with the intent to provide a cohesive appearance of the overall built form.

Figure 8.50 Blade type piers along Duck River bridge.

Figure 8.51 The new bridge would incorporate blade type piers for consistency with the existing situation. The spacing of piers may differ to the existing situation, yet this is considered less critical.

8.2 THE EASTERN SECTION

The eastern section of the proposal extending from Duck River to the Homebush Bay Drive interchange comprises of widening the existing motorway carriageways at grade, and transitioning from high ground to a cutting situation. New on-ramps at Hill Road and Homebush Bay Drive are set within the existing road reserve.

The proposal emulates the existing situation in this section and the urban design strategy focuses primarily on vegetative screening opportunities and consistency of built form elements.

MOTORWAY BETWEEN DUCK RIVER AND MELTON ST SOUTH / NORTH

The concept is to create a strong visual impression in the form of an 'urban forest' as an entry into the parkway-like eastern section of the motorway. The strong green setting would be strengthened through reinstating and improving the existing planting edges along the motorway corridor.

The higher elevation of Duck River bridge would provide a clear view towards this lush setting, for eastbound drivers, acting as a marker along the journey.

Figure 8.52 View looking east along the motorway from the pedestrian overpass near Melton Street. The existing parkland character to the right is visible from the motorway.

Figure 8.53 View looking west along the motorway. The disused toll plaza is visible on the left hand side and existing concrete median.

DETAIL PLAN SHEET 3 – JUNCTION STREET TO STUBBS STREET

Refer to the plan overleaf (Figure 8.54) for the detailed plan.

Key urban design elements incorporated in the plan include:

- Widening works are contained within the existing road reserve therefore the impacts are largely contained.
- Implementing strong tree planting either side of the corridor by removal of weeds and poor quality vegetation to create a strong green setting as the western gateway into the parkway character.
- The redundant paved areas provide a unique opportunity to increase the tree canopy coverage significantly and reinforce the parkway character in this particular location.
- Introduce trees, native grasses and low shrubs to wide sections of new medians either side of bridges/overpasses to continue the existing theme.
- New plantings to consist of local indigenous Cumberland Plain Woodland species to increase biodiversity along the M4 corridor.

Building for the future

Transport WestConnex Delivery Authority

DETAIL PLAN SHEET 3

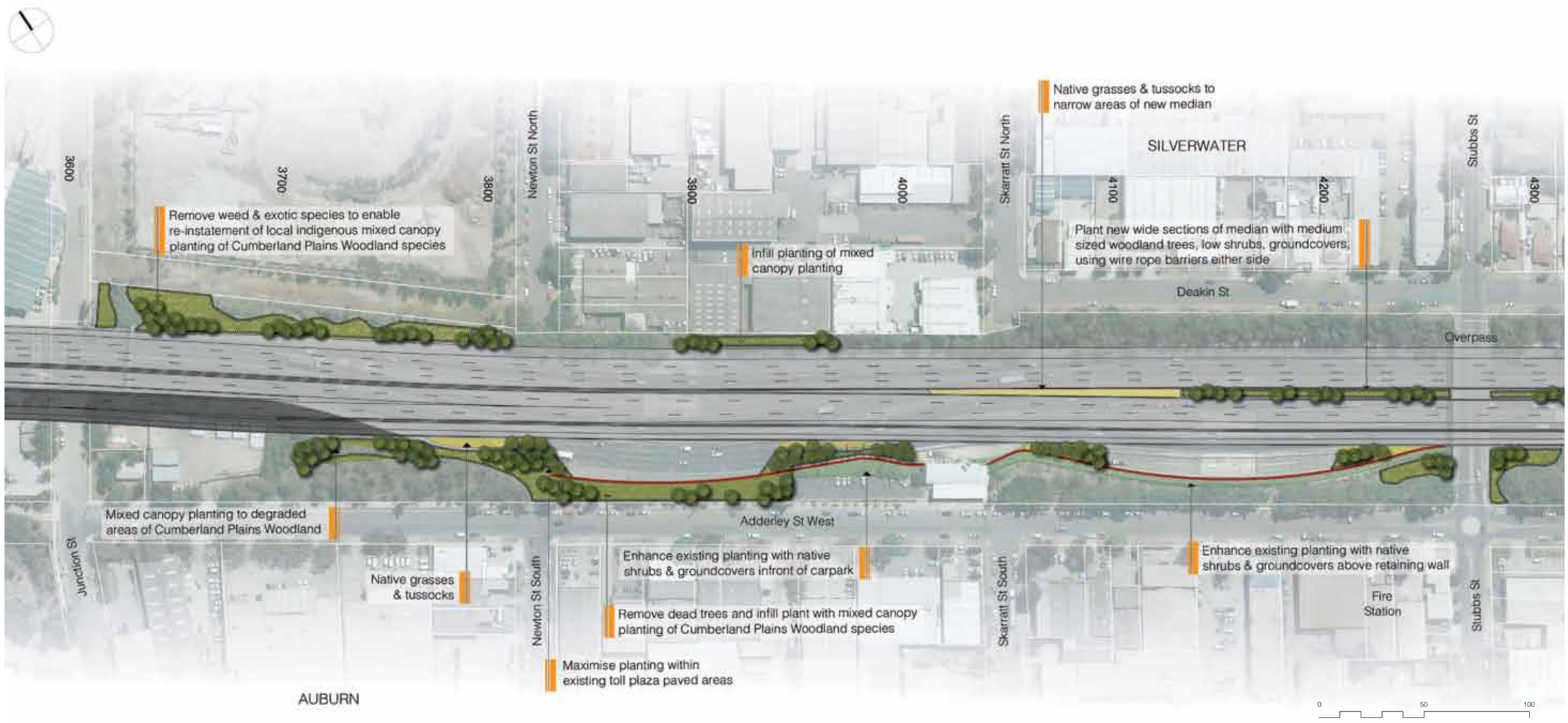


Figure 8.54 Detail Plan - Sheet 3

MOTORWAY BETWEEN MELTON ST SOUTH AND SILVERWATER ROAD

A retaining wall would be required east of Melton Street along the southern verge of the motorway. The wall would be proposed as a piled wall with precast concrete fascia panels. To retain consistency, the panels would echo the existing retaining walls further east in the vicinity of the old tolling plaza and have a vertical ribbed finish.

Figure 8.55 The existing retaining wall in the vicinity of the old tolling plaza.

8.3 GANTRIES

The concept design of the gantry structures is of an indicative nature and would contribute to the overall identity of the motorway. Its form language has been developed to compliment the already established character of other built form elements.

Key principles that should guide the further development of these components include:

- Develop a gantry that allows a range of components to be integrated in a systematic way, allowing the mounting of various accessories in an organised fashion.
- Aim at integrating the various components within the built form envelope of the gantry.
- Introduce colour to add interest and promote the identity of the motorway.
- Limit the extent of bright colours to minimise impacts beyond the corridor.
- Introduce clean lines and reinforce the horizontality of the structure.
- Consider piers that accommodate various situations.
- Consider a pier form that adds character to the structure and relates to other built form elements.
- Capitalise on repetition in relation to production costs, minimise variations in design to accommodate various situations.
- Consider safety and maintenance access.
- Minimise visual clutter.

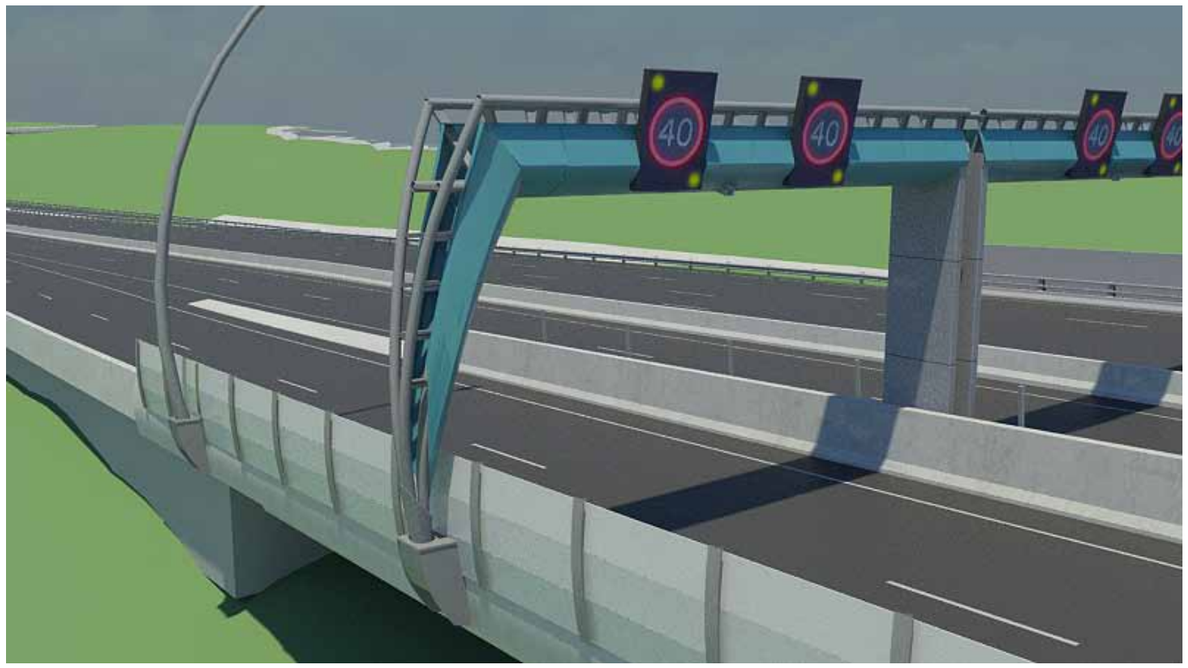


Figure 8.56 Indicative 3D study of gantry pier interfacing with other built form elements i.e. viaduct structure and noise wall.

Figure 8.57 At grade pier arrangement. The central pier has been designed as a blade pier to provide flexibility in constrained median situations.

WestConnex

Figure 8.58 Indicative 3D study of gantry along the viaduct structure. Consider aligning east and west bound gantries to minimise visual clutter. The use of a double blade pier allows flexibility with separate bridge structures.

Figure 8.59 Apply a consistent form language across components to create a integral composition and form language.

Figure 8.60 The use of subdued colours is preferred such as darker hues compared to bright hues.

Figure 8.61 The use of subdued colours is preferred such as darker hues compared to bright hues.

8.4 SUMMARY

In summary the urban design concept focuses on limiting visual and landscape character impacts to the community by retaining a compact footprint of the overall expansion of the motorway, and providing mitigation strategies that also enhance the local living environments for the community.

The urban design of the western section of the proposal builds upon the existing form language as far as practical and takes into account constructability issues to minimise disruption and other impacts to the community. In doing so, it delivers a simple form language that utilises other roadside components to create a uniform and homogeneous, contemporary design.

The partially bold design, in particular with the noise walls and headstocks, gives the overall form language a stronger identity, and attempts to distract from the otherwise existing inconsistent and disjointed built form language along the whole corridor.

Landscape strategies have been identified that would enhance the depleted, remnant ecological corridors, particularly in the western section, and reinforce the existing motorway parkland character along the eastern section. This reinforcement of the motorway with a parkway character, where practical, is consistent with the *Draft WestConnex Motorway Urban Design Framework* (RMS, 2013), by providing an 'urban forest' along the motorway.

The greatest impacts on the cycle/pedestrian network will be during construction works. The temporary closure of particular sections may be required during various activities. Some north south links (in addition to the footpaths either side of roads) such as the Prince Street and Onslow Street pedestrian only crossings would also be affected during the works. Shared path diversions would be required and temporary alternative routes would be set out clearly for the safety of users whilst construction works progress.

It is envisaged that the cycle routes will remain as existing after the M4 Widening project construction works are complete. Improvements to lighting beneath the viaduct and cycle underpasses would assist with safety and other CPTED initiatives where practical, in particular for the underpass beneath the main western railway line. Improvements to Martha Street would improve the pedestrian/cyclist experience by providing a consistent width of path.

The future/proposed off road and on road cycle ways on the north south routes as indicated on Parramatta local council maps would improve cyclist safety on arterial roads and better connections to local centres either side of the M4 corridor.

A landscape character and visual impact assessment has been undertaken throughout the design process, not only to determine the impact that the proposal would have on adjacent areas, but also to inform the overall engineering/urban design for the corridor.

9.0 LANDSCAPE CHARACTER & VISUAL IMPACT ASSESSMENT

9.1 LANDSCAPE CHARACTER ASSESSMENT

The landscape character impact is based on the aggregate of an area's built, natural and cultural character and sense of place. In this regard, it is measured by the combination of the area's sensitivity and the magnitude (scale, character and distance).

Table 9.1 illustrates how the level of sensitivity and magnitude are combined to achieve an overall level of impact for both the landscape character impact and the visual impact in accordance with the RMS's Environmental Impact Assessment Practice Note - *Guidelines for Landscape Character and Visual Impact Assessment* No. EIA-N04,"Version 2.0 Issue Date 28 March 2013.

It should be noted that the ratings are measured relative to each other rather then assigned through an absolute scale. Hence the resulting landscape character impact rating is project specific and identifies those areas with the highest and lowest impacts.

Table 9.1 Landscape character and visual impact grading matrix

Sensitivity \ Magnitude	high	moderate	low	negligible
high	high impact	high- moderate	moderate	negligible
moderate	high- moderate	moderate	moderate-low	negligible
low	moderate	moderate-low	low	negligible
negligible	negligible	negligible	negligible	negligible

The sensitivity of each landscape character zone was assessed in section 3.1 and 3.2 and is summarised in Table 9.2. The assessment identified a strong correlation between land use and sensitivity values.

Within this section of the report the magnitude of impact of the M4 Widening project is identified for each landscape character zone and the resulting landscape character impact is outlined for each zone.

Table 9.2 Landscape character zones sensitivity ratings

character zones	sensitivity
1 (north)	high
1 (south)	moderate
2 (north)	high
2 (south)	high
3 (north)	moderate
3 (south)	low
4	moderate
5 (north)	high
5 (south)	low
6 (north)	low
6 (south)	low
7 (north)	moderate
7 (south)	low

IMPACT ON ZONE 1 - PARRAMATTA/HOLROYD

NORTHERN SIDE

The magnitude of impact within this zone is considered moderate in areas where the noise wall would need to be extended in height, specifically west of Inkerman Street. It is likely that existing screening vegetation would be impacted, thereby exposing the walls more than in the current situation. This would contribute to a stronger presence of the freeway within the residential areas, yet the overall character of the neighbourhood would not change. Other areas would not be impacted by the works, hence the overall magnitude of impact within this character zone is considered low. **As a result, a moderate landscape character impact** has been assessed.

SOUTHERN SIDE

The proposed works west of Church Street would slightly encroach into the verge, impacting some of the screening vegetation. As this impact is considered to be of a minor nature and would not greatly affect the existing landscape character in this area, a low magnitude of impact is considered appropriate. A new noise wall, replacing an existing one would be required west of Holroyd Sportsground. As the wall would be situated adjacent to the motorway, the existing screening vegetation would be retained, thereby limiting the magnitude of impact of this element. For the residential pocket at the western end of this zone, the magnitude of impact is considered negligible. West of Church Street, the introduction of the new viaduct would impact A'Beckett Creek Canal, and the shared path facility, thereby creating a stronger dominance of the motorway within the general setting. From Parramatta Road, this magnitude of impact is considered moderate as the overall character of the area would not fundamentally change. Hence an overall low magnitude of impact is assessed for the zone. **This has resulted in a moderate to low landscape character impact** for the south side of Zone 1.

IMPACT ON ZONE 2 - HARRIS PARK/GRANVILLE

NORTHERN SIDE

The proposed works would have a minimal impact to most properties as viaduct and widening works predominantly affects the southern verge. The multi-storey flats along Bowden Street with views towards the motorway would not be greatly impacted by the proposal. Hence, a negligible magnitude of impact is assessed, **resulting in a negligible landscape character impact.**

SOUTHERN SIDE

Although the general character of the area would not fundamentally change, the motorway corridor would have a stronger presence, reinforcing the urban character of the area. This is underpinned by the dominant height of the proposed viaduct structure in the vicinity of Arthur Street.

Overall a moderate magnitude of impact is considered appropriate in this case as the sense of place and character would only be partially affected. **The assessment has resulted in a moderate to high landscape character impact.**

IMPACT ON ZONE 3 - INDUSTRIAL/SPEEDWAY

NORTHERN SIDE

To the northern verge, the magnitude of impact is considered moderate as the proposal would partially impact this verge by encroaching in the vicinity of Deniehy Street towards the Sydney Speedway, resulting in the loss of some vegetative screening. Hence **a moderate landscape character impact** has been assessed for this area.

SOUTHERN SIDE

To the south however, the magnitude of impact is considered moderate to high since the new viaduct structure 'swings' away from the existing motorway to avoid conflicts with the existing westbound off-load ramp at James Ruse Drive. This 'swing' would have a strong impact on the streetscape of Martha Street, including the motorcycle training facilities located under the viaduct which would have to move. In addition, screening vegetation along the fill batter would be removed, reducing greenery to the streetscape and exposing the motorway. Overall, a high magnitude of impact has been assessed for this southern verge, resulting in a **moderate landscape character impact**, driven by the low sensitivity of the land use.

IMPACT ON ZONE 4 - DUCK RIVER CROSSING

NORTHERN SIDE

To the northern verge, the magnitude of impact to commercial properties and Duck Creek is considered negligible as no works are proposed along the northern verge of the motorway.

SOUTHERN SIDE

In the case of the commercial premises to the south, the magnitude of impact is considered low, since Duck River provides extensive buffer zones. This is further underpinned by the scale of the built form elements within this area, hence a low magnitude of impact is assessed. The concrete batching facility on Junction Street would be highly impacted as the proposal would dissect this property. Overall, the proposal is not considered to have a high magnitude of impact to the character of the area.

In the case of Duck River, the magnitude of impact is considered moderate to low. As the motorway would extend the partial overshadowing of the river, its fundamental character would not be changed, hence **a moderate landscape character impact** has been considered appropriate.

IMPACT ON ZONE 5 -DUCK RIVER TO HASLAMS CREEK

NORTHERN SIDE

To the north of the motorway and between Stubbs Street and Silverwater Road, a new noise wall and the extension in height of an existing noise wall would be required. The noise wall would be situated on top of a subtle mound and it is likely that existing screening vegetation would be impacted for the construction. The magnitude of impact is considered low in this area as the new noise wall would provide additional screening to the highway and it would not greatly change the sense of place and character of the existing setting. It would be critical to minimise impacts on the existing vegetation as much as possible to retain the current visual amenity.

At the interchange of Silverwater Road, a new noise wall would be required. Further east, the existing wall flanking the eastbound on-load ramp would be replaced with a new wall. This results in a low magnitude of impact as the

proposal would mitigate the loss of screening vegetation facing residences, the sense of place and cohesion of the suburb and park would not change.

The overall **landscape character impact for the northern verge has been assessed with a moderate rating**, taking into account affected and less affected areas.

SOUTHERN SIDE

To the south, a new noise wall would be required west of Silverwater Road. The wall would face the motorway, allowing existing screening vegetation to limit its impacts. The magnitude of impact is considered low as it would not greatly impact the general character of the area. **A low landscape character impact has been assessed**.

IMPACT ON ZONE 6 - CARTER STREET PRECINCT

NORTHERN SIDE

To the north and south of the motorway between Haslams Creek and Hill Road, the magnitude of the impact is considered negligible as no works are taking place on the verge. Between Hills Road to Birnie Avenue the northern widening of the motorway would affect the verge and property boundary of the Carter Street Precinct. The loss of existing screening vegetation would result in a high magnitude of impact in this location, resulting in a **moderate landscape character impact**, driven by the low/moderate sensitivity of the land use.

SOUTHERN SIDE

The extension to the on ramp from Bombay Street/Hill Road on the southern would impact on existing mixed tree planting and potentially an avenue of existing Eucalypts within the road reserve. A moderate magnitude of impact is assessed and **moderate-low landscape character impact** due to the low sensitivity of the land use.

IMPACT ON ZONE 7 - OLYMPIC PARK

NORTHERN SIDE

To the north of the motorway the magnitude of the impact is considered negligible as no works are taking place.

SOUTHERN SIDE

To the south the magnitude of impact is also considered low as it would not impact the general character of the area as the new on-ramp would be fully contained within the existing motorway corridor and therefore the **landscape character impact is considered low**.

SUMMARY

From Table 9.3, it can be concluded that the proposal has a limited landscape character impact. This is predominantly driven by the existing nature of the motorway and the limited scale of the expansion. The highest impact occurs within zone 2, along the southern verge, and is predominantly driven by the sensitive nature of the land use.

In most other areas either the land use or the minimal impact of the proposal outside the existing motorway corridor limit the overall landscape character impact.

The overall proposal is considered to have a moderate-low impact.

Table 9.3 Landscape Character Impact - Summary table

character zones	sensitivity	magnitude	impact
1 (north)	high	low	moderate
1 (south)	moderate	low	moderate-low
2 (north)	high	negligible	negligible
2 (south)	high	moderate	moderate-high
3 (north)	moderate	moderate	moderate
3 (south)	low	high	moderate
4	moderate	low	moderate
5 (north)	high	low	moderate
5 (south)	low	low	low
6 (north)	low	high	moderate
6 (south)	low	moderate	moderate-low
7 (north)	moderate	negligible	negligible
7 (south)	low	low	low

9.2 VISUAL IMPACT ANALYSIS

In order to assess the visual impact, a Visual Envelope Map (VEM) or the proposal's visual catchment from the surrounding area has been prepared. The visual catchment is defined either by topographical features, built form elements or screening vegetation.

In this case, the proposal has a limited visual exposure due to the screening effect of existing vegetation and buildings, particularly on the northern side of the M4 corridor.

In addition the existing viaduct provides a screen from the northern side of the proposal to the new sections of viaduct. The southern side of the proposal is significantly exposed in Landscape Character Zones 1, 2 and 3 (see maps overleaf).

The following maps also include the location of representative viewpoints along the project used for the visual impact assessment. These viewpoints are further discussed in section 9.3 of this chapter.

WestConnex

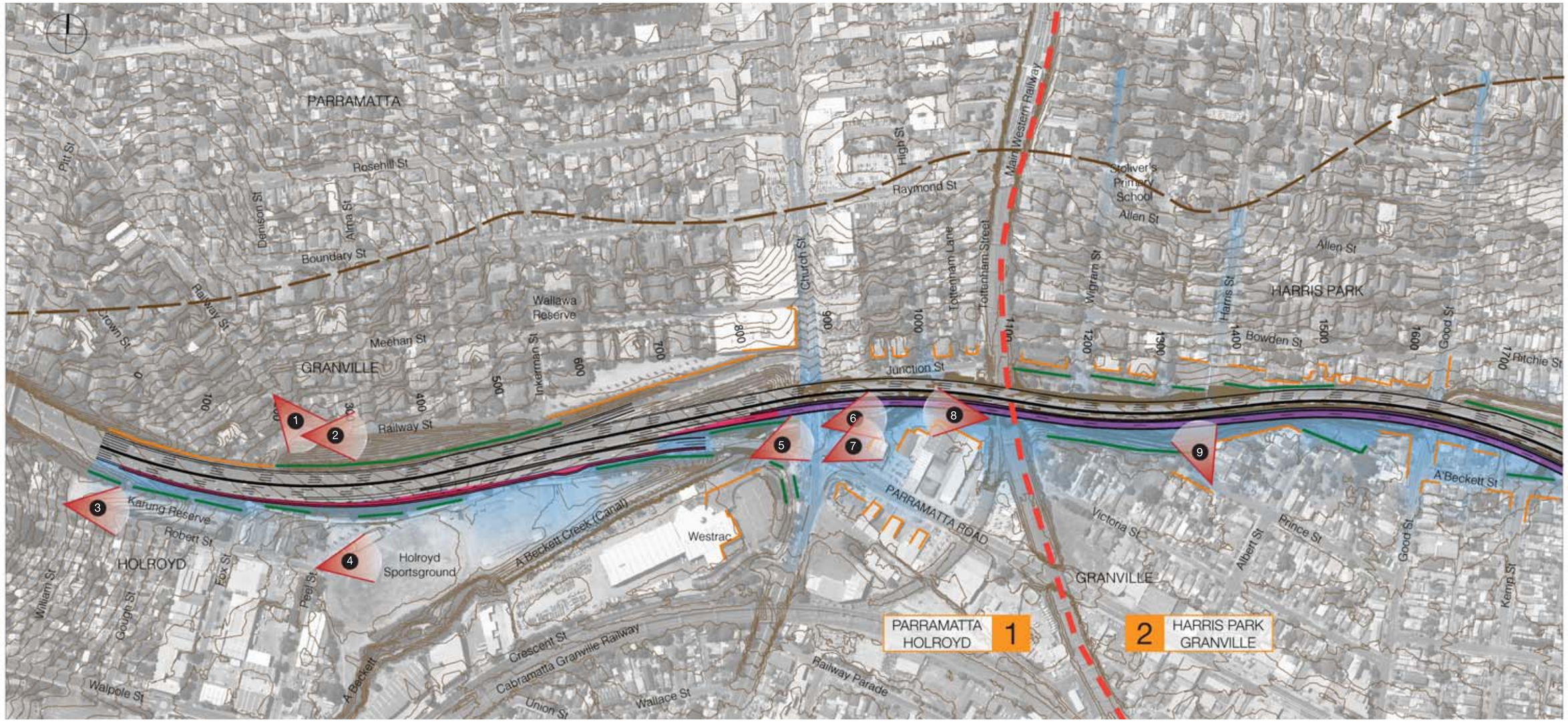
ZONE 1

For Zone 1 the visual exposure varies. On the northern side, west of Church Street the motorway is confined by existing noise walls and vegetation. East of Church Street the existing viaduct strongly limits the exposure to the new viaduct from the north.

On the southern side, west of Church Street, the exposure to residential areas is limited by Karung Reserve vegetation and the verge buffer vegetation. Views are attainable from Holroyd Sportsground to the M4 Motorway. East of Church Street there is high visual exposure around the intersection with Church Street and Parramatta Road.

ZONE 2

Within Zone 2, the visual exposure is moderately limited on the northern side due to the position of the existing viaduct, although due to the rise in topography beyond, there is limited exposure from streets running perpendicular to the M4 Motorway.



visual envelope

SHEET 1

- Visual exposure
- Character zones
- Built form defines visual catchment
- Vegetation defines visual catchment
- New pavement
- New viaduct
- 1 Assessed viewpoints from adjacent setting
- A Viewpoints from within the motorway

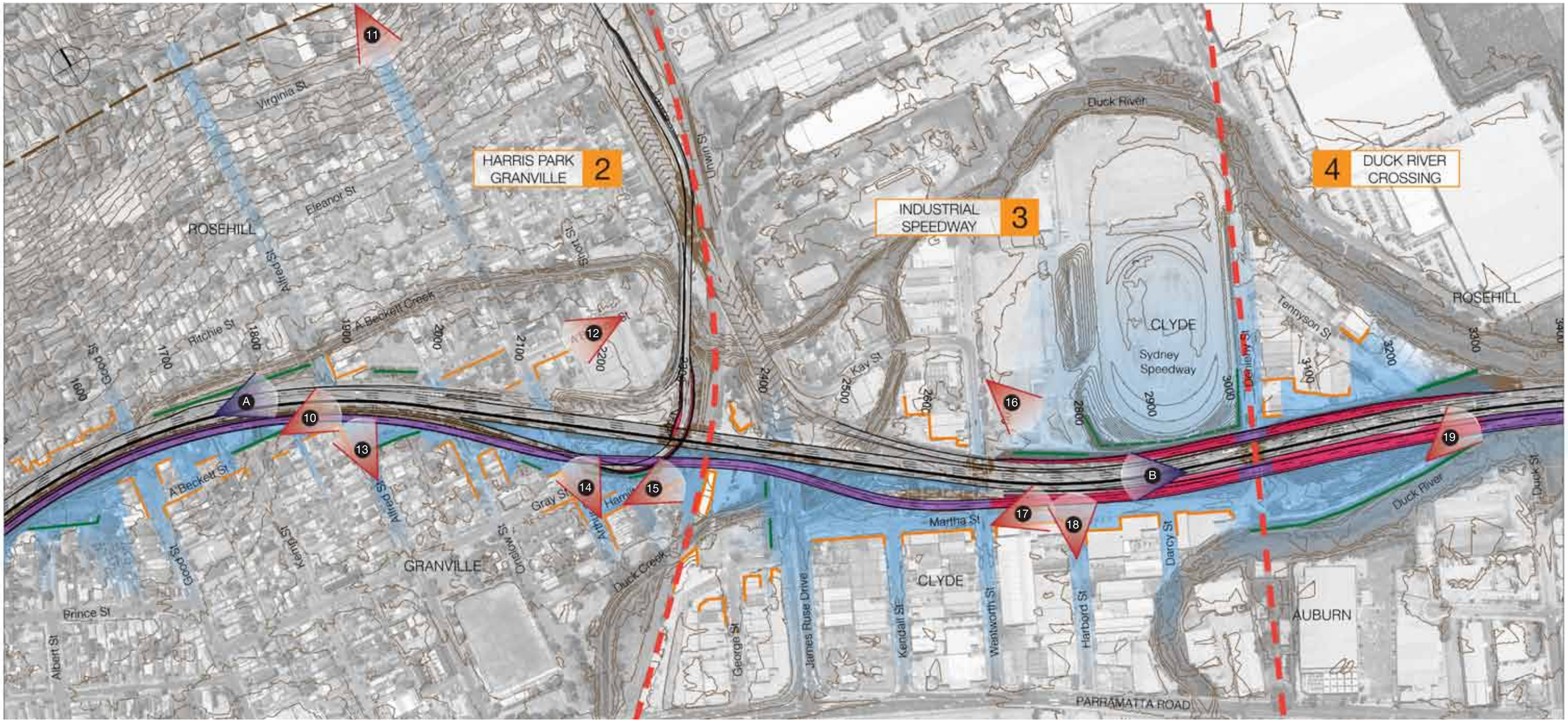
Figure 9.1 Visual Envelope Map - Sheet 1

On the southern side the visual exposure is high directly adjacent the viaduct where residential properties face the proposal site. Number 58 & 60 Alfred Street are two storey residences with particularly high exposure to the proposal.

ZONE 3

Within Zone 3, the northern side of the M4 Motorway has moderately limited exposure from the streets. Views from the speedway would be attainable as the existing buffer planting is sparse and would be impacted by the proposal.

The south side of the proposal has a high visual exposure to commercial properties primarily along Martha Street.



visual envelope

SHEET 2

- Visual exposure
- Built form defines visual catchment
- New pavement
- 1 Assessed viewpoints from adjacent setting
- Character zones
- Vegetation defines visual catchment
- New viaduct
- A Viewpoints from within the motorway

Figure 9.2 Visual Envelope Map - Sheet 2

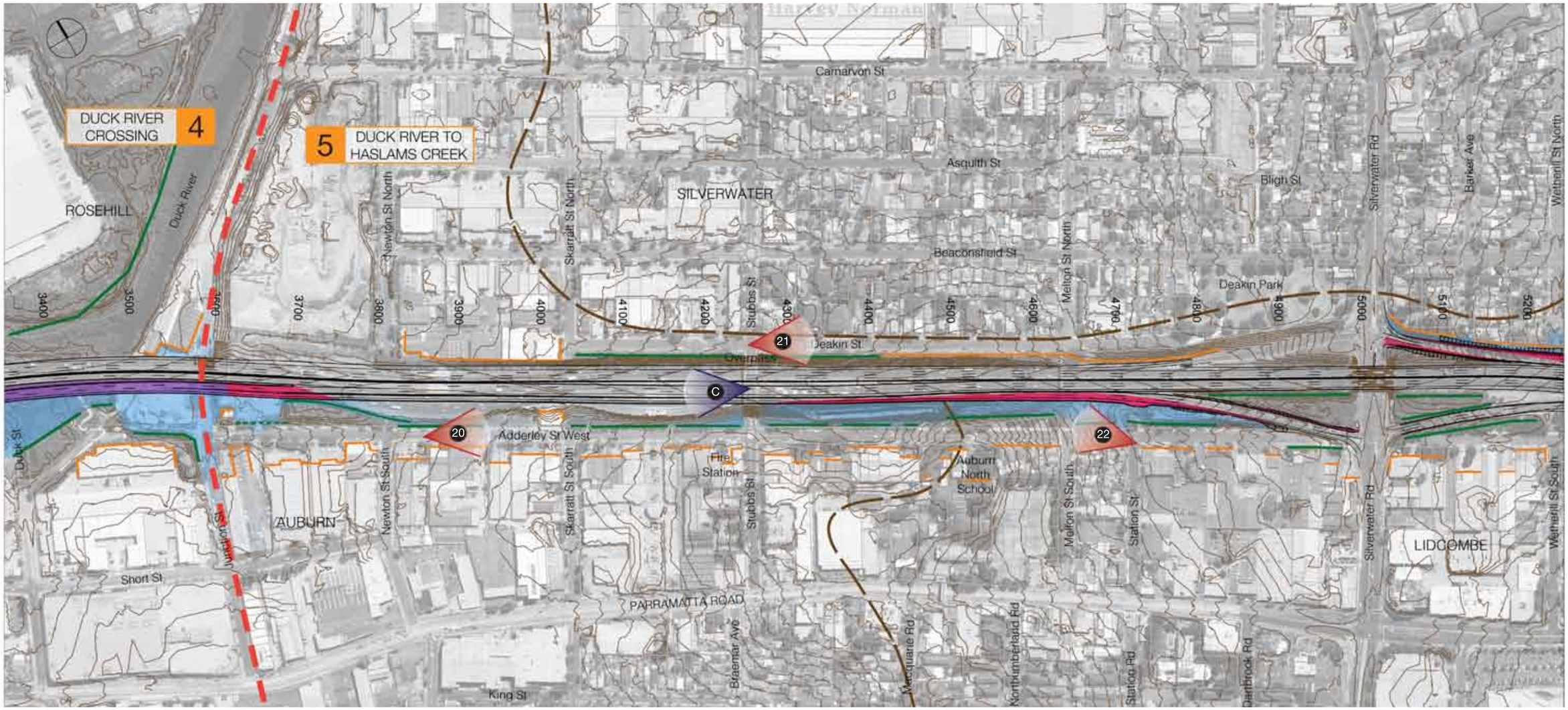
WestConnex

ZONE 4

Within Zone 4 the visual exposure is strongly limited by the Duck Creek and buffer vegetation on the M4 corridor and the large warehouse premises either side. Street views are attainable from Deniehy Street, and Duck Street, but the enclosed character of the view would limit the exposure to the proposal.

ZONE 5

For Zone 5, the visual exposure is considered limited due to the existing setting of the M4 Motorway and the proposal's works which are limited to the M4 corridor. The northern side is significantly screened by noise walls and vegetation alongside the road corridor. The southern side is screened by vegetation and its foreseen the existing screen planting would be augmented in key locations under the widening works.



SHEET 3

visual envelope

- Visual exposure
- Character zones
- Built form defines visual catchment
- Vegetation defines visual catchment
- New pavement
- New viaduct
- 1 Assessed viewpoints from adjacent setting
- A Viewpoints from within the motorway

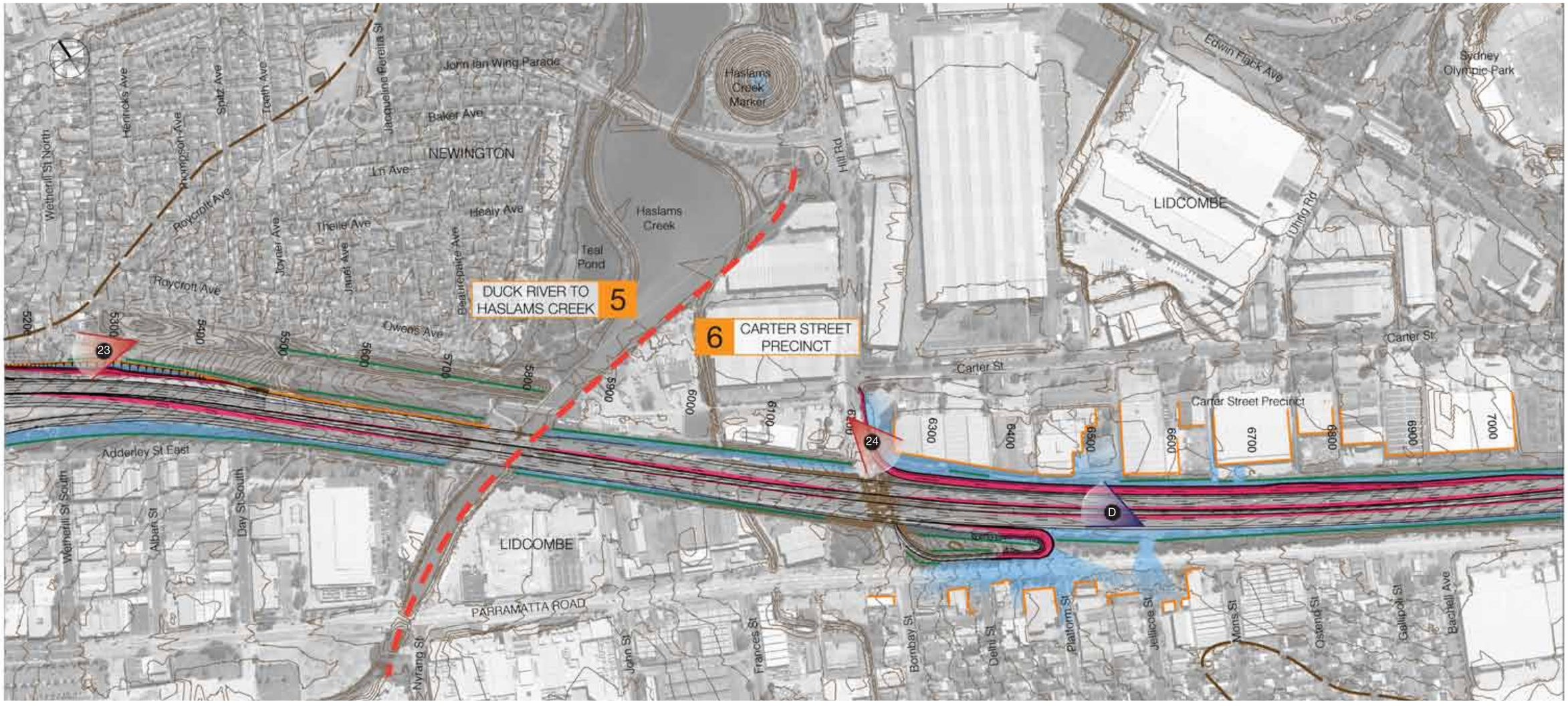
Figure 9.3 Visual Envelope Map - Sheet 3

Building for the future

Transport WestConnex Delivery Authority

ZONE 6

For Zone 6, the visual exposure is considered moderately limited due to the existing screening vegetation either side of the M4 Motorway. The block arrangement for Auburn LEP's Carter Street Precinct indicates property boundaries remaining in the current orientation backing onto the M4 corridor. Visual exposure to the road user would be high if limited screening opportunities are available at the rear of these properties on the northern side of the M4 corridor.



visual envelope

SHEET 4

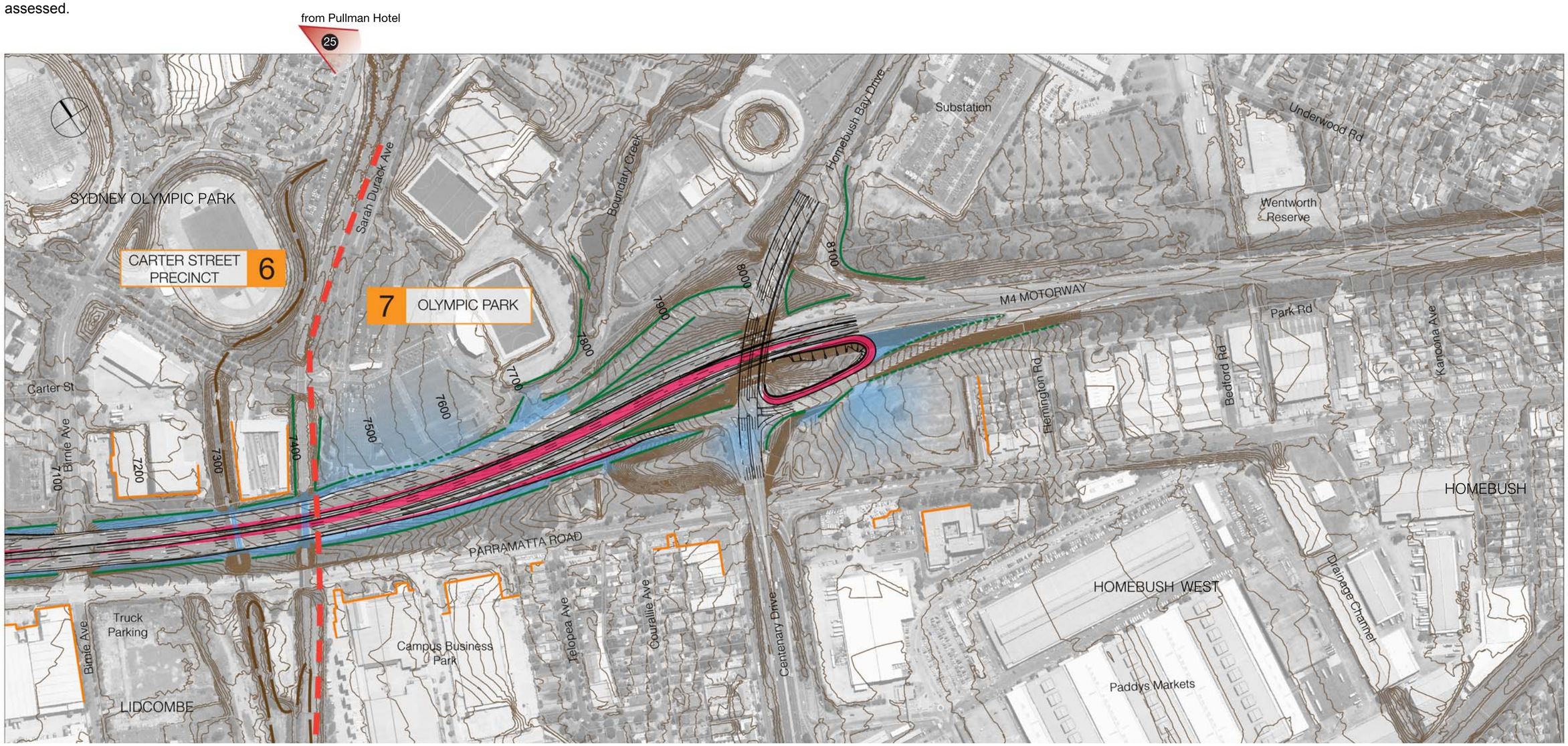
- Visual exposure
- Built form defines visual catchment
- New pavement
- 1 Assessed viewpoints from adjacent setting
- Character zones
- Vegetation defines visual catchment
- New viaduct
- A Viewpoints from within the motorway

Figure 9.4 Visual Envelope Map - Sheet 4

WestConnex

ZONE 7

Within Zone 7 the visual exposure is strongly limited due to the predominant cutting situation of the M4 Motorway therefore a low visual exposure has been assessed.



SHEET 5

visual envelope

- Visual exposure
- Character zones
- Built form defines visual catchment
- Vegetation defines visual catchment
- New pavement
- New viaduct
- 1 Assessed viewpoints from adjacent setting
- A Viewpoints from within the motorway

Figure 9.5 Visual Envelope Map - Sheet 5

9.3 VISUAL IMPACT ASSESSMENT

The visual impact assessment has been based by selecting representative viewpoints from various locations. A number of representative viewpoints have been identified within the general project area. The VEM maps in section 9.2 of this chapter illustrate the location of the selected viewpoints used for the visual impact assessment.

In order to determine the visual impact, sensitivity values have been assigned to the various viewpoints. The sensitivity rating combined with the visual magnitude of impact rating determines the visual impact for each viewpoint and is based on the same matrix as shown in section 9.1 of this chapter.

The assessment is based on *RMS's Environmental Impact Assessment Practice Note - Guidelines for Landscape Character and Visual Impact Assessment No. EIA-N04,"Version 2.0 Issue Date 28 March 2013*.

Due to the limited accessibility into private properties, the particular viewpoints are not within these properties but along the road verge's, local streets and parks. The viewpoints discuss the likely visual effects these properties would experience as a result of the proposal.

It should be noted, that the selected viewpoints focus on areas with a likely higher visual impact. The assessment includes three dimensional model images of the same viewpoints to provide a better comparison of the magnitude of impact. Colour has been used to clearly illustrate the new/changed structures only- and does not represent the final design finish. The representation of the three dimensional model viewpoints do not include all urban and landscape design measures proposed, but rather an indication of the overall engineering structure proposed.

Table 9.4 and 9.5 summarise the overall resulting visual impact of each viewpoint, which are discussed in more detail in the following pages of this report. The assessment considers both views from outside the motorway corridor and views experienced within the motorway.

Table 9.4 Viewpoints outside the road corridor

viewpoint	sensitivity	magnitude	impact
1	high	moderate	moderate-high
2	high	moderate	moderate-high
3	high	negligible	negligible
4	moderate	low	moderate-low
5	low	moderate	moderate-low
6	low	moderate	moderate-low
7	low	moderate	moderate-low
8	low	high	moderate
9	high	moderate	moderate-high
10	high	high/moderate	high/moderate-high
11	high	negligible	negligible
12	high	negligible	negligible
13	high	moderate	moderate-high
14	high	high	high
15	high	moderate	moderate-high
16	moderate	low	moderate-low
17	moderate	high	moderate-high
18	moderate	moderate	moderate
19	low	moderate	moderate-low
20	low	low	low

Table 9.4 continued

viewpoint	sensitivity	magnitude	impact
21	high	low	moderate
22	moderate	moderate	moderate
23	moderate	high	moderate-high
24	moderate	high	moderate-high
25	high	negligible	negligible

Table 9.5 Viewpoints within the road corridor

viewpoint	sensitivity	magnitude	impact
A	low	low	low
B	low	high	moderate
C	low	moderate	moderate-low
D	low	high	moderate

VIEWPOINTS: ZONE 1 - PARRAMATTA/HOLROYD

Figure 9.6 Site Photo. Source: Google Streetview

VIEWPOINT 1	
Description of the setting	View looking south along Railway Street towards the M4 Motorway corridor
Element visible of the proposal	Noise wall height extension in the background
Category of viewer	Residents, pedestrians.
Nature of impact	Adverse
Visual sensitivity	High due to the nature of the viewer.
Magnitude of impact	Moderate, since the proposed works would replace an existing noise wall.
Overall rating of visual impact	Moderate to high
Comment / mitigation measures	Retain existing vegetation where possible.

VIEWPOINTS: ZONE 1 - PARRAMATTA/HOLROYD

Figure 9.7 Site Photo. Source: Google Streetview

VIEWPOINT 2	
Description of the setting	View looking east along Railway Street adjacent to the M4 Motorway corridor
Element visible of the proposal	Extension in height of the existing noise wall
Category of viewer	Residents, pedestrians.
Nature of impact	Adverse
Visual sensitivity	High due to the nature of the viewer.
Magnitude of impact	Moderate, since the proposed works would likely require the removal of screening vegetation.
Overall rating of visual impact	Moderate to high
Comment / mitigation measures	Retain and minimise loss of existing vegetation on verge where possible.

Figure 9.8 Site Photo

VIEWPOINT 3	
Description of the setting	View looking east along Robert Street toward Holroyd Sportsground with Karung Reserve on the left side of the image adjacent the M4 corridor.
Element visible of the proposal	No element visible
Category of viewer	Cyclist, pedestrians and commercial property owners
Nature of impact	Adverse
Visual sensitivity	High due to the surrounding land use.
Magnitude of impact	Negligible
Overall rating of visual impact	Negligible
Comment / mitigation measures	No mitigation required.

VIEWPOINTS: ZONE 1 - PARRAMATTA/HOLROYD

Figure 9.9 Site Photo

VIEWPOINT 4	
Description of the setting	View looking east towards Church Street across the Holroyd Sportsground. The motorway and commercial properties dominate the setting.
Element visible of the proposal	Viaduct structure in the background.
Category of viewer	Cyclist and pedestrians.
Nature of impact	Adverse
Visual sensitivity	Moderate due to the transient nature of the viewer.
Magnitude of impact	Low, since the proposed works would be seen mostly from the distance.
Overall rating of visual impact	Moderate to low
Comment / mitigation measures	Limited opportunities to mitigate. Screen planting along southern verge of on-load ramp.

Figure 9.10 Site Photo

	VIEWPOINT 5
Description of the setting	View looking east towards Church Street. The motorway and commercial properties dominate the setting.
Element visible of the proposal	Viaduct structure in the background.
Category of viewer	Cyclist and pedestrians.
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature of the viewer.
Magnitude of impact	Moderate
Overall rating of visual impact	Moderate to low. The project would not significantly impact the amenity of the shared user path.
Comment / mitigation measures	Limited opportunities to mitigate.

Building for the future

Transport WestConnex Delivery Authority

VIEWPOINTS: ZONE 1 - PARRAMATTA/HOLROYD

Figure 9.11 Site Photo

Figure 9.12 Indicative Photomontage

VIEWPOINT 6	
Description of the setting	View from Church Street looking east along A'Beckett Creek with commercial properties to the south.
Element visible of the proposal	Viaduct structure in the foreground increasing the visual dominance of the motorway.
Category of viewer	Cyclist, pedestrians and commercial property owners
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature of the viewer and surrounding land use.
Magnitude of impact	Moderate
Overall rating of visual impact	Moderate to low
Comment / mitigation measures	Mitigate by planting of trees north of the shared path to aid in screening the structure. Opportunity to re-establish creek vegetation to also assist mitigation (beyond scope of project, in liaison with Sydney Water) .

Figure 9.13 Site Photo

	VIEWPOINT 7
Description of the setting	View from Parramatta Road looking north east with commercial properties in the foreground.
Element visible of the proposal	Viaduct structure in the background.
Category of viewer	Commercial property owners
Nature of impact	Adverse
Visual sensitivity	Low due to the nature of the viewer context.
Magnitude of impact	Moderate
Overall rating of visual impact	Moderate to low
Comment / mitigation measures	Limited opportunities to mitigate.

VIEWPOINTS: ZONE 1 - PARRAMATTA/HOLROYD

Figure 9.14 Site Photo

Figure 9.15 Indicative Photomontage

VIEWPOINT 8	
Description of the setting	View looking west past the Cumberland Line along A'Beckett Creek.
Element visible of the proposal	Viaduct structure in the foreground increasing the visual dominance of the motorway.
Category of viewer	Cyclist and pedestrians
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature of the viewer.
Magnitude of impact	High
Overall rating of visual impact	Moderate
Comment / mitigation measures	Limited opportunities to mitigate except within certain areas of A'Beckett Creek channel where works are affected (in liaison with Sydney Water)

VIEWPOINTS: ZONE 2 - HARRIS PARK/GRANVILLE

Figure 9.16 Site Photo

	VIEWPOINT 9
Description of the setting	View looking towards the proposal at the intersection of Harris Street and Prince Street
Element visible of the proposal	Viaduct structure in the mid-ground plane that moderately increase the prominence of the motorway.
Category of viewer	Residents
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of viewer in combination with the land use.
Magnitude of impact	Moderate
Overall rating of visual impact	Moderate to high
Comment / mitigation measures	Mitigate by planting of trees in front of the viaduct to aid in screening the structure and settling it in the landscape.

VIEWPOINTS: ZONE 2 - HARRIS PARK/GRANVILLE

Figure 9.17 Site Photo

VIEWPOINT 10	
Description of the setting	View looking east along A'Beckett Street to the intersection with Alfred Street.
Element visible of the proposal	Viaduct structure visible in the mid-ground plane, increasing the prominence of the motorway.
Category of viewer	Residents
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of viewer in combination with the land use.
Magnitude of impact	High (property at the intersection of A'Beckett Street and Alfred Street). Other properties are likely to experience a moderate magnitude of impact due to the screening effect of existing vegetation.
Overall rating of visual impact	High/Moderate to high
Comment / mitigation measures	Mitigate by maximising retention of existing planting and introducing additional screen planting.

Figure 9.18 Site Photo

VIEWPOINT 11	
Description of the setting	View looking south along Arthur Street with the motorway in the background
Element visible of the proposal	Minor elements of the proposal visible.
Category of viewer	Residential property owners
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of the viewer in combination with the land use.
Magnitude of impact	Negligible
Overall rating of visual impact	Negligible
Comment / mitigation measures	No mitigation measures required.

VIEWPOINTS: ZONE 2 - HARRIS PARK/GRANVILLE

Figure 9.19 Site Photo

	VIEWPOINT 12
Description of the setting	View looking west from corner of A'Beckett Street and Parker Street north of the M4 corridor. The M4 Motorway viaduct is visible in the middle ground.
Element visible of the proposal	It is likely the new viaduct would be visible as it is higher than the existing viaduct in this location, although the existing screening vegetation on the northern side provides an effective buffer.
Category of viewer	Residential property owners
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of the viewer in combination with the land use.
Magnitude of impact	Negligible
Overall rating of visual impact	Negligible
Comment / mitigation measures	Retain existing vegetation and introduce tall screen planting in the open spaces between the viaducts.

Figure 9.20 Site Photo

VIEWPOINT 13	
Description of the setting	View looking north along Alfred Street with the motorway in the mid-ground.
Element visible of the proposal	Viaduct structure in the mid-ground plane moderately increasing the prominence of the motorway.
Category of viewer	Residents
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of viewer in combination with the land use.
Magnitude of impact	Moderate as existing vegetation provides for some effective screening
Overall rating of visual impact	Moderate to high
Comment / mitigation measures	Mitigate through screen planting at key locations.

VIEWPOINTS: ZONE 2 - HARRIS PARK/GRANVILLE

Figure 9.21 Site Photo

VIEWPOINT 14	
Description of the setting	View looking north along Arthur Street with the motorway in the background.
Element visible of the proposal	Viaduct structure in the background plane moderately increasing the prominence of the motorway.
Category of viewer	Residents
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of viewer in combination with the land use.
Magnitude of impact	High, even though existing vegetation and buildings provide for some effective screening.
Overall rating of visual impact	High
Comment / mitigation measures	Limited opportunities to mitigate. Height of structure makes the proposal more prominent.

Figure 9.22 Site Photo

VIEWPOINT 15	
Description of the setting	View looking east along Hamilton Street with the motorway in the background.
Element visible of the proposal	Viaduct partially visible in the background moderately increasing the prominence of the motorway.
Category of viewer	Residents
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of viewer in combination with the land use.
Magnitude of impact	Moderate as existing vegetation provides for some effective screening.
Overall rating of visual impact	Moderate to high
Comment / mitigation measures	Limited mitigation opportunities. Introduce screen planting where possible. Property at cul-de-sac would experience a high impact due to the proximity and little screening potential is available.

VIEWPOINTS: ZONE 2 - HARRIS PARK/GRANVILLE

Figure 9.23 Site Photo

	VIEWPOINT 16
Description of the setting	View looking towards the motorway from the parking lot within Sydney Speedway.
Element visible of the proposal	Minimal exposure to the motorway due to effective vegetative screening. Some loss of vegetation would occur, yet a significant wedge of planting would remain.
Category of viewer	Recreational
Nature of impact	Adverse
Visual sensitivity	Moderate due to the static nature of viewer in context with recreational activities.
Magnitude of impact	Low as extensive existing vegetation provides for some effective screening.
Overall rating of visual impact	Moderate to low
Comment / mitigation measures	Introduce screen planting along motorway's verge. Apply a construction methodology that minimises the loss of existing vegetation. Minimise the height of retaining walls.

VIEWPOINTS: ZONE 3 - PARRAMATTA/HOLROYD

Figure 9.24 Site Photo

VIEWPOINT 17	
Description of the setting	View looking east along Martha Street with commercial/light industrial properties facing the M4 Motorway and existing dense screening vegetation.
Element visible of the proposal	New viaduct/retaining structure flanking the street would remove the screening vegetation along the length of Martha Street significantly increasing the motorway's prominence.
Category of viewer	Commercial/light industrial premises
Nature of impact	Adverse
Visual sensitivity	Moderate due to the static nature of viewer combined with a less sensitive land use.
Magnitude of impact	High as existing vegetation would be removed for the proposal.
Overall rating of visual impact	High to moderate
Comment / mitigation measures	Mitigate through implementation of new streetscape layout including street tree planting in blisters.

Building for the future

Transport WestConnex Delivery Authority

VIEWPOINTS: ZONE 3 - PARRAMATTA/HOLROYD

Figure 9.25 Site Photo

VIEWPOINT 18	
Description of the setting	View looking north along Harbord Street with the motorway in the background.
Element visible of the proposal	Viaduct/retaining structure in the background plane significantly increasing the prominence of the motorway as existing vegetation would be removed to allow for the structure.
Category of viewer	Commercial/light industrial premises
Nature of impact	Adverse
Visual sensitivity	Moderate due to the static nature of viewer combined with a less sensitive land use.
Magnitude of impact	Moderate as existing vegetation and buildings provides for some effective screening.
Overall rating of visual impact	Moderate
Comment / mitigation measures	Mitigate through implementation of new streetscape layout including street tree planting.

VIEWPOINTS: ZONE 4 - DUCK RIVER CROSSING

Figure 9.26 Site Photo

VIEWPOINT 19	
Description of the setting	View looking east along the shared path, west of Duck River.
Element visible of the proposal	Proposal would dominate the foreground and be highly visible.
Category of viewer	Pedestrians and cyclists.
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature. The setting is of limited visual value due to its context with the general area, hence it is considered a commuter route and less a recreational route.
Magnitude of impact	Moderate. The current situation provides a similar visual experience.
Overall rating of visual impact	Moderate to low.
Comment / mitigation measures	Screen planting should be considered were feasible to reduce the prominence of the new structure.

VIEWPOINTS: ZONE 5 - DUCK RIVER TO HASLAMS CREEK

Figure 9.27 Site Photo

	VIEWPOINT 20
Description of the setting	View looking east along Adderley Street West taking in the commercial properties flanking the street, screening vegetation and the M4 Motorway on the far left. The screening trees are dying in this location.
Element visible of the proposal	Widening works likely to be visible through the trees, but works remain within the existing road corridor.
Category of viewer	Commercial/light industrial premises
Nature of impact	Adverse
Visual sensitivity	Low due to the nature of the land use.
Magnitude of impact	Low
Overall rating of visual impact	Low
Comment / mitigation measures	Apply construction methodologies that minimise loss of vegetation, reinstate as much vegetation as practical and replace poor quality vegetation.

Figure 9.28 Site Photo

VIEWPOINT 21	
Description of the setting	View looking east along Deakin Street from the corner of Stubbs Street.
Element visible of the proposal	Proposal is likely not to be visible as there is a dense buffer of existing established vegetation flanking the M4 corridor.
Category of viewer	Resident
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of viewer in combination with land use.
Magnitude of impact	Low, as screening vegetation provides a visual buffer.
Overall rating of visual impact	Moderate
Comment / mitigation measures	Minimise disturbance to existing screening vegetation by building the wall from the motorway side if possible.

VIEWPOINTS: ZONE 5 - DUCK RIVER TO HASLAMS CREEK

Figure 9.29 Site Photo. Source: Google Streetview

VIEWPOINT 22	
Description of the setting	View looking west along Adderley Street West. The M4 Motorway corridor is on the right.
Element visible of the proposal	New noise wall within the motorway corridor
Category of viewer	Residents, pedestrians.
Nature of impact	Adverse
Visual sensitivity	Moderate due to the mixed nature of the viewers.
Magnitude of impact	Moderate, the proposed works would be partially screened by existing vegetation.
Overall rating of visual impact	Moderate
Comment / mitigation measures	Retain existing vegetation where possible. Mitigate through improvements to parkland landscape with new screen planting.

Figure 9.30 Site Photo

VIEWPOINT 23	
Description of the setting	View looking west from within the parkland adjacent the Newington(Olympic Village) residential area and M4 corridor.
Element visible of the proposal	The proposal site is screened by existing noise walls and planting either side of the wall which are likely to impacted by the widening works in this location.
Category of viewer	Park user/resident
Nature of impact	Adverse
Visual sensitivity	Moderate due to the nature of the land use and orientation of adjacent residences.
Magnitude of impact	High due to potential loss of screening vegetation.
Overall rating of visual impact	High to moderate
Comment / mitigation measures	Retain as much as possible the existing vegetation. Apply construction methodologies that minimise loss of vegetation and reinstate as much vegetation as practical. Noise walls to be reinstated if impacted.

VIEWPOINTS: ZONE 6 - CARTER STREET PRECINCT

Figure 9.32 Site Photo

VIEWPOINT 24	
Description of the setting	View looking east from Hill Road towards the new on-ramp position and M4 Motorway overpass.
Element visible of the proposal	Eastbound motorway on-ramp. Existing vegetation (centre of photograph) would be removed.
Category of viewer	Commercial/light industrial premises
Nature of impact	Adverse
Visual sensitivity	Moderate due to the nature of the current and future land use.
Magnitude of impact	High due to loss of screening vegetation.
Overall rating of visual impact	High to moderate
Comment / mitigation measures	Retain as much as possible the existing vegetation. Apply construction methodologies that minimise loss of vegetation and reinstate as much vegetation as practical.

VIEWPOINTS: ZONE 7 - OLYMPIC PARK

Figure 9.33 Site Photo

VIEWPOINT 25	
Description of the setting	View from the upper floors of the Pullman Hotel looking south towards the motorway.
Element visible of the proposal	Proposal would likely not be visible.
Category of viewer	Visitor resident
Nature of impact	Adverse
Visual sensitivity	High due to the static nature of viewer, contributed by panoramic views.
Magnitude of impact	Negligible
Overall rating of visual impact	Negligible
Comment / mitigation measures	No mitigation strategies required.

VIEWPOINTS: ALONG THE CORRIDOR

Figure 9.34 Site Photo

	VIEWPOINT A
Description of the setting	View looking east along the M4 Motorway viaduct adjacent to A'Beckett Street prior to intersection with Alfred Street.
Element visible of the proposal	New viaduct as the existing vegetation in the background to the right of the picture would be impacted upon.
Category of viewer	Motorist
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature of the viewer.
Magnitude of impact	Low
Overall rating of visual impact	Low
Comment / mitigation measures	Mitigate through additional screen planting at key locations defining the motorways verge.

VIEWPOINTS: ALONG THE CORRIDOR

Figure 9.35 Site Photo

VIEWPOINT B	
Description of the setting	View looking west along the motorway adjacent Martha Street on the left.
Element visible of the proposal	New viaduct. Existing vegetation (left of photograph) would be removed.
Category of viewer	Motorist
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature of the viewer.
Magnitude of impact	High due to loss of screening vegetation.
Overall rating of visual impact	Moderate
Comment / mitigation measures	Vegetation loss opens up contextual views to motorists and defines a change in the motorway journey with the start of the viaduct. Streetscape strategies would reinstate some vegetation.

Figure 9.36 Site Photo

VIEWPOINT C	
Description of the setting	View looking west along the M4 Motorway from the Stubbs Street overpass. The existing retaining walls and remnants of the toll system are visible on left of the image.
Element visible of the proposal	Widening works to the existing corridor and planting to edges of corridor.
Category of viewer	Motorist
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature of the viewer.
Magnitude of impact	Moderate as the existing vegetation provides for some effective screening
Overall rating of visual impact	Moderate to low
Comment / mitigation measures	Additional vegetative screening reinforces parkway character of the existing motorway.

VIEWPOINTS: ALONG THE CORRIDOR

Figure 9.37 Site Photo

	VIEWPOINT D
Description of the setting	View looking at the northern verge of the motorway along Hill Road.
Element visible of the proposal	Eastbound motorway entry ramp. The existing vegetation (to the right of photograph) would be impacted upon by the proposal.
Category of viewer	Motorist
Nature of impact	Adverse
Visual sensitivity	Low due to the transient nature of the viewer
Magnitude of impact	High due to loss of screening vegetation along northern verge.
Overall rating of visual impact	Moderate
Comment / mitigation measures	Retain as much as possible the existing vegetation. Apply construction methodologies that minimise loss of vegetation and reinstate as much vegetation as practical.

9.4 OVERSHADOWING ASSESSMENT

IN VICINITY OF ARTHUR STREET

The adjacent shadow diagrams, (Figures 9.59 to 9.64) illustrate the expected shadow impacts to the areas south of the viaduct, in the vicinity of Arthur Street. This location is where the viaduct is likely to have the highest overshadowing due to the height of the structure.

Whilst the largest overshadowing would occur during the winter months early in the morning, minimal impact would occur in the afternoon. During the summer solstice, as the overall overshadowing is fairly contained, impacts are limited.

Note, the illustrated shadows are at ground plane and do not take into consideration built form elements.

Figure 9.38 June 21 - 9:00am

Figure 9.39 December 21 - 9:00am

Figure 9.40 June 21 - 12:00pm

Figure 9.41 June 21 - 3:00pm

Figure 9.42 December 21 - 12:00pm

Figure 9.43 December 21 - 3:00pm

IN VICINITY OF GOOD STREET

The adjacent shadow diagrams, (Figures 9.65 to 9.70) illustrate the expected shadow impacts to the areas south of the viaduct, in the vicinity of Good Street. Due to the orientation of the alignment, the overshadowing is more prominent compared to Arthur Street, even though the viaduct height is lower.

The overshadowing predominantly impacts green areas and residual spaces with the exception of a few residences. The diagrams do not take into account built form elements hence, the shadows are shown at the ground plane.

The largest overshadowing would occur during the winter months early in the morning and late afternoon. During the summer solstice, the overall overshadowing is negligible.

Figure 9.44 June 21 - 9:00am

Figure 9.45 December 21 - 9:00am

Figure 9.46 June 21 - 12:00pm

Figure 9.47 June 21 - 3:00pm

Figure 9.48 December 21 - 12:00pm

Figure 9.49 December 21 - 3:00pm

9.5 MITIGATION MEASURES

This section summarises the mitigation measures which have been identified in this report as design strategies in Chapter 7.0 - *Strategic Concept Design* and 8.0 - *Concept Design Detailed Areas*.

DURING DESIGN DEVELOPMENT

- During detailed design, develop a landscape plan for the project to include the setout, species and planting guides depicted in this report at a more detailed level.
- Identify locations for site compounds that minimise impacts on the local community, where possible.
- Where feasible and reasonable, identify areas within site compounds for provision of additional screen planting to reduce visual impacts.
- Provide planting in front of the new viaduct to aid in screening and reducing the prominence of the new structure, and to assist in settling it into the surrounding landscape.
- Maximise the retention of existing planting and apply a construction methodology that minimises the loss of existing vegetation where possible.
- Where appropriate, to mitigate effects of new retaining walls in streetscapes, introduce street tree planting and consider improved streetscape layouts.
- Where noise walls are to be modified and /or new walls proposed, mitigate effects by reinstating vegetation and introducing new screen planting where practical.
- Where affected by the project, allow for the replacement of poor quality or degraded and weed infested vegetation along the motorway corridor.
- Strengthen the local biodiversity of the landscape by reinforcing the local indigenous plant communities as new plantings wherever appropriate.
- Introduce landscape restoration works that promote re-establishment of riparian species to affected creek channels and buffers.
- Extend existing median plantings, wherever appropriate, to strengthen the parkway character.
- Consider introducing low landscape retaining walls, rather than batters to minimise impacts on existing significant vegetation.
- Integrate design across built form components to create a cohesive legible architectural language.
- Consider construction methodologies and typologies of superstructures that would minimise the footprint of construction areas required.
- Consider curved shape for noise walls along the viaduct to minimise visual bulk and to add interest to the structure.
- Enhance the entry to Parramatta where appropriate with landscape design strategies.
- Incorporate where possible, open, uncluttered spaces beneath the viaduct suitable for interactive land use by community.
- Allow for improved lighting under the viaduct to enhance safety in affected areas.
- Maintain cycleway and connections and improve where possible.
- Develop a hoarding strategy that aids in limiting visual impacts during construction.
- Promote on-going consultation with Councils and affected stakeholders to identify opportunities.

DURING CONSTRUCTION

- Provide tree protection to significant trees and vegetation to protect trees from damage during construction and retain trees and vegetation to minimise visual impacts.
- Minimise impacts to areas of threatened vegetation communities and significant tree planting by protecting areas during the works.

DURING OPERATION

- Develop a landscape management plan to cover maintenance and management of landscaped areas during operation.

10.0 CONCLUSION

The proposal is situated in a highly urbanised area, already fronting a major motorway, and strategically located between two major centres, Sydney and Parramatta. The proposal would contribute to enhancing connectivity for the future vitality of the Sydney metropolitan area.

Being an expansion of the existing motorway, the proposal has a limited overall effect on the general landscape character of the area. The sensitive resolution of the motorway expansion within the existing corridor limits any impacts along the eastern portion of the proposal. West of Duck Creek, the impacts are more significant, yet with the mitigation strategies adopted, combined with the fact that the proposal is an expansion of an existing motorway, limits these impacts.

In a number of cases, existing noise walls would need to be extended or replaced, yet the character of the areas impacted is not expected to significantly change as there are already existing noise walls. It is critical however, that the construction methodologies for these elements limit any impacts to screening vegetation.

Most areas to the north of the motorway are not impacted (except for the extension of noise walls) and those areas most impacted are less sensitive to change such as Sydney Speedway and the industrial estates near Hill Road. Towards the southern verge, the largest impacts are along Martha Street, where the loss of significant vegetation and the introduction of retaining structures would have a dramatic effect on the streetscape. Mitigation measures as outlined in this report are critical to settle the new works in its setting, whilst providing some visual screening to properties along the route.

Between the Carlingford Railway Line and James Ruse Drive, properties would be impacted along the southern verge, including potential acquisition of some properties. The impact of the proposal is considered less significant between the railway line and Good Street as green buffer zones would assist in visually screening the proposal.

Between Good Street and Arthur Street, the impacts are considered higher on particular properties such as along A'Beckett Street, yet the overall impact is limited to the overall community. The potential acquisition of various properties would provide the opportunity for vegetative screening, thereby limiting these impacts to properties exposed by demolition of buildings on acquired properties..

There is also opportunity to improve riparian zones at A'Beckett Creek and Duck River through which the project passes.

Within the western section of the proposal, the existing shared user path would be impacted by increasing the extent of structures overhead, thereby further limiting daylight. The proposal has the opportunity to assist in the revitalisation of the spaces beneath the existing motorway. The introduction of lighting and landscape treatments to add interest and legibility is considered important from an urban design point of view, to create more user friendly spaces.

KEY PROCESSES IN NEXT STEPS:

- Consultation with local council's with regard to opportunities for new land uses for the spaces beneath the viaducts.
- Consultation with Sydney Water with regard to opportunities to enhance A'Beckett Creek and Duck River where affected by the works.
- Key elements, structures and noise walls to be further refined in design development.
- Development of an artwork strategy
- Gantry design development

APPENDIX 1

REFERENCE DOCUMENTS

Auburn LEP 2010, Auburn City Council

Beyond the Pavement, Urban design policy procedures and design principles, Transport Roads and Maritime Services Centre for Urban Design, February 2014

Bridge Aesthetics Design guidelines to improve the appearance of bridges in NSW, Transport Roads and Maritime Services Centre for Urban Design, July 2012

Guideline for Landscape Character and Visual Impact Assessment EIA-N04, Transport Roads and Maritime Services Centre for Urban Design, Version 2.0, 28 March 2013

Landscape Guideline, RTA, April 2008

Noise Wall Design Guidelines, Design guidelines to improve the appearance of noise walls in NSW, RTA, November 2006

Shotcrete Design Guidelines, RTA, June 2005

NSW Bicycle Guidelines, Roads and Traffic Authority NSW, Version 1.2, July 2005

Parramatta LEP 2011, Parramatta City Council

Soil Landscapes of Sydney, Soil Conservation Service of NSW (1989)

Strathfield LEP 2012, Strathfield Council

The Native Vegetation of the Cumberland Plain, Western Sydney: systematic classification and field identification of communities, Tozer 2003

Draft WestConnex M4 Widening Pitt St Parramatta to Homebush Bay Drive, Homebush Construction and Operational Road Traffic Noise and Vibration Impact Assessment, SLR Consulting Australia, 2014

Draft WestConnex Motorway Urban Design Framework, WestConnex Delivery Authority - RMS Centre for Urban Design, September 2013

WestConnex M4 Widening Socio-Economic Assessment, QE06802, Sinclair Knight Merz (SKM), November 2013

WestConnex M4 Widening Biodiversity Assessment, Sinclair Knight Merz (SKM)