

MITIGATION MEASURES 7.0

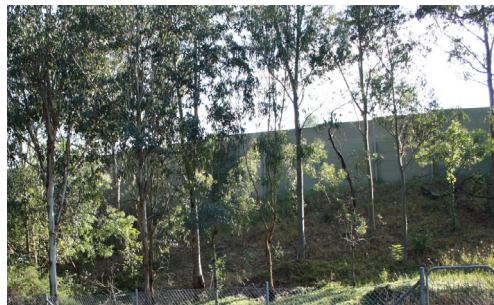
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7.1.4 Noise Mitigation

At present, noise mitigation is well established however the existing noise wall palette is varied in both colour and material comprising lightweight concrete, timber, metal and many different paint colours (refer to Illustrations 76 to 79). The existing wall panels are irregular heights and appear to have been extended without consideration to matching detailing and finishes. It appears from a visual analysis that there is no strategy behind the placement of the different materials and colours. This inconsistency makes it difficult to achieve a linear identity for the motorway, compromises visual amenity and is difficult to maintain. Noise Walls are well screened from the off road view either in the older subdivisions sections north of Salt Pan Creek due to being located further from development (separated by a linear park created from residual land from the motorway development) and also screened by embankment planting or for newer development areas having back fences located on the motorway and again being planted. It is therefore the motorway user view which is important to improve as some noise walls are immediately adjacent the motorway, visible and have limited opportunity for screening.

As part of the Motorway upgrade, there is likely to be the need for the replacement of some existing walls, and new walls to fill gaps adjacent to residential areas.



*Illustrations 76 - 79:
Existing noise wall treatments (clockwise from top left) metal, timber, lightweight
concrete, and different paint palette (images supplied by HBO+EMTB)*

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The noise wall design strategy proposed for this project seeks to:

- Establish a linear identity along the M5 for the road user – thereby enhancing legibility;
- Respond to the natural bushland setting of the road corridor; and
- Improve visual amenity – particularly for the motorway user as the off road neighbour has substantial screening and it is proposed that this would be retained.

The noise wall panel design would consider both the roads users and road neighbours views. Panel design would also consider the M5 Maintenance Team requirements for minimal texture/ patterning and a limited colour palette for ease of maintenance.

The proposed noise wall design strategy comprises:

- A Lightweight Concrete Panel is proposed in areas that adjoin existing walls and will remain the predominant noise wall material utilised along the motorway (refer to Illustration 80). These walls will provide a backdrop to the planted corridor edges and are proposed to be painted a colour that better blends with the existing setting.
- A Transparent Panel may be used when either replacing or adding new walls to bridges (refer to Illustration 81). This would allow views to be opened up from the motorway corridor and provide better visual connection to the surrounding context. These panels would be constructed using a slender steel post.
- The Precast Concrete Panel is proposed to be a visible signature for the M5 Motorway user and used only in limited locations (to be determined). The colour palette would be selected to distinguish the M5 from the adjacent M7 Motorway and M5 East Motorway and contrast the bushland character of the M5 motorway corridor. The pattern references the distinctive Cumberland Plain woodland landscape of the M5 and would be a stylised repeat of the Motorway alignment (refer to Illustration 82).
- Where overshadowing of residences may be an issue, transparent panels may also be used at these locations (as yet not determined).

The design of any new walls immediately adjacent to the carriageway and therefore highly visible to passing traffic would consider alternative strategies to reduce the visual impact such as:

- Mounding to reduce the wall heights;
- Landscape screening such as tree and shrub planting or the use of climbers on the wall;
- Where limited space for landscape screening, varying the colour, overlapping panels or varying the panel shape (for example not just rectangular) may be considered.

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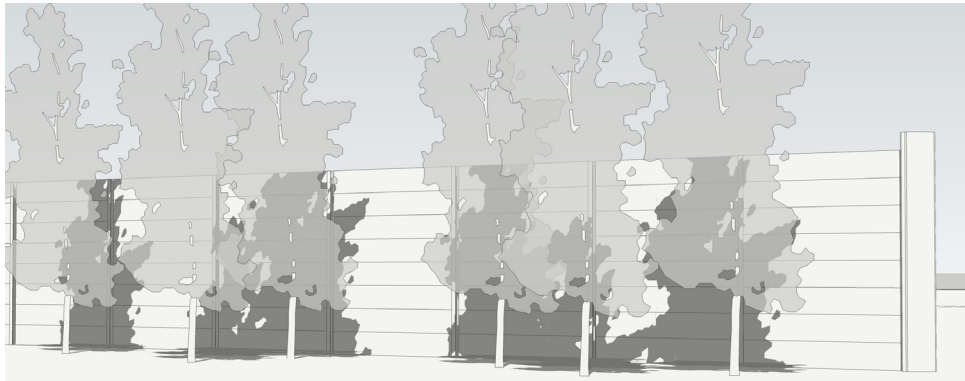


Illustration 80:
Proposed lightweight concrete panel (Type L) noise wall with planting to residences
(image supplied by HBO+EMTB)

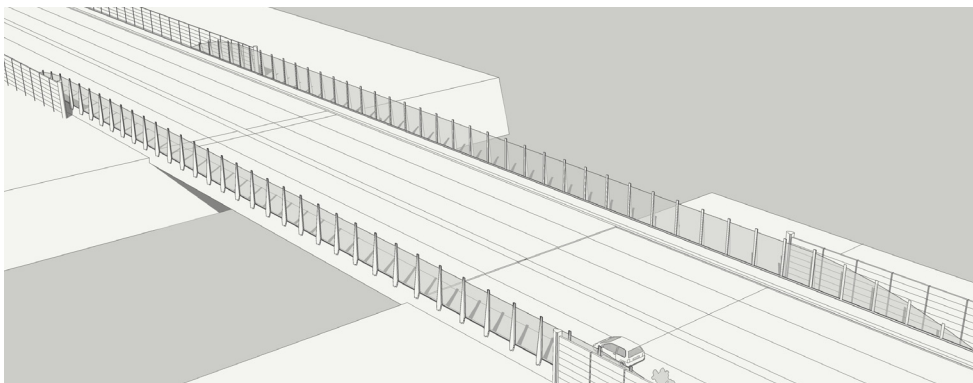


Illustration 81:
Proposed transparent panel used on local road overbridges (Type T) noise wall (image supplied by HBO+EMTB)

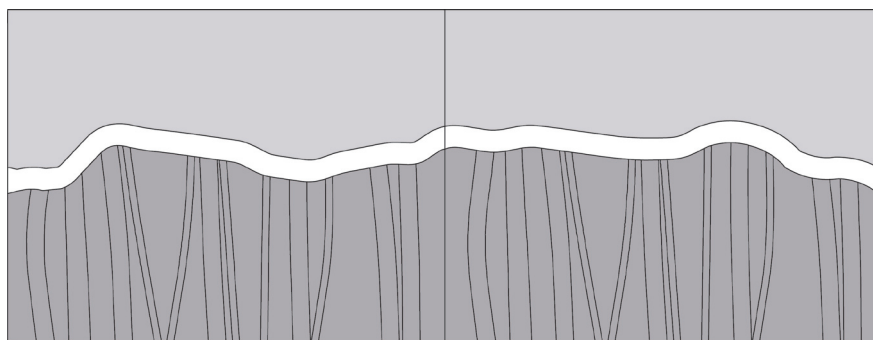


Illustration 82:
Proposed precast concrete panel (Type P) noise wall
(image courtesy of HBO+EMTB)

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7.1.5 New and Modified Sedimentation Basins

Design of the new and modified sedimentation ponds would consider re-vegetation opportunities as well as re-shaping the landform to reduce visibility and maintain the Cumberland Plain Woodland character of the Motorway. In addition, canopy tree planting around some ponds behind noise walls would enhance visible canopy above noise walls, and thus assist in retaining the green corridor experience for motorists and screening the road from surrounding residences.



Illustrations 83:
Proposed sedimentation basin treatment (drawing supplied by HBO+EMTB)

LEGEND

- Existing vegetation
- Feature tree
- Pasture grasses
- Basin-margin zone plants

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7.1.6 Modification of Bridges

Modification of existing bridges at the crossing of the Queen Street and Nuwarra Road would have little visual impact itself as it involves the infill of the existing bridge and does not require clearing additional to or outside areas affected by carriageway duplication. The reconstruction of the De Meyrick Street underpass would be consistent with the existing structure.

Due to difficulties in constructing the OMCS conduit piping underground at some bridge locations, it is proposed that the galvanised steel conduits are fixed to the outside face of some existing bridges. The bridges are visible from the local roads and Salt Pan Creek open space but not from the Motorway itself. The bridges where this is proposed include: Peshurst Road Underpass, Bonds Road Underpass, Salt Pan Creek Bridge, Queen Street Underpass and Nuwarra Road Underpass. It is proposed to visually ameliorate these exposed pipes through the design of a facing/screen applied to the outside face of the piping/bridge concealing the pipes from view for the local road users and local residents/ workers. The design of the screens needs to be integrated with the surrounding structural elements such as bridge safety rails and noise walls and consider the transition from underground the embankments either side. Robust and easily maintainable materials and design is also an important design issue for the screens.

7.1.7 Embankments and Retaining Walls

It is difficult to discern from a review of the existing retaining wall/ abutments a particular strategy that has been adopted in terms of finishes. The existing finishes comprise:

- Motorway Users View:
 - o Random rubble pattern reinforced earth wall panelling at King Georges Road reflecting finishes on the M5 East (refer to Illustration 84);
 - o Hexagonal pattern reinforced earth wall panelling at Heathcote Road (refer to Illustration 85);
 - o Crib lock walls with "pebblecrete" abutment panels at Fairford Road;
 - o Spill through abutments with "jigsaw puzzle piece" shaped paving under bridges at The River Road and Henry Lawson Drive;
 - o Bark pattern reinforced earth wall panelling with stepped Gabion walls at Moorebank Avenue;
 - o Shotcrete (refer to Illustration 86).
- Off Motorway View:
 - o Concrete blockwork for walls below noise walls on embankments;
 - o Low height Gabion Walls at toe of embankments;
 - o Interlocking pavers and "jigsaw puzzle piece" shaped paving under the local road overbridges at Bonds Road and Queen Street (refer to Illustration 87).

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Proposed strategies for any retaining walls or embankments include:

- Any changes to cut and fill batters should seek to minimise impact on the adjoining vegetation on the areas above the proposed earthworks.
- Low retaining walls should be considered in preference to the re-shaping of the embankment. Safety considerations need to be factored into the design of the wall.
- Where new retaining walls are required that are visible, they will need to be sensitive in design to both any existing adjacent abutment and/or new noise wall design.
- Shotcrete should be avoided and hyrolmulching/seeding considered where the embankment is self supporting.



Illustrations 84 - 87:
Existing retaining wall/ abutments (clockwise from top left) random rubble pattern, hexagonal pattern, shotcrete, and interlocking pavers (images courtesy of HBO+EMTB)

7.1.8 Construction Compounds

A number of sites have been identified as potential locations for construction site compounds and excess spoil stockpiles (refer to Illustration 64). Once construction is complete, it is proposed that these sites will be returned to at least their pre-construction state, or to designs in accordance with the Urban Design and Landscape Plan to be developed during the detailed design stage. This will generally involve revegetation with Cumberland Plain Woodland species (including grasses, groundcovers, shrubs and trees) depending on sight line requirements. Landowners will be consulted on any proposed urban design and landscape treatments.

CONCLUSION 8.0

8.1 CONSISTENCY WITH EXISTING AND DESIRED FUTURE CHARACTER

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The study area adjoins a highly modified landscape of suburban, commercial and industrial land uses, with little tree cover present. The character of the motorway itself is relatively constant as a generally flat four lane carriageway with a grass median and well vegetated verges. As a result of this well vegetated corridor, it is difficult to discern the surrounding land uses for the majority of the motorway length. Exceptions to this are the elevated sections over Salt Pan Creek and Georges River where views into the surrounding landscape are possible.

The project aims to reduce congestion on the motorway and provide improved travel time reliability and, in doing this, would introduce a number of elements into the environment, as described in section 3 and 4 of this Report, including:

- Widened pavement surface where the additional lanes cannot be accommodated within the existing pavement width.
- New infill bridge decking in the central median areas between the existing bridges crossing over Nuwarra Road and Queen Street and the reconstruction of the bridge over DeMeyrick Avenue to current standards.
- Upgrading of existing sedimentation basins, construction of new basins and drainage works.
- Construction of noise barriers and mounds. There is likely to be the need for the replacement of some existing walls, and new walls to fill gaps adjacent to residential areas however the location of these works will be based in the findings of the RTA's noise assessment which is not yet available.
- Installation of fixed signage.
- A new control building adjacent to the existing offices at Hammondville.
- OMCS works including installation of trunk cabling and VMS signs within the motorway corridor and on surrounding roads.

These project elements are consistent with the existing character as they are similar to those already found along the corridor. The urban design principles take into account urban design and visual character not only for the corridor itself, but also reflect its relationship with surrounding areas. The integration of project elements and urban design and landscaping treatments within the corridor helps achieve the desired future character. The urban design and landscaping treatments:

- Include targeted landscaping measures to maintain and enhance the vegetated character of the corridor.
- Provide diversity in landscape treatments at interchanges that distinguishes the various entry and exit points for motorway users.
- Maintain a consistent and distinguishable M5 South West Motorway within the Sydney orbital network through consistent treatments for new motorway elements such as noise walls.
- Would incorporate materials and finishes for new motorway elements that align with those elements already within the corridor.
- Would seek to limit the visual intensity of motorway elements relative to the wider vegetated corridor through a consistent and limited colour palette.

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APPENDIX A

VMS VISUAL ASSESSMENT ADVICE

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MEMORANDUM

VMS Visual Assessment Advice

Introduction

As part of the M5West Widening, six variable message signs (VMS) would be introduced on the motorway and 16 VMS would be introduced on the wider road network around the motorway. This visual assessment memo has been prepared by HBO + EMTB to provide guidance and information as to the potential visual impact resulting from the proposed placement of VMS on the M5 Freeway and in identified localities, typically near intersections on arterial roads leading to the motorway.

The visual impact assessment considers the change in visual impact between the existing situation and the effect of the proposed structure (s).

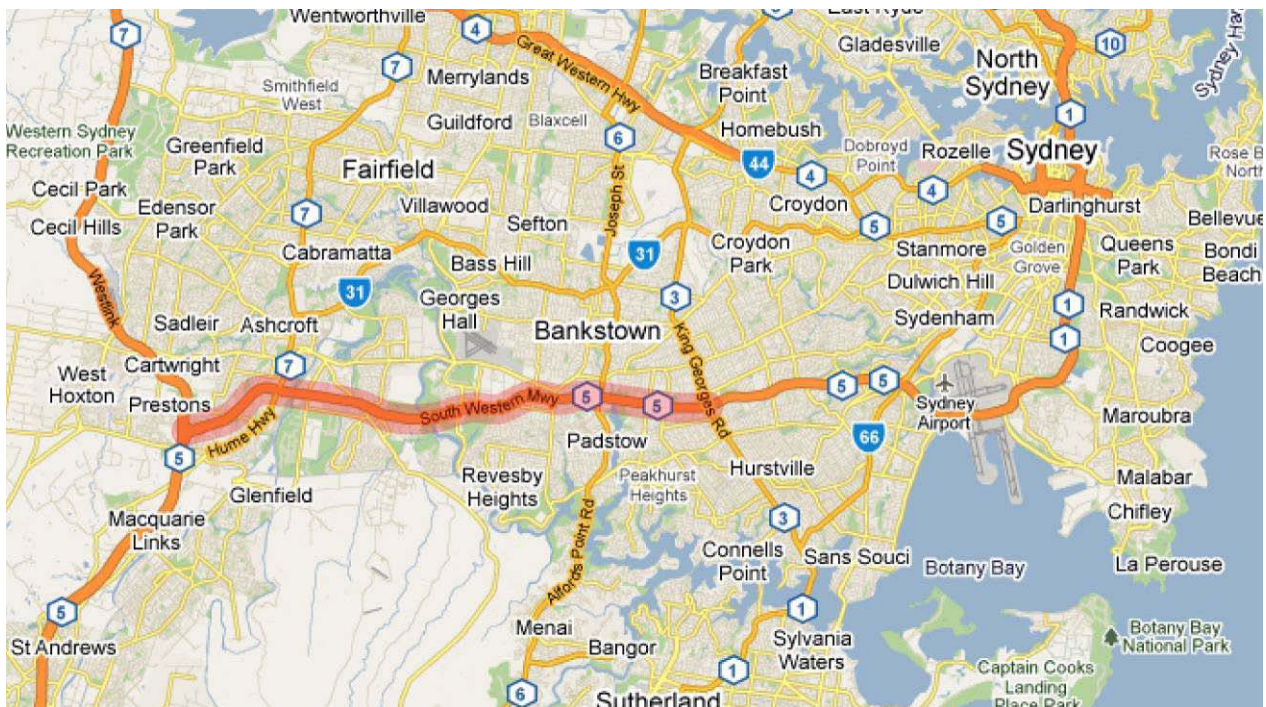


Figure 1.1 Study Area Location (Source: Google Maps 2010)

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Purpose

As described in the RTA’s *Environmental Assessment Guidance Note: Guidelines for landscape character and visual impact assessment EIA-NO4 (2009)*, the purpose of the visual impact assessment is to “...define the day to day visual effects of a project on people’s views”. This is to improve design outcomes, report on impacts and propose mitigation of identified impacts.

Assessment Approach

The impact assessment for the Visible Message Signs (VMS) involved;

- A desktop analysis to ascertain the visual catchment of the project within the area, and potential receptors of the visual impact determined through topographic analysis and Google Maps, Google Maps street View.
- Field inspection of each vantage point per structure to determine the extent of visibility.
- After considering the visibility of proposed structures; the likely impacts on existing and future landscaping, particularly tree planting in verges and at road edges; and any mitigation measures that can be introduced.
- The sensitivity of each VMS locality is assessed and recorded in the table 1.1. The visual impact of each structure is assessed by combining the viewpoint sensitivity and the magnitude of the proposal in a table format using the matrix in table 1.1.

		Magnitude					
		High	High to Moderate	Moderate	Moderate to Low	Low	Negligible
Sensitivity	High	High impact	High impact	Moderate-high	Moderate-high	Moderate	Negligible
	High to Moderate	High impact	Moderate-high	Moderate-high	Moderate	Moderate	Negligible
	Moderate	Moderate-high	Moderate-high	Moderate	Moderate	Moderate-low	Negligible
	Moderate to Low	Moderate-high	Moderate	Moderate	Moderate-low	Moderate-low	Negligible
	Low	Moderate	Moderate	Moderate-low	Moderate-low	Low impact	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

Table 1.1 Visual Impact Grading Matrix, (RTA, 2009)

Urban Design Principles

The following urban design principles established by the RTA (*Guidelines for the Location and Placement of Variable Message Signs*, Dec. 2008. pp 8-9), have been taken into consideration when assessing the sensitivity of the landscape / urban setting in which the proposed structure is to be located.

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- a) Variable message signs should not obscure or interrupt views of a valued landscape or landmark form properties and from the road.
- b) Variable message signs should minimise their silhouette effect against the sky in views from the road and from residential areas.
- c) Variable message signs should not block important vistas in the landscape.
- d) Variable message signs should not have a detrimental impact on important natural or cultural heritage elements and their curtilages.
- e) Variable message signs should be located to minimise clutter.

Sensitivity

The sensitivity of a view is the capacity of the landscape / urban setting to absorb development without creating a significant change in visual character or producing a reduction in scenic quality. The capacity to absorb development is primarily dependent on vegetation cover, landform and existing structures, the viewers, frequency of the view, the distance between the viewers and the development, and the scenic qualities of the location.

Combined with magnitude (of visual effect), sensitivity provides a measure of impact. (RTA, 2009)

The factors which together contribute to the sensitivity of a viewpoint are:

- The extent to which the landscape is pristine or has been modified;
- Its coherence or variability;
- The number of users and frequency of view,
- The distance the viewers are from the proposed development.
- The scenic quality

The following table describes how the visual sensitivity is measured.

Table 1.2 Visual Sensitivity Grading Matrix categorises four sensitivity indicators as High, Moderate or Low and scores them as 3, 2 and 1 respectively.

Sensitivity Indicators		
1. Pristine or Modified	L	1
2. Coherence or Variability	M	2
3. Number of viewers and frequency of view	H	3
4. Distance of viewer from proposed development	M	2
5. Scenic quality	L	1
Sum total of scores (Visual sensitivity ranking)	M	9

Visual Sensitivity is then measured by the sum total of these scores

5-8 points = Low, 9-10 points = Low to Moderate, 11-12 points = Moderate, 12-13 points = Moderate to High, 15 points = High.

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Definitions

Pristine or modified

The more pristine the landscape, the greater the consequence of introducing new development. Areas, which have been modified either for sporting fields or in and around urban development will be ranked, lower than (for example) areas fronting a park.

Coherence or Variability

A location with a coherent character, for example a park or a heritage streetscape will be more visually sensitive to new development than a location whose topography and character has greater variety. This is in part a measure of the capacity of a setting to be able to absorb development without a significant change in visual character. For example, a structure which intrudes upon a heritage view places a 'foreign' object into the frame of the aspect changing the character of the view.

Number of Users and Frequency of view

For larger number of viewers and high usage areas, such as urban development, these will rate higher than less populated areas such as industrial areas. The frequency of view relates to the length of time the development is visible to people who are on either public roads or public lands. The ratings are defined with respect to the hierarchy of the road or urban settlement. A freeway or major town centre has a 'High impact' rating, an arterial road or suburban centre a 'Moderate' impact rating and a local road or neighbourhood has a 'Low' impact rating.

Distance

The distance from a new structure affects the visual sensitivity of the structure as seen by the viewer. Fore-ground views are typified as views within 300 metres of viewer and are rated as having a 'High' impact. These are views where the most detail of the structures can be identified. Mid-ground views occur between 300 and 1 km of the viewer and are rated as having a 'Moderate' impact. Distant views are those views which occur beyond 1km; viewers may distinguish large structures but will have difficulty in isolating individual details from the surrounding landscape. Distant views have a 'Low' impact rating.

Scenic Quality

Scenic quality is associated with the integrity of the landscape and / or urban environment. It includes consideration of important vistas, topographical features, cultural, aesthetic and or heritage landmarks within each location. The degree of contrast with the natural environment, landscape setting, or built form contributes to the impact on the scenic value. A structure which contrasts greatly, such as a large sign in an attractive landscape setting or one of heritage significance would be given a 'High' impact rating. A structure in an urban setting which is cohesive but with existing street elements and trees would receive a 'Moderate' rating. A structure set within an industrial environment or one which is made up of discontinuous street frontages with many disparate elements would be given a 'Low' rating.

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Magnitude of Proposal

The magnitude of proposal is the degree of change the visual landscape undergoes as a result of the proposed structure. The factors considered in assessing the visual magnitude were: the height, size, bulk and location of the proposed structures. These effects were recorded as having a, 'Moderate' or 'Low visual impact. The proposed structure rankings are further discussed, and are notated in the visual assessment tables per VMS as part of the visual impact assessment. For structures inserted into the Motorway environment it was determined that the magnitude of proposal was lower due to the large signage structures being characteristic of this environment/ setting.

Proposed Structures

The VMS structures are a standard RTA structure with minimalist design and clean lines. The sign would be attached to a cantilever gantry structure incorporating a maintenance platform for access to the back of the sign. The support structure and maintenance platform would be fabricated from hot-dip, galvanised steel. This is the final finish.

Two types of VMS structures are proposed as part of the M5 West Widening. These are termed Type B and Type C.

Type B is primarily used where car speed is < 90km and would be installed on arterial roads

Sign size 7.2 metres long, 1.7 metres high and 420mm deep.

The structure rating for a type B VMS is Moderate

Type C is primarily used where car speed are > 90km and would be installed on the Motorway.

Sign size 8.7 metres long, 1.8 metres high and 420mm deep.

The structure rating for a type C VMS is Low.

The controller for each sign would be contained within the sign itself with all other control equipment located in a roadside cabinet. The roadside cabinet would measure approximately 1200mm high x 600mm wide x 500mm deep and would be finished in 'Gull Grey' as specified in AS2700. Each VMS would require connection to a local power supply and connection to the motorway control centre via either connection to the local telecommunications network or direct connection to the motorway control centre. The signs would conform to the RTA specification 'General requirements for the design, installation, commissioning and maintenance of variable message signs' and AS1743 'Road Signs'.

Protective barriers may also need to be installed at the VMS site to prevent injuries to persons in vehicles that would occur if the vehicle were to hit the structure. Such elements need to be designed and located to minimise impacts on property access (in particular lines of sight) and pedestrian access where VMS are located in close proximity to foot paths.

The electronic display lights are recessed into the display board ensuring that while clearly visible to road users, they do not shine into adjacent homes or business premises.

The VMS are located at major decision points on and approaching heavily used road corridors. The main considerations in locating a VMS are the importance of the particular

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route, potential alternatives to the route, critical decision points on the route in regard to alternative route choice, proximity of other routes and proximity of major destination points (e.g. airport, major industrial areas). The number of vehicle incidents in the immediate vicinity of an individual proposed VMS is not a primary consideration in locating a sign.

To be effective the VMS must satisfy three factors:

- Conspicuity.
- Legibility.
- Comprehension.

Conspicuity refers to the ease with which a sign is first noticed and detected. This depends on the luminance, size and location relative to the driver's line of sight. Having read a sign, a driver must also be able to comprehend the meaning of the message and react appropriately.

The following diagrams illustrate the location and type of the proposed VMS structures.

The exact positions of VMS within the identified localities would be determined by Interlink Roads and its contractors in consultation with the Roads and Traffic Authority based on relevant standards and requirements. It is also important to note that trenching works to connect the VMS to local power and telecommunications networks or back to the M5 South West Motorway may extend outside of the VMS localities.

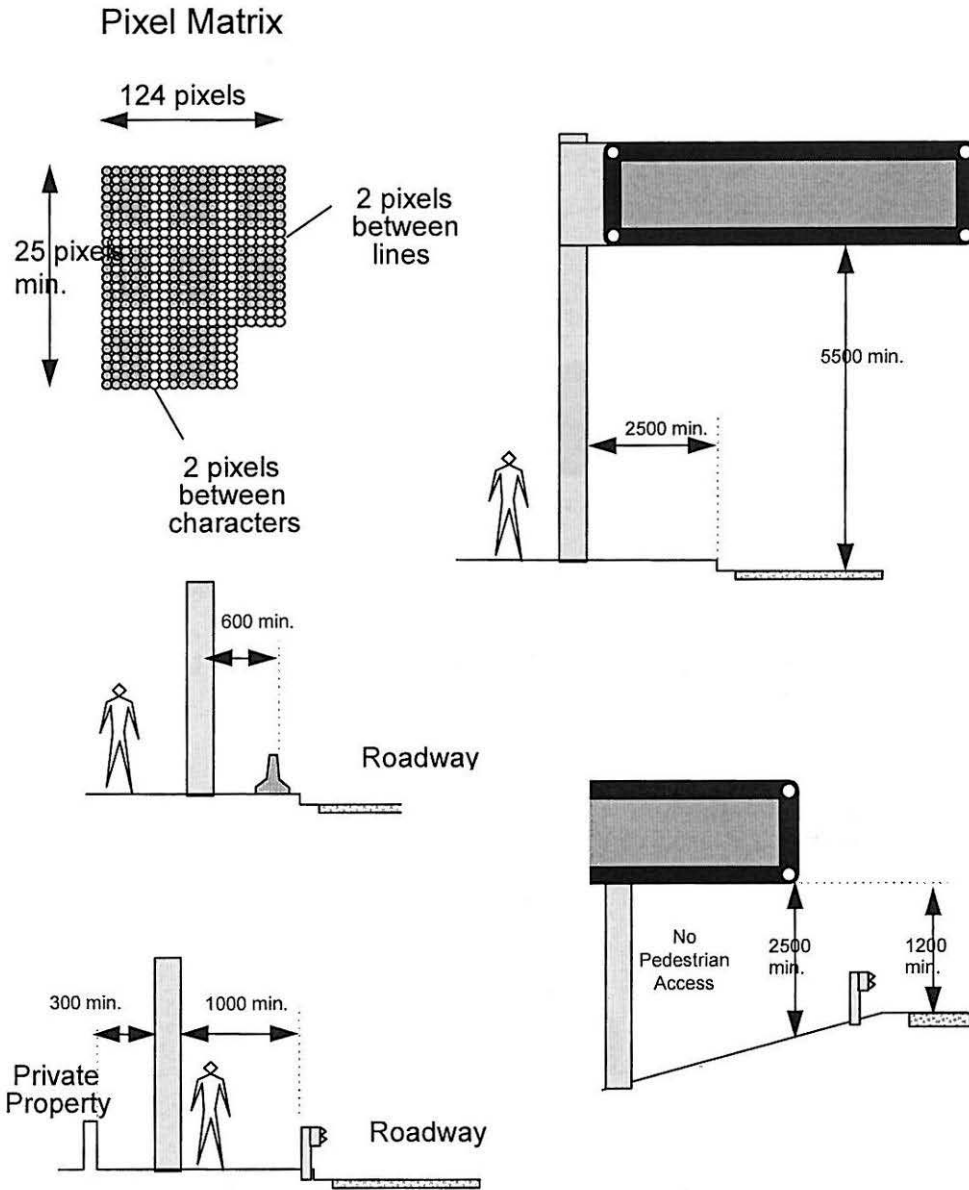
The visual impacts of VMS must be considered from the perspectives of both the road user and surrounding residents and businesses. On the one hand visual prominence to road users is a key requirement in locating a VMS and, on the other hand, visual impacts on surrounding land uses need to be minimised to the greatest extent practicable.

The potential visual impacts of the identified VMS localities on the surrounding visual catchment is documented in table 1.3.

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Dimensions are in mm.

Details

VMS Configurations & Clearances

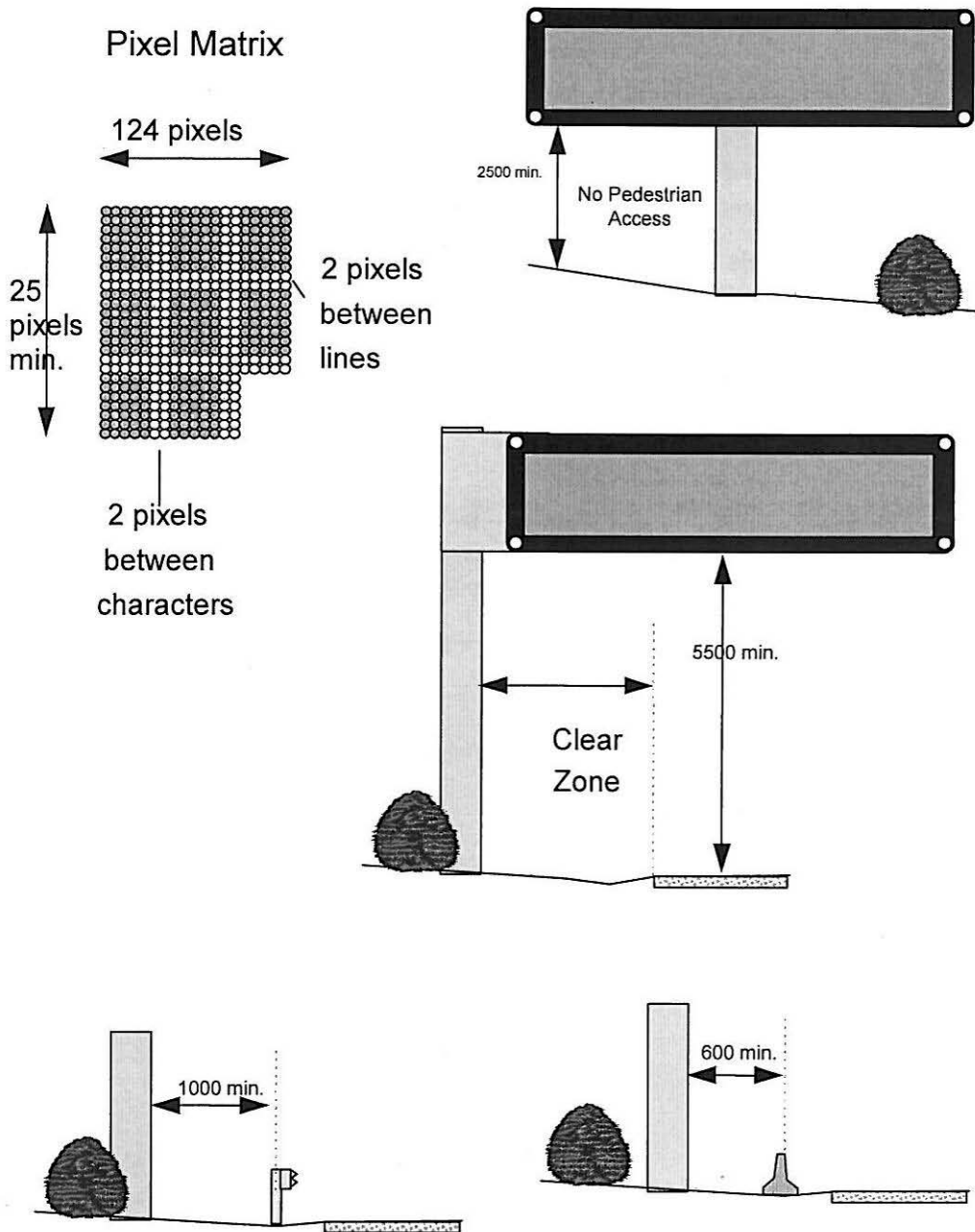
TYPE B

- 1) Full graphics capability
- 2) Dimensions = 124 pixels x 25 pixels
- 3) Capable of displaying up to 4 lines of 18
- 4) Characters of Letter Height 320mm

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Dimensions are in mm.

Detail

VMS Configurations & Clearances

TYPE C (Freeway)

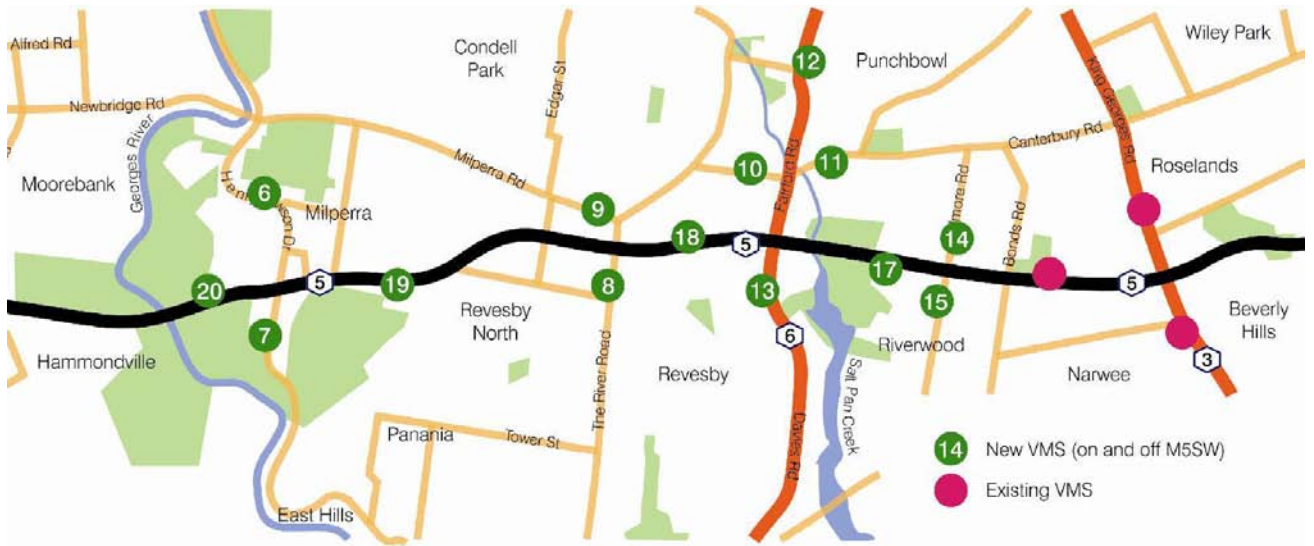
- 1) Full graphics capability
- 2) Dimensions = 124 pixels x 25 pixels
- 3) Capable of displaying up to 4 lines of 18 char
- 4) Characters of Letter Height 400mm.

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Existing VMS locations (pink) and new VMS localities (green)





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Table 1.3 - Potential visual impacts of VMS

No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
1	Hume Highway, south of Liverpool Southbound between Memorial Avenue and Macquarie Street	Local Roads – Type B		The VMS is proposed to be set within a dense urban area adjacent to the southbound carriageway of the Hume Highway, a six lane road. Three storey residential apartment buildings front onto southbound travel lanes. Woodward Park, a large open space, fronts onto the northbound travel lanes. A number of large trees occur along the southern edge providing a potential backdrop. Large light poles, taller in height than the proposed VMS, occur along both sides of the carriageway.	LM	M	M	The VMS would not obscure or interrupt valued or significant landmark views. Surrounding urban development, tall trees and light poles provide a suitable backdrop to absorb the pole structure.
2	Hume Highway, north of Casula Northbound approaching the M5 South West Motorway	Local Roads – Type B		The VMS is proposed to be set within a low rise residential urban area with mixed use elements such as motels and petrol stations occurring along the northbound carriageway. Montclair Park, a linear open space along the eastern edge of Hume Highway, separates the	L	M	LM	The VMS is proposed to be located within the median of the Hume Highway and cantilever over the northbound travel lane. This location minimises any potential visual impact.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
				residential area from the highway.				
3	Newbridge Road, west of Moorebank Avenue Eastbound approaching Moorebank Avenue	Local Roads— Type B		The VMS is proposed to be located on a four lane median separated carriageway east of the Georges River west of Haig Avenue. The approach is elevated above Bill Morrison Parklands, the Georges River and industrial/ commercial development and has dense tree planting to either side. The westbound carriageway has a brief long distance urban view to Liverpool Town Centre.	LM	M	M	The VMS may partially obscure a distant momentary vista to Liverpool Town Centre. The VMS needs to be carefully located so as to not add to existing visual clutter.
4	Newbridge Road, east of Moorebank Avenue Westbound approaching Moorebank Avenue	Local Roads— Type B		The VMS is proposed to be located on a three lane divided carriageway in a light industrial/bulky retail warehousing district.	L	M	LM	The VMS is in keeping with the large scale urban character of the area.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
5	Heathcote Road, south of the M5 South West Motorway Northbound approaching Nuwarra Road	Local Roads— Type B		The VMS is proposed to be located on a four lane divided carriageway which has a planted median. The locality is in a residential area with occasional street tree plantings.	MH	M	MH	The modified landscape is attractive and provides a high quality streetscape. Providing a VMS in this locality has the potential to result in an adverse visual impact. The VMS needs to be sensitively placed in this context.
6	Henry Lawson, Drive, north of the M5 South West Motorway Southbound approaching Bullecourt Avenue	Local Roads— Type B		The VMS is proposed to be located adjacent to a two lane road corridor. The locality is residential in character with houses set back from the carriageway with a turfed verge and substantial street tree plantings.	MH	M	MH	The VMS has the potential to result in an adverse visual impact and contribute to visual clutter in the street. The existing streetscape setting is attractive therefore the VMS must be located to avoid loss of street trees.
7	Henry Lawson, Drive, south of the M5 South West Motorway Northbound approaching the M5 South West Motorway	Local Roads – Type B		The VMS is proposed to be located adjacent a two lane carriageway which is bordered by well established evergreen trees providing an enclosed visual corridor. To the west the carriageway borders a Deepwater Regional Park. To the east	MH	M	MH	The VMS would contribute to visual clutter in what is currently a relatively undeveloped semi rural environment of high coherence and scenic quality. The VMS would not

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
				beyond the treed edge are Kelso Park Sporting Fields. The carriageway is un-kerbed and has a semi rural character.				obscure or interrupt valued or significant landmark views as views are confined to the road corridor.
8	The River Road, south of the M5 South West Motorway Northbound approaching the M5 South West Motorway	Local Roads— Type B		The VMS is proposed to be located on a four lane carriageway in a predominantly suburban residential setting with some mixed uses. The houses generally have an open frontage to the street with a few small street trees. Tall powerlines traverse the eastern side of the carriageway.	ML	M	M	The VMS would not adversely add to the visual clutter as other substantial street signs occur in the distance on approach to the motorway. If located judiciously small street tree plantings may provide a suitable visual backdrop to the pole structure in addition to the distant treed ridgeline setting.
9	Milperra Road, eastbound approaching The River Road	Local Roads— Type B		The VMS is proposed to be located on a six lane carriageway. To the north is a large lot industrial area to the south the land use comprises small lot residential.	L	M	LM	Mixed use and commercial uses with existing well established evergreen trees would provide a suitable visual backdrop for the VMS.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
10	Canterbury Road, west of Fairford Road Eastbound approaching Fairford Road	Local Roads— Type B		The VMS is proposed to be located adjacent to a four lane road corridor. Two lanes traverse eastward through an older style industrial area made up of “big box” retail and internalised office suites. The street edge is discontinuous of varying setbacks and street edge treatments.	L	M	ML	The VMS would not adversely add to the visual clutter due to the existing large amount of commercial signage clutter. Care should be taken to prevent removal of any of the few existing street trees.
11	Canterbury Road near Moxon Road Westbound approaching Moxon Road	Local Roads— Type B		The VMS is set adjacent to a four lane road in an area with some mixed uses, small lot residential and car sales lots, transitioning into large lot industrial uses. Most lots have large setbacks with a poor address to the street. There are few street trees.	L	M	ML	The area has poor visual amenity and seems to be undergoing transition from residential to commercial. The VMS would not adversely add to the visual clutter as the existing context comprises flag poles, overhead electricity wires and poles and lighting poles.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
12	Stacey Street, north of Canterbury Road Southbound prior to the Stacey Street diversion	Local Roads— Type B		The VMS is proposed to be located adjacent to a five lane road, heading north, which is separated by a wide concrete median. The immediate area comprises small lot residential with a number of mature street trees.	L	M	ML	Placement of the VMS between the existing powerpole and street trees would provide the optimum outcome.
13	Fairford Road, south of the M5 South West Motorway Northbound approaching the M5 South West Motorway	Local Roads— Type B		The VMS is proposed to be located adjacent to a six lane road. The immediate area comprises large lot light industrial uses with inconsistent setbacks. A large open turfed area part of the adjacent factory site property, is visible adjacent to the southern carriageway and provides distant panoramic glimpses to Salt Pan Creek riparian treed edge. The M5 South West Motorway overbridge is visible in the street vista to the north.	L	M	ML	The VMS would not adversely add to the visual clutter due to the existing industrial character with signage and lighting poles.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
14	Belmore Road, north of the M5 South West Motorway Southbound approaching the M5 South West Motorway	Local Roads— Type B		The VMS is proposed to be located adjacent to a two lane carriageway with space for on-street car parking. The land uses to the western edge are single lot small scale residential, with the eastern edge comprising large lot light industrial/commercial uses (business park style).	ML	M	M	Varied street edge of large lot industrial buildings provide a suitable visual backdrop. The VMS would be viewed against the sky and, although it will not block an important vista it would impact the street presentation of the landscaped business park frontage.
15	Belmore Road, south of the M5 South West Motorway Northbound approaching the M5 South West Motorway	Local Roads— Type B		The VMS is proposed to be located adjacent to a two lane road with on street car parking to either side. The surrounding land use is residential. There are some street trees and some residences have well established trees with a high canopy in front yards.	ML	M	M	The existing street vegetation of street trees and private property plantings would provide a suitable visual backdrop to visually absorb the VMS. Care should be taken to prevent the removal of existing street trees. The VMS would not adversely add to the visual clutter due to the existing overhead power lines and poles.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
16	Moorebank Avenue, south of the M5 South West Motorway Northbound approaching the M5 South West Motorway	Local Roads– Type B		The VMS is proposed to be located adjacent to a two lane road. The immediate area comprises large lot industrial uses with many undeveloped sites giving it a semi rural character. The western edge is un-kerbed and has a number of mature evergreen trees with dense canopies. Some are within the road corridor. The existing heritage property, Kitchener House, is obscured from the road as it is setback within a garden setting. It has a large car park and industrial complex immediately adjacent to it.	M	M	M	The structure would not obscure or interrupt valued or significant landmark views as it is proposed to be located 150 metres to the south of Kitchener House street frontage, adjacent existing industrial development. Well established trees located on either side of Moorebank Avenue with existing industrial lots would provide a suitable visual backdrop to absorb the structure.
17	Westbound approaching Salt Pan Creek	Motorway– Type C		The VMS is proposed to be located on the M5 Motorway on the approach to the Salt Pan Creek Road Bridge. The view comprises noise walls immediately adjacent the roadway with mature trees and road directional signage located to the rear of the noise barriers.	ML	L	ML	Existing roadside vegetation would provide a partial visual backdrop although there may be some silhouetting against the skyline due to the irregular heights of the tree canopy as can be seen with the current signage. The VMS would not adversely

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
								add to the visual clutter of the Motorway as there is already existing directional signage as part of the Motorway function.
18	Eastbound west of the Gibson Avenue overbridge	Motorway– Type C		The VMS is proposed to be located on the M5 Motorway, west of the Gibson Avenue Bridge, heading east. The motorway is set within a mature vegetated cutting providing an enclosed visual corridor. The Gibson Avenue Bridge is discernable in the distance.	M	L	ML	Existing roadside vegetation will provide a suitable visual backdrop to absorb the structure. The VMS would not adversely add to the visual clutter of the Motorway as there is already existing directional signage as part of the Motorway function.
19	Westbound west of the Horsely Road overbridge	Motorway– Type C		The VMS is proposed to be located on the M5 Motorway, west of the Horsely Road Bridge, heading west. The motorway is set within a partially enclosed corridor. A noise barrier aligns the north side with partial tree planting to the south. The adjacent industrial lands to the south are clearly visible from the roadway.	ML	L	ML	Existing roadside vegetation will provide a partial visual backdrop although there may be some silhouetting against the skyline. Additional planting would provide further amelioration in the long term.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
20	Eastbound east of the Georges River	Motorway– Type C		The VMS is proposed to be located on the M5 Motorway east of the Georges River, heading east. The motorway is set within an enclosed corridor, with well established high canopy trees to either side. A vegetated mound aligns the north side adjacent to the motorway. There are no views to the surrounding area from the Motorway.	M	L	ML	The VMS would not adversely add to the visual clutter of the Motorway as there is already existing directional signage as part of the Motorway function.
21	Westbound between Heathcote Road and Moorebank Avenue	Motorway– Type C		The VMS is proposed to be located on the M5 Motorway between Heathcote Road and Moorebank Avenue, heading westbound. The motorway is set within an enclosed corridor, with noise barriers and mature vegetation to either side. The noise barriers are visible from the carriageway. There are no views to the surrounding area from the Motorway.	M	L	ML	The structure would partially obscure momentarily for motorists heading west the bushland setting. Existing roadside vegetation would provide a partial visual backdrop although there may be some silhouetting against the skyline due to the uneven heights of the tree canopy.

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No.	Locality	VMC Type	Aerial photo of precinct	Context	Visual sensitivity	Magnitude of visual effect	Overall rating of visual impact	Comments
22	Eastbound between the Hume Highway and Moorebank Avenue	Motorway – Type C		The VMS is proposed to be located on the M5 Motorway east of the Georges River, heading east. The motorway is elevated on an embankment, as part of the bridging of the Georges River, with mature high canopy trees to either side. There are no views to the surrounding area at this point from the Motorway. Directional signage for the Moorebank Ave exit is prominent. Moorebank Ave bridge is visible in the distance.	ML	L	ML	The structure would momentarily partially obscure landmark views to Moorebank Ave Bridge for motorists heading east.

Neg=Negligible, L= Low, ML= Medium Low, M = Medium, MH = Medium High, H=High

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Consulting

Summary findings

The extent of visual impact ranges from low to median through to median to high. In general, VMS localities in more urbanised localities have a reduced visual impact relative to localities with predominately rural and other land uses as VMS are more in keeping with an urban context. The cumulative visual impact of installing the 22 VMS within the localities on and around the M5 South West Motorway must also be considered. While a number of VMS would be installed in close proximity to one another, it would not be possible to view more than one VMS at a time. Therefore no cumulative visual impacts would result from the installation of the VMS within the identified localities.

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