



Appendix H

Working paper: Visual impact,
urban design and landscaping

Landscape Character and Visual Impact Assessment

M5 West Widening



September 2010

SPACKMAN  MOSSOP
MICHAELS

M5 West Widening

Landscape Character and Visual Impact Assessment

September 2010

Prepared for

Interlink Roads

By

SPACKMAN  **MOSSOP**
MICHAELS

PO Box 880
Darlinghurst, NSW 1300

P (02) 9361 4549
F (02) 9361 4569
www.sm2group.com.au
ABN 65 065 578 985

Version	Status	Date	Released by
1.0	Draft for RTA Review	05.05.10	TC
2.0	Final Draft for Internal Review	01.06.10	TC
3.0	Final Draft	02.06.10	TC
4.0	Final Report	16.08.10	TC
5.0	Final Report Re-issued	10.09.10	TC

Contents

1.0	INTRODUCTION	5
1.1	Study Method	7
1.2	Impact Assessment Method	9
1.2.1	Landscape Character Impact Assessment	9
1.2.2	Visual Impact Assessment	9
1.2.3	Mitigation Measures	10
2.0	CONTEXTUAL ANALYSIS	11
2.1	Regional Context	11
2.2	Existing Site Conditions	15
2.2.1	Landform	15
2.2.2	Vegetation	15
2.2.3	Landuse	17
2.2.4	Interchanges and Access	17
2.2.5	Pedestrian and Cycle Facilities	18
2.2.6	Road Infrastructure	18
2.2.6	Transport Network	19
2.3	Landscape Character of the Study Area	20
3.0	MOTORWAY UPGRADE WORKS	21
3.1	Summary of the Proposed Works	21
3.1.1	Project Overview	21
3.1.2	Noise Walls	21
3.1.3	Sedimentation Basins	21
3.1.4	Control Centre	22
3.1.5	Construction Site Compounds	22
4.0	LANDSCAPE CHARACTER IMPACT	23
4.1	Landscape Character Precincts	23
4.2	Precinct 1: King Georges Road to Salt Pan Creek	26
4.2.1	Existing Landscape Character	26
4.2.2	The Proposed Upgrade	26
4.2.3	Landscape Character Assessment	27
4.3	Precinct 2: Salt Pan Creek Floodplain	30
4.3.1	Existing Landscape Character	30
4.3.2	The Proposed Upgrade	30
4.3.3	Landscape Character Assessment	31
4.4	Precinct 3: Salt Pan Creek to Gibson Avenue	32
4.4.1	Existing Landscape Character	32
4.4.2	The Proposed Upgrade	32
4.4.3	Landscape Character Assessment	33

2

4.5	Precinct 4: Gibson Avenue to Queen Street	36
4.5.1	Existing Landscape Character	36
4.5.2	The Proposed Upgrade	36
4.5.3	Landscape Character Assessment	37
4.6	Precinct 5: Queen Street to Horsley Road	40
4.6.1	Existing Landscape Character	40
4.6.2	The Proposed Upgrade	40
4.6.3	Landscape Character Assessment	41
4.7	Precinct 6: Horsley Road to the Eastern End of the Georges River Bridge (East)	44
4.7.1	Existing Landscape Character	44
4.7.2	The Proposed Upgrade	44
4.7.3	Landscape Character Assessment	45
4.8	Precinct 7: Eastern End of the Georges River Bridge (East) to the Main Toll Plaza	48
4.8.1	Existing Landscape Character	48
4.8.2	The Proposed Upgrade	49
4.8.3	Landscape Character Assessment	49
4.9	Precinct 8: West of Main Toll Plaza to Heathcote Road	52
4.9.1	Existing Landscape Character	52
4.9.2	The Proposed Upgrade	52
4.9.3	Landscape Character Assessment	53
4.10	Precinct 9: Heathcote Road to Moorebank Avenue	56
4.10.1	Existing Landscape Character	56
4.10.2	The Proposed Upgrade	56
4.10.3	Landscape Character Assessment	57
4.11	Precinct 10: Moorebank Avenue to Hume Highway	60
4.11.1	Existing Landscape Character	60
4.11.2	The Proposed Upgrade	60
4.11.3	Landscape Character Assessment	61
4.12	Precinct 11: Hume Highway to Beech Road	64
4.12.1	Existing Landscape Character	64
4.12.2	The Proposed Upgrade	64
4.12.3	Landscape Character Assessment	65
4.13	Precinct 12: Beech Road to Camden Valley Way	68
4.13.1	Existing Landscape Character	68
4.13.2	The Proposed Upgrade	68
4.13.3	Landscape Character Assessment	69
4.14	Landscape Character Impact Summary	72

5.0	VISUAL IMPACT	75
5.1	Visual Impact Analysis	75
5.2	Visual Impact Assessment	79
6.0	URBAN DESIGN OBJECTIVES AND PRINCIPLES	89
7.0	MITIGATION MEASURES	90
7.1	Mitigation Measures	90
7.1.1	Gateway and Interchange Treatments	91
7.1.2	Carriageway Extension and Removal of Corridor Vegetation	92
7.1.3	New Control Building	94
7.1.4	Noise Mitigation	95
7.1.5	New and Modified Sedimentation Basins	98
7.1.6	Modification of Bridges	99
7.1.7	Embankments and Retaining Walls	99
7.1.8	Construction Compounds	100
8.0	CONCLUSION	101
8.1	Consistency with Existing and Desired Future Character	101

APPENDICES

Appendix A	VMS Visual Assessment Advice
------------	------------------------------

List of Illustrations

Illustration 1:	Impact Assessment Grading Matrix	10
Illustration 2:	M5 South West Motorway study area	11
Illustration 3:	Open space and public places	12
Illustration 4:	View west from King Georges Road	15
Illustration 5:	Typical roadside Cumberland Plain Woodland vegetation	15
Illustration 6:	Landuses	16
Illustration 7:	View north to the industrial area of Revesby	18
Illustration 8:	The River Road interchange	18
Illustration 9:	Pedestrian overpass at Riverwood	18
Illustration 10:	Typical signage billboard	19
Illustration 11:	The M5 control centre building	19
Illustration 12:	Typical noise wall treatment	19
Illustrations 13 to 15:	Typical character images	20

4

Illustration 16:	Character precincts	24
Illustrations 17 to 19:	Character images of Precinct 1	26
Illustration 20:	Precinct 1: existing situation and proposed works	29
Illustrations 21 to 23:	Character images of Precinct 2	30
Illustration 24:	Precinct 2: existing situation and proposed works	31
Illustrations 25 to 27:	Character images of Precinct 3	32
Illustration 28:	Precinct 3: existing situation and proposed works	35
Illustrations 29 to 31:	Character images of Precinct 4	36
Illustration 32:	Precinct 4: existing situation and proposed works	39
Illustrations 33 to 35:	Character images of Precinct 5	40
Illustration 36:	Precinct 5: existing situation and proposed works	43
Illustrations 37 to 39:	Character images of Precinct 6	44
Illustration 40:	Precinct 6: existing situation and proposed works	47
Illustrations 41 to 43:	Character images of Precinct 7	48
Illustration 44:	Precinct 7: existing situation and proposed works	51
Illustrations 45 to 47:	Character images of Precinct 8	52
Illustration 48:	Precinct 8: existing situation and proposed works	55
Illustrations 49 to 51:	Character images of Precinct 9	56
Illustration 52:	Precinct 9: existing situation and proposed works	59
Illustrations 53 to 55:	Character images of Precinct 10	60
Illustration 56:	Precinct 10: existing situation and proposed works	63
Illustrations 57 to 59:	Character images of Precinct 11	64
Illustration 60:	Precinct 11: existing situation and proposed works	67
Illustration 61 to 62:	Character images of Precinct 12	68
Illustrations 63:	Precinct 12: existing situation and proposed works	71
Illustration 64:	Visual catchment	76
Illustration 65:	Visual Impact Assessment summary for each viewpoint	79
Illustration 66:	Visual Impact Assessment summary for noise walls	82
Illustration 67:	Visual Impact Assessment summary for construction compounds	84
Illustration 68:	Visual Impact Assessment summary for spoil disposal sites	86
Illustrations 69 to 70:	Proposed gateway treatments	90
Illustration 71:	Proposed planting at gateway intersections	92
Illustration 72:	Proposed interchange treatment	93
Illustrations 73 to 74:	Cross sections showing existing situation and proposed works	95
Illustration 75:	Proposed control building	96
Illustrations 76 to 79:	Existing noise wall treatments	97
Illustration 80:	Proposed lightweight concrete panel	99
Illustration 81:	Proposed transparent panel	99
Illustration 82:	Proposed precast concrete panel	99
Illustration 83:	Proposed sedimentation basin treatment	100
Illustrations 84 to 87:	Existing retaining wall/ abutments	102

INTRODUCTION 1.0

5

This Landscape Character and Visual Impact Assessment Report has been prepared for Interlink Roads by Spackman Mossop Michaels as part of the Environmental Assessment of the proposed widening of the M5 South West Motorway between King Georges Road and Camden Valley Way in the Canterbury, Bankstown and Liverpool Local Government area.

The report has been prepared in accordance with the RTA's Guidelines for Landscape Character and Visual Impact Assessment. It describes:

- The landscape character and the qualities of the existing site and its surrounds;
- The sensitivity of the landscape character to the proposed upgrade;
- The significance and sensitivity of existing views into and out of the site;
- Urban design recommendations to be addressed as the design is developed to improve the design outcome for motorway users and those outside of the motorway, as well as avoiding and mitigating visual impacts.

6

This Page Is Left Intentionally Blank

INTRODUCTION 1.0

1.1 STUDY METHOD

7

The undertaking of the impact assessment and the landscape and urban design concept has been an iterative process in which preliminary information was provided to highlight key issues and constraints of the proposed upgrade. Concepts have continued to be developed by HBO+EMTB, in parallel with this assessment, avoiding or minimising potential impacts where possible.

The method used to undertake this study is summarised as follows:

- Undertaking a number of site visits and field investigations, reviewing relevant literature, analysing aerial photographs, topographic maps and Google Maps® to understand the study area;
- Reviewing the initial engineering concept design and supporting material to gain an appreciation of the project;
- Defining the study areas landscape character through a contextual analysis;
- Identifying and describing landscape character precincts and evaluating the proposal's impact on them;
- Identifying the visual catchment of the motorway and proposed works;
- Selecting sensitive viewpoints within the visual catchment representing a range of different landuses;
- Evaluating the proposals visual impact by comparing the sensitivity of viewpoints and the magnitude of the impact of the upgrade upon them;
- Identifying urban design and landscape opportunities and methods of mitigating adverse visual impacts for consideration in the detail design phase of the project.

The method used to assess the impact of the proposed upgrade is described in the following section.

8

This Page Is Left Intentionally Blank

INTRODUCTION 1.0

1.2 IMPACT ASSESSMENT METHOD

9

1.2.1 Landscape Character Impact Assessment

Due to the length of the motorway, the first step has been to identify different landscape character precincts. These have generally been chosen to reflect the motorways surrounding landuse, but also the existing conditions of the motorway, for example, from King Georges Road to the Salt Pan Creek, the carriageways are divided by a wire rope barrier, whereas as the majority of the motorway contains a grassed median. The purpose of dividing the study area into character precincts is to make the assessment process easier to undertake and understand.

The impact of the proposal on each character precinct has been assessed, based on the sensitivity of the precinct and the magnitude of the proposal in that particular precinct.

In this case, sensitivity refers to how sensitive the character of the setting is to the proposed works. For example, a pristine natural environment will be more sensitive to change than an industrial area, however, if the proposed works are relatively minor, then the overall sensitivity will be low.

Magnitude refers to the nature of the project. For example, a large interchange will have a very different impact on landscape character than a localised road widening.

The combination of sensitivity and magnitude provides the rating of the landscape character impact for the precinct (refer to Illustration 1).

1.2.2 Visual Impact Assessment

The extent of the area that the existing M5 South West Motorway is visible has been defined. Within this, the estimated extent of the visibility of the proposed upgrade works has been mapped. As the works are an upgrade of an existing motorway, rather than a new piece of road infrastructure, the visibility of the works is limited to the motorway corridor itself, and a few immediately adjacent locations. Within these areas, a number of viewpoints have been identified at key public locations (refer Illustration 64).

The impact of the proposed upgrade has been assessed by considering both the sensitivity of the view and the magnitude of the proposed works within that view.

In this case, sensitivity refers to the quality of the view and how sensitive it is to the proposed upgrade. Sensitivity is related to the direction of the view, composition of the view and may include more than one character precinct.

Magnitude refers to the nature of the change and its proximity to the viewer. For example, a development situated one kilometre from the viewpoint will have a much reduced visual impact than one 100 metres away.

The combination of sensitivity and magnitude provides the rating of the visual impact (refer to Illustration 1).

For the purposes of this environmental assessment, existing landscape character and the likely magnitude and sensitivity of viewers have been described in a qualitative manner. This has been based on the authors' experience in the field of landscape character and visual assessment and work on projects of a similar nature. While these methods aim to provide

1.0 INTRODUCTION

10

1.1 ASSESSMENT METHOD

		MAGNITUDE					
		High	High to Moderate	Moderate	Moderate to Low	Low	Negligible
SENSITIVITY	High	High impact	High impact	High to Moderate	High to Moderate	Moderate impact	Negligible
	High to Moderate	High impact	High to Moderate	High to Moderate	Moderate impact	Moderate impact	Negligible
	Moderate	High to Moderate	High to Moderate	Moderate impact	Moderate impact	Moderate to Low	Negligible
	Moderate to Low	High to Moderate	Moderate impact	Moderate impact	Moderate to Low	Moderate to Low	Negligible
	Low	Moderate impact	Moderate impact	Moderate to Low	Moderate to Low	Low impact	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

Illustration 1: Impact Assessment Grading Matrix

a consistent and unbiased approach to the impact assessment, the highly individualistic nature of landscape character and visual perception still often leads to differing opinions with regards to the impact of a proposed development

1.2.3 Mitigation Measures

Mitigation measures are visual treatments that are recommended to mitigate the visual impacts of a proposed development. They include ways to lessen the visual effect of the project itself and identify treatments near critical view areas to reduce the visual impacts of the project. Where the exact locations of features, such as noise barriers, sedimentation basins and retaining walls is not known, proposed treatments for consideration during detailed design are provided.

Mitigation measures are outlined in Section 7.0.

CONTEXTUAL ANALYSIS 2.0

2.1 REGIONAL CONTEXT

11

The study area for this Landscape Character and Visual Impact Assessment Report is for the 22 kilometre section of the M5 South West Motorway between King Georges Road and Camden Valley Way. Interlink Roads is the concessionaire for the M5 South West Motorway under a build, own, operate and transfer deed with the RTA.

The M5 South West Motorway was opened in 1992, and is a key section of Sydney's orbital road network, linking central Sydney to the expanding south-western suburbs, Southern Highlands, Canberra and Melbourne as part of the National Highway Network. It is part of the Sydney Orbital Network (refer Illustration 2), that provides over 160 kilometres of uninterrupted motorways, freeways and other main roads around and through Greater Sydney. It adjoins the south-eastern boundary of the South West Growth Centre which, together with the North West Growth Centre, is earmarked to accommodate the majority of Sydney's urban growth over the next 25 years. As part of the overall M5 corridor, it links to Sydney Airport and Port Botany that now accounts for 70% of Sydney Ports trade.



Illustration 2: M5 South West Motorway study area between King Georges Road and Camden Valley Way, shown within the context of the Sydney Orbital Network and the Sydney Metropolitan Region