Appendix I – Urban Design and Landscape Comparative Assessment Addendum

Albion Park Rail bypass

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NSW GOVERNMENT

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1. INTRODUCTION

1.1 PURPOSE OF THIS ADDENDUM

Roads and Maritime Services (Roads and Maritime) propose to build a 9.8 kilometre extension of the Princes Motorway between Yallah and Oak Flats that would bypass Albion Park Rail, refer to *Figure 1-1* Project Location.

An Environmental Impact Statement (EIS) was prepared by Roads and Maritime to assess the potential impacts of the proposal. The EIS was publicly exhibited by the Department of Planning and Environment between 28 October and 27 November 2015.

Supporting the EIS was *Technical Paper 10 - Urban Design Concept, Landscape Character and Visual Impact Assessment Report* (*Technical Paper 10*) prepared by Spackman Mossop Michaels for NSW Roads and Maritime Services in October 2015.

Roads and Maritime has prepared a *Submissions and Preferred Infrastructure Report* that addresses issues raised in submissions received during the exhibition of the EIS. It also describes and assesses the proposed design refinements.

This *Urban Design and Landscape Comparative Assessment Addendum* (the Addendum) forms an appendix to the *Submissions and Preferred Infrastructure Report* and details the additional urban design and visual impact investigations undertaken since the EIS. The purpose of the Addendum is to assess the revised design to determine whether it would result in any changes to the urban design, landscape character and visual impacts identified in *Technical Paper 10*.

In doing so, this Addendum focuses on areas of change between the EIS design and the revised design. They are outlined in *section 1.3 Revised design* below and further elaborated on where appropriate in *section 3 Assessment of proposed changes*.

Aspects and elements of the design that have not changed since the EIS are not discussed or assessed in this Addendum, as they have previously been assessed in *Technical Paper 10.* This Addendum should therefore be read in conjunction with *Technical Paper 10* which provides the landscape character and visual impact assessment for the majority of the design.

1.2 PROJECT DESCRIPTION

Key features of the project include:

- Two lanes in each direction divided by a median (with capacity to upgrade to three lanes in each direction in future)
- Three interchanges provided at Yallah, Albion Park and Oak Flats would connect the local road network with the motorway
- Bridges to carry the motorway over Duck Creek, Macquarie Rivulet and Frazers Creek
- Bridges to carry the motorway over the Princes Highway and Tongarra Road
- A bridge to carry the motorway over the South Coast Rail Line
- Improved pedestrian and cycle connections
- Improvements to directly impacted sporting facilities at the Croom Regional Sporting Complex and changes to the southern access.

Figure 1-1: Project Location

1.3 REVISED DESIGN

Following the EIS display, a review of the design was undertaken in response to feedback following stakeholder consultation. As a result of this review process, Roads and Maritime has refined a number of aspects of the project as exhibited in the EIS. Design refinements have been developed to minimise impacts where possible and in response to:

- Consultation with the community during the EIS exhibition period
- Submissions received during and following the EIS exhibition period
- Landowner discussions during property acquisition and adjustment
- Further concept design review of the EIS design.

The key design refinements proposed include:

- Reconfiguration of the central interchange to minimise the impact on agricultural land and allow northbound traffic to exit the motorway onto Tongarra Road
- Reduction in the project footprint within agricultural land
- Some refinements to intersection arrangements in response to further detailed traffic modelling
- Changes to proposed noise mitigation measures - refer following section.

1.4 REVIEW OF POTENTIAL NOISE MITIGATION MEASURES

The revised design proposes changes to the noise mitigation measures for the project. They have the potential to affect the landscape character and views in the project area.

The potential changes are described below. The resulting landscape character and visual impacts are discussed in sections 3.1 and 3.2 to determine the extent to which they alter the landscape character and visual impacts of the proposed bypass as identified in *Technical Paper 10*. This will help facilitate decision making in the next stages of the project.

1.4.1. Noise Barriers

The following changes have been made to the design:

- Dapto northbound:
  - A change in alignment, length and height of the proposed noise barrier along the northbound Princes Motorway carriageway in Dapto, relative to the EIS design.
  - Replacement of the existing northbound noise wall with a new noise barrier of increased height.
- Dapto southbound:
  - Replacement of the existing noise wall along the Princes Motorway southbound carriageway in Dapto with a new noise barrier of increased height. Extension of the length of the noise barrier southbound towards Cormack Avenue.

The location and alignment of both barriers is illustrated in section *4 .Concept Design Drawings*.

Dapto northbound

The EIS design indicated a noise barrier may be required along the edge of the northbound on-ramp to the Princes Motorway, extending approximately 440 metres from south of Semillon Place to north of Mount Brown Road. The likely height of the barrier was not known at that time.

The revised design provides for an approximately 925 metre long noise barrier. It extends from north of the roundabout at the Princes Highway interchange towards the northern project boundary at the Martin Street footbridge.

The revised design would

- Replace the existing northbound noise wall that commences approximately 150 metres south of the Martin Street footbridge with a new, substantially taller noise barrier
- Provide a new noise barrier near the existing road corridor boundary, following the top of the existing cutting, at the rear of existing residential properties

The height of the Dapto northbound noise barrier would be 6.5 meters for about four fifths of the length of the barrier, with the northern fifth 8 meters high above existing ground level. At the rear of the wall towards residential properties would be an approximately three meters wide combined drainage and maintenance access apron. A typical cross section of the barrier is illustrated in *Figure 1-2*.

While construction of the project would have involved removal of existing vegetation within the project footprint on the western side of the mainline, replacement of the existing noise barrier and construction of the noise barrier in the revised alignment may potentially result in the removal of additional mature vegetation at the rear of residential properties. Removal of vegetation would be limited to within the nominated project footprint. Depending on the final design and alignment of the barrier relative to the on-ramp and residential properties, opportunities to reinstate vegetation may be limited.

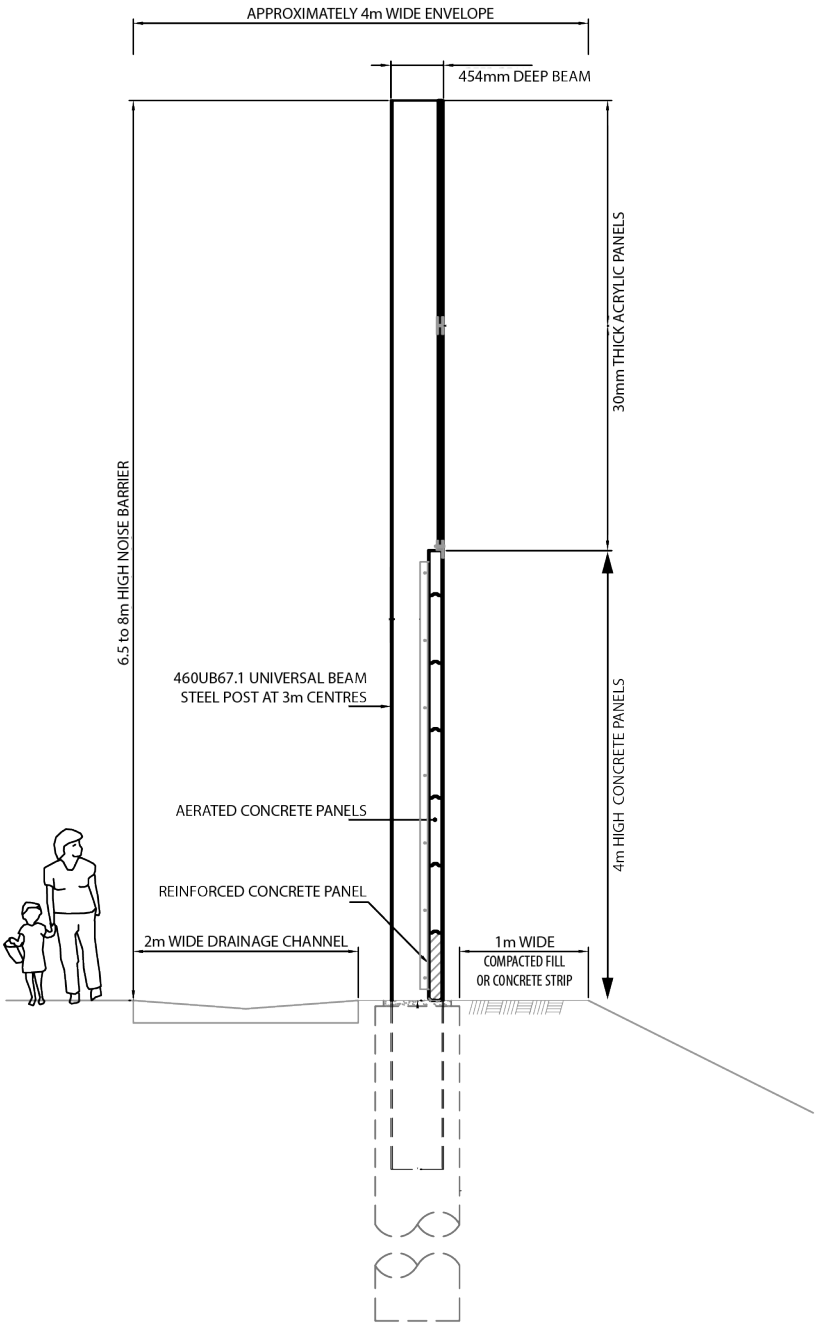
Dapto southbound

The EIS design did not propose any changes to the existing noise wall along the southbound carriageway of the Princes Motorway.

The revised design proposes to replace the existing noise wall between the southbound carriageway and residential property boundaries east of the Princes Motorway. The new noise barrier would be 7.5 meters high and extend further south than the existing barrier. The new barrier would be approximately 411 meters long and would follow an alignment along the rear of properties from the northern project boundary to the southern end of Cadigan Place. Similarly to Dapto northbound, the noise barrier would require a three meter wide combined drainage and maintenance access apron at the rear.

As the EIS design did not anticipate any works in the area between the southbound carriageway and residential property boundaries, it is likely that the replacement and extension of the noise barrier would result in the removal of additional existing mature vegetation, relative to what may have been required for the construction of the EIS design. Depending on the final alignment of the barrier, opportunities to reinstate vegetation may be limited.

Figure 1-2: Typical section of concrete and acrylic panel noise barrier



2. URBAN DESIGN AND LANDSCAPE CHARACTER STRATEGY

2.1 URBAN DESIGN AND LANDSCAPE CHARACTER

An Urban Design and Landscape Character Strategy was included in section 3.2 of *Technical Paper 10*. The strategy describes the interrelationship between the works and adjoining areas. The strategy design presented in *Technical Paper 10* guides the integration of elements such as retaining walls, cuttings, fill embankments, pedestrian and cyclist connections and habitat corridors into the proposed motorway corridor, to assist in maintaining the existing character of the local area.

As part this integrated design approach, an urban design strategy was developed to guide the overall concept design for the bypass. The purpose of the strategy is to articulate how urban design can contribute to the successful achievement of the overall project objectives. An integrated design approach has been adopted for the Albion Park Rail bypass in order to ensure that the best possible outcomes are achieved.

The overall project objectives for the Albion Park Rail bypass are:

- Provide a motorway standard bypass of Albion Park Rail
- Provide a minimum of one in 20 year flood immunity
- Provide access for A-double vehicles
- Provide east-west connectivity for current and future land use.

The urban design and landscape character strategy has directly influenced key engineering aspects of the concept design to date including the proposed road alignment, bridges, retaining walls, cuttings and embankments. The intention is that the urban design and landscape character strategy will continue to inform the development of the bypass when it proceeds to detailed design and construction.

The revised road concept design address more efficiently the urban design and landscape character strategy by reducing the proposed footprint into the existing landscape, therefore the over-arching aim of the urban design strategy and the project specific objectives and principles identified in *Technical Paper 10* and shown in *Table 2-1* below, still remain the same.

Table 2-1: Urban Design Objectives as per *Technical Paper 10*

	No.	Objectives
LANDSCAPE AND SCENIC QUALITY	1	To achieve a project that fits sensitively with the existing landscape and scenic qualities and characteristics of the Albion Park Rail and Albion Park setting
DESIGN OF THE MOTORWAY, INTERCHANGES AND BRIDGES	2	To achieve an integrated road design form and character that minimises the visual impacts on the adjoining areas
	3	To achieve a design that efficiently utilises road related elements which minimise visual impacts and require minimal maintenance
HERITAGE AND CULTURAL VALUES	4	To protect the integrity of the heritage and cultural values of the Albion Park Rail and Albion Park area
USER'S CONNECTIVITY	5	To contribute to the accessibility and connectivity into and through Albion Park Rail, Albion Park and other surrounding areas
URBAN DEVELOPMENT	6	To create a project that facilitates future urban development and revitalisation along and surrounding the proposed project area
PUBLIC DOMAIN	7	To enhance the quality and value of the public domain along and surrounding the proposed project area

3. ASSESSMENT OF PROPOSED CHANGES

3.1 LANDSCAPE CHARACTER ASSESSMENT

A review of the landscape character of the study area, against the revised road design, has been addressed within this section of the Addendum, in order to show any changes to the landscape character assessment as described in *Technical Paper 10*.

The impact assessment grading matrix, adopted from the *Guideline for Landscape Character and Visual Impact Assessment* (Roads and Maritime 2013), shown in *Table 3-1*, is used in both the landscape character and visual impact assessments.

Table 3-1: Roads and Maritime impact grading matrix used to assess landscape character and visual impact

		MAGNITUDE			
		HIGH	MODERATE	LOW	NEGLIGIBLE
SENSITIVITY	HIGH	HIGH	HIGH TO MODERATE	MODERATE	NEGLIGIBLE
	MODERATE	HIGH TO MODERATE	MODERATE	MODERATE TO LOW	NEGLIGIBLE
	LOW	MODERATE	MODERATE TO LOW	LOW	NEGLIGIBLE
	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE

Technical Paper 10 identified twelve Landscape Character Zones (LCZ) within the study area - refer *Figure 3-1*. Those zones have been defined through gaining an understanding of land use, topography, heritage and vegetation in combination with other factors intrinsic to the local landscape.

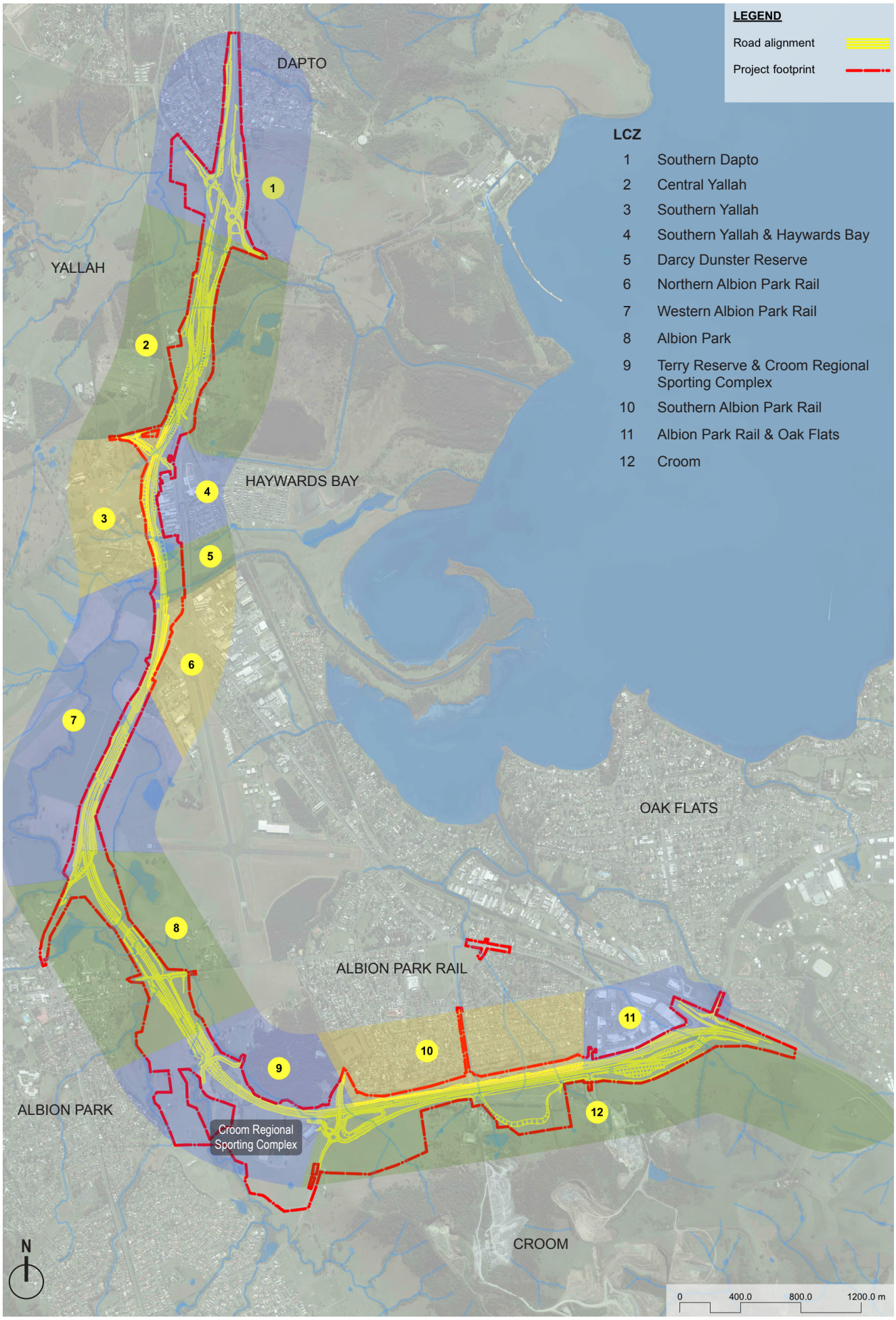
The twelve LCZs are:

- LCZ 1 Southern Dapto
- LCZ 2 Central Yallah
- LCZ 3 Southern Yallah
- LCZ 4 Southern Yallah & Haywards Bay
- LCZ 5 Darcy Dunster Reserve
- LCZ 6 Northern Albion Park Rail
- LCZ 7 Western Albion Park Rail
- LCZ 8 Albion Park
- LCZ 9 Terry Reserve & Croom Regional Sporting Complex
- LCZ 10 Southern Albion Park Rail
- LCZ 11 Albion Park Rail & Oak Flats
- LCZ 12 Croom

Overall, the proposal would have an impact on landscape character. The proposed bypass would impact on all LCZs to some degree, including those parts of the works proposed within an established road corridor.

From the perspective of local property owners, tourists, motorists and cyclists, landscape character would be impacted, due to the magnitude of the proposal in this area.

Figure 3-1: Landscape Character Zones



The impact of the revised road design on the LCZs compared to the EIS design is described below and summarised in *Table 3-2*.

LCZ 1 - Southern Dapto

The major change in this LCZ is the proposed replacement of the existing northbound and southbound noise walls with substantially taller noise barriers, as well as the introduction of a northbound noise barrier where currently none exist. Both magnitude and sensitivity of this LCZ were previously assessed as high, therefore the landscape character impact within this LCZ remains unchanged as **high**.

LCZ 2 - Central Yallah

Both magnitude and sensitivity of this LCZ within the current design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 3 - Southern Yallah

Both magnitude and sensitivity of this LCZ within the current design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 4 - Southern Yallah & Haywards Bay

Both magnitude and sensitivity of this LCZ within the current design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 5 - Darcy Dunster Reserve

Both magnitude and sensitivity of this LCZ within the current design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 6 - Northern Albion Park Rail

Both magnitude and sensitivity of this LCZ within the current design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 7 - Western Albion Park Rail

Both magnitude and sensitivity of this LCZ within the current design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 8 - Albion Park

Although the revised road design reduces the footprint of the project through this LCZ, the final impact remains the same due to the high sensitivity of the area and the changes to the landscape character as a result of the introduction of a new motorway through an undeveloped agricultural and floodplain area.

LCZ 9 - Terry Reserve & Croom Regional Sporting Complex

Both magnitude and sensitivity of this LCZ within the revised design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 10 - Southern Albion Park Rail

Both magnitude and sensitivity of this LCZ within the revised design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 11 - Albion Park Rail & Oak Flats

Both magnitude and sensitivity of this LCZ within the revised design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

LCZ 12 - Croom

Both magnitude and sensitivity of this LCZ within the revised design remains the same due to the proposed minor changes in road alignments and adjustments in the project boundary.

SUMMARY OF LANDSCAPE CHARACTER ASSESSMENT

Table 3.2 summarises the landscape character impacts of the proposed bypass. It features both the impacts identified in *Technical Paper 10* and the revised impacts as per this Addendum.

The table illustrates that, while there have been changes to the design and adjustments in the project boundary, impact ratings on all LCZs have remained as presented in the EIS.

Table 3-2: Landscape Character Zones - landscape character and visual impact matrix

LCZ	SENSITIVITY	MAGNITUDE	EIS IMPACT	REVISED IMPACT
LCZ 1	High	High	HIGH	HIGH
LCZ 2	High	Low	MODERATE	MODERATE
LCZ 3	High	High	HIGH	HIGH
LCZ 4	High	Low	MODERATE	MODERATE
LCZ 5	High	High	HIGH	HIGH
LCZ 6	Low	Low	LOW	LOW
LCZ 7	High	Moderate	HIGH-MODERATE	HIGH-MODERATE
LCZ 8	High	High	HIGH	HIGH
LCZ 9	High	High	HIGH	HIGH
LCZ 10	High	Low	MODERATE	MODERATE
LCZ 11	Moderate	Low	MODERATE-LOW	MODERATE-LOW
LCZ 12	High	Moderate	HIGH-MODERATE	HIGH-MODERATE

3.2 VISUAL IMPACT ASSESSMENT

A review of the visual impact of the revised road design within the study area, is presented in this section of the Addendum, in order to highlight changes to the visual impact assessment as described in *Technical Paper 10*.

As a result of the proposed revised design and adjustments to the project boundary, there are changes to the visual impact, from what has been described in *Technical Paper 10*. These include changes to the visibility of the proposed bypass from some of the selected viewpoints in the EIS, as well as to some viewpoints not discussed in the EIS. .

The following areas would be affected by the proposed design changes:

1. Southern Dapto
2. South of the Illawarra Regional Airport
3. Stapleton's Bridge/ Tongarra Road
4. Swansea Dairy site and farmhouse

The following sections discuss the changes relative to the EIS and the likely visual impacts identified in *Technical Paper 10*. The locations of viewpoints are shown in *Figure 3-2*.

3.2.1. Southern Dapto

Views in Southern Dapto would potentially be affected by

- The proposed replacement of the existing northbound noise wall in Dapto with a new barrier of greater length and substantially increased height
- The increased length and height of a new Dapto northbound noise barrier combined with a more prominent alignment at the top of the cutting adjoining residential property
- The proposed replacement of the existing southbound noise wall in Dapto with a new barrier of greater length and substantially increased height

Viewpoints potentially affected by these changes are viewpoints 1 and 2.

Two new viewpoints 40 and 41 were introduced to assess the visual impact of proposed changes to noise mitigation measures on residential areas in southern Dapto, as well as on the existing Princes Motorway.

Potential changes to the visual impact are discussed below.

Viewpoint 1 - Dapto hillside near Carlyle Close

Due to the angle of the viewpoint, the intervening topography and vegetation, changes to the design would not be able to be perceived from this viewpoint. Viewpoint 1 would retain the same visual impact rating as identified in the EIS.

Viewpoint 2 - Semillon Place, Dapto

The height of the proposed Dapto northbound noise barrier has been increased relative to the EIS design. However, due to direction of the view from this viewpoint, this change would not be able to be perceived. Viewpoint 2 would retain the same visual impact rating as identified in the EIS.