



MWH

BUILDING A BETTER WORLD

Riccarton Road West Upgrade Notice of Requirement Documentation

Volume 1: Documentation

Prepared for Dunedin City Council

NOVEMBER 2009

Riccarton Road West Upgrade Notice of Requirement Documentation

Volume 1: Documentation



Prepared for Dunedin City Council

NOVEMBER 2009

This document has been prepared for the benefit of Dunedin City Council. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.

This disclaimer shall apply notwithstanding that the report may be made available to other persons for an application for permission or approval to fulfil a legal requirement.

QUALITY ASSURANCE STATEMENT

PROJECT MANAGER Denise Anderson	REVIEWED BY Paula Hunter 
PREPARED BY Denise Anderson	APPROVED FOR ISSUE BY Denise Anderson 

DUNEDIN

Level 3, John Wickliffe House, 265 Princes Street, PO Box 4, Dunedin 9054, New Zealand
P + 64-3-477 0885, F + 64-3-477 0616

DUNEDIN CITY COUNCIL

Riccarton Road West Upgrade Notice of Requirement Documentation

CONTENTS

Notice of Requirement by Local Authority for a Designation

Executive Summary

1	Introduction	1
1.1	Background	1
1.2	Overall Project Description.....	1
1.2.1	2006 Transportation Strategy	2
1.2.2	Dukes Road and Gladfield Road Feasibility Assessment	2
1.2.3	Recent Changes to Mosgiel's Development.....	2
1.2.4	Current Investigations 2006-onwards	3
1.3	Notice of Requirement.....	3
1.4	Outline Plan	3
1.5	Resource Consents	3
1.6	Structure of this Report	3
2	Site Description.....	5
2.1	Location and General Description.....	5
2.2	Legal Description of the Site	6
3	Proposal Description.....	9
3.1	Outline	9
3.2	Shared Path.....	9
3.3	Road Improvements	9
3.4	Landscaping	10
3.5	Earthworks.....	11
3.6	Roadside Drainage and ORC Scheduled Drains	11
3.7	Culverts	11
3.8	Mill Stream Bridge	12
3.9	Silver Stream Bridge	12
3.10	Owhiro Stream Bridge	12
3.11	Services.....	12

3.12	Construction Methodology.....	13
3.12.1	Road.....	13
3.13	Bridge Widening	13
3.14	Construction Period, Timing and Lapsing of Designation	13
3.15	Access during Construction.....	14
4	Objectives and Need for the Project.....	15
5	Existing Environment.....	17
5.1	General.....	17
5.2	Existing Designations	21
5.3	Scheduled Drains	22
5.4	Neighbourhood and Wider Community	22
5.5	Visual and Landscape	22
5.6	Traffic Environment	22
5.7	Noise	24
5.8	Air Quality	24
5.9	Archaeological and Heritage	24
5.10	Tangata Whenua.....	26
5.11	Water Supply Values.....	26
5.12	Aquatic Values	26
5.12.1	Silver Stream.....	26
5.12.2	Owhiro Stream	27
6	Construction Effects.....	28
6.1	Delays and Safety	28
6.2	Archaeological and Heritage	28
6.2.1	Noise and Vibration.....	29
6.3	Dust	29
6.4	Visual and Landscape	30
6.5	Class I Soils.....	35
6.6	Rivers and Water Courses	36
6.7	Effectiveness	36
6.8	Utilities	36
6.9	Tangata Whenua	36
6.10	Designation D388, Airways Corporation of New Zealand, Mosgiel NDB and 12ILS Outer Marker Beacon, 245 Riccarton Road	36
6.11	Designation D212, ORC, East Taieri Depot, 234 Riccarton Road.....	37
6.12	Designation D464, NZ Transport Agency, SH87, Mosgiel Interchange to DCC/CODC Boundary North of Hyde.....	37
6.13	Designation D419, NZ Railway Corporation, Main South Railway,	37

6.14	Designation D274, Dunedin Airport Limited, Take-off and Approach Fan, Transitional (side) Surface, Horizontal and Conical Surfaces	37
7	Operational Effects	38
7.1	Positive Effects Non Motorised Users	38
7.2	Motorised Users	38
7.3	Safety and Effectiveness	39
7.4	Archaeological and Heritage	39
7.5	Noise	39
7.6	Visual and Landscape	40
7.6.1	Residences	40
7.6.2	Rural Activities	41
7.6.3	Assessment	41
7.7	Air Quality	41
7.8	Class I Soils	42
7.9	Flooding	42
7.10	Tangata Whenua	42
7.11	Designation D388 Airways Corporation of New Zealand, 245 Riccarton Road	43
7.12	Designation D212 ORC East Taieri Depot, 234 Riccarton Road	43
7.13	Designation D464 SH87, NZTA	43
7.14	Designation D419 Main South Railway, NZ Railway Corporation	43
7.15	Designation D274 Dunedin Airport Approach and Land Use Controls, Dunedin Airport Limited	43
8	Statutory Framework	44
8.1	Resource Management Act 1991	44
8.1.1	Purposes and Principles of the RMA	44
8.1.2	Designations	45
8.2	Dunedin City District Plan	46
8.2.1	Existing Designations - Riccarton Road West	48
8.2.2	Significant Trees	48
8.2.3	Information Requirements	48
8.3	Relevant Regional Planning Documents	50
8.3.1	Regional Policy Statement for Otago	50
8.3.2	Otago Regional Land Transport Strategy	51
8.3.3	Regional Plan: Water for Otago	52
8.3.4	Consents Required	52
8.4	Other Relevant Documents	52
8.4.1	Otago Regional Council Flood Protection Management Bylaw 2008	52
8.4.2	Kai Tahu Ki Otago Natural Resource Management Plan 2005	54
9	Alternative Sites, Routes and Methods	55
9.1	Mosgiel Arterial Routes	55
9.1.1	Studies Undertaken 1999-2006	55
9.1.2	2006 Transportation Strategy	57
9.1.3	Dukes Road and Gladfield Road Feasibility Assessment	57
9.1.4	Recent Changes to Mosgiel's Development	58

9.2	Current Investigations 2006-onwards	58
9.3	Greenfields Route South of Riccarton Road	58
9.4	Riccarton Road Options	59
9.4.1	Option 1: Widening on Both Sides of the Existing Centreline.....	59
9.4.2	Option 2: Widening Along the Eastern Side	59
9.4.3	Option 3: Widening Along the Western Side	59
9.5	Option 4C	60
9.6	Option 5	61
9.7	Option 6	61
9.8	Comparison of Options 4B, 4C, 5 and 6	62
10	Resource Consents	64
11	Consultation	65
11.1	Transportation Strategy Consultation.....	65
11.2	Information Day 30 July 2008: Riccarton Road and Dukes Road.....	65
11.3	Mosgiel Taieri Arterial Routes Projects Letters Mid August 2008.....	66
11.4	Mosgiel Taieri Arterial Routes Update Letters 7 August 2009	66
11.5	Consultation Record Table.....	66
11.6	Other Stakeholders	67
11.6.1	Otago Regional Council	67
11.6.2	NZTA.....	67
11.6.3	KTKO	67
11.6.4	Fish & Game	68
11.6.5	New Zealand Historic Places Trust (NZHPT)	68
11.6.6	New Zealand Airways Corporation	68
11.6.7	New Zealand Railways Corporation	68
11.6.8	Utility Providers	68
12	Summary and Conclusions.....	70
13	Draft Conditions	71
Appendix A:	Existing Typical Cross Sections	
Appendix B:	Proposed Typical Cross Sections	
Appendix C:	Layout Plans	
Appendix D:	Bridge Plans	
Appendix E:	Designation Plans	
Appendix F:	Certificates of Title	
Appendix G:	Service Plans	
Appendix H:	Landscape Effects Assessment	

Appendix I:	Traffic Assessment
Appendix J:	Noise Assessment
Appendix K:	Air Quality Assessment
Appendix L:	Vibration During Construction
Appendix M:	Other Options, Typical Cross Sections Option 4C, 5 and 6
Appendix N:	Consultation

LIST OF TABLES

Table 2-1 : Legal Description of Site.....	6
Table 3-1 : Possible Hedging Species.....	10
Table 3-2 : Culverts.....	12
Table 9-1 : Comparison of Transport Components Options 4B, 4C, 5 and 6.....	62
Table 9-2 : Preliminary Economic Analysis Summary.....	62

LIST OF FIGURES

Figure 2-1 : Location Map.....	5
Figure 5-1 : Station 1620. Adjacent to 371 Riccarton Road West.....	18
Figure 5-2 : Station 2200. Adjacent to 323 Riccarton Road West.....	18
Figure 5-3 : Station 2300. Adjacent to 293 Riccarton Road West.....	19
Figure 5-4 : Station 3300. Adjacent to 208 Riccarton Road West.....	19
Figure 5-5 : Station 4170. Adjacent to 119 Riccarton Road West.....	20
Figure 5-6 : Station 4600. Adjacent to 77 Riccarton Road West.....	20
Figure 5-7 : Station 6000. Adjacent to 51 Riccarton Road West.....	21
Figure 5-8 : View of stables from access to 114 Riccarton Road West.....	25
Figure 5-9 : View of stables from opposite side of Riccarton Road West.....	25
Figure 5-10 : View of former Wyllies Crossing Post Office from the Northern side of SH 87.....	26

Notice of Requirement by Local Authority for a Designation

Section 168A Resource Management Act 1991

To Dunedin City Council
PO Box 5045
Dunedin 9058

1. Dunedin City Council gives notice of a requirement for a designation for a public work
2. The site to which the requirement applies is as follows:

Street Address: Land adjacent to Riccarton Road West between SH87 and Gladstone Road South, Mosgiel, Dunedin.

Legal Descriptions:

Address	Legal Description	Certificate of Title	Land Owner	Land Area required (m ²)
413 Riccarton Road West, Dunedin	Lot 1 DP 27332	OT 19A/508	David Huia Duff and Linda Anne Duff	1215
389 Riccarton Road West, Dunedin	Lot 1 DP 349527	CT 203002	Wyllies Crossing Limited	2040
383 Riccarton Road West, Dunedin	Lot 2 DP 349527	CT 203003	Wyllies Crossing Limited	65
371 Riccarton Road West, Dunedin	Lot 1 DP 11947	OT 3D/777	Arthur McNicoll Heenan and Gail Carol Heenan and Alexander Donald Walter Scott	1915
345 Riccarton Road West, Dunedin	Lot 5 DP 348697	CT 199911	John William Phipps and Catherine Helen Phipps and Thomas Haines Wilson	2255
323 Riccarton Road West, Dunedin	Lot 1 DP 348697	CT199907	Shayne William King and Andrina Irene King	1890
162 Dukes Road South, Dunedin	Lot 1 DP 12838	OT 5B/667	David John Fleming, Patricia Mary Fleming	1245
293 Riccarton Road West, Dunedin	Lot 2 DP 27676	OT 19B/127	Andrew Leonard Sinclair and Raymond Vivian Sinclair	1175
264 Riccarton Road West, Dunedin	Lot 1 DP 6930	OT 3C/45	Evan Franklyn Jones, Alison Joan Jones, Edwin Alan Nicolson	900

Address	Legal Description	Certificate of Title	Land Owner	Land Area required (m ²)
255 Riccarton Road West, Dunedin	Pt Sec 7 Blk VIII East Taieri SD	OT 320/103	Keith Alexander Cleave and Susan Ellen Aitken-Cleave and Richard James Farquhar	3985
255 Riccarton Road West, Dunedin	Deposited Plan 5969	OT 319/194	Keith Alexander Cleave, Susan Ellen Aitken-Cleave and Richard James Farquhar	45
245 Riccarton Road West, Dunedin	Sec 1 SO 13203	OT 14D/1033	Airways Corporation of New Zealand Limited	1145
Flood Bank Silver Stream	Pt Sec 7 Blk VIII East Taieri SD	Gaz 1981 (P2237)	Otago Regional Council	40
Flood Bank Silver Stream	Lot 1 DP 5017	OT 286/40	Dunedin City Council	95
215 Riccarton Road West, Dunedin	Pt Lot 2 DP 5017	OT 8D/55	Peter Robert Findlay Gootjes and Katherine Margaret Caldwell	605
234 Riccarton Road West, Dunedin	Pt Allotment 15 DP 1846	OT178/244	Otago Regional Council	175
248 Riccarton Road West, Dunedin	Pt Lot 19 DP 1846	OT 7A/108	Ivan Walter Glass, Belinda Christine Elizabeth Glass	15
Flood Bank Silver Stream	Pt Lot 19 DP 1846	Gaz 1977(p396) Soil Conservation and River Control Purposes	Otago Regional Council	5
Flood Bank Silver Stream	Pt Lot 20 DP 1846	OT 18C/627	Otago Regional Council	25
214 Riccarton Road West, Dunedin	Pt Lot 20 DP 1846	OT144/124	Graeme Anthony Petrie, Karen June Petrie, Farry and Co. Trustees Limited	365
193 Riccarton Road West, Dunedin	Pt Sec 1 Blk VIII East Taieri SD	OT 194/92	Alan Duncan George Dunbar and Margaret Rose Dunbar and Peter Austin Gowing	1955
193 Riccarton Road West, Dunedin	Lot 2 DP 11077	OT 2C/303	Alan Duncan George Dunbar and Margaret Rose Dunbar and Peter Austin Gowing	620
177 Riccarton Road West, Dunedin	Lot 1 DP 11077	OT 2D/1246	Reiner Van Der Hilst and Christine Mary Van Der Hilst	505
157 Riccarton Road West, Dunedin	Lot 1 DP 9588	OT 3A/1218	Gillian Elizabeth Higgins and Jeffrey Charles Withington	1115

Address	Legal Description	Certificate of Title	Land Owner	Land Area required (m ²)
198 Bush Road, Dunedin	Lot 2 DP 9588	OT 7B/1308	Otago Lumber Company Limited	1130
164 Riccarton Road West, Dunedin	Lot 1 DP 309879	CT 39043	Graham Phillips and Gail Williams, Gary Mark Williams and Race & Douglas Trustees Ltd.	1810
114 Riccarton Road West, Dunedin	Sec 12 Blk III East Taieri SD	OT 258/285	Allen John Blackie and Vivian Dale Blackie	5555
199 Bush Road, Dunedin	Lot 1 DP 12463	OT 4D/1327	Mark Patrick Anngow, Barbara Anne Anngow and WMC Trustee Limited	30
119 Riccarton Road West, Dunedin	Lot 1 DP 344127	CT 181274	Brenden Mark Johnston and Michelle Louise Johnston	575
117 Riccarton Road West, Dunedin	Lot 2 DP 12463	CT 181275	Ian Thomas, Jillian Ann Thomas, and Paul Stafford O'Neill	100
77 Riccarton Road West, Dunedin	Pt Sec 7 Blk IV East Taieri SD	OT 258/291	Brian James Miller and Adrienne Joan Miller and Webb Farry Nominees Limited	110
51 Riccarton Road West, Dunedin	Pt Sec 1 Blk IV East Taieri SD	OT 12B/263	Trumbles Hill Farm Company Limited	870
10 Riccarton Road West, Dunedin	Pt Sec 6 Blk III East Taieri SD	OT B1/698	John Philip Sebelin, Dianne Sheila Sebelin, Webb Farry Limited	2765

Grid Reference: NZMG: 2301138E 5480045N to 2302847E 5476174N

3. The nature of the proposed public work is:

The provision of a shared path and the widening and realignment of Riccarton Road West between SH87 and Gladstone Road South, Mosgiel, Dunedin. This includes associated works such as: the re-establishment of accesses, landscape mitigation, realignment of drains and provision of safety barriers and widening of bridges and culverts.

The nature of the proposed public work is described more particularly in Section 3 of the documentation.

4. The nature of the proposed restrictions that would apply are described more particularly in Section 13 of the documentation.
5. The effects that the public work will have on the environment, and the ways in which any adverse effects will be mitigated, are set out in Sections 5, 6, 11 and 13 of the documentation.
6. Alternative sites, routes and methods have been considered to the extent set out in Section 9 of the documentation.

7. The public work and designation are reasonably necessary for achieving the objectives of the requiring authority, for the reasons set out in Section 4 of the documentation.
8. The designation to which this Notice of Requirement shall apply will lapse within 15 years of the date of its confirmation if it is not given effect to, in terms of section 184(i)(c) of the Resource Management Act 1991. Refer to Section 3 of the documentation.
9. The following resource consents are needed for the proposed activity, have yet to be lodged and will be lodged as soon as is practical:
Resource consents from the Otago Regional Council for investigative drilling, and other resource consents associated with the widening of bridges and culverts along Riccarton Road West and activities in or on beds of rivers or floodbanks. More particularly, consents will be required for:
 - Discharge permit to discharge contaminants to water associated with drilling.
 - Discharge permit to discharge contaminants to water.
 - Land use consent to place a structure over the bed of an unnamed watercourse.
 - Land use consent to extend a structure over and on the bed of each of the following watercourses: Mill Stream, Silver Stream and Owhiro Stream.
 - Land use consent to disturb the bed of the following watercourses: Mill Stream, Silver Stream, Owhiro Stream and the unnamed tributary to Silver Stream.
 - Land use consent for the drilling of land over an aquifer identified on Map C15.
10. The consultation described in Section 11 of this documentation has been undertaken with parties that are likely to be affected by this Notice of Requirement.

Dunedin City Council attaches the following information required to be included in this notice by the district plan, regional plan, or any regulations made under the Resource Management Act 1991:

Riccarton Road West Upgrade: Notice of Requirement Documentation.



P J Harland
Signed on behalf of Dunedin City Council

16/11/09

Date

Address for Service:

MWH New Zealand Ltd
P O Box 4
Dunedin 9054

Attention: Denise Anderson
Ph: (03) 477 0885
Fax: (03) 474 3992

Executive Summary

Dunedin City Council (DCC) has a proposal to upgrade Riccarton Road West in Dunedin City between Gladstone Road South to the south and SH87 to the north, a distance of approximately 4.2km. This upgrade includes the provision of a shared path, road widening and associated works. This project is identified in the DCC Long Term Council Community Plan (LTCCP) and as such the Council has financial responsibility for the project. The upgrade of Riccarton Road West to improve safety for non motorised users and its use as an arterial road was identified in the Dunedin City Transportation Strategy, 2006.

The objectives of this project are to upgrade Riccarton Road West by providing a safer facility for non motorised users of the road and existing motorised users by:

- providing a separate shared path available for use by pedestrian, cyclists and horse riders,
- providing wider traffic lanes and sealed shoulders,
- reducing roadside hazards,
- improving visibility and layout at the Gladstone South Road, Bush Road and Dukes Road South intersections,
- improving visibility at the Silver Stream Bridge approaches and
- improving visibility at a number of driveways.

This upgrade is necessary to provide for the existing non motorised users as well as motorised users of the road.

Riccarton Road West is a narrow rural road from Gladstone Road South to SH87 with no provision for non-motorised users of the road. The legal road width varies from very narrow at approximately 9.9m to approximately 18.4m. The variations in width exist because Council has, over a number of years as the opportunity arose, taken the opportunity to obtain land to provide for road widening. The existing legal road is not wide enough to accommodate the upgrade. DCC has prepared a Notice of Requirement for a proposed designation relating to the upgrade of Riccarton Road West.

The overall upgrading project will comprise of the following features:

- Replacement of the existing straight road alignment by very gentle bends to mitigate effects on residences.
- A new separate shared path on the western side of the road.
- Wider traffic lanes with sealed shoulders.
- Clear zones, shallow slopes on both sides of the road where practical.
- Widened bridges over the Owhiro Stream, Silver Stream and Mill Stream to provide continuity.
- The incorporation of flood hazard mitigation in to the design.
- Improved intersection visibility distance and safety.
- Improved visibility distance on the approaches to the Silver Stream Bridge.
- Improved visibility distances and layouts at accesses to property.
- Protection of the significant Bhutan Cypress trees at 119 Riccarton Road West and the stables opposite.
- Landscape mitigation.
- Relocation of the service poles.
- Relocation of the scheduled drains.

The proposal has been developed and refined to avoid or mitigate effects, particularly with respect to residences, significant trees, landscape, privacy, and noise. Landscape mitigation will be established where practical before construction starts and will be developed in consultation with landowners. Consultation has commenced and is ongoing. Noise effects arising from the project are negligible. Draft conditions to mitigate effects are included in the Notice of Requirement.

The construction will follow establishment of landscape mitigation and is anticipated to start in 2012 or 2013 subject to the planning process and unforeseen circumstances. It is anticipated road construction will extend over an 18 month period but it will not be continuous over that time and it will be constructed in sections.

A number of alternatives were identified; however this option is preferred by Council as best meeting its objectives to upgrade Riccarton Road West to improve safety for non motorised users of the road as well as existing motorised users of the road.

A number of resource consents from the Otago Regional Council are required and these will be applied for as soon as is practicable. Other authorities are required from other organisations such as the NZ Historic Places Trust and application will be made for these.

1 Introduction

This report comprises a Notice of Requirement from Dunedin City Council (DCC) relating to the upgrade, operation and maintenance of Riccarton Road West between Gladstone Road and SH87 in Dunedin City. This upgrade includes the provision of a shared path, road widening and associated works. This project is identified in the Regional Land Transport Programme (RLTP) and in the DCC Long Term Council Community Plan (LTCCP) and as Riccarton Road comes under the city's control, the Council has financial responsibility for the project.

The report describes the site, the existing environment, the proposed works and the effects on the environment that are likely to result from the proposed road upgrade, operation and maintenance, and the mitigation measures proposed. The statutory framework within the Resource Management Act 1991 (RMA) is outlined. An evaluation of alternative routes and alignment options is included as well as a description of why the proposed work is necessary to achieve the objectives of the requiring authority. Consultation has been undertaken and is outlined in this document. Suggested conditions are included for review by DCC.

1.1 Background

Riccarton Road West is a narrow rural road from Gladstone Road to SH 87 with no provision for non-motorised users of the road. The legal road width varies from very narrow at approximately 9.9m to approximately 18.4m. The variations in width exist because Council has, over a number of years as the opportunity arose, taken the opportunity to obtain land to provide for road widening. It is noted that there is insufficient width for the current proposal. Appendix A: Typical Cross section illustrates the current road.

1.2 Overall Project Description

The project involves upgrading Riccarton Road West, Dunedin between Gladstone Road South to the south and SH87 to the north, a distance of approximately 4.2km. The overall upgrading project will comprise of the following features:

- The provision of a 3m wide shared path on the western side of the road beyond a gravel feathered edge.
- The widening of Riccarton Road West to provide two 3.5m wide traffic lanes with 750mm wide sealed shoulders and a 1.25m wide gravel feathered edge with a 6:1 slope on both sides of the road.
- A 5.0m clear zone beyond the edge line on the western side of the road.
- A 5.0m clear zone on the eastern side of the road where the road is being widened on the eastern side of the existing road.
- Widening of the bridges over the Owhiro Stream, Silver Stream and Mill Stream to provide for a 2.2m wide shared path across these bridges and culverts, widened traffic lanes and installation of guardrail and a pedestrian barrier.
- Ensuring the centreline level will be no higher than the level of the existing centreline level on two sections on the road so the road is not a barrier to flood waters. These sections are from 665m north of Mill Stream through to Mill Stream (station 1400 to station 2065) and the area surrounding the Owhiro Stream (station 4960 to station 5260). Improving intersection visibility distance and safety at the Dukes Road South, Bush Road and Gladstone Road south intersections with Riccarton Road West.
- Improving the visibility distance on the approaches to the Silver Stream Bridge.
- Landscape mitigation.
- Improved visibility distances, layout and relocation and reinstatement of accesses, driveways and mailboxes etc.
- Relocation and reinstatement of the scheduled drains along Riccarton Road West to the same cross section area as at present other than the two culverts across Riccarton Road West south of the Dukes Road South intersection which are to be replaced with a single larger capacity culvert.
- Relocation of the service poles beyond the clear zone except where guardrail is provided.

Appendix B: Proposed Typical Cross Sections illustrates the typical cross sections for the upgraded road for Option 4B which is proposed. Appendix C: Layout Plans illustrate on an aerial photograph the extent of the proposed designation and the general layout. Appendix D: Bridge Plans includes conceptual plans for the widening of the bridges over Mill Stream, Silver Stream and Owhiro Stream.

1.2.1 2006 Transportation Strategy

Over the period from 2004-2006 the DCC developed a new Transportation Strategy for the City. This strategy was developed in conjunction with a consultation programme that included workshops, liaison meetings and public consultation. The strategy identified four related projects in the Mosgiel area to deal with the growth and land-use changes:

- Construct a link between Centre Street and Carncross Street
- Upgrade Dukes Road and Riccarton Road to improve safety for non-motorised users
- Investigate the feasibility of using Dukes Road South and Gladfield Road as an arterial route option to the south
- Upgrade Dukes Road South and Gladfield Road South as an additional arterial route option to the south if warranted

The Riccarton Road West upgrade project subject of this NOR is considered an important stage in implementing the Transportation Strategy.

1.2.2 Dukes Road and Gladfield Road Feasibility Assessment

In the Transportation Strategy, Gladfield Road and Dukes Road were identified as an additional arterial route to the south rather than an alternative to Riccarton Road. The feasibility of upgrading Gladfield Road and Dukes Road was investigated in 2006. It was found that the cost of the upgrade was significant due to the length of seal widening needed, the seal extensions required on both roads, the construction of a bridge over the Silver Stream and improvements to all intersections. It was also identified in earlier reports that the option had a number of disadvantages including: a high risk of flooding, restricted sight distance at the state highway intersections and the requirement for new bridges and culverts.

The economic analysis assessed that there were benefits that could be derived from road user cost savings. The total cost savings for road users were almost the same between Gordon Road (SH87) and the Gladfield/Dukes route. This meant that the tangible benefits of the project were very low and could not offset the significant costs. The project was not considered further as funding could not be obtained from Land Transport New Zealand (now the NZ Transport Agency).

1.2.3 Recent Changes to Mosgiel's Development

During the past 2-3 years some issues in the Mosgiel area have changed. The newly zoned Dukes Road Industrial area has not developed as expected and Fisher and Paykel decided to relocate their production facilities off-shore. The optimistic predictions for industrial growth in the area have not been realised. The residential developments in the north east of Mosgiel that were previously proceeding at a fast pace have now slowed down and in some cases stalled. The expected log numbers out of the forests near Mosgiel have not been as significant as suggested in the 2000 report. In the case of Mt Allan, only around 80 trips per day are generated with a 50/50 split between logs travelling to the Port and those heading south for treatment. The harvesting began in 2008 and is expected to end by 2016.

Traffic volumes on Gordon Road recorded in 2008 were 14,200vpd. The traffic volumes on Gordon Road have been reducing significantly since 2006 when the maximum of 16,100vpd was recorded. The early reports from 2000 and 2003 predicted 16,000vpd by 2010 and 18,000vpd by 2019. It is unlikely that these high traffic volumes will now occur given the loss of industrial production activity in the area. It was also predicted that Gordon Road would become more congested and less free flowing. Some restrictions to traffic flows were observed in 2006 but these have eased with the reduction in traffic volumes. There has been no growth in traffic volumes on Riccarton Road between 2006 and 2009.

1.2.4 Current Investigations 2006-onwards

In June 2007 MWH were engaged to begin work on the design and Notice of Requirement for the Riccarton Road and Dukes Road upgrade. The focus of the project was to provide facilities for non-motorised users and bring the roads up to standard for current users of the road at the same time. A scheme assessment report was prepared in mid 2008. A decision was made by the DCC to exclude walking and cycling facilities on Dukes Road from the project until alternative east west routes such as a track on the stop banks of the Silver Stream were investigated. A project feasibility report to assess the feasibility of upgrading Riccarton Road alone was completed early in 2009.

In 2008 the Centre Street to Carncross Street project was put on-hold as, due to the economic downturn the benefits of the Centre to Carncross project were significantly reduced. These changes coincided with concerns regarding the structural integrity of the Wingatui Road bridge. An investigation concluded that a replacement bridge was required at Wingatui Road rather than relying on the new bridge on the Centre to Carncross route. This meant that the benefits of the Centre to Carncross route would be reduced even further. The project has been put on-hold until development in the industrial area begins. The project could become viable again in 10-15 years.

1.3 Notice of Requirement

This section of the report outlines the Notice of Requirement (NOR) that the DCC is seeking. The need for the project is set out in Section 4 and the statutory framework is set out in Section 7 of this document.

Name of Designation: Riccarton Road West – SH 87 to Gladstone Road

Purpose: Road Widening

Location: Riccarton Road West, Mosgiel, Dunedin

1.4 Outline Plan

Before work commences, and in accordance with s176A of the Resource Management Act 1991 (RMA), an Outline Plan needs to be submitted to the Dunedin City Council unless the work has been otherwise approved under the RMA or the details of the work are incorporated into the designation, or the territorial authority waives the requirement for an Outline Plan. It is intended that a separate Outline Plan will be lodged for this work.

1.5 Resource Consents

Resource consents will be required from the Otago Regional Council (ORC) to enable investigative drilling, the widening of the bridges over the Owhiro Stream, Silver Stream and Mill Stream where they cross Riccarton Road West.

It is anticipated that applications for these consents will be sought from the ORC in the next few months.

1.6 Structure of this Report

This report is structured in a way that is intended:

- To provide a clear understanding of the proposal and associated works involved.
- To set out the statutory framework and relevant policy considerations that the proposal is to be assessed against.
- To provide a description of the environment as it currently exists.
- To detail the aspects of the environment that will be affected by the proposed construction, operation and maintenance.

- To provide an assessment of the nature and scale of these effects and to demonstrate how these effects can be avoided, remedied or mitigated.
- To suggest conditions to avoid, remedy or mitigate or off-set effects of the proposal on the environment.

The structure is as follows:

Section 1	Introduction
Section 2	Site Description
Section 3	Proposal Description
Section 4	Objectives and Need for the Project
Section 5	Existing Environment
Section 6	Construction Effects
Section 7	Operational Effects
Section 8	Statutory Framework
Section 9	Alternative Sites, Routes and Methods
Section 10	Resource Consents
Section 11	Consultation
Section 12	Summary
Section 13	Draft Conditions

Appendices

Appendix A	Existing Typical Cross Sections
Appendix B	Proposed Typical Cross Sections Option 4B
Appendix C	Layout Plans
Appendix D	Bridge Plans
Appendix E	Designation Plans
Appendix F	Certificates of Title
Appendix G	Service Plans
Appendix H	Landscape Effects Assessment
Appendix I	Traffic Assessment
Appendix J	Noise Assessment
Appendix K	Air Quality Assessment
Appendix L	Vibration During Construction
Appendix M	Other Options, Typical Cross Sections Options 4C, 5 and 6
Appendix N	Consultation

2 Site Description

2.1 Location and General Description

The site is located on land adjacent to a 4.2km section of Riccarton Road West, which extends between SH87 to the north and Gladstone Road South to the south. Figure 2-1 Location Map below identifies the location.



Figure 2-1 : Location Map

Riccarton Road West is a straight road which runs more or less north to south along the western side of Mosgiel. The existing legal road width is narrow and varies between approximately 9.9m and 18.4m. The road traverses three streams: Mill Stream, Silver Stream and Owhiro Stream.

The requirement affects land on both sides of Riccarton Road West because of the very gentle curves that have been introduced to the design in order to minimise the effects on residences.

The NZMG Grid Reference of the site is:
2301138E 5480045N to 2302847E 5476174N

2.2 Legal Description of the Site

The legal description of the land adjacent to Riccarton Road West which is subject to this requirement is detailed in Table 2-1 : Legal Description of the Site.

Table 2-1 : Legal Description of Site

Address	Legal Description	Certificate of Title	Land Owner	Land Area required (m²)
413 Riccarton Road West, Dunedin	Lot 1 DP 27332	OT 19A/508	David Huia Duff and Linda Anne Duff	1215
389 Riccarton Road West, Dunedin	Lot 1 DP 349527	CT 203002	Wyllies Crossing Limited	2040
383 Riccarton Road West, Dunedin	Lot 2 DP 349527	CT 203003	Wyllies Crossing Limited	65
371 Riccarton Road West, Dunedin	Lot 1 DP 11947	OT 3D/777	Arthur McNicoll Heenan and Gail Carol Heenan and Alexander Donald Walter Scott	1915
345 Riccarton Road West, Dunedin	Lot 5 DP 348697	CT 199911	John William Phipps and Catherine Helen Phipps and Thomas Haines Wilson	2255
323 Riccarton Road West, Dunedin	Lot 1 DP 348697	CT199907	Shayne William King and Andrina Irene King	1890
162 Dukes Road South, Dunedin	Lot 1 DP 12838	OT 5B/667	David John Fleming, Patricia Mary Fleming	1245
293 Riccarton Road West, Dunedin	Lot 2 DP 27676	OT 19B/127	Andrew Leonard Sinclair and Raymond Vivian Sinclair	1175
264 Riccarton Road West, Dunedin	Lot 1 DP 6930	OT 3C/45	Evan Franklyn Jones, Alison Joan Jones, Edwin Alan Nicolson	900
255 Riccarton Road West, Dunedin	Pt Sec 7 Blk VIII East Taieri SD	OT 320/103	Keith Alexander Cleave and Susan Ellen Aitken-Cleave and Richard James Farquhar	3985
255 Riccarton Road West, Dunedin	Deposited Plan 5969	OT 319/194	Keith Alexander Cleave, Susan Ellen Aitken-Cleave and Richard James Farquhar	45
245 Riccarton Road West, Dunedin	Sec 1 SO 13203	OT 14D/1033	Airways Corporation of New Zealand Limited	1145
Flood Bank Silver Stream	Pt Sec 7 Blk VIII East Taieri SD	Gaz 1981 (P2237)	Otago Regional Council	40

Address	Legal Description	Certificate of Title	Land Owner	Land Area required (m²)
Flood Bank Silver Stream	Lot 1 DP 5017	OT 286/40	Dunedin City Council	95
215 Riccarton Road West, Dunedin	Pt Lot 2 DP 5017	OT 8D/55	Peter Robert Findlay Gootjes and Katherine Margaret Caldwell	605
234 Riccarton Road West, Dunedin	Pt Allotment 15 DP 1846	OT178/244	Otago Regional Council	175
248 Riccarton Road West, Dunedin	Pt Lot 19 DP 1846	OT 7A/108	Ivan Walter Glass, Belinda Christine Elizabeth Glass	15
Flood Bank Silver Stream	Pt Lot 19 DP 1846	Gaz 1977(p396) Soil Conservation and River Control Purposes	Otago Regional Council	5
Flood Bank Silver Stream	Pt Lot 20 DP 1846	OT 18C/627	Otago Regional Council	25
214 Riccarton Road West, Dunedin	Pt Lot 20 DP 1846	OT144/124	Graeme Anthony Petrie, Karen June Petrie, Farry and Co. Trustees Limited	365
193 Riccarton Road West, Dunedin	Pt Sec 1 Blk VIII East Taieri SD	OT 194/92	Alan Duncan George Dunbar and Margaret Rose Dunbar and Peter Austin Gowing	1955
193 Riccarton Road West, Dunedin	Lot 2 DP 11077	OT 2C/303	Alan Duncan George Dunbar and Margaret Rose Dunbar and Peter Austin Gowing	620
177 Riccarton Road West, Dunedin	Lot 1 DP 11077	OT 2D/1246	Reiner Van Der Hilst and Christine Mary Van Der Hilst	505
157 Riccarton Road West, Dunedin	Lot 1 DP 9588	OT 3A/1218	Gillian Elizabeth Higgins and Jeffrey Charles Withington	1115
198 Bush Road, Dunedin	Lot 2 DP 9588	OT 7B/1308	Otago Lumber Company Limited	1130
164 Riccarton Road West, Dunedin	Lot 1 DP 309879	CT 39043	Graham Phillips and Gail Williams, Gary Mark Williams and Race & Douglas Trustees Ltd.	1810
114 Riccarton Road West, Dunedin	Sec 12 Blk III East Taieri SD	OT 258/285	Allen John Blackie and Vivian Dale Blackie	5555

Address	Legal Description	Certificate of Title	Land Owner	Land Area required (m ²)
199 Bush Road, Dunedin	Lot 1 DP 12463	OT 4D/1327	Mark Patrick Anngow, Barbara Anne Anngow and WMC Trustee Limited	30
119 Riccarton Road West, Dunedin	Lot 1 DP 344127	CT 181274	Brenden Mark Johnston and Michelle Louise Johnston	575
117 Riccarton Road West, Dunedin	Lot 2 DP 12463	CT 181275	Ian Thomas, Jillian Ann Thomas, and Paul Stafford O'Neill	100
77 Riccarton Road West, Dunedin	Pt Sec 7 Blk IV East Taieri SD	OT 258/291	Brian James Miller and Adrienne Joan Miller and Webb Farry Nominees Limited	110
51 Riccarton Road West, Dunedin	Pt Sec 1 Blk IV East Taieri SD	OT 12B/263	Trumbles Hill Farm Company Limited	870
10 Riccarton Road West, Dunedin	Pt Sec 6 Blk III East Taieri SD	OT B1/698	John Philip Sebelin, Dianne Sheila Sebelin, Webb Farry Limited	2765

The proposed designation is illustrated on the plans in Appendix E: Designation Plans. These plans also illustrate the existing designations. Current copies of the certificates of title for the site are contained in Appendix F: Certificates of Title.

The width of the designation varies along the road. This variation in width arises because of a combination of factors including the width of scheduled drains within the designation, visibility improvements at intersections and the provision of clear zones (shallow slopes with no obstructions).

3 Proposal Description

3.1 Outline

The proposal is to improve the standard of Riccarton Road West for motor vehicles as well as cyclists, pedestrians and horse riders. The improvements will comprise of two components: a shared path for the vulnerable users and road improvement for motor vehicles. Plans for the proposal are located in Appendix B: Proposed Typical Cross Sections, Appendix C: Layout Plans, Appendix D: Bridge Plans and Appendix G: Services. The details of each component are outlined below:

3.2 Shared Path

A shared path will be provided and will be located on the western side of Riccarton Road West. The path will run the entire length of the site from the SH87 and School Road intersection to Gladstone Road South which is about 4.2km long. The shared path will link to existing paths on Riccarton Road East, Gladstone Road South and the path along the Silver Stream. The path will be 3.0 metres wide to accommodate walkers, cyclists and horses. The path will have a compacted gravel surface. It is anticipated that the path will enable children to cycle to school as well as for recreational purposes.

The installation of the shared path will require crossings over the Silver Stream, Mill Stream and Owhiro Stream. The existing road bridges over these streams will be widened to accommodate the path and the widened road. The shared path will be narrowed at these points to 2.2m. A 1.4m high handrail will be provided on the outside of the bridge to provide protection for pedestrians and cyclists. A safety barrier will separate vehicles from the shared path on the bridge and approaches.

The shared path will have a number of points where there will be conflict with motor vehicles. These include intersections and private access ways. Sufficient sight distance will be provided at these locations to ensure both vehicles and the shared path users are visible to each other. No formal crossing treatments have been included at the road intersections as the number of users is not likely to warrant it. Further consideration will be given to the treatment of the shared path over the level crossing at the Riccarton Road West/Gladstone Road intersection when the detailed design is undertaken.

3.3 Road Improvements

The road widening and improvements will be undertaken in accordance with the relevant NZ Transport Agency and Austroads standards and guidelines. The existing 80km/hr speed limit will be retained and this has been used as the design speed.

Riccarton Road West will be widened to a seal width of 8.5 metres with two 3.5 metre traffic lanes and 0.75 metre shoulders. A standard water channel will be provided in all areas except where ORC scheduled drains exist. Where ORC scheduled drains exist, the drains will be replaced with a repositioned drain with a similar grade, cross sectional area and capacity as the existing drains. ORC has indicated during consultation that for maintenance reasons an open drain is required.

Clear zones, gentle slopes with no obstructions, will be provided on both sides of the road where possible.

The current straight road alignment will be replaced by very gentle bends. While the proposed horizontal alignment for Riccarton Road West is curvilinear, the bends are so large (a minimum of 1200m) that the road will appear straight to drivers. This design makes the most of the road reserve available while reducing the effects on adjacent residences. In some places this design will require the centre line of the road to shift about 1.5 metres to the west.

The vertical alignment will not change for most of Riccarton Road West. The vertical curve over the Silver Stream Bridge will be improved to ensure there is sufficient stopping sight distance on the bridge approaches.

DCC has worked with ORC during development of the design in order to ensure that the proposed road improvements do not result in an increased flood risk for adjacent properties on this section of the Taieri. Two sections of road were identified in which raising the road level may create a barrier to flood waters. These sections are from 665m north of Mill Stream through to Mill Stream (station 1400 to station 2065) and the area surrounding the Owhiro Stream (station 4960 to station 5260). Within these sections the proposed centreline will be no higher than the existing centreline.

All intersections will be improved by increasing the approach curve radii and providing better sight distance for some approaches where possible. Further improvements will be considered during the detailed design phase such as providing a seamless transition between these proposed works and the existing facilities at the Riccarton Road East, Gladstone Road South and Railway level crossing intersection.

All accesses affected will be upgraded with a sealed surface leading off the road and improved sight distance.

3.4 Landscaping

While the design approach adopted has sought to avoid creating adverse effects, the proposal will result in the loss of existing hedges and some landscaping along the frontage of a number of properties.

The trees and hedges to be affected are almost entirely within private properties now, and maintained and controlled by the adjacent landowners. It is appropriate that this situation continues and to this end, Council intends to provide for reasonable replacement plantings according to the wishes of the affected landowners. Consultation has already commenced and agreements in principle regarding landscape mitigation have been reached with some landowners. It is intended that this consultation continues, to address the concerns of all property owners affected.

Ideally, planting of hedges and trees to replace those that will have to be removed should be undertaken as soon as possible to provide for maximum growth and impact before the effects of removal of the existing vegetation is felt. Where appropriate, relocation of existing plants is also an option to consider. In general however, replanting rather than transplanting of hedges is likely to be the most practicable approach. If construction is likely before the hedges are fully established, the incorporation of fencing will ensure security for children and pets.

The species to be replanted will be the landowner's choice but Table 1 lists species that are either characteristic in the area now or promoted as suitable hedging / hedgerow options in terms of ecological function (i.e. bird food sources, or appropriateness to indigenous biodiversity). Indicative growth rates are also given. Replanting provides an opportunity to enhance the landscape both visually and ecologically by the use of locally appropriate species and to replace pest species such as gorse.

Table 3-1 : Possible Hedging Species

Species	Bird food source	Indigenous local biodiversity function	Appropriate to existing cultural landscape character	Indicative growth rate / yr
<i>Aristotelia serrata</i> hybrid (Wineberry)	√			500mm
<i>Coprosma lucida</i> (Karamu)	√	√		300mm
<i>Coprosma rugosa</i>		√		400mm
<i>Coprosma virescens</i>		√		400mm

Species	Bird food source	Indigenous local biodiversity function	Appropriate to existing cultural landscape character	Indicative growth rate / yr
<i>Cortaderia richardii</i> (Toetoe)		√	√	1m
<i>Crataegus monogyna</i> (Hawthorn)	√		√	500mm
<i>Cupressocyparis leylandii</i> (Leyland Cypress)			√	800mm
<i>Cupressus macrocarpa</i> (Macrocarpa)			√	600mm
<i>Griselinia littoralis</i> (Broadleaf)	√	√		300mm
<i>Ilex</i> sp (Holly)	√		√	200mm
<i>Kunzea ericoides</i> (Kanuka)		√		400mm
<i>Olearia dartonii</i>				800mm
<i>Olearia paniculata</i> (Akiraho)				500mm
<i>Phormium tenax</i> (Flax)	√	√		500mm
<i>Pittosporum eugenioides</i> (Lemonwood)	√	√		400mm
<i>Pittosporum tenuifolium</i> (Kohuhu)	√	√		400mm

3.5 Earthworks

The works will create a volume of “cut to waste” material of in the order of 9,000m³. The “cut to waste” material will be disposed of on an approved disposal site. Conventional earthworks machinery will be used to undertake the road works.

3.6 Roadside Drainage and ORC Scheduled Drains

The roadside drainage is intended to allow water to flow freely into existing drainage structures. These existing structures will be extended where required and the locations have been shown on the layout plans.

A new road drain will be formed along the eastern side of Riccarton Road West from station 2190 to Dukes Road South and connect to the drain on the south side of the Dukes Road South intersection. In addition, the capacity of two culverts across Riccarton Road West on the south side of the Dukes Road South intersection will be replaced with a single culvert with a greater capacity to mitigate existing flood hazards. These two items were identified during consultation with the ORC as items that would mitigate flood hazards and have been incorporated into the project for that reason.

A number of drains within Riccarton Road West are scheduled drains under the control of the ORC. Scheduled drains that require relocation as a consequence of the proposal will be reinstated with an open drain with a similar cross sectional area, grade and capacity for that section. The scheduled drains convey flood waters and drain land during storm events. The cross sectional area of the scheduled drains is much greater than that required for roadside drainage which merely collects stormwater from the road. The reinstated drains will be located further from the traffic lanes to reduce roadside hazards. One of the main reasons for variations in the proposed designation width is provision of a scheduled drain within the road.

3.7 Culverts

The cooperative approach to the design development with ORC has resulted in the replacement of some culverts across the road which will enhance the operation of the scheduled drains.

A number of culverts will be lengthened and replaced. All known culvert locations and their functions are identified in the table below and treatment identified.

Table 3-2 : Culverts

Route Position (RP)	Scheduled Drain	River / Stream	Road Drainage	Treatment
1530	X	X		To be extended
1790			X	To be extended
2190			X	To be extended
2520	X			To be replaced with a 1x1.5m box culvert
2860			X	To be extended
2930			X	To be extended
3220			X	To be extended
3490			X	To be extended
3850	X			To be extended
3920	X(1@45°)		X(2)	To be extended

The culvert at Station 2520 on the southern side of the Dukes Road South intersection conveys water in a scheduled drain. The proposal to replace the culvert with a 1m x 1.5m box culvert was developed after consultation with ORC.

3.8 Mill Stream Bridge

The existing Mill Stream Bridge constructed in 1999 is a two lane 7m single span bridge which is 9.0m wide. The bridge will be widened to 16m wide which will provide for widened traffic lanes, shoulders, safety barrier, a 2.2m shared path across the bridge and a hand rail on the western side of the bridge. A concept plan for the bridge widening is contained in Appendix D: Bridge Plans.

3.9 Silver Stream Bridge

The existing Silver Stream Bridge was constructed in 1964 with two traffic lanes, three spans, and an overall length of 34.9m long. The bridge will be widened to 12.7m wide in order to provide for a 2.2m shared path across the bridge as well as widened traffic lanes, shoulders, safety barriers and a handrail. A concept plan for the bridge widening is contained in Appendix D: Bridge Plans.

3.10 Owhiro Stream Bridge

Owhiro Stream Bridge was constructed in 1951. The bridge is essentially two box culverts constructed in situ with a length of 7.32m and a width of 9.14m. The bridge will be widened to 15.1m insitu construction in order to provide for a 2.2m shared path across the bridge as well as widened traffic lanes, shoulders, safety barriers and a handrail. Owhiro Stream is a scheduled drain under the ORC Bylaw. A concept plan for the bridge widening is contained in Appendix D: Bridge Plans.

Note: The overall widths of the 3 bridges vary because of the differing offset of the existing road centreline to the proposed road centreline.

3.11 Services

There are a number of services along Riccarton Road West which are identified on the plans in Appendix G: Service Plans. A number of services will be protected or relocated during construction. There are underground Telecom cables along the majority of the section which run along the western side of the road. Overhead power cables run predominantly along the eastern side of the road. There are also

underground services associated with the lights and bells at the railway level crossing north of the Gladstone Road intersection with Riccarton Road.

3.12 Construction Methodology

Construction methods and procedures will be finalised with the contractor once the contract has been let. However, consideration has been given to the general construction methods and they are outlined in this section.

Prior to commencing construction, the contractor will be required to prepare an Environmental Management Plan to demonstrate how designation and resource consent conditions will be complied with and environmental effects mitigated.

3.12.1 Road

The widened road will be constructed by conventional methods and will include:

- Establishment of replacement hedges, fences and landscaping as agreed with landowners in advance of road construction where practicable.
- Relocation of services where required.
- Machine excavation of vegetation and removal of topsoil to stockpile for reuse for landscaping.
- Construction of relocated scheduled drains.
- Machine excavation to road and shared path subgrade level.
- Machine placement and preparation of granular pavement layers.
- Surface sealing of the road by conventional construction methods.
- Machine spreading of stockpiled topsoil over earth and preparation for seeding.
- Reinstatement of accesses to properties and relocation of mail boxes as appropriate.
- Installation of signs and markings.
- Landscaping including grass seeding of the verges.

3.13 Bridge Widening

While there will be some differences between the construction methods for each bridge the method will generally comprise of the following:

- Removal of the existing handrail, balusters and kerb.
- Prepare and construct foundations.
- Extension of the abutments and piers.
- Extension of the deck by insitu or hollow core units as appropriate.
- Surface the bridge, install guard rail and hand rail.

3.14 Construction Period, Timing and Lapsing of Designation

It is anticipated that the construction period required for the project, exclusive of mitigation, will be approximately 18 months with construction anticipated to start in 2012 or 2013 subject to the planning process and unforeseen circumstances. Widening of each bridge is likely to take in the order of 3 to 6 months within that 18 month period. Construction will not be undertaken continuously during that period but will be focussed on the summer construction season. It is likely the work will be undertaken in sections along the road so the entire road is not under construction at once. Landscape mitigation will precede the road construction.

The designation will lapse within 15 years of the date of confirmation if it is not given effect.

Unforeseen circumstances may arise due to funding uncertainty from Council and NZ Transport Agency, the acquisition and transfer of land, dealing with a significant number of landowners and the other approvals required before construction can commence such as authority from the Historic Places Trust and ORC, and establishment of landscape mitigation prior to the 18 month construction period.

3.15 Access during Construction

Access to adjacent property will be maintained during the construction process; however there may be delays in travel along the road. It is likely that widening of the three bridges will be undertaken at the same time as the adjacent road section is widened. It is likely that one way travel across bridges and along the road will be able to be maintained however, there may be periods during the construction where it is necessary for construction reasons for access to be restricted.

4 Objectives and Need for the Project

The objectives of this project are to upgrade Riccarton Road West by providing a safer facility for non motorised users of the road and existing motorised users by:

- providing a separate shared path available for use by pedestrian, cyclists and horse riders,
- providing wider traffic lanes and sealed shoulders,
- reducing roadside hazards,
- improving visibility and layout at the Gladstone South Road, Bush Road and Dukes Road South intersections,
- improving visibility at the Silver Stream Bridge approaches and
- improving visibility at a number of driveways.

To achieve this will require a wider legal road width than the existing road width. This requires the purchase of adjacent private property. The use of a designation is therefore necessary.

The DCC has indicated in the July 2006 Transportation Strategy that it intends to upgrade Dukes Road and Riccarton Road to improve safety for non-motorised road users. In addition, the Council has determined that upgrading Dukes Road South and Gladfield Road South as an arterial road option to the south is not warranted and that they wish to proceed with upgrading Riccarton Road West. This project therefore contributes towards the DCC's objectives. Both the Dunedin Cycling Strategy and the Dunedin Pedestrian Strategies seek to increase participation and safety.

This section of Riccarton Road West can be summarised as having the following safety issues for the current use of the road:

- Narrow seal width varying between 5.5m and 6.5m.
- Two narrow traffic lanes varying between 2.75m and 3.25m wide.
- No sealed shoulders.
- Deep drains adjacent to the traffic lanes along much of the road.
- Service poles close to the traffic lanes.
- Obstacles within the 5.0m clear zone (deep drains with non recoverable slopes, large culvert head walls, service poles, trees, letterboxes etc).
- No provision for non motorised modes (pedestrians, cyclists, horses).
- Poor delineation along the road (no retroreflective raised pavement markers, edge lines or edge marker posts).
- Restricted sight distance at the intersections with Gladstone Road South, Bush Road, and Dukes Road and inconsistent signs at intersections.
- Restricted sight distance due to vertical curvature, particularly at the Silver Stream bridge approach.
- Restricted sight distance at a number of driveways due to hedges, landscaping and structures.

An appropriate standard for the existing use of Riccarton Road West is 3.5m wide traffic lanes and 750mm sealed shoulders on either side.

The narrow seal and lack of sealed shoulder means that there is no room on the road for non-motorised users including pedestrians, cyclists and horseriders. They are required to either share the narrow traffic lane with vehicles or use the steeply sloped shoulder next to the drains.

The narrow seal and no sealed shoulder combined with the steep unsealed shoulder, deep drains and other roadside hazards also affects vehicles. There is no area available outside of the traffic lanes for vehicles to recover if they accidentally leave the sealed road. A clear zone between the edgeline and any hazards with shallow slopes is generally required for a crash to be recoverable.

There is also restricted sight distance at a number of points which compromises safety on the road. The locations where sight distance is restricted include:

- At the intersections with Gladstone Road South, Bush Road, and Dukes Road.
- Due to vertical curvature, particularly at the Silver Stream bridge approach.
- At a number of driveways due to hedges, landscaping and structures.

The legal road is narrow which has restricted the DCC's ability to improve many of these issues.

5 Existing Environment

5.1 General

The site is generally located beyond the western fringe of Mosgiel and north of East Taieri. It is located on land adjacent to a 4.2km length of Riccarton Road West between SH87 to the north and the Main South Railway and Gladstone Road South to the south. Figure 2-1 Location Map indicates the general locality of the site in relation to Mosgiel and surrounding roads. Riccarton Road West runs more or less north to south. There are three streams which traverse the site: Mill Stream, Silver Stream and Owhiro Stream flowing in a westerly direction. The natural character of all of the waterways is severely modified by channelling and the construction of stop banks. The site is located on the Taieri Plains and is generally flat. The land is zoned Rural in the Dunedin City District Plan (DCDP) and some of the land is identified on District Plan Map 75 as being High Class Soils.

The surrounding land is predominantly used for agricultural purposes and lifestyle properties. The majority of agricultural purposes are used for grazing with intensive horticultural activities occurring on some sites, such as 77 Riccarton Road West. Some of the surrounding land is also being used for industrial purposes, including a sawmill at 198 Bush Road.

Riccarton Road West is a straight rural road with an 80km/hr speed limit which runs more or less north to south along the western side of Mosgiel. The legal road width varies between approximately 9.9m and 18.4m.

The section of Riccarton Road West is a narrow two lane rural road, which has a sealed width of between 5.5-6.5 metres consisting of two 2.75-3.25 metre wide lanes and no sealed shoulders. There are deep ditches alongside the road for much of the length.

The road is generally straight and flat with some undulations. The Silver Stream Bridge is located at a higher elevation than Riccarton Road West which has resulted in a crest to curve over the bridge and limited visibility on the approaches.

There are numerous access ways along the route that service rural residential, rural and commercial properties.

At the northern end of this section of Riccarton Road West is the six legged intersection with SH87 (Outram-Mosgiel Road) and School Road South at Wyllies Crossing. At the southern end of the section is the cross road intersection with Gladstone Road South and the railway level crossing just to the north of the road intersection.

This section of Riccarton Road West is also intersected by two roads, Bush Road and Dukes Road South. Both of these intersections are crossroads.

The following photographs illustrate the existing road layout. All of the photographs are of views looking to the south towards Saddle Hill.



Figure 5-1 : Station 1620. Adjacent to 371 Riccarton Road West
Service poles and scheduled drain close to road on left side of picture before hedge.



Figure 5-2 : Station 2200. Adjacent to 323 Riccarton Road West
Service poles close to road.



Figure 5-3 : Station 2300. Adjacent to 293 Riccarton Road West
Service poles and scheduled drain close to road on left side of picture before hedge.



Figure 5-4 : Station 3300. Adjacent to 208 Riccarton Road West
The deep drain on the left of the picture is close to the road.



Figure 5-5 : Station 4170. Adjacent to 119 Riccarton Road West

The Bhutan Cypress trees are the large trees to the right of the picture. The stable at 114 Riccarton Road West is the building to the left of the picture. The available width between the stable and the Bhutan Cypress trees is very narrow.



Figure 5-6 : Station 4600. Adjacent to 77 Riccarton Road West

Service poles to left of picture close to road. Hedges restrict sight distance at accesses.



Figure 5-7 : Station 6000. Adjacent to 51 Riccarton Road West
 Very narrow width between the gorse hedges and service poles close to road.
 The traffic lanes are narrow and there are no shoulders.

5.2 Existing Designations

The Airway Corporation of New Zealand has designation D388 on 245 Riccarton Road West (Sec 1 SO13203). The designation is for a non directional beacon which comprises of a concrete block structure containing equipment and two large aerials with stays.

The ORC East Taieri Depot is located at 234 Riccarton Road West on Pt Lot 15, DP 1846 held on CT 178/244. This land is designated (D212) in the DCDP by ORC. It should be noted that there is an error with the legal description in the DCDP Designation Schedule 25.5 and a corresponding error with the site shown on Map 27. The buildings on the site accommodate the depot.

NZTA has a designation for State highway purposes for SH87 adjoining the northern extent of the site. This is designation D464 SH87 – Mosgiel Interchange to DCC/CODC Boundary North of Hyde. The designation has been given effect to and there is a two lane highway.

NZ Railway Corporation has a designation for the Main South Railway at the southern extent of the site. The designation number is D419 and the purpose is for "railway purposes". There is a section of single track railway and a signalised crossing where Riccarton Road West crosses the Main South Railway.

Dunedin Airport Limited designation D274, Dunedin Airport Approach and Land Use Controls includes Riccarton Road West. DCDP Map 72 indicates that the road is within the area covered by the Takeoff/Approach Fan.

The extent of the first four designations identified above are marked on the Designation Plans in Appendix E.

5.3 Scheduled Drains

There are a number of scheduled drains running alongside or crossing Riccarton Road West. The majority of the drains running alongside are on the eastern side of the road with the exception of a short section north of the Bush Road intersection that is on the western side. Scheduled drains and the floodbanks along the Silver Stream are listed as a defence against water and are controlled by the ORC, and any alteration must be authorised in accordance with the Otago Regional Council Bylaw 2008.

5.4 Neighbourhood and Wider Community

The neighbourhood can be described as rural residential and rural in nature with residents strongly reliant on private motor vehicle based transportation. Riccarton Road West and the surrounding area is regularly used by cyclists as well as pedestrians and runners for recreation and training purposes. The road provides a link for pedestrians and runners to the existing paths along the Silver Stream, Gladstone Road South and Riccarton Road East.

5.5 Visual and Landscape

There are three significant trees adjacent to Riccarton Road West listed in the DCC District Plan:

- T048 119 Riccarton Road East Taieri Cypresses corneyana Bhutan cypress Lot 1 DP 10041
- T049 119 Riccarton Road East Taieri Cypresses corneyana Bhutan cypress Lot 1 DP 10041
- T956 193 Riccarton Road Salix sp. Willow Pt Sec 1 Blk VIII East Taieri SD

The two Bhutan Cypresses (T048 and T049) are located on 119 Riccarton Road West. None of the significant trees will be impacted by the proposal.

On both sides of the road there are hedges along much of this 4.2km length of Riccarton Road, the majority of which are on private land. The hedge species include Macrocarpa, Gorse, Hawthorn and Holly. Other plantings are predominantly exotic shelter and amenity plantings of varying composition and character associated with the buildings on the adjacent land.

The visual appearance from the road is predominantly rural in character, however there are a number of residences located in relatively close proximity to the road. Refer to the figures earlier in this section, in particular 5-4, 5-5 and 5-7. The plantings on the left of Figure 5-4 provide a strong separation between the road and houses however to the right there is a much weaker buffer. Figure 5-5 is the area adjacent to 119 Riccarton Road West, and the Bhutan Cypresses, the stables and the well maintained hedges enhance the landscape. Figure 5-7 the narrow road is framed between well maintained gorse hedges.

Appendix C: Layout Plans includes an aerial photograph background to the plans which illustrates the existing development and landscaping immediately adjacent to the road.

The landscape values have been assessed in the Landscape Effects Assessment from both a road users and adjacent residents perspective. In summary, the landscape is an intensively modified working rural environment which is dominated by cultural elements. Visual amenity from the road is highest in areas with attractive trees of significant scale, attractive buildings and well maintained hedgerows that define the road boundary and provide a sense of enclosure. The visual amenity is lower where there are elements of clutter created by service poles and wires, over enclosure caused by high dense planting and hedges close to the boundary or buildings close to the road with little or no planting. From a resident's perspective the rural environment provides plenty of open space and landscaping has an important visual function as well as providing shelter, privacy and setting.

5.6 Traffic Environment

An assessment has been undertaken of the traffic environment on Riccarton Road West.

This section of Riccarton Road West can be summarised as having the following safety issues for the current use of the road:

- Narrow seal width varying between 5.5m and 6.5m
- Two narrow traffic lanes varying between 2.75m and 3.25m wide
- No sealed shoulders
- Deep drains adjacent to the traffic lanes along much of the road
- Service poles close to the traffic lanes
- Obstacles within the 5.0m clear zone (deep drains with non recoverable slopes, large culvert head walls, service poles, trees, letterboxes etc)
- No provision for non motorised modes (pedestrians, cyclists, horses)
- Poor delineation along the road (no retroreflective raised pavement markers, edge lines or edge markers posts)
- Restricted sight distance at the intersections with Gladstone Road South, Bush Road, and Dukes Road and inconsistent signs at intersections.
- Restricted sight distance due to vertical curvature, particularly at the Silver Stream bridge approach
- Restricted sight distance at a number of driveways due to hedges, landscaping and structures

An appropriate standard for the existing use of Riccarton Road West is 3.5m wide traffic lanes and 750mm sealed shoulders on either side.

The narrow width of the legal road restricts improvements that can be achieved at present.

The signs at intersections have recently been improved, hazard markers have been installed at private driveways to improve delineation at night and signs added highlighting the presence of cyclists.

A travel survey undertaken in 2003 showed that a number of vehicles are already using Riccarton Road as a through route in preference to Gordon Road.

The survey showed that a total 556 vehicles travelled between the survey point northwest of Riccarton Road West on SH87 and the survey points on Gordon Road and Riccarton Road East north of SH1. Of those vehicles 397 (71%) travelled along Riccarton Road with the rest travelling on Gordon Road.

The traffic from Dukes Road was also surveyed. The number of vehicles surveyed at the Dukes Road survey point and the survey points on Gordon Road and Riccarton Road East north of SH1 was 169. Of those vehicles 78 (46%) travelled along Riccarton Road.

The percentage of heavy vehicles using either Gordon Road or Riccarton Road appeared to be dependent only on the source of the traffic. Volumes originating from SH87 had about 10% heavy vehicles regardless of whether that traffic travelled on Gordon Road or Riccarton Road. The traffic originating from Dukes Road had 40-50% heavy vehicles.

Overall the survey showed that during the survey period 65% of through vehicles used Riccarton Road as compared to 35% of vehicles using Gordon Road. The overall percentage of heavy vehicles surveyed travelling through Riccarton Road was 13%.

The average traffic volume (2009) on Riccarton Road East between SH1 and Gladstone Road is 2,280 vehicles per day and 6% of those vehicles are heavy commercial vehicles. Riccarton Road West between Gladstone Road and Bush Road has an average daily traffic of 2,070 with 6% heavy commercial vehicles and between Dukes Road and SH87, the average daily traffic has reduced to 1075 vehicles per day with 6% heavy commercial vehicles. The traffic enters or leaves Riccarton Road at Dukes Road or Bush Road or the properties between these roads. It is likely that the majority travel along Bush Road. Analysis of the hourly traffic volumes and traffic direction indicates that Riccarton Road has a much higher evening peak than the morning peak and this may be a consequence of route choice being made by commuters to avoid Gordon Road during the evening peak period. The current speed limit on Riccarton Road West is 80km/h and no more than 15% of vehicles are travelling more than 10km/h over the speed limit. Around 50% of vehicles on Riccarton Road West are exceeding the 80km/h speed limit and beyond the site on Riccarton Road East, nearly 80% of vehicles are exceeding the 50km/h speed limit. The numbers of

pedestrians, cyclists and equestrian traffic has not been specifically surveyed, however observations during various visits indicate numbers are low. This is likely because the road is considered to be deficient and considered to be unsafe by non motorised users.

There have been a total of 15 injury crashes (1 fatal, 2 serious injury and 12 minor injury crashes) and 27 non injury crashes reported on the road in the 10 years 1999 to 2008 inclusive. While most are concentrated at the intersections overall there is an average of almost 9 crashes per kilometre. The crash analysis does not include crashes which occurred during 2009 however a fatal crash did occur south of the Dukes Road intersection which involved a refuse truck worker who stepped from behind the refuse vehicle into the path of a van.

Of the 25 reported intersection crashes, 12 occurred at the Gladstone Road intersection (6 minor, 6 non injury), 8 at the Bush Road intersection (1 fatal, 1 serious, 2 minor, 4 non injury), 2 at Dukes Road intersection 1 minor, 1 non injury) and 3 at the SH87 intersection (1 serious, 2 non injury).

Mid-Block crashes occurred on the following sections:

- Gladstone Road to Bush Road there were 6 non injury crashes.
- Bush Road to Dukes Road there were 3 minor injury crashes and 2 non injury crashes.
- Dukes Road to SH87 there were no mid block crashes.

5.7 Noise

The existing noise environment is typical for a rural environment in close proximity to a road. A noise assessment has been prepared and is included in Appendix J: Noise Assessment.

5.8 Air Quality

Based on ORC monitoring, air quality in the Mosgiel area can be classed as reasonable given that, especially in the winter months, there were approximately five exceedances of the National Environmental Standard (NES) for PM₁₀ of 50µg/m³ (24 hour average). However, the Regional Plan: Air for Otago seeks to achieve continual annual improvement in air quality to achieve the NES limit within 5 years. It is acknowledged by the ORC that the main source of PM₁₀ is from domestic fires. The contribution by vehicular traffic to the total PM₁₀ particulate burden in Mosgiel air when compared to the contribution by domestic fires and also general wind blown dust particles from soils. An assessment of the effects of the proposed improvements to Riccarton Road West is contained in Appendix K: Air Quality Assessment.

5.9 Archaeological and Heritage

Based on a search of the NZ Archaeological Association's database, the Dunedin City Plan and discussions with Kai Tahu ki Otago (KTKO), no registered archaeological sites, specific recorded resources or values, have been identified in the immediate surrounding area. Riccarton Road West was a very early route across the Taieri and investigations have identified at least one stone culvert along the road that is likely to be pre-1900. As this culvert is to be extended, an archaeological assessment may recommend that an archaeological authority is required from NZHPT and an archaeological authority will be obtained before work is undertaken if an authority is required. An attractive stables building of brick and slate construction, constructed in the early 1900's, has also been identified at 114 Riccarton Road West. The style of the stables is consistent with the adjacent residence on the same property. The stables are located close to the Riccarton Road West boundary of the property.

Refer to Figure 5-8 and 5-9 for a view of the stables.



Figure 5-8 : View of stables from access to 114 Riccarton Road West
 Service poles close to road.



Figure 5-9 : View of stables from opposite side of Riccarton Road West
 The former Wyllies Crossing Post Office buildings are located on the north west corner of 424 Riccarton Road West. The Wyllies Crossing Post Office was opened for the local farming community on 6 December 1897 and was closed in 1931 (NZ Post Offices, R M Startup). The buildings appear to have been heavily modified in the intervening period.



Figure 5-10 : View of former Wyllies Crossing Post Office from the Northern side of SH 87

Looking south along Riccarton Road West.

Neither the stables at 114 Riccarton Road nor the former Wyllies Crossing Post Office building at 424 Riccarton Road West will be changed or affected by the proposal.

5.10 Tangata Whenua

No matters of interest to Tangata Whenua, particularly Kai Tahu, have been identified other than those related to the Silver Stream and Owhiro Stream in the Aquatic Values section which follows.

5.11 Water Supply Values

Part of the site is identified as being within Ground Water Protection Zone B. The only potential effects are from investigative drilling. The methodology will ensure that effects arising from this activity is avoided or mitigated and will be considered as part of the ORC consents.

5.12 Aquatic Values

There are three streams which traverse the site flowing in a westerly direction: Mill Stream, Silver Stream and Owhiro Stream. While the natural character of all of the waterways is severely modified by channelling and the construction of stop banks, the Silver Stream and Owhiro Stream are considered to have some natural values or interest and value to Kai Tahu while Mill Stream is not identified as having any interest or Kai Tahu interest or values.

5.12.1 Silver Stream

The Regional Plan: Water for Otago (RPW) sets out the natural values of Silver Stream at Schedule 1A. The gravel bed composition is of importance to the resident biota. There is an absence of aquatic pest plants. Trout and eels are present in significant numbers in the Silver Stream with trout spawning and areas for the development of juvenile trout.

Silver Stream is also identified in Schedule 1D as having the following Kai Tahu beliefs, values, and uses associated with it:

- kaitiakitanga
- Mauri
- Waahi Tapu and/or Waiwhakaheke
- Waahi toaka

It is also identified as having the following access or customary use interests for Kai Tahu:

- Mahika kai
- Kohanga
- Trails

5.12.2 Owhiro Stream

No natural values are identified for Owhiro Stream in Schedule 1A of the RPW; however the following Kai Tahu beliefs, values, and uses are identified in schedule 1D:

- kaitiakitanga
- Mauri
- Waahi toaka

It is also identified as having the following access/customary use interests for Kai Tahu:

- Mahika kai
- Kohanga
- Trails
- Cultural materials
- Waipuna

6 Construction Effects

6.1 Delays and Safety

During the 18 month construction period, vehicles, staff and equipment will be present on site and the construction will be completed in sections. Sections of the road will operate on a one way basis during construction and from time to time temporary delays will occur for motorists and pedestrians. There is the potential for a reduction in safety for vehicles, cyclists and pedestrians travelling through the site however temporary traffic management will be in place to ensure the safety of the construction workers and road users. There will be some disruption to property access during the construction process however temporary access will be provided to residents where necessary.

Mitigation Measures

At the time of construction it will be necessary to advise the community, by way of a public notice in the newspaper and letter drops to the occupiers of adjacent properties that the works will be commencing.

DCC or its agent will regularly liaise with the occupiers of adjacent property.

The Contractor will be required to obtain a Traffic Management Plan from DCC which will set out the traffic control to be provided through the site.

The Contractor will be required to make provision for property access during the construction, including temporary access where necessary.

6.2 Archaeological and Heritage

A stone culvert has been identified on Riccarton Road West that may predate 1900. Extension of the culvert is required which will result in some disturbance. Consultation will be undertaken with the Historic Places Trust when developing the detail design for the culvert extension in order to mitigate effects.

Based on a search of the NZ Archaeological Association's database, the Historic Places Trust Register, the DCC District Plan, and discussions with Kai Tahu ki Otago (KTKO), no other recorded resources or values have been identified in the immediate surrounding area.

Vibrating rollers are often used during road construction. If these vibrating rollers are used in "vibrate mode" close to sensitive buildings, such as the Stables at 114 Riccarton Road West and the former Wyllies Crossing Post Office building located on the northwest corner of 424 Riccarton Road West, to have an adverse effect on sensitive buildings. Design advice for operating vibrating rollers close to sensitive structures is contained in Appendix L: Vibration During Construction and involves measures such as turning the vibrating function off when in close proximity to buildings or structures that are sensitive to vibration.

Mitigation Measures

An archaeological assessment will be undertaken prior to construction and depending on the outcome of the assessment an archaeological authority may be recommended. Work will be undertaken either under an archaeological authority or an accidental discovery protocol. In the event that artefacts or other items of cultural significance are found during construction, work would stop immediately and the Historic Places Trust, KTKO and the NZ Police (in the case of human remains) would be notified. Appropriate action can then be taken to preserve and protect items of cultural and archaeological significance from damage.

The following applies to the use during construction of vibrating rollers meeting the category definition of "B2":

- a. When NOT vibrating, rollers may operate normally at any point along the roadway adjacent to the stables or other structures.*

- b. When vibration functions are ON, the point of closest approach to the stables' foundation is to be no nearer than 20 metres.*
- c. When vibration functions are ON, the point of closest approach to any dwelling foundation (or building of similar design and purpose) is to be no nearer than 10 metres.*
- d. Where, owing to the style of structure, condition etc of the dwellings it is considered that they are sensitive to vibration, the point of closest approach with the vibration function ON should be 20 metres.*

6.2.1 Noise and Vibration

Noise and vibration arising from construction activities has the potential to cause annoyance and disrupt the activities of residents in the neighbourhood. In addition, vibration arising from activities such as the use of vibrating rollers in close vicinity to sensitive structures or pile driving has the potential to cause damage to structures in the vicinity. The specific effects of vibrating rollers are considered in the previous section.

Construction activity will comply with NZS 6803: 1999 Acoustics – Construction Noise and DIN 4150-3 :1999 for Noise and Vibration respectively. Construction will generally take place between 7am and 6pm Monday to Saturday, exclusive of public holidays.

Compliance with the recognised standards for noise construction and vibration, together with the restrictions on the hours of operation will ensure that noise and vibration during construction is kept to a minimum practicable level. While damage due to vibration is unlikely if the standard is complied with, the pre-construction structural check will provide a baseline for residents to assess any changes in their property.

Mitigation Measures

Construction activity will comply with NZS 6803: 1999 Acoustics – Construction Noise and DIN 4150-3 :1999 for Noise and Vibration respectively. Construction will generally take place between 7am and 6pm Monday to Saturday, exclusive of public holidays.

Before construction commences, property owners within a 250m radius of Mill Stream, Silver Stream and Owhiro Stream will be offered a free independent structural survey which will include a photographic record and installation of "tell-tales" on any visible cracks. This survey will be repeated at the completion of construction and any damage that has arisen from vibration during construction activities, such as pile driving will be rectified by DCC.

A Construction Management Plan (CMP) which will demonstrate compliance with the designation conditions will be submitted to DCC and ORC before starting construction. This will include the need for written notification to all residents within 250m of the site of the construction timeframe, particularly the expected pile driving schedule.

6.3 Dust

Dust arising from construction activities could potentially inconvenience and disrupt outdoor activities, infiltrate residences and affect pastures. The issue is most likely to arise during periods of settled weather.

On site mitigation for the duration of the construction activities will ensure that dust is controlled. Exposed earth will be sprayed with water as required to control dust emissions. Establishment of replacement hedges and landscaping on adjacent properties in advance of construction will assist in reducing the effects of dust. Revegetation and planting on the road verges has been incorporated into the proposal and will be implemented as an integral component of the construction activities.

Mitigation Measures

Replacement hedges and landscaping will be established on adjacent properties where practical in advance of construction.

The exposed ground will be sprayed with a water cart during dry conditions to ensure dust is not excessive.

6.4 Visual and Landscape

A sensitive approach to the design has resulted in an option which minimises disruption to adjacent residential amenity values and rural shelter as much as possible by introducing very gentle bends. There will be a substantial change to the road landscape arising from the construction and in some areas there will be some adverse effects on the landscape of adjoining properties. The key implications identified in the Landscape Effects Assessment in Appendix H are as follows:

- *In places, hedges and other plantings will have to be removed and fences relocated. This will open up the landscape; at least until replacement vegetation is well established.*
- *An altered landscape character from within the road reserve due to the wider road space and carriageway. The current narrow country lane character will be less strongly expressed.*
- *In some places the distance from the road boundary to dwellings will be reduced and trees and shrubs that provide the garden setting, shelter and privacy for these dwellings will be removed or reduced. This has implications for the amenity of these properties. These effects are discussed in more detail below.*

The two Bhutan Cypress trees at 119 Riccarton Road West identified in the DCDP as significant trees T048 and T049 will not be affected by the proposal. The Bhutan cypress trees and the stables are important landscape elements. The design has been carefully executed so that both the Bhutan Cypresses and the stables at 114 Riccarton Road will be retained. The road has been gently curved at this location so that effects on both the trees are avoided. There is no room to locate the shared path to the east of the Bhutan Cypresses, therefore the shared path loops around the west of the Bhutan cypresses. The construction methodology in the vicinity of the trees has been developed to avoid damage to the roots of the Bhutan Cypress trees, particularly on the western side and involves constructing the shared path on the surface and the use of permeable materials. The trees have adapted to a non permeable surface on the eastern side. This will result in the some loss of privacy, buffer and shelter at 119 Riccarton Road.

While the design approach has been to avoid creating adverse effects on the landscape, there will be adverse effects that should be mitigated where possible. The trees and hedges affected by the construction are almost all within private properties and maintained and controlled by landowners. It is appropriate that landscape mitigation remain on private land and under the control of landowners. The Council is taking the approach that it will provide for reasonable replacement plantings in accordance with the landowners wishes. Maintenance of a secure area for children or pets may be an issue depending on when the planting is established in relation to construction. In such cases, fences of a suitable design may also need to be utilised. Effects are primarily to do with loss of existing vegetation that provides enclosure, define the road environment, and create setting, buffer, shelter and privacy for residences. Establishment of replacement planting in advance of construction will assist in mitigating loss to enclosure, privacy and amenity. Consultation with landowners is facilitating early establishment of mitigation and agreement in principle has been reached with some landowners. This consultation is ongoing. While the choice of species is the landowners choice, a possible hedging species list has been made available to landowners. This list identifies the features of each species including the indicative growth rate, and ecological function. The list is included in the Landscape Effects Assessment and is reproduced below:

Table 1: Possible hedging species

Species	Bird food source	Indigenous local biodiversity function	Appropriate to existing cultural landscape character	Indicative growth rate / yr
Aristotelia serrata hybrid (Wineberry)	√			500mm
Coprosma lucida (Karamu)	√	√		300mm
Coprosma rugosa		√		400mm
Coprosma virescens		√		400mm
Cortaderia richardii (Toetoe)		√	√	1m
Crataegus monogyna (Hawthorn)	√		√	500mm
Cupressocyparis leylandii (Leyland Cypress)			√	800mm
Cupressus macrocarpa (Macrocarpa)			√	600mm
Griselinia littoralis (Broadleaf)	√	√		300mm
Ilex sp (Holly)	√		√	200mm
Kunzea ericoides (Kanuka)		√		400mm
Olearia dartonii				800mm
Olearia paniculata (Akiraho)				500mm
Phormium tenax (Flax)	√	√		500mm
Pittosporum eugenioides (Lemonwood)	√	√		400mm
Pittosporum tenuifolium (Kohuhu)	√	√		400mm

A careful assessment of the effects on individual residential properties was included in the Landscape Effects Assessment and is reproduced:

Table 2: Assessment of impacts on residential environments

Impact is assessed in terms of the following terms

- *Minimal – no mitigation required*
- *Minor - adverse effects able to effectively mitigated in the medium term (approx 5 years) – assuming early replanting of hedges etc.*
- *Significant – adverse effects unable to be mitigated entirely. Long term impacts on amenity.*

Property #	Description of impact	Possible mitigation measures / effectiveness
51 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
57 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
77 Riccarton Rd	Minimal impacts, Very minor encroachment into property. Existing buffering vegetation remains.	None required

Property #	Description of impact	Possible mitigation measures / effectiveness
89 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
95 Riccarton Rd	Minor impacts. No encroachment into property. Dwelling approx 120m from road. Loss of hedge along approx half of frontage.	Replacement hedge planting as early as possible will provide for effective mitigation.
114 Riccarton Rd	Minimal impacts and no encroachment in the immediate vicinity of dwelling. Existing buffering vegetation and barn remains. Hedging either side of dwelling will be removed.	Replacement hedge planting as early as possible will provide for effective mitigation.
117 Riccarton Rd	Minor impacts. Dwelling approx 100m from road. Loss of hedge along frontage. Encroachment of shared path into farm yard area. Realignment of driveway access required.	Replacement hedge planting as early as possible and tree planting as discussed with owners will provide for effective mitigation.
119 Riccarton Rd	Significant impacts. Shared path encroaches significantly into front garden. Loss of some buffering vegetation to accommodate retention of Bhutan Cypress trees.	Replacement hedge or other garden plantings as early as possible will effectively mitigate privacy effects. Garden spaciousness will be permanently reduced but the large trees providing setting will remain.
199 Bush Rd	Minor impacts. No encroachment into property. Loss of hedge on frontage as currently shown. Other garden buffering planting remains	Additional screening garden shrubs or hedging, planted as early as possible will provide for effective mitigation.
157 Riccarton Rd	Significant impacts. Shared path and drain encroaches significantly into property and front garden. Loss of some buffering vegetation including trees that enhance setting.	Replacement hedge or other garden plantings as early as possible will effectively mitigate privacy effects. Garden spaciousness, including room for larger trees, will be permanently reduced.
164 Riccarton Rd	Minor impacts. Realignment of driveway access required. Encroachment into property and loss of some trees on frontage.	Hedge, tree and shrub planting as early as possible will provide for effective mitigation and enhanced buffering of the dwelling and garden.
170 Riccarton Rd	Minor impacts. New driveway access, including replacement hedging agreed in principle with Council.	Replacement hedging associated with relocated driveway planted as early as possible will provide for effective mitigation.
177 Riccarton Rd	Significant Impacts. Significant encroachment into property and front garden. Loss of some buffering vegetation including mature trees providing setting.	Replacement hedge or other garden plantings as early as possible will effectively mitigate privacy effects. Garden spaciousness, including room for larger trees, will be permanently reduced.

Property #	Description of impact	Possible mitigation measures / effectiveness
178 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
182 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
186 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
192 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
193 Riccarton Rd	Significant impacts. Significant encroachment into property and front garden. Loss of some buffering vegetation including mature trees providing setting.	Replacement garden plantings or establishment of hedging as early as possible will effectively mitigate privacy effects. Garden spaciousness, including room for larger trees, will be permanently reduced.
204 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
208 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation remains.	None required
214 Riccarton Rd	Minor impacts. Hedge adjacent to road to be removed but effects will be minimal as significant buffering vegetation remains. Dwelling approx 90m from road.	Replacement hedge planting as early as possible will effectively mitigate any adverse effects.
215 Riccarton Rd	Minor impacts. Encroachment into property and front yard but dwelling is over 50m from the road. The hedge providing the primary buffer will be removed. Significant plantings and garden space still remain.	Replacement hedge or other garden plantings planting as early as possible will effectively mitigate any adverse effects.
240 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation.	None required
248 Riccarton Rd	Minimal impacts. No encroachment into property. Existing buffering vegetation.	None required
255 Riccarton Rd	Minor impacts. Boundary encroachment has minor impact on plantings by road. Garden framework remains largely intact.	Replacement plantings as required will effectively mitigate any adverse effects.

Property #	Description of impact	Possible mitigation measures / effectiveness
264 Riccarton Rd	Minor impact. No property encroachment in the vicinity of the dwelling. Buffer plantings adjacent to dwelling remain unaffected. Boundary plantings to the north will be removed.	Replacement plantings as early as possible will effectively mitigate any adverse effects.
169 Dukes Rd South	Minimal impact. No frontage to Riccarton Rd. No loss of primary buffering vegetation.	None required.
162 Dukes Rd South	Minor impact. Dwelling over 100m from Riccarton Rd. Hedge adjacent to Riccarton Rd removed but no loss of primary buffering vegetation around house	Replacement hedge plantings as early as possible will effectively mitigate any adverse effects.
293 Riccarton Rd	Significant impacts. Significant property encroachment affects front garden. Loss of some generally low buffering vegetation.	Replacement plantings as early as possible will effectively mitigate any adverse effects but garden spaciousness will be permanently reduced.
293 (second house) Riccarton Rd	Minor impacts. Property encroachment but this second dwelling on the property already has planting establishing behind the proposed boundary.	None required.
334 Riccarton Rd	Minimal impacts. No property encroachment. Existing buffering vegetation remains.	None required
328 Riccarton Rd West	Minimal impacts. No property encroachment. No boundary vegetation affected.	None required
345 Riccarton Rd West	Minor impacts. Encroachment by road, path and drain will require modifications to the existing driveway but plantings are yet established.	Plantings can be established as required to tie in with the new driveway layout.
350 Riccarton Rd	Minimal impacts. No property encroachment. Existing buffering vegetation remains.	None required
356 Riccarton Rd	Minimal impacts. No property encroachment. Existing buffering vegetation remains.	None required
362 Riccarton Rd	Minimal impacts. No property encroachment. Existing buffering vegetation remains.	None required
371 Riccarton Rd	Minor impacts. Property encroachment with the loss of a few trees. Primary buffer planting however is nearer the house and unaffected.	Replacement plantings as required will effectively mitigate any adverse effects.
389 Riccarton Rd	Minor impacts. Property encroachment with the loss of a low hedge. Primary buffer planting however is nearer the house and unaffected.	Replacement hedge plantings as required will effectively mitigate any adverse effects.

Property #	Description of impact	Possible mitigation measures / effectiveness
413 Riccarton Rd	<i>Minimal impacts. Property encroachment but the dwelling is approx 95m from the road and buffer plantings are unaffected.</i>	<i>None required.</i>
219 Outram – Mosgiel Rd	<i>Minimal impacts. No property encroachment. Existing buffering vegetation remains.</i>	<i>None required</i>
424 Riccarton Rd	<i>Minimal impacts. No property encroachment. Existing sheds and hedges remain.</i>	<i>None required.</i>

This table identifies that the majority of residences will experience minimal landscape effects arising from the construction and no mitigation is required. There will be 14 residences that will experience minor adverse effects due to loss of privacy, setting and shelter that are able to be effectively mitigated in the medium term. The duration and scale of these effects can be reduced by the early planting of hedges and landscaping in advance of construction.

There are 5 properties however, that will have significant adverse effects that will not be able to be mitigated entirely and there will be long term impacts on amenity because of the loss of garden spaciousness. The 5 properties are:

- 119 Riccarton Road
- 157 Riccarton Road
- 177 Riccarton Road
- 193 Riccarton Road
- 293 Riccarton Road

Early establishment of replacement hedging and other garden plantings will effectively mitigate privacy effects.

There will be a loss of hedges along the frontage of some properties being used for farming purposes which will give rise to a loss of shelter for stock and privacy. Before any hedges are removed on land used for grazing, DCC will ensure that they will be replaced with stock proof fencing. The design has been carefully crafted so that loss of hedges primarily occurs on one side of the road only, there will be some sections where hedges will be lost on both sides of the road. On the positive side, an opportunity is provided to replace existing gorse hedges with more desirable plant species. Early planting of replacement hedges in advance of construction will reduce the duration and scale of these effects and in time, these effects will be fully mitigated.

Mitigation Measures

Establish mitigation planting and stock proof fencing in advance of construction where practical.

6.5 Class I Soils

Approximately 1.8km of the 4.2km long section of Riccarton Road West is fronted by land which is classified in the DCDP as having high class soils. Within the parts of Riccarton Road West that have high class soils, approximately 20% of the land fronting Riccarton Road West is used for non-productive purposes (eg, residential, industrial etc) with the remaining 80% in pasture or cropping.

A narrow strip of land identified as having Class I soils will be incorporated into this proposal. Top soil will be stripped during construction and will be retained and used to reinstate areas disturbed during construction with any excess made available for use elsewhere. The amount of land required within the high class soil area is relatively small and is not expected to have any significant impact on the productivity of the adjacent land.

Mitigation Measures

Topsoil will be stripped during the construction process, stockpiled and used to reinstate areas disturbed during construction. Any surplus will be made available for use elsewhere.

6.6 Rivers and Water Courses

The road widening and widening of bridges and culverts will result in removal of vegetation from watercourses and the likelihood of sediment and contaminants entering watercourses which could have an effect on water quality. Defences against water and scheduled drains will be altered which could result in an increased risk of flooding.

Mitigation Measures

Separate consents will be required from the ORC and the affects will be addressed at that time.

The design and construction methodology is intended to reduce the likely risk of adverse effects.

Sediment traps will be utilised where appropriate.

6.7 Effectiveness

There will be a need to operate the section of road being constructed under a temporary speed limit during the construction of the project. The work will be undertaken in stages which will mean that the restricted speed limit will apply on the section of road that is under construction at the time. The road will be less attractive for non motorised users, in particular cyclists on road bikes and they may chose to ride on alternative routes where practical.

Mitigation

The Contractor will be required to provide a Construction Management Plan.

6.8 Utilities

The work will require the relocation of utilities during the construction process. The location of existing utilities has been identified and this information will be provided to the Contractor. The Contractor will be required to liaise with the utility service providers to ensure disruption is minimised and effects on consumers managed.

6.9 Tangata Whenua

Tangata Whenua main interest in relation to this project is understood to be focussed on water. There is the potential for contaminants to reach water during the construction process, however this can be mitigated by the construction methodology and the use of measures to avoid contamination of water such as the use of sediment traps.

Mitigation Measures

Sediment traps will be utilised where appropriate.

6.10 Designation D388, Airways Corporation of New Zealand, Mosgiel NDB and 12ILS Outer Marker Beacon, 245 Riccarton Road

The purpose of Airways Corporation of New Zealand designation D388 is "Air Navigation Aids (Non Directional Beacon and Outer Marker Beacon)". The construction will require the relocation of the concrete block building near the frontage of the site together with the equipment that it contains as well as one of the aerial stays. Consultation with the requiring authority has indicated that the non directional beacon within this designation operates 24 hours a day and there is currently no plan to decommission this beacon before 2011 when construction is proposed. The Airways Corporation of New Zealand has

indicated that it is looking at how the building and aerial foundation blocks can be relocated with minimum disruption and relocation of existing structures. Consultation will continue with the corporation. It is noted that pursuant to S177(1)(a) of the RMA, written consent is needed from Airways Corporation of New Zealand prior to doing anything in accordance with this proposed designation.

Mitigation Measures

The construction design and methodology will be developed in conjunction with the Airways Corporation of New Zealand to achieve relocation of the equipment with the minimum disruption to the operation of the non directional beacon.

6.11 Designation D212, ORC, East Taieri Depot, 234 Riccarton Road

The purpose of ORC designation D212 is "Otago Regional Council Purposes, specifically: office administration activities; light engineering works; storage of parts and equipment for light engineering works including flood control purposes; storage of documents; storage of up to 50 litres of fuel or oil; storage of ammunition and firearms; storage of vehicles and equipment; storage of chemicals for control of pest plants, willows and pest animals; processing of toxic bait formulations for feral animal control." The landscaping along the property frontage and the shed closest to the road frontage will be affected by the construction. DCC has been consulting with the ORC and there has been an indication that the land required for the proposed designation will be available to DCC. It is noted that pursuant to S177(1)(a) of the RMA, written consent is needed from ORC prior to doing anything in accordance with this proposed designation.

6.12 Designation D464, NZ Transport Agency, SH87, Mosgiel Interchange to DCC/CODC Boundary North of Hyde

The purpose of NZ Transport Agency designation D464 is "State Highway Purposes (SH87)". The proposed designation abuts the SH87 NZTA designation. Consultation has been undertaken with the Agency to ensure that the proposal will not have an adverse effect on designation D464. It is noted that pursuant to S177(1)(a) of the RMA, written consent is needed from NZTA prior to doing anything in accordance with this proposed designation.

6.13 Designation D419, NZ Railway Corporation, Main South Railway,

The purpose of NZ Railway Corporation designation D419 is "Railway Purposes". While the proposed designation does not extend on to the NZ Railway Corporation designation, the proposal will require work within the railway designation which will require the consent of NZ Railway Corporation. This work is likely to have a positive effect on the safety and effectiveness of the railway given that it will improve visibility at the level crossing and intersection. Consultation has been initiated with the requiring authority. It is noted that pursuant to S176(1)(b) of the RMA, written consent is needed from NZ Railway Corporation prior to undertaking work within the rail designation.

6.14 Designation D274, Dunedin Airport Limited, Take-off and Approach Fan, Transitional (side) Surface, Horizontal and Conical Surfaces

The purpose of designation D274 Riccarton Road West is "Airport Approach and Land Use Controls". While the designation is within the Dunedin Airport Limited, Dunedin Airport Takeoff/Approach fan, the work will not extend into the obstacle limitation surface. It is noted that pursuant to S177(1)(a) of the RMA, written consent is needed from Airways Corporation of New Zealand prior to doing anything in accordance with this proposed designation.

7 Operational Effects

7.1 Positive Effects Non Motorised Users

The shared path will be 3 metres wide which is sufficient for non-directional, regular recreational and commuter use. The capacity of the road to accommodate pedestrians, cyclists and horseriders will be greatly increased by the construction of the path and widened shoulders. The new facilities will attract users from elsewhere and will attract new users as demand will be currently suppressed by the lack of facilities.

The new facilities on Riccarton Road West will improve the overall mobility of residents in the area, improve accessibility and increase the transport choices for the community. Connectivity and reliable access to existing facilities will be greatly enhanced given that the shared path will link to existing paths on Gladstone Road South and along the Silver Stream. The path and widened road will give local residents access to alternative forms of transport by providing a suitable facility and provide mode choice. The improvements will attract more pedestrians, cyclists and horseriders as demand is likely to be suppressed due to safety concerns.

Other more minor effects will arise such a health benefits to people in the community who are attracted to walk, cycle and ride there will be an improvement to the health and well-being to those people. The new facilities will also make the community more inclusive for the transport disadvantaged such as people with disabilities and mothers with young children.

All the traffic impacts resulting from the improved pedestrian, cyclist and horserider facilities are considered positive so no mitigation measures are considered necessary.

7.2 Motorised Users

Based on information from the DCC TRACKS modelling, the traffic volumes on Riccarton Road West will increase but only by about 4%. This will equate to about 80 vpd between Gladstone Road South and Bush Road and 40 vpd from Dukes Road to SH87 or about 5 vehicles per hour between Gladstone Road South and Bush Road. This change will be minor and will not be discernable to adjacent residents and road users. There is no indication from the modelling that the proportion of heavy vehicles will change as a result of the road widening. The number of heavy vehicles attracted to the route will be minor and not noticeable to adjacent residents and road users.

The modelling shows that the main increase in traffic on Riccarton Road following the upgrade will be to northbound traffic. On some sections of Riccarton Road, the increase in northbound traffic is twice that of southbound traffic. This appears to indicate that traffic travelling up from the south is being diverted from the Hagart-Alexander Drive route onto Riccarton Road. The difference in the directional split of the new traffic is not likely to lead to a change in the existing directional split balance. The increase in traffic is too low to influence these existing traffic characteristics. It is unlikely that there will be any change to the daily traffic profile. There may be an increase in the mean speed of traffic travelling along the road arising from the increase in traffic lane width but this is anticipated to be a minor effect.

The improvements to Riccarton Road West for vehicles will have a number of positive and negative impacts on adjacent residents and existing road users. Safety on the road will be improved which will lead to a reduction in crashes. More traffic will use the road and traffic speeds may increase. The overall increase in traffic equates to about 5 vehicles per hour between Gladstone Road South and Bush Road. This increase, including heavy vehicles, will be minor and is likely not to be noticeable to adjacent residents and road users. No mitigation measures are considered necessary as the effects are minor.

Appendix I contains a Traffic Assessment.

7.3 Safety and Effectiveness

The project will encourage the use of non motorised modes of transport by providing for the ongoing safety of the roading network in the area for motorists, pedestrians, horse riders, and cyclists. The wider traffic lanes and sealed shoulders will better provide for the traffic volume and mix using Riccarton Road West. Overall the improvements to Riccarton Road West will improve safety for vehicles.

The road is quite narrow in places and this has lead to a number of loss of control crashes. The provision of flatter road shoulders and clear zones will increase the ability of drivers to recover control of their vehicles in a loss of control situation and will decrease the severity of any crashes arising from motorists leaving the road.

Both the Gladstone Road South and Bush Road intersections have significant crash histories. The improved intersections will be more obvious to motorists as they approach the intersections and there will be increased visibility distance available to motorists at the intersections which are likely to improve intersection safety along Riccarton Road West. Improvements to the visibility distances at property accesses, improved access layout and the provision of a sealed shoulder will improve safety at accesses.

The provision of a shared path will remove the need for pedestrians, cyclists, and horse riders to use the traffic lanes to travel along the roads, thereby improving the safety of the roads for these users. While some residents choose to use the road in its current state for walking and cycling, it is not considered safe as they are forced to use the side of the road on a steep gravel shoulder close to the traffic lane. The path will provide a safe facility that is separated from vehicles and it will have safe crossing points at intersections. Cyclists will have the choice of either using the path or riding along the traffic lanes which will be wider and will have a sealed shoulder. There will be an improvement in the overall safety of the road and a minor improvement in the effectiveness of the road.

7.4 Archaeological and Heritage

There is the potential for road maintenance activities involving large vibrating rollers to disturb structures that are sensitive to vibration including the Stables at 114 Riccarton Road West and the former Wyllies Crossing Post Office at 424 Riccarton Road West. Turning off the vibration functions in the vicinity of such structures will avoid this potential effect.

Mitigation Measures

The following applies to the use during maintenance of vibrating rollers meeting the category definition of "B2":

- *When NOT vibrating, rollers may operate normally at any point along the roadway adjacent to the stables or other structures.*
- *When vibration functions are ON, the point of closest approach to the stables' foundation is to be no nearer than 20 metres.*
- *When vibration functions are ON, the point of closest approach to any dwelling foundation (or building of similar design and purpose) is to be no nearer than 10 metres.*
- *Where, owing to the style of structure, condition etc of the dwellings it is considered that they are sensitive to vibration, the point of closest approach with the vibration function ON should be 20 metres.*

7.5 Noise

The adopted design for the road with slight curves has been developed taking in to account noise effects. The design enables the road to generally move away from existing residences which is an advantage in terms of noise effects on adjacent residences. Retaining a straight alignment would have resulted in some instances moving the road closer to a number of residences. Where the road moves slightly closer to residences it is generally where there are residences or other features on both sides of the road. Where the proposed road boundary will be closer to a residence in order to accommodate the shared path, there will be no effect on traffic noise.

Upgrading the road is not expected to have an impact on overall traffic growth above that normally anticipated and as such will have negligibly greater effect on residents than the current road. Where the proposed centreline of the road moves slightly closer to residences there may be a negligible increase in noise eg the road will move about 1m closer to the residence at station 3440 and this will result in a negligible increase in noise level of 0.2dBA. The human ear cannot detect changes of less than about 2dBA. The curvilinear approach to the proposed design has resulted in negligible effects of noise on residences. A Noise Assessment is contained on Appendix J.

7.6 Visual and Landscape

7.6.1 Residences

The design has resulted in an outcome which has minimised the amenity effects arising from loss of landscaping on residences along the route. The majority of residences (22) will experience minimal landscape effects arising from the construction, no mitigation is required and there will be no operational effects on their property. There are 14 residences that will experience minor adverse effects due to loss of privacy, setting and shelter. However, these effects are able to be mitigated in the medium term. The duration and scale of these effects can be reduced by the early planting of hedges and landscaping in advance of construction. If construction occurs before the hedges are fully established, the incorporation of fencing will ensure security for children and pets.

There are 5 properties however, that will incur significant adverse effects that will not be able to be mitigated entirely and there will be long term impacts on amenity because of the loss of garden spaciousness. The 5 properties are:

- 119 Riccarton Road West
- 157 Riccarton Road West
- 177 Riccarton Road West
- 193 Riccarton Road West
- 293 Riccarton Road West

All of these residences are located within "pinch points" on the road where there are residences, stables or trees on opposite sides of the road close to the existing road frontage or intersections. The residences affected are all on the western side of Riccarton Road West. Early establishment of replacement hedging and other garden plantings will effectively mitigate privacy effects but the loss of garden spaciousness will be an ongoing effect because of the loss of frontage arising from the proposal.

There are particular space constraints between 114 Riccarton Road West and 119 Riccarton Road West due to the position of the stables, the Bhutan Cypress trees and the residences on opposite side of the road. Retention of the Bhutan Cypress trees and the stables means that while there is room for the widened road between the two, the shared path will not fit and has been routed to the west of the Bhutan Cypress trees. This does result in a loss of the hedges and spaciousness along the frontage of 119 Riccarton Road West. An alternative to this would have been the loss of either the stables and the hedges adjacent to the residence at 114 Riccarton Road West or the Bhutan Cyppresses and the hedges along the frontage of 119 Riccarton Road, however either of these options were considered to have greater effects than that proposed.

A longer pinch point occurs north of Bush Road between 164, 170, 178, 182, 186, 192, 204 and 208 Riccarton Road West on the eastern side of the road and 157, 177 and 193 Riccarton Road West. This has resulted in the residences at 157, 177 and 193 Riccarton Road West losing buffering vegetation and encroachment into the property will result in a loss of spaciousness.

The relationship between 264 Riccarton Road West, the Dukes Road South Intersection and 293 Riccarton Road West has resulted in 293 Riccarton Road West losing buffering vegetation and encroachment into the property resulting in a loss of spaciousness.

Mitigation Measures

Establish mitigation planting as far in advance of construction as practical.

7.6.2 Rural Activities

Until the hedges are re-established along the frontage of some properties being used for farming, there may be a loss of shelter for stock and privacy. The design has been carefully crafted so that loss of hedges primarily occurs on one side of the road only, however there are some sections where hedges will be lost on both sides of the road. Early planting of replacement hedges together with stock proof fences in advance of construction will reduce the duration and scale of these effects and in time, these loss of shelter and privacy effects will be fully mitigated.

Mitigation Measures

Establish mitigation planting as far in advance of construction as practical.

7.6.3 Assessment

The landscape values along Riccarton Road West have been assessed as being “*not of particular or recognised significance. The area is a pleasant but highly modified rural environment, relatively densely settled, and enhanced by garden shelter and shelter plantings*”. Throughout the design process there was a strong emphasis on avoiding adverse effects on the plantings and living environments of adjacent properties and the proposed upgraded road gently meanders to achieve this. The design has protected the significant trees listed in the DCDP and there are no other values of recognised significance. Hedges and trees removed as part of the works can be replaced and the existing character in terms of the impact provided by trees and hedges is likely to recover in the medium term. Arterial roads of significant width are included in rural environments and the upgraded road will be compatible with rural character, ie. no kerb and channel and gravel surface on the shared path.

Road users will experience some change in the road in the short term associated with the loss of the hedges and enclosing vegetation and narrow country lane character unless replacement planting is established and allowed to mature to a certain extent prior to the works proceeding. In the longer term, the landscape will develop to be similar to present but on a less intimate scale.

The level of adverse effects on landscape amenity of adjacent residential environments will generally be low, provided replacement plantings acceptable to the landowners are established as early as possible. In a small number of cases, adverse effects on the landscape amenity of residences will not be able to be fully mitigated.

A Landscape Effects Assessment is contained in Appendix H of this report.

7.7 Air Quality

There is the potential for motor vehicle emissions to increase as a result of the proposed upgrade of Riccarton Road West and to have an adverse effect on air quality. Motor vehicle emissions consist of engine exhaust emissions, contributions from the evaporation of fuel, dust from brake linings, tyre wear and fine particulate produced by mechanical action at the roadway surface. Vehicle exhaust emissions contribute by far the largest proportion of the total emissions burden.

Typical contaminants emitted in motor vehicle exhausts include carbon monoxide (CO), oxides of nitrogen (NO_x), Fine particulate (so-called PM₁₀ and PM_{2.5}) and sulphur dioxide. Other contaminants that may have potential air quality impacts include volatile organic compounds (VOCs), benzene and polycyclic aromatic hydrocarbons. Fine particulate emissions are the most significant air pollution contributor from vehicle exhausts.

Vehicle emissions vary according to the type of fuel. The most significant emissions from petrol powered engines are CO and to a lesser extent NO_x while small particulate emission concentrations are relatively

low. Diesel powered vehicles have higher fine particulate emissions, NO_x emissions are relatively significant but CO emissions are much lower than for petrol powered vehicles.

As noted on the Otago Regional Council (ORC) website, the main air quality issue in urban areas of Otago, and thus in Mosgiel, is fine particulate. The ORC monitoring of PM₁₀ within the environs of Mosgiel for the period April to August 2009 showed that, especially in the winter months, there were approximately five exceedances of the National Environmental Standard (NES) for PM₁₀ of 50 µg/m³ (24 hour average). Air quality in the Mosgiel area can thus be classed as reasonable but the Regional Plan: Air for Otago seeks to achieve continual annual improvement in air quality by a consistent reduction in PM₁₀ concentrations over the next 5 years to achieve the 50 µg/m³ NES limit as a goal. The main source of PM₁₀, as acknowledged by the ORC, is from domestic fires for home heating. Industrial sources will also contribute to PM₁₀ concentrations, but it is not clear how significant such industrial contributions may be in the Mosgiel area.

As a proportion of the total PM₁₀ particulate burden in Mosgiel air, contributions from vehicular traffic will be minor when compared to domestic fires in particular, and also general wind-blown dust particles generated by uplift from the region's soils.

The proposed upgrade is anticipated to give rise to a slight increase in average speeds and the speeds are likely to become more uniform. Road improvements that contribute to less braking and acceleration over a route will result in a decrease in fine particulate emissions and thus an enhancement in overall air quality.

The overall effect on air quality is likely to be a maintenance of the status quo in terms of the air quality associated with vehicle emissions, and a probable decrease in PM₁₀ emissions.

7.8 Class I Soils

There are not likely to be any effects arising from the operation of the road.

7.9 Flooding

Riccarton Road West cuts across the Taieri Plains and there is the potential for the road to act as a barrier to flood waters if a change to the vertical profile of the road raises the road. DCC has worked with ORC during development of the design in order to ensure that the proposed road improvements do not result in an increased flood risk for adjacent properties on this section of the Taieri. As a result of this cooperative approach, ORC has used their LIDAR data to identify the critical sections where the level of the road should not be raised. The design has been adjusted so that the proposed centreline level will be no higher than the level of the existing centreline level on the following sections to mitigate the risk of flooding arising from the work:

- 665m north of Mill Stream through to Mill Stream (station 1400 to station 2065) and
- the road on either side of the Owhiro Stream (station 4960 to station 5260).

Mitigation Measures

The proposed centreline level will be no higher than the existing centreline level on the following sections of road: 665m north of Mill Stream through to Mill Stream (station 1400 to station 2065) and the road on either side of the Owhiro Stream (station 4960 to station 5260).

7.10 Tangata Whenua

No particular ongoing effects on Tangata Whenua have been identified arising from the operation of the road.

7.11 Designation D388 Airways Corporation of New Zealand, 245 Riccarton Road

Once the non directional beacon is relocated during construction within the Airways Corporation of New Zealand designation D388, there will be no ongoing effects on the designation.

7.12 Designation D212 ORC East Taieri Depot, 234 Riccarton Road

DCC has been consulting with the ORC and there has been an indication that the land required for the proposed designation will be available to DCC.

7.13 Designation D464 SH87, NZTA

The proposed designation abuts the SH87 NZTA designation and is not likely to have an adverse effect on designation D464 arising from the operation of the road.

7.14 Designation D419 Main South Railway, NZ Railway Corporation

The operation of the upgraded road is likely to have a positive effect on the safety and effectiveness of the railway given that it will improve visibility at the level crossing and intersection.

7.15 Designation D274 Dunedin Airport Approach and Land Use Controls, Dunedin Airport Limited

There will be no effects arising from the operation of the road on the approach/takeoff fan for Dunedin Airport Limited's designation D274.

8 Statutory Framework

8.1 Resource Management Act 1991

The Resource Management Act 1991 (RMA) provides for a Minister of the Crown, Local Authorities, or requiring authorities, which has financial responsibility for the work, to issue Notices of Requirement for a designation for a public work or for a project or work in respect of any land, water, subsoil or airspace where a restriction is necessary for the safe or efficient functioning or operation of a public work or project. Dunedin City Council is a requiring authority as it is a Local Authority. Designation means a provision made in a district plan to give effect to a requirement made by a requiring authority.

This proposal requires a Notice of Requirement for Designation under section 168A, an Outline Plan under section 176A, and resource consents under Section 88.

8.1.1 Purposes and Principles of the RMA

Part 2: Purpose and Principles of the Resource Management Act 1991 is the framework under which all functions, powers and duties are exercised for the purpose of giving effect to the RMA. There are no qualifications or exceptions. Any exercise of discretionary judgement must promote the statutory purpose of the RMA, which is the sustainable management of natural and physical resources. Section 5 of the RMA incorporates the following description of sustainable management:

“...‘sustainable management’ means managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well being and for their health and safety while –

- a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- b) Safeguarding the life supporting capacity of air, water, soil and ecosystems; and*
- c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.”*

Part 2 also has a focus on recognising and providing for matters of national importance (Section 6), having particular regard to other significant resource management matters (Section 7) and taking into account the principles of the Treaty of Waitangi (Section 8).

The matters of national importance under Section 6 are as follows:

- a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development;*
- b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development;*
- c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna;*
- d) The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers;*
- e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.*
- f) The protection of historic heritage from inappropriate subdivision, use, and development.*
- g) The protection of recognised customary activities.*

There are no matters of national importance which are considered particularly relevant to this proposal.

The other resource management matters under Section 7 are as follows:

- a) *Kaitiakitanga:*
 - aa) *The ethic of stewardship:*
- b) *The efficient use and development of natural and physical resources:*
 - ba) *The efficiency of the end use of energy:*
- c) *The maintenance and enhancement of amenity values:*
- d) *Intrinsic values of ecosystems:*
- e) *[Repealed]*
- f) *Maintenance and enhancement of the quality of the environment:*
- g) *Any finite characteristics of natural and physical resources:*
- h) *The protection of the habitat of trout and salmon:*
- i) *The effects of climate change:*
- j) *The benefits to be derived from the use and development of renewable energy.*

Section 7(b), (c), and (f) are considered to be particularly relevant to this proposal.

8.1.2 Designations

Designations are provided for in Sections 166 to 186 of the RMA.

Section 168A(1B) and Form 18, Schedule 1 (Forms, Fees and Procedure) Regulations 2003) of the RMA describes the information to be included in a Notice of Requirement. The Notice of Requirement must describe:

- The site.
- The nature of the proposed public work.
- The effects on the environment and the ways in which any adverse effects will be mitigated.
- The extent to which alternative sites, routes and methods have been considered.
- Why the public work and designation is reasonably necessary for achieving the objectives of the requiring authority.
- Resource consents needed and whether or not they have been applied for.
- Consultation undertaken

and provide any other information which is required.

When considering a Notice of Requirement for a designation under Section 168A(3) and any submissions made on the Notice of Requirement, a Territorial Authority must subject to Part 2, consider the effects on the environment and have particular regard to:

- a) *any relevant provisions of –*
 - (i) *a national policy statement;*
 - (ii) *a New Zealand coastal policy statement;*
 - (iii) *a regional policy statement or proposed regional policy statement;*
 - (iv) *a plan or proposed plan; and*
- b) *whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if –*
 - (i) *the requiring authority does not have an interest in the land sufficient for undertaking the work; or*
 - (ii) *it is unlikely that the work will have a significant adverse effect on the environment; and*
- c) *whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought; and*
- d) *any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement.*

Once a designation is confirmed it is incorporated into a district plan as if it were a rule, providing for activities and setting out the conditions and restrictions that have been determined through the process. Requirements for designations have an interim effect from the time the requirement is notified until the designation is included in the district plan and effect from that time. No person may do anything on the

land included in the designation that would prevent or hinder the work including; use of the land or changing the character, intensity, or scale of use of the land or subdividing the land without the prior written consent of the Council.

After a designation for this work is established an outline plan of the work to be constructed must be submitted to the Council before work is commenced unless the details of the work are incorporated into the designation or the Territorial Authority has waived the need to provide an outline plan. The details required to be shown on an outline plan are contained in section 176A(3) as follows:

- (a) the height, shape and bulk of the public work, project, or work; and
- (b) the location of the site of the public work, project, or work; and
- (c) the likely finished contour of the site; and
- (d) the vehicular access, circulation, and the provision for parking; and
- (e) the landscaping proposed; and
- (f) any other matters to avoid, remedy or mitigate any adverse effects on the environment.

An outline plan will be prepared and submitted to Council before work is commenced.

The Notices of Requirement for designations relate to land (including subsoil and airspace) for the project. Resource consent applications will be made for consents for aspects which are the responsibility of the Otago Regional Council for land use consent and for discharge permits.

8.2 Dunedin City District Plan

The DCDP contains the relevant provisions to be taken into account when considering a Notice of Requirement. The relevant objectives and policies of the Dunedin City District Plan in respect of this proposal are set out below.

Reference	Objective or Policy
Sustainability	
Objective 4.2.1	<i>Enhance the amenity values of Dunedin.</i>
Objective 4.2.2	<i>Ensure that the level of infrastructural services provided is appropriate to the potential density and intensity of development and amenity values of the area.</i>
Objective 4.2.3	<i>Sustainably manage infrastructure.</i>
Policy 4.3.1	<i>Maintain and enhance amenity values.</i>
Policy 4.3.4	<i>Provide for the protection of the natural and physical resources of the City commensurate with their local, regional and national significance.</i>
Policy 4.3.5	<i>Require the provision of infrastructure services at an appropriate standard.</i>
Policy 4.3.10	<i>Adopt an holistic approach to assessing the effects of the use and development of natural and physical resources.</i>
Manawhenua	
Objective 5.2.1	<i>Take into account the principles of the Treaty of Waitangi in the management of the City's natural and physical resources.</i>
Policy 5.3.1	<i>Consult with Manawhenua regarding natural and physical resource issues of importance to them.</i>
Policy 5.3.5	<i>Avoid, remedy or mitigate any adverse effects on waahi taoka resulting from land use activities.</i>
Rural	
Objective 6.2.1	<i>Maintain the ability of the land resource to meet the needs of future generations.</i>
Objective 6.2.2	<i>Maintain and enhance the amenity values associated with the character of the rural area.</i>
Objective 6.2.6	<i>Maintain and enhance the life-supporting capacity of land and water resources.</i>
Policy 6.3.2	<i>Sustain the productive capacity of the Rural Zone by controlling the adverse effects of activities.</i>

Reference	Objective or Policy
Landscape	
Objective 14.2.3	<i>Ensure that land use and development do not adversely affect the quality of the landscape.</i>
Objective 14.2.4	<i>Encourage the maintenance and enhancement of the quality of Dunedin's landscape.</i>
Policy 14.3.3	<i>Identify those characteristics which are generally important in maintaining landscape quality in the rural area (as listed in part 14.5.3 of this section) and ensure they are conserved.</i>
Policy 14.3.4	<i>Encourage development which integrates with the character of the landscape and enhances landscape quality.</i>
Trees	
Objective 15.2.2	<i>Protect Dunedin's most significant trees.</i>
Hazards and Hazardous Substances	
Objective 17.2.1	<i>Ensure the effects on the environment of natural and technological hazards are avoided, remedied or mitigated.</i>
Objective 17.2.2	<i>Prevent or mitigate the adverse environmental effects and risks arising from facilities and activities involving the storage, use, disposal or transportation of hazardous substances.</i>
Policy 17.3.8	<i>Control activities involving the storage, use, disposal and transportation of hazardous substances and identify sites where hazardous substances processes and facilities which pose a risk to the environment and to health and safety are located.</i>
Transportation	
Objective 20.2.1	<i>Avoid, remedy or mitigate adverse effects on the environment arising from the establishment, maintenance, improvement and use of the transportation network.</i>
Objective 20.2.3	<i>Achieve integrated management of the roading network, including pedestrian and cycle use, with rail, air and sea networks.</i>
Objective 20.2.4	<i>Maintain and enhance a safe, efficient and effective transportation network.</i>
Policy 20.3.1	<i>Avoid, remedy or mitigate the adverse effects on the environment of establishing, maintaining, improving or using transport infrastructure.</i>
Policy 20.3.2	<i>Provide for the maintenance, improvement and use of public roads.</i>
Policy 20.3.5	<i>Ensure safe standards for vehicle access.</i>
Policy 20.3.6	<i>Encourage heavy traffic to use appropriate routes.</i>
Policy 20.3.8	<i>Provide for the safe interaction of pedestrians and vehicles.</i>
Environmental Issues	
Objective 21.2.2	<i>Ensure that noise associated with the development of resources and carrying out of activities does not affect public health and amenity values.</i>
Policy 21.3.3	<i>Protect people and communities from noise and glare which could impact upon health, safety and amenity.</i>
Policy 21.3.7	<i>Encourage the establishment of buffer areas around activities giving rise to adverse effects on adjoining areas.</i>
Policy 21.3.8	<i>Avoid where practicable, or otherwise remedy or mitigate, the adverse effects of activities discharging to land, water or air.</i>

Overall it is considered that the proposed works are consistent with the relevant objectives and policies contained in the Dunedin City District Plan. The relevant objectives and policies are about providing and enhancing a safe, efficient, effective transportation network for all modes of transport while avoiding, remedying and mitigating the adverse effects of establishment and operation of roads, landscape character, maintaining amenity and protecting significant trees.

It is also consistent with the objectives and policies related to use of hazardous substances, the effect on public health and amenity and discharges to land, water or air.

8.2.1 Existing Designations - Riccarton Road West

There are no existing designations in the DCC District Plan for the widening of Riccarton Road West. A Notice of Requirement for a Designation will be required for the widening of Riccarton Road West. An Outline Plan will also be required. The information requirements for an Outline Plan can be incorporated into the Notice of Requirement or alternatively, it can be provided before construction commences.

There are five existing designations of relevance:

- D212 Otago Regional Council, East Taieri Depot - "Otago Regional Council Purposes, specifically: office administration activities; light engineering works; storage of parts and equipment for light engineering works including flood control purposes; storage of documents; storage of up to 50 litres of fuel or oil; storage of ammunition and firearms; storage of vehicles and equipment; storage of chemicals for control of pest plants, willows and pest animals; processing of toxic bait formulations for feral animal control." Riccarton Road, East Taieri, Dunedin, Pt Lot 19 DP 1846. It is noted that there is an error in the legal description for the site. The site is Pt Lot 15 DP 1846. The site is incorrectly shown on the district plan maps.
- D388 Airways Corporation of New Zealand Limited, Mosgiel NDB and 12ILS Outer Marker Beacon - "Air Navigation Aids (Non Directional Beacon and Outer Marker Beacon)", Riccarton Road, Mosgiel, Dunedin Sec 1 SO 13203 (contains conditions).
- D419 New Zealand Railways Corporation, Main South Railway - "Railway Purposes".
- D464 NZ Transport Agency, SH87 – Mosgiel Interchange to DCC/CODC Boundary North of Hyde - "State Highway Purposes (SH87)".
- D274 Dunedin Airport Limited – Take-off and Approach Fan, Transitional (Side) Surface, Horizontal and Conical Surfaces – "Airport Approach and Land Use Controls".

Where land is subject to an existing designation, the requiring authority responsible for the later designation must obtain written consent pursuant to s177 from the requiring authority responsible for the earlier designation before anything is done on land subject to an earlier designation. Where work is to be undertaken on land subject to an existing designation, written consent pursuant to S176 is required.

8.2.2 Significant Trees

There are three significant individual trees on land adjacent to Riccarton Road West identified in the Dunedin City District Plan. They are as follows:

- T048 & T049 Cypresses *corneana* (Bhutan cypress) – Barker Property, Riccarton Road West, Mosgiel on Lot 1 DP 10041. The two Bhutan Cypresses are located on 119 Riccarton Road and are located within the proposed designation.
- T956 193 Riccarton Road *Salix* sp. Willow on Pt Sec 1 Blk VIII East Taieri SD. The willow is located beyond the proposed designation.

The significant trees will not be affected by the proposal.

8.2.3 Information Requirements

Section 2.3 of the Dunedin City District Plan outlines the information which is to be supplied with a Notice of Requirement. This information is as follows:

(i) Evidence from a Minister of the Crown or a local authority that it has financial responsibility for a public work, or evidence from a network utility operator of its requiring authority status.

(ii) A statement from the requiring authority that the work and designation are reasonably necessary to achieve the objectives of the requiring authority.

- (iii) Current search copies of the Certificates of Title for the site, the subject of the notice.
- (iv) Plans drawn to a standard scale (showing a north point, date, title and scale) and an accompanying statement detailing the location of the following matters where applicable:
- (a) A description of the site including:
 - its area and dimensions; and
 - generalised relief of the site including contours, existing ground lines, and spot heights sufficient to illustrate the general topography of the site.
 - (b) Where the site is held in separate titles, the existing boundaries between Certificates of Titles.
 - (c) Easements or encumbrances affecting the proposal.
 - (d) Access to the site and its design, including roads (which should be shown as being either formed or unformed), tracks and walkways.
 - (e) Provision for parking and on-site manoeuvring of vehicles.
 - (f) Fences.
 - (g) Water mains, power, telephone and gas lines.
 - (h) Areas of fill and excavation.
 - (i) Stormwater and sanitary sewers and drains, and stormwater and effluent treatment or disposal systems, including disposal fields.
 - (j) Existing buildings and structures on the site, including their size and existing use.
 - (k) All existing vegetation, indigenous or otherwise, and habitats of indigenous fauna - including significant trees, groups of trees, hedges and areas of bush or scrub, to enable consideration of the rules of the Landscape, Townscape, Trees, and Indigenous Vegetation and Fauna Sections of the District Plan.
 - (l) Any watercourses, wetlands, drainage systems or defences against water.
 - (m) Any protected item listed in Schedule 25.1.
 - (n) Any archaeological site or sites (including those listed in Schedule 25.2).
 - (o) Any tree listed in Schedule 25.3.
 - (p) Any area of significant conservation value listed in Schedule 25.4.
 - (q) Designations listed in Schedule 25.5.
 - (r) Any waahi tapu site, waahi taoka site or other significant site.
 - (s) Where landscaping is to be undertaken, details of that landscaping.
 - (t) Any other relevant occupation of the land.
- (v) Drawings and plans, drawn to a standard scale (showing a north point, date, title and scale) and an accompanying statement containing a comprehensive description of the public work, project or work for which the designation is sought.
- (vi) A description of the proposed sequence and timing of implementation of the public work, project or work clearly identifying any part of the public work, project or work which may not be commenced for five or more years.
- (vii) A description of the proposals for the use and maintenance of those parts of the land which will not be developed for five or more years, in particular, identification of those buildings and structures which will continue to be used and maintained.
- (viii) If the site is already designated or subject to a heritage protection order, a summary of the details of the designation or order, whether the previous designation has been put into effect fully, and how the proposed public work, project or work, will affect the efficiency of the existing designation or order.
- (ix) A statement on the degree to which the public work, project or work is:
- (a) Consistent with Part II of the Act.
 - (b) Consistent with the relevant provisions of national, coastal and regional policy statements and regional plans.
 - (c) Consistent with, and inconsistent with the objectives and policies in and rules of this District Plan.
- (x) An assessment of the effects that the public work, project or work will have on the environment, and the ways in which any adverse effects will be mitigated. This assessment shall contain such detail as corresponds with the scale and significance of the actual or potential effects that the public work, project

or work may have on the environment, and shall be prepared in accordance with the Fourth Schedule of the Act.

(xi) Where the public work, project or work is subject to technological hazards, geological hazards such as fault lines, and areas susceptible to amplified ground shaking and liquefaction, falling debris, erosion, subsidence, slippage or inundation, a geotechnical report, prepared by a suitably qualified person, which satisfies the Council that the effects of such natural hazards from any source on the land or any structure on the land or proposed to be built on the land can be adequately avoided, remedied or mitigated shall be provided.

In the case of public works, projects or works that may be subject to inundation (other than those lying within the area enclosed by Victoria Road, the extended John Wilson Ocean Drive, Tainui Road, Ravelston Street, Royal Crescent, Portobello Road, Portsmouth Drive, Strathallan Street, Wilkie Road, South Road and Forbury Road where Council will undertake any mitigation work), the applicant shall provide a detailed level survey in accordance with a datum that can be related to mean sea level.

(xii) The storage, use, disposal or transportation of hazardous substances requires the following:

- (a) A statement on the degree of risk to the public health and safety arising from the production, storage, use, disposal or transportation of such substance.
- (b) A site management plan.
- (c) An emergency response plan.

(xiii) Such other information as is necessary to explain the requirement fully.

8.3 Relevant Regional Planning Documents

8.3.1 Regional Policy Statement for Otago

The relevant provisions of the Regional Policy Statement for Otago in respect of this proposal are set out below.

Reference	Objective or Policy
Manawhenua	
Objective 4.4.3	To recognise the principle of wairua and mauri in the management of Otago's water bodies.
Objective 4.4.4	To maintain and enhance mahika kai and access to those traditional resources.
Objective 4.4.5	To incorporate the concept and spirit of kaitiakitanga in the management of Otago's natural and physical resources in a way consistent with the values of Kai Tahu.
Land	
Objective 5.4.2	To avoid, remedy or mitigate degradation of Otago's natural and physical resources resulting from activities utilising the land resource.
Objective 5.4.4	To ensure that public access opportunities exist in respect of activities utilising Otago's natural and physical land features.
Policy 5.5.7	To promote the provision of public access opportunities to natural and physical land features throughout the Otago region except where restriction is necessary: <ul style="list-style-type: none"> (i) To protect areas of significant indigenous vegetation and/or significant habitats of indigenous fauna; or (ii) To protect Maori cultural values; or (iii) To protect public health or safety; or (iv) To ensure a level of security consistent with the purpose of a resource consent or in circumstances where safety and security concerns require exclusive occupation; or (v) In other exceptional circumstances sufficient to justify the restriction notwithstanding the importance of maintaining that access.

Reference	Objective or Policy
Water	
Objective 6.4.2	<i>To maintain and enhance the quality of Otago's water resources in order to meet the present and reasonably foreseeable needs of Otago's communities.</i>
Objective 6.4.3	<i>To safeguard the life-supporting capacity of Otago's water resources through protecting the quantity and quality of those water resources.</i>
Objective 6.4.7	<i>To maintain and enhance public access to and along the margins of Otago's water bodies.</i>
Policy 6.5.10	<i>To maintain and enhance access to and along the margins of Otago's water bodies through:</i> <ul style="list-style-type: none"> <i>a) Encouraging the retention and setting aside of esplanade strips and reserves and access strips to an along the margins of water bodies which will enhance access; and</i> <i>b) Identifying and providing for other opportunities to improve access;</i> <i>Except where restriction is necessary:</i> <ul style="list-style-type: none"> <i>(i) To protect areas of significant indigenous vegetation and/or significant habitats of indigenous fauna,</i> <i>(ii) To protect Maori cultural values,</i> <i>(iii) To protect public health or safety,</i> <i>(iv) To ensure a level of security consistent with the purpose of a resource consent; or</i> <i>(v) In other exceptional circumstances sufficient to justify the restriction notwithstanding the national importance of maintaining that access.</i>
Air	
Objective 7.4.1	<i>To maintain and enhance Otago's existing air quality, including visual appearance and odour.</i>
Built Environment	
Objective 9.4.3	<i>To avoid, remedy or mitigate the adverse effects of Otago's built environment on Otago's natural and physical resources.</i>
Policy 9.5.3	<i>To promote and encourage the sustainable management of Otago's transport network through:</i> <ul style="list-style-type: none"> <i>a) Promoting the use of fuel efficient modes of transport; and</i> <i>b) Encouraging a reduction in the use of fuels which produce emissions harmful to the environment; and</i> <i>c) Promoting a safer transport system; and</i> <i>d) Promoting the protection of transport infrastructure from the adverse effects of landuse activities and natural hazards.</i>

Overall it is considered that the proposed works are consistent with the relevant objectives and policies contained in the Regional Policy Statement for Otago. The assessment of effects on the environment within this document demonstrates that the proposed realignment and widening of Riccarton Road West can be undertaken in a manner that avoids, remedies or mitigates any potential adverse effects on the surrounding environment.

8.3.2 Otago Regional Land Transport Strategy

The relevant policies of the Regional Land Transport Strategy for Otago (2005) in respect of this proposal are set out below.

Reference	Objective or Policy
Policy 1.1	<i>Assist economic development in the Otago region.</i>
Policy 2.1	<i>Ensure transport decisions promote environmental sustainability.</i>
Policy 3.1	<i>Ensure transport related decision-making supports improvement in safety and personal security.</i>
Policy 3.2	<i>Ensure transport decision-making improve access and mobility.</i>

Reference	Objective or Policy
Policy 3.3	<i>Ensure transport related decision-making protects and promotes Public Health.</i>
Policy 3.4	<i>Ensure appropriate incorporation of cultural wellbeing issues into transport related decision-making.</i>

Overall it is considered that the proposed works are consistent with the relevant objectives and policies contained in the Regional Land Transport Strategy for Otago. The assessment of effects on the environment within this document demonstrates that the proposed realignment and widening of Riccarton Road West can be undertaken in a manner that avoids, remedies or mitigates any potential adverse effects on the surrounding environment.

8.3.3 Regional Plan: Water for Otago

Consents under the Regional Plan Water are not being sought and will be assessed at the time application is made.

8.3.4 Consents Required

The following table summarises the activity status and consents required from the Otago Regional Council. These consents will be applied for at a later date.

Consent Required	Relevant Plan	Relevant Rule	Activity Status
1. Discharge permit to discharge contaminants to water associated with drilling.	RPW	Rule 12.9.2.1	Restricted Discretionary
2. Discharge permit to discharge contaminants to water.	RPW	Rule 12.13.1.1	Discretionary
3. Land use consent to place a structure over the bed of an unnamed watercourse.	RPW	Rule 13.2.3.1	Discretionary
4. Land use consent to extend a structure over and on the bed of each of the following watercourses: Mill Stream, Silver Stream and Owhiro Stream	RPW	Rule 13.3.2.1	Restricted Discretionary
5. Land use consent to disturb the bed of the following watercourses: Mill Stream, Silver Stream, Owhiro Stream and the unnamed tributary to Silver Stream.	RPW	Rule 13.5.3.1	Discretionary
6. Land use consent for the drilling of land over an aquifer identified on Map C15.	RPW	Rule 14.2.2.1	Controlled

Overall, the status of the activities is **discretionary** pursuant to Rules 12.13.1.1, 13.2.3.1, and 13.5.3.1. Resource consent for these activities is not included in this documentation but information on the status has been included for clarity.

8.4 Other Relevant Documents

8.4.1 Otago Regional Council Flood Protection Management Bylaw 2008

While the ORC Flood Protection Management Bylaw 2008 has not been prepared under the RMA, it has been included as a relevant document for clarity. The purpose of the Flood Protection Management Bylaw 2008 is "to manage, regulate and protect flood protection works owned by or under the control of

the Otago Regional Council". Under the bylaw flood protection works can include drains, defences against water and floodways.

The relevant sections of the bylaw with respect to this work are as follows:

3.1 Drains

No person shall, without the prior authority of the Council, in respect of any drain shown in the First Schedule –

- a. *Widen, deepen or otherwise alter any drain;*
- b. *Obstruct any drain;*
- c. *Remove or interfere with any machinery or equipment relating to any drain;*
- d. *Connect any pipe, channel or other conduit to any drain;*
- e. *Plant any tree*
 - *in any drain or on the banks of any drain, or*
 - *within seven metres of the top of the bank of any drain;*
- f. *Construct any structure*
 - *in, over, through or under any drain, or*
 - *on the banks of any drain, or*
 - *within seven metres of the top of the bank of any drain;*
- g. *Dump or deposit any thing in any drain;*
- h. *Drive any livestock or vehicle, or take or operate any machinery or equipment, in or through any drain;*
- i. *Allow livestock*
 - *in or through any drain, or*
 - *to graze any drain.*

3.2 Defences against water

No person shall, without the prior authority of the Council, in respect of any defence against water shown in the Second Schedule –

- a. *Widen, raise, lower, reduce in width, or otherwise alter any defence against water;*
- b. *Remove or interfere with any machinery or equipment relating to any defence against water;*
- c. *Plant any tree*
 - *on any defence against water, or*
 - *within seven metres of the landward side of any defence against water, or*
 - *between the bank of any watercourse or drain and any associated defence against water;*
- d. *Construct any structure*
 - *in, on, over, through or under any defence against water, or*
 - *within seven metres of the landward side of any defence against water, or*
 - *between the bank of any watercourse or drain and any associated defence against water;*
- e. *Dump or deposit any thing*
 - *on any defence against water, or*
 - *within seven metres of the landward side of any defence against water, or*
 - *between the bank of any watercourse or drain and any associated defence against water;*
- f. *Allow livestock, vehicles, machinery or equipment to adversely affect the integrity of any defence against water;*
- g. *Carry out any excavation*
 - *in, on or between the bank of any watercourse or drain and any associated defence against water, or*
 - *within 20 metres of the landward side of any defence against water which lowers the existing ground surface by more than 300 millimetres in depth, or*
 - *within the excavation-sensitive areas (shown on the Lower Taieri maps in the Second Schedule).*

The proposal will include work on drains and defences against water which come within the ambit of the bylaw and there for authority will be required from the ORC before the work can be undertaken. An appropriate authority will be sought from the ORC prior to any work in accordance with the designation that is covered by this bylaw.

8.4.2 Kai Tahu Ki Otago Natural Resource Management Plan 2005

The Natural Resource Management Plan 2005 (NRMP) is the principal planning document for Kai Tahu ki Otago, created to provide a basis from which Kai Tahu ki Otago can further develop their participation in the management of the natural, physical and historic resources of Otago. The objectives and policies relevant to this proposal are set out below.

Reference	Objective or Policy
Objective 5.4.3	<i>i. All wāhi tapu are protected from inappropriate activities.</i> <i>ii. Kāi Tahu ki Otago have access to wāhi tapu.</i> <i>iii. Wāhi tapu throughout the Otago region are protected in a culturally appropriate manner.</i>
Objective 5.5.3	<i>i. Mahika kai resources are healthy and abundant within the Otago Region.</i> <i>ii. Mahika kai is protected and managed in accordance with Kai Tahu ki Otago tikaka.</i> <i>iii. Indigenous plant and animal communities and the ecological processes that ensure their survival are recognised and protected to restore and improve indigenous biodiversity within the Otago Region.</i>
Policy 5.5.4.7	<i>To require that all assessments of effects on the environment include an assessment of the impacts of the proposed activity on mahika kai.</i>
Policy 5.6.4.20	<i>To require an accidental discovery protocol for all road realignments and widening and forest harvest roads and to avoid any sediment run-off during earthworks and road construction to avoid contamination of waterways.</i>

Overall it is considered that the proposed works are consistent with the relevant objectives and policies contained in the NRMP given the nature and location of the works and the suggested conditions proposed in Section 11 of this document.

There are no national policy statements (including the NZ Coastal Policy Statement), which have any relevant provisions of with regard to this proposed Notice of Requirement.

This proposed Notice of Requirement is consistent with Part 2 of the Act, and the relevant provisions of national, coastal and regional policy statements and regional plans, and the objectives, policies and rules of the DCDP. The proposal provides for the upgrading of Riccarton Road West which will better provide for the community's social and cultural wellbeing, by providing facilities for cyclists, pedestrians and horse riders. The road will also add to the safety of all users. Adverse effects that arise from construction and use are avoided, or mitigated to the greatest extent possible.

9 Alternative Sites, Routes and Methods

9.1 Mosgiel Arterial Routes

9.1.1 Studies Undertaken 1999-2006

In 1999 community concerns were raised that heavy vehicle volumes in and around Mosgiel were going to increase due to log harvesting coming online in the area and development in the industrial areas. Without alternatives available all heavy traffic would travel along Gordon Road (SH 87) which was considered incompatible with its other functions as a town centre.

The Council established a working party called the Heavy Vehicle Routes over the Taieri Plains Working Party, consisting of Councillors and Mosgiel Taieri Community Board Members, to guide the investigations. A discussion paper, "Options for Heavy Vehicle Traffic in Mosgiel" was prepared in 1999 by Duffill Watts and King. This report identified the sources of traffic, future predictions and possible options to resolve the issues. Four options for diverting through traffic from Gordon Road were considered suitable:

- Dukes Road and Riccarton Road.
- Dukes Road, Riccarton Road and Gladstone Road.
- Stedman/Wingatui Roads, Factory Road and Hagart-Alexander Drive.
- Stedman/Wingatui Roads and Gladstone Road.

While Gladfield Road was identified as a potential through route for traffic travelling between Dunedin and Outram, for travel distance and economics of upgrading reasons it was not considered to be a desirable option. Two number plate surveys were undertaken as part of the investigation, one in 1997 and the other in 1998. Both found that only a small percentage of traffic passed through Mosgiel without stopping, so it was concluded that most traffic travelling through Mosgiel had business within it. In the 1998 survey only 40 vehicles surveyed travelling directly through Mosgiel were heavy vehicles.

Following the 1999 report, public meetings were held and submissions were received. From this consultation process the working party compiled a shortlist of the most economically viable routes:

- Hagart-Alexander Drive and Factory Road linked to Dukes Road via Stedman Road or Puddle Alley.
- Riccarton Road from SH87 to SH1 (or a selected portion of the route).
- Gladfield Road from SH87 to SH1 (or a selected portion of the route).
- Dukes Road linking the Five Roads intersection to either Riccarton Road or Gladfield Road.
- Outram-Allanton Road from SH87 to SH1.

The work progressed further in 2000 and the Taieri Plain Heavy Vehicle Routes Preliminary Feasibility Study was undertaken by Montgomery Watson (now MWH) to determine the approximate costs, economic viability and likelihood of funding from Transfund New Zealand (now the NZ Transport Agency) of the 5 routes identified by the Working Party. In addition to the 5 routes identified by the working party the study also included options where two or three routes could be used conjunctively to spread the effects of traffic. Consideration was also given to identifying a route suitable for adoption as an alternative to heavy vehicles travelling on SH87 through the Mosgiel shopping centre.

The various options were assessed based on traffic data obtained from three sources: existing traffic counts, data used in the 1999 report and predicted logging volumes supplied by the DCC. Heavy vehicle volume assumptions were based on number plate surveys undertaken between 1997 and 1999. The report predicted that by 2010, the traffic volumes on Gordon Road would be 16,000 vehicles per day including all predicted logging traffic. It was assessed that this would be nearing the capacity limits for Gordon Road. By 2019 at the peak of the expected logging vehicle numbers from Mt Allan (111vpd), traffic volumes would be nearing 18,000vpd. It was predicted that Gordon Road would be highly congested with delays and gridlock and would be operating at level of service E, down from the comfortable and free flowing operation at level of service A or B at the time.

At that time the threshold for obtaining Transfund funding for capital road improvements was a benefit cost ratio exceeding 3.

For the single route options of Dukes Road and Riccarton Road or Dukes Road and Gladfield Road, the respective benefit cost ratios (BCR) were 7.6 and 2.3. This indicated that the Dukes Road and Riccarton Road option was more favourable than Dukes Road and Gladfield Road.

The two route option of the Outram-Allanton Road with the Stedman Road, Wingatui Road, Factory Road and Hagart-Alexander Drive route was identified as being economically viable in the west but not in the east as significant upgrades were required.

The three route scenario also proved uneconomic for the same reasons.

The report concluded that three single routes should be considered as options for a heavy vehicle route:

- Outram-Allanton Road,
- Dukes Road and Gladfield Road, and
- Dukes Road and Riccarton Road.

Dukes Road and Riccarton Road were assessed as being the most economically viable route but as also being the most controversial.

In late 2000 and early 2001 consultation was undertaken with the community. Following the consultation the Council's Works Operations Committee approved further investigation into routes west of Mosgiel. The working party terms of reference were reviewed and the name was changed to the "Mosgiel Bypass Working Party" as the issues mainly related to Mosgiel. In mid 2002 the working party identified options to be modelled both east and west of Mosgiel. The modelling results were reported to the working party and they decided that further investigation would be confined to three options:

- Riccarton Road.
- Carncross Street and Hagart-Alexander Drive.
- Stedman Road, Factory Road and Hagart-Alexander Drive.

In September 2002 the Working Party agreed the brief for the Investigation and Reporting (I&R) phase of these options. This I&R phase provides the documentation required to obtain funding from Transfund. The I&R phase consisted of 3 stages. Stage 1 examined the routes to the east of Mosgiel and eliminated one from further consideration. Stages 2 and 3 provided the necessary information requirements for funding including an economic evaluation, cost estimates, planning assessment.

Early in 2003 the Working party reached the conclusion that a bypass was not the correct solution and what was required was an integrated network of arterial routes to deal with the long term transportations need of the Mosgiel Taieri area.

In 2003 the three I&R reports were prepared for the DCC by MWH:

- Mosgiel Bypass Stage 1 Eastern Corridor Review.
- Mosgiel Bypass I&R Stages 2 and 3 Summary Report Assessment of Effects and Preliminary Economic Evaluation.
- Mosgiel Arterial Routes I&R Scheme Assessment Report.

Stage 1 report investigation included a number plate survey on Gordon Road and Riccarton Road to find how much through traffic was on each route as part of the stage 1 report. The survey found that Riccarton Road was already functioning as a bypass for traffic between Outram and Dunedin. The report identified that both an eastern and western route could be viable and appropriate due to the different functions that they would provide. It was not determined whether or not Riccarton Road traffic would attract logging volumes from Mt Allan as part of this report.

The stage 2 and 3 report further explored the preferred routes including preparation of estimates, economics and an assessment of effects. The eastern and western bypass options were found to have indicative BCRs of 3.0 and 0.3 respectively. It was concluded that the design of the eastern corridor of

Hagart-Alexander/Centre/ Carncross route should begin but that any work on the western route be put on-hold until a decision was made by Transit regarding the alternative route for SH87.

The Mosgiel Arterial Routes Scheme Assessment Report concluded that the Centre Street to Carncross Street route was the most superior eastern route and was economically fundable. It was recommended that:

- The Centre Street to Carncross Street route be adopted as the preferred option and the design phase proceed.
- Traffic flows should be monitored on Riccarton Road and Dukes Road and upgrade projects be programmed as the demands of increased traffic required.
- A long-term strategy be adopted between the DCC and Transit regarding the alternative route for Gordon Road.

The Working Party reported back to the Council in November 2003 and the Council adopted the concept of the arterial network, considered that the Outram Allanton Road could be a viable alternative route for SH 87 and published the findings to the community.

Early in 2004 MWH was engaged to develop the design and to begin preparation of the Notice of Requirement for the Centre Street to Carncross Street route. This project continued on into 2006.

Prior to the completion of the Mosgiel Arterial Routes scheme assessment report, the SH87 Gordon Road Alternative Route Scoping Study Report was undertaken by MWH for Transit New Zealand (now the NZ Transport Agency). Transit was concerned about the significant deterioration in the level of service on Gordon Road predicted for 2019. They were concerned that the proposed eastern corridor would not realistically serve as a state highway so western routes needed to be investigated. From a strategic perspective it was found that SH87 currently provided a local arterial function rather than a regional strategic function as only 2% of the traffic travelled directly through Mosgiel. The Outram-Allanton Road option was considered the best long-term strategic alternative to Gordon Road. It had a number of benefits over the other options including lower upgrade costs, links to SH86 and no rail level crossing. It was also concluded that Riccarton Road may also be a viable alternative if the DCC decides on using it as a western arterial route.

Late in 2004 a scheme assessment report was prepared for the SH87 relocation to Outram-Allanton Road. It was found that the project was not economically viable. Consultation was undertaken with the public about relocating SH87 to the Outram – Allanton Road which drew significant opposition from the Outram community. The project did not proceed any further.

9.1.2 2006 Transportation Strategy

Over the period from 2004 - 2006 the DCC developed a new Transportation Strategy for the City. This strategy was developed in conjunction with a consultation programme that included workshops, liaison meetings and public consultation. The strategy identified four related projects in the Mosgiel area to deal with the growth and land-use changes:

Construct a link between Centre Street and Carncross Street

Upgrade Dukes Road and Riccarton Road to improve safety for non-motorised users

Investigate the feasibility of using Dukes Road South and Gladfield Road as an arterial route option to the south

Upgrade Dukes Road South and Gladfield Road South as an additional arterial route option to the south if warranted

The Riccarton Road West upgrade that is the subject of this NOR is considered an important stage in implementing the Transportation Strategy.

9.1.3 Dukes Road and Gladfield Road Feasibility Assessment

In the Transportation Strategy, Gladfield Road and Dukes Road were identified as an additional arterial route rather than an alternative to Riccarton Road. The feasibility of upgrading Gladfield Road and Dukes

Road was investigated in 2006. It was found that the cost of the upgrade was significant due to the length of seal widening needed, the seal extensions required on both roads, the construction of a bridge over the Silver Stream and improvements to all intersections. It was also identified in earlier reports that the option had a number of disadvantages including: a high risk of flooding, restricted sight distance at the state highway intersections and the requirement for new bridges and culverts.

The economic analysis assessed that the benefits could be derived from road user cost savings. The total cost savings for road users were almost the same between Gordon Road (SH87) and the Gladfield/Dukes route. This meant that the tangible benefits of the project were very low and could not offset the significant costs. The project was not considered further as funding could not be obtained from Land Transport New Zealand (now the NZ Transport Agency).

9.1.4 Recent Changes to Mosgiel's Development

During the past 2-3 years some issues in the Mosgiel area have changed. The newly zoned Dukes Road Industrial area has not developed as expected and Fisher and Paykel decided to relocate their production facilities off-shore. The previously optimistic predictions for industrial growth in the area have not been met. The residential developments in the north east of Mosgiel that were proceeding at a fast pace have now slowed down and in some cases stalled. The expected log numbers out of the forests near Mosgiel have not been as significant as suggested in the 2000 report. In the case of Mt Allan the generated trips are only about 80 per day with a 50/50 split between logs travelling to the Port and those heading south for treatment. The harvesting began in 2008 and is expected to end by 2016.

Traffic volumes on Gordon Road recorded in 2008 were 14,200vpd. The traffic volumes on Gordon Road have been reducing significantly since 2006 when the maximum of 16,100vpd was recorded. The early reports from 2000 and 2003 predicted 16,000vpd by 2010 and 18,000vpd by 2019. It is unlikely that these high traffic volumes will now occur given the loss of industrial production activity in the area. It was also predicted that levels of service on Gordon Road will deteriorate. Some restrictions to traffic flows were observed in 2006 but these have eased with the reduction in traffic volumes. There has been no growth in traffic volumes on Riccarton Road between 2006 and 2009.

9.2 Current Investigations 2006-onwards

In June 2007 MWH were engaged to begin work on the design and Notice of Requirement for the Riccarton Road and Dukes Road upgrade. The purpose of the project was provide safety for all users so the route can fulfil its role as part of the arterial network. The focus of the project is to bring the roads up to safe standards, including the provision of facilities for non-motorised users, for all users of the road at the same time. A scheme assessment report was prepared in mid 2008. A decision was then made by the DCC to exclude walking and cycling facilities on Dukes Road from the project until alternative east west routes such as a track on the stop banks of the Silver Stream were investigated. A project feasibility report to assess the feasibility of upgrading Riccarton Road alone was completed early in 2009.

In 2008 the Centre Street to Carncross Street project was put on-hold, as due to the economic downturn the benefits of the Centre to Carncross project were significantly reduced. These changes coincided with concerns regarding the structural integrity of the Wingatui Road bridge. An investigation concluded that a replacement bridge was required at Wingatui Road rather than relying on the new bridge on the Centre to Carncross route. This meant that the benefits of the Centre to Carncross route would be reduced even further. The project has been put on-hold until development in the industrial area begins. The project could will become viable when industrial development proceeds.

9.3 Greenfields Route South of Riccarton Road

Investigations into a greenfields route south of Riccarton Road between SH1 and Dukes Road was not pursued when it was identified that it would result in the severing of a number of rural properties.

9.4 Riccarton Road Options

A number of Riccarton Road options in different configurations have been assessed to better provide for non vehicle users as well as vehicle users. None of the options will fit within the existing legal road. The main options considered were:

- Option 1.
- Option 2.
- Option 3.
- Option 4B.
- Option 4C.
- Option 5.
- Option 6.

Options 1, 2 and 3 involved upgrading options with the same straight Riccarton Road alignment. Options 4B, 4C, 5 and 6 involved upgrading Riccarton Road on a gently curving alignment which was introduced to minimise effects where possible particularly on residences and significant trees along the road. The curves have large radii and will be barely perceptible to drivers.

All of the options provide for the following:

- 80km/hr design speed.
- Improved visibility (Safe intersection sight distance of 181m) at intersections.
- Swept path of 15m at intersections for truck and trailer units.
- Widened bridges and culverts with guardrail as appropriate.
- Landscape mitigation.
- Driveway improvements.
- Mailbox relocation.

Note: Option 4B is a refinement of Option 4 which was the option displayed during the Open Day. The refinements have been aimed at mitigating effects on adjacent properties.

9.4.1 Option 1: Widening on Both Sides of the Existing Centreline

Option 1 involved widening on both sides of the existing road on a straight alignment. Option 1 would have provided a 3.0m shared path for non vehicle users, traffic lanes widened to 3.5m with 750mm of sealed shoulder. The centreline of the road would not be significantly raised. This option would however, have resulted in the loss of hedges and landscaping along both sides of the road. Investigation of this option was not pursued primarily because the landscaping along both property frontages of the road would have been affected and it was considered that there were other options which would have reduced visual effects.

9.4.2 Option 2: Widening Along the Eastern Side

Option 2 involved widening on the eastern side of Riccarton Road West on a straight alignment. Option 2 would have provided a 3.0m shared path for non vehicle users, traffic lanes widened to 3.5m with 750mm of sealed shoulder. The centreline of the road would have been raised and would have had an effect on flooding. This option was not pursued primarily as Council considered that Option 3 was preferable as it limited the number of properties affected and resulted in reduced costs arising from infrastructure relocation.

9.4.3 Option 3: Widening Along the Western Side

Option 3 involved widening on the western side of Riccarton Road West on a straight alignment. Option 3 was developed to scheme plan stage. Option 3 would have provided a 3.0m shared path for non vehicle users, traffic lanes widened to 3.5m with 750mm of sealed shoulder. The centreline of the road would have moved approximately 1.5m to the west. A 2.55m feathered edge on the eastern side of the road would have been provided between the edge of the traffic lane and the deep ditches running alongside the roadway. The western side of the road would have a 2.75m shoulder with a 4:1 slope and a 3.0m shared path. A standard watertable would have been installed in all areas except where scheduled drains

exist. In these areas the scheduled drains would have been reinstated with a similar cross sectional area, grade and capacity for that section. A clear zone of 5.5m was provided along the western side of the road however, the clearzone requirement was not met on the eastern side of the road.

The centreline of the road would have been raised and could have had an effect on flooding. The visibility for approaching vehicles at the Silver Stream Bridge would have been improved.

Widening of the bridges over the Silver Stream, Mill Stream and the Owhiro Stream was included as well as culverts crossing the road. All accesses along the western side of Riccarton Road West would have been altered and reinstated during the construction period.

Utilities located along Riccarton Road West include Telecom underground cables and overhead power cables predominantly along the eastern side of the road.

There is a concrete block structure and two large aerals owned Airways Corporation of New Zealand (Sec 1 SO 13203). Initial consultation with Airways Corporation of New Zealand has indicated that the equipment is used as a non-directional beacon which must be kept running 24 hours a day. It is believed that the structure could be rebuilt further back from the carriageway and the equipment inside could be relocated. The aerals are not able to be relocated, but it seems likely that any affected stays could be repositioned. The land that this structure occupies is designated by the Airways Corporation of New Zealand and is D388 in the DCC District Plan.

The existing hedges and some of the landscaping along the frontage of all properties on the western side of the road would have been lost due to the widening.

The removal of landscaping along the property frontages required by Option 3 would cause a loss of amenity, landscaping and privacy on residential front yards that will be greater than minor and may be significant for a number of residential properties where the residence is close to the existing road. The legal road would have been significantly closer to some residences with a number of front yards extents being halved. Two significant trees would have been lost (Bhutan Cypress at 119 Riccarton Road West, T048 and T049). While mitigation planting in advance of construction could mitigate the effects to an extent, in some cases full mitigation is not likely.

Moving the road centreline closer to the properties on the western side of the road would also have resulted in noise effects on residences.

Given the loss of amenity, landscaping, privacy and noise effects on residences on the western side of the road, it was determined that option 3 would not be pursued.

9.5 Option 4C

Option 4C is Option 4B (the proposed option) plus a 2m sealed shoulder and guardrail where a 5.0m clear zone is not achieved on the eastern side of the existing road. This results in the 5.0m clear zone requirements being met for the full length of the road. It has the same designation requirements as Option 4B.

Option 4C is described as having the following typical cross section features:

- A curvilinear alignment to minimise effects on adjacent residences.
- Horizontal curves with a minimum radius of 1200m.
- Vertical alignment improvement at the Silver Stream bridge.
- Ensuring the road will be no higher than the existing level on the following sections: 665mm north of Mill Stream through to Mill Stream (station 1400 to station 2065) and the area surrounding the Owhiro Stream (station 4960 to station 5260).
- Two 3.5m wide traffic lanes.
- 750mm sealed shoulders (2m where guardrail installed).
- 1.25m feathered edge with a 6:1 slope on both sides of the road.

- 3m wide shared path on the western side of the road beyond the feathered edge.
 - 5.0m clear zone beyond the edge line on the western side of the road.
 - 5.0m clear zone on the eastern side of the road where the road is being widened on the eastern side of the existing road.
 - Guardrail on the eastern side of the road where a 5.0m clear zone is not achieved on the eastern side of the road with appropriate treatment at each access (2010m plus curved guardrail detail with trailing end terminal and an end anchor at 10 accessways).
 - Relocation and reinstatement of the scheduled drains to the same cross section area as at present.
 - Relocation of the service poles beyond the clear zone.
 - 2m contingency width added to both sides of designation except at tight spots.
- Typical cross sections for Option 4C are included in Appendix M.

9.6 Option 5

Option 5 is described as having the following typical cross section features:

- A curvilinear alignment to minimise effects on adjacent residences.
- Horizontal curves with a minimum radius of 1200m.
- Vertical alignment improvement only at the Silver Stream bridge.
- Ensuring the road will be no higher than the existing level on the following sections: 665mm north of Mill Stream through to Mill Stream (station 1400 to station 2065) and the area surrounding the Owhiro Stream (station 4960 to station 5260).
- Two 3.5m wide traffic lanes.
- 1.5m sealed shoulders.
- 3.5m feathered edge with a 6:1 slope on both sides of the road.
- 5.0m clear zone beyond the edge line on both sides of the road.
- Relocation and reinstatement of the scheduled drains to the same cross section area as at present.
- Relocation of the service poles beyond the clear zone.
- 2m contingency width added to both sides of designation.

A typical cross section for Option 5 is included in Appendix M.

9.7 Option 6

Option 6 is described as having the following typical cross section features:

- A curvilinear alignment to minimise effects on adjacent residences.
- Horizontal curves with a minimum radius of 1200m.
- Vertical alignment improvement only at the Silver Stream bridge.
- Ensuring the road will be no higher than the existing level on the following sections: 665mm north of Mill Stream through to Mill Stream (station 1400 to station 2065) and the area surrounding the Owhiro Stream (station 4960 to station 5260).
- Two 3.5m wide traffic lanes.
- 1.5m sealed shoulders (2.0m where guardrail is required).
- 1.5m feathered edge with a 6:1 slope on both sides of the road.
- Guardrail where a 5.0m clear zone is not achieved (curved guardrail detail with a trailing end terminal and an end anchor at accessways).
- Relocation and reinstatement of the scheduled drains to the same cross section area as at present.
- Relocation of the service poles beyond the clear zone except where guardrail is provided.
- 2m contingency width added to both sides of designation.

A typical cross section for Option 6 is included in Appendix M.

9.8 Comparison of Options 4B, 4C, 5 and 6

Options 4B, 4C, 5 and 6 have been compared and Table 8-1: Comparison of Transport Components Options 4B, 4C, 5 and 6 prepared. The transport components have been compared with the problems identified on the existing road. The table compares the options for a particular transport component. The comparison table cannot be used to compare between different transport components.

Table 9-1 : Comparison of Transport Components Options 4B, 4C, 5 and 6

Transport Components	4B	4C	5	6
Traffic Lane Width	+	+	+	+
Sealed Shoulder Width	+	+	++	++
Clear Zone	+	++	+++	++
Intersection Sight Distance	+	+	+	+
Through Traffic	+	+	+	+
Turning Traffic	+	+	+	+
Training Cyclists	+	+	++	++
Pedestrians / Recreational Cyclists / Horses	++	++	+	+

Positive results are shown above.

+ low

++ medium

+++ high

A preliminary economic analysis has been undertaken and this indicates that Option 4B has the highest Benefit to Cost Ratio of these four options and is therefore the most cost efficient option. Refer to Table 9-2 which follows. Based on this preliminary analysis it is unlikely that options 5 or 6 would gain financial support from NZTA and are therefore not likely to be feasible.

Table 9-2 : Preliminary Economic Analysis Summary

Option	BCR
4B	2.6
4C	2.3
5	1.6
6	1.1

A preliminary comparative analysis of the differences in the effects between the four options has been undertaken.

The two Bhutan Cypressess at 119 Riccarton Road West listed in the District Plan as 'significant trees' (T048 and T049) will require removal to make way for the widening for options 5 and 6. These significant trees remain protected for options 4B and 4C together with the stables at opposite at 114 Riccarton Road West which is a positive for the landscape. Because of the narrow width between the trees and the stables they will remain as obstacles within the clear zone, however this effect can be partially mitigated with very strong definition of the road edge.

Option 4B and 4C have the same designation land area requirements.

Option 5 has a greater designation land area requirement and an increased effect on residences when compared with Options 4B or 4C or Option 6. Option 6 has a slightly lower land area requirement than Options 4B or 4C.

The wider traffic lanes and sealed shoulders will better provide for the existing traffic volume and mix using Riccarton Road West. All of the options improve intersection visibility and make better provision for turning vehicles. There are cyclists and pedestrians who use the road at present. All of the options considered will improve the facilities for non motorised modes of transport and there is likely to be an increase above the present numbers as there is likely to be a suppressed demand for these non motorised modes. Cyclists will be able to ride along the sealed shoulder or can also use the gravel shoulders or the separate shared path on the western side of the road in the case of 4B or 4C.

The Council resolved that option 4B was the option that they wished to proceed with.

10 Resource Consents

A number of resource consents will be required from the Otago Regional Council before work commences. These consents are primarily associated with the extension of the bridges and work in their vicinity and applications will be lodged as soon as is practical. Consents required include:

- Discharge permit to discharge contaminants to water associated with drilling.
- Discharge permit to discharge contaminants to water.
- Land use consent to place a structure over the bed of an unnamed watercourse.
- Land use consent to extend a structure over and on the bed of each of the following watercourses: Mill Stream, Silver Stream and Owhiro Stream.
- Land use consent to disturb the bed of the following watercourses: Mill Stream, Silver Stream, Owhiro Stream and the unnamed tributary to Silver Stream.
- Land use consent for the drilling of land over an aquifer identified on Map C15.

11 Consultation

Consultation has been undertaken over a number of years on options for heavy vehicle routes across the Taieri Plains. Consultation since 2008 has focussed on options for upgrading Riccarton Road and Dukes Road. The following provides a summary of the consultation undertaken with a focus on Riccarton Road West.

Over the period from 1999 until 2001 the Council undertook two major consultations with respect to options for heavy traffic in the Mosgiel Taieri area.

This included public meetings, information days and publication of options documentation in June 1999 and February 2001 for people to provide feedback on. The feedback provided in each consultation informed the Working Party on community views before they commenced the next stage of the work.

Following the Council decisions on the future arterial network in November 2003 considerable community feedback was received particularly with respect to the option of the Outram Allanton road being used as an alternative route for SH87.

This triggered additional investigation of this option and further community consultation and the decision of the Mosgiel Taieri Community Board that the preferred route for SH87 was Gordon Road. This was subsequently endorsed by the Council.

11.1 Transportation Strategy Consultation

Work on reviewing the City's transportation strategy commenced in 2004. The development process included:

- Focus Groups.
- Workshops.
- Liaison meetings.
- Public Consultation on issues and options for addressing the issues.
- Development of a draft strategy and public consultation on this.

The strategy identified four related projects in the Mosgiel area to deal with the growth and land use changes:

- Construct a link between Centre Street and Carncross Street.
- Upgrade Dukes Road and Riccarton Road to improve safety for non-motorised users.
- Investigate the feasibility of using Dukes Road South and Gladfield Road as an arterial route option to the south.
- Upgrade Dukes Road South and Gladfield Road South as an additional arterial route option to the south if warranted.

The Council adopted the Transportation Strategy in July 2006.

11.2 Information Day 30 July 2008: Riccarton Road and Dukes Road

Specific consultation on the project to upgrade Riccarton and Dukes Road commenced with an Information Day on 30 July 2008. Owners of land fronting on to Riccarton Road West between Gladstone Road South and SH87 and Dukes Road between Riccarton Road West and Carncross Street were sent a letter dated 23 July 2008 inviting them to attend an Information Day about the Mosgiel Taieri Arterial Routes Projects on 30 July 2008 at the Coronation Hall in Mosgiel. The Information day ran from 3.00pm through to 8.00pm. The invitation letter and mailing list is included in Appendix P.

Information provided included:

- Information Sheet.
- Large scale display plans of option 4 for Riccarton Road and option 2 for Dukes Road.

- Bridge Widening Concept Plans.
- Smaller scale plans of option 3 for Riccarton Road were available for viewing.
- Recommended Species List for Replanting.

A copy of the information available at the meeting is included in Appendix P.

Residents had an opportunity at this meeting to discuss the proposals with representatives from the Council and the Council's Consultant, MWH NZ Ltd.

Feedback forms were provided for attendees to raise any concerns or request further information.

A summary of the feedback received during the Information Day is included in Appendix P.

Following the Information Day, ongoing consultation was undertaken with a number of residents who had either attended the Information Day or provided feedback which was followed up or provided subsequent comment which was followed up. Follow up consultation undertaken with particular landowners or occupiers is summarised in the sections following and is ongoing.

11.3 Mosgiel Taieri Arterial Routes Projects Letters Mid August 2008

Letters were sent to owners and occupiers of land which fronted on to or gained access from Riccarton Road West during Mid August 2008. Enclosed was a concept plan showing the section of road that adjoined their land or access onto Riccarton Road West and a response to Information Day feedback was included in a number of letters. People were advised that they were welcome to engage in ongoing consultation. The general letter and mailing list is included in Appendix P.

11.4 Mosgiel Taieri Arterial Routes Update Letters 7 August 2009

Following a DCC decision to exclude walking and cycling facilities on Dukes Road from the project until alternative east west routes such as a track on the stop banks of the Silver Stream were investigated, update letters were sent.

On 7 August 2009 update letters were sent to owners of land adjacent to Riccarton Road West advising them that modifications had been made to the plans following the Information Day feedback. A number of landowners received individualised update letters which provided an update to specific matters raised. A layout plan of the section of road adjacent to their land was sent to each landowner. Owners and occupiers were invited to make contact with any questions that they may have and to talk about mitigating effects. A number of people had enquired about the designation and land purchase process. For landowners who owned land that would be directly affected by the Notice of Requirement, a copy of the MFE booklet, The Designation Process was included with each letter, as well as a computer link to the Land Information New Zealand booklet, A Guide to Land Owners Rights.

Letters were also sent to landowners and occupiers of land adjacent to Dukes Road advising them that the project fronting their property was not proceeding at this time.

A copy of the general letters is included in Appendix P.

Following the update letters, contact was made by a number of people.

11.5 Consultation Record Table

The Consultation Record Table contains a summary of the consultation activities undertaken with individual land owners adjacent to Riccarton Road commencing 30 July 2008 to date. The later consultation included those properties that gain access to Riccarton Road West, known interest groups as well as properties that front on to Riccarton Road West.

11.6 Other Stakeholders

11.6.1 Otago Regional Council

Consultation between ORC and DCC has occurred on a number of occasions from mid 2008. The outcome of the consultation between ORC staff and DCC staff and consultants is that DCC and ORC will work cooperatively to ensure the upgrade of Riccarton Road West will not exacerbate flooding by acting as a barrier if the road level is raised in certain locations along its length. ORC has clarified the location of the flood hazard issues along Riccarton Road West as being:

- For maintenance reasons, relocated scheduled drains should continue to be open drains and should have a similar grade, cross sectional area and capacity as the existing drain.
- The section between 200m north of the Owhiro Stream Bridge through to 100m south of the bridge (stations 4960 to 5260) should be no higher than existing pavement level. Ideally the section of pavement south of the bridge should be at a lower level than existing.
- From 200m north of the Owhiro Stream Bridge to the Silver Stream Bridge, ORC has generally little in the way of concerns.
- ORC are investigating options for the Silver Stream flood hazard mitigation – the ORC would look to some form of collaboration with the DCC in regard to modification of the Silver Stream Bridge if this aspect forms a part of the final mitigation package.
- Widening of the Silver Stream Bridge should not reduce the waterway area.
- Increasing the capacity of the culverts beneath the Riccarton Road on the south side of the Dukes Road South intersection would have some advantage in offsetting the effects of raising the pavement level between Dukes Road and Mill Stream. The existing culverts are 750mm and 600mm in diameter and a 1m high and 1.5m wide box culvert was suggested given the limited headroom between the pavement level and drain invert.
- The formation of a drain along the eastern side of Riccarton Road West from station 2190 to Dukes Road South linking to the existing drain with a 600mm or 750mm diameter culvert.
- The level of Riccarton Road West is to be no higher than existing between station 1400 to 2065 (Mill Stream).
- Information was supplied for the proposed drain along School road so the projects can be coordinated.

All of the mitigation issues raised by the ORC have been incorporated in to the Riccarton Road West Upgrade proposal. ORC intentions for the Silver Stream flood hazard mitigation when finalised will be accommodated.

11.6.2 NZTA

Consultation has been undertaken with NZTA given that the proposal abuts NZTA designation D464 for SH87. NZTA are undertaking a separate project to upgrade the SH87, Riccarton Road West and School Road intersection. ORC has a proposal for a new scheduled drain along School Road. A meeting was held on 24 August 2009 between representatives of NZTA, DCC and ORC to coordinate the design of the three projects. The three projects are coordinated and the shared path will pass over the culvert for the School Road Scheduled Drain and terminate at the SH87 intersection.

11.6.3 KTKO

Draft layout plans were sent to KTKO on 1 September 2008 for their comments and information. A preliminary statement was received dated 16 October 2008 and suggested the following conditions:

- "If koiwi (human skeletal remains), waahi taoka (resource or object of importance), waahi tapu (place or feature of special significance) or other artefact materials are discovered work shall stop, allowing for a site inspection by the appropriate Runaka and their advisors. These people will determine if the discovery is likely to be extensive and whether a thorough site investigation will be required. Materials discovered should be handled and removed by takata whenua who possess knowledge of tikanga (protocol) appropriate to their removal or preservation.
- That no earthworks should occur in the flowing water."

11.6.4 Fish & Game

Fish and Game responded by email on 30 October 2009 that they are unable to make a detailed assessment on potential effects based on the information supplied at this time. They indicated that in general, bed disturbance, sedimentation, and material such as fuel, oil and concrete would need to be avoided. This is required to protect sports fishery habitat values. Sports fish spawning occurs from May to September each year. They indicated that they request a standard condition on all applications of this nature, that no disturbance of the wet bed occurs in any form where there are sports fish spawning values.

11.6.5 New Zealand Historic Places Trust (NZHPT)

A letter was sent to NZHPT on 1 September 2009 enclosing layout plans for the proposal for information and comments.

11.6.6 New Zealand Airways Corporation

It was explained that the small concrete block structure houses components that operates 24 hours a day. A new block structure will need to be constructed and the contents housed in the existing building will be relocated. The main concern was that the beacon is not affected (the big aerial). It was anticipated at that time that a new beacon would be installed at the airport in the next 4-5 years and that the beacon on Riccarton Road would become redundant but will remain in its current position.

This contact was followed up by letter dated 4 September 2009 provided an updated layout plan which indicated relocation of the building and one of the aerial stays.

Airways Corporation of New Zealand responded by letter dated 27 October 2009 that they are currently looking in to how this can be achieved with minimum disruption and relocation of existing structures.

11.6.7 New Zealand Railways Corporation

A letter was sent to New Zealand Railways Corporation on 7 October 2009 enclosing the relevant layout and designation plans. The letter indicated that the designation did not extend over the New Zealand Railways designation D419, but identified that work would be required within their designation. It was indicated that Section 176 written consent would be sought following further design of the intersection. Comments were sought on the proposal and an emailed response received on 13 November 2009. The email stated:

"The New Zealand Railways Corporation supports Dunedin City Council's proposal in principle to lodge a Notice of Requirement to designate Riccarton Road within the District Plan. We appreciate that this will assist with Council's proposal to widen Riccarton Road and reconfigure the Riccarton Road/Gladstone Road designation. The latter of course should improve the layout of the level crossing.

Should any of the proposed works require access/occupation on/of the rail premises and/or require alteration to any rail assets, the Corporation requires Council to obtain all necessary approvals from NZRC prior to any works commencing. This includes obtaining all approvals from our technical staff and any necessary property approvals.

Approvals should be sought during the design phase of this project."

11.6.8 Utility Providers

A fax was sent to service providers on the 29th January 2008 seeking plans indicating the location of existing services: Delta Utility Services, Telecom, Telstra Clear, LINZ, DCC Water and Waste and Nova LPG. Services Plans for Riccarton Road were prepared based on this information. The Services Plans will be updated before construction begins.

Particular consultation with Delta Utility Services concerning relocation of particular power poles along the route commenced April 2008.

Services Plans are included in Appendix G.

12 Summary and Conclusions

The proposed Upgrade of Riccarton Road West will meet the DCC objectives to improve safety for non motorised users as well as improving safety for motorised users of the road. Alternatives have been considered and the option preferred for upgrading Riccarton Road West has been developed and refined to mitigate effects on the environment.

The environment is rural with a number of residences close to the road. The landscape is an intensively modified working rural environment dominated by cultural elements. The significant Bhutan Cypress trees and the stables opposite have been protected. The effects of the proposed road upgrade have been comprehensively considered and evaluated. The conclusions drawn from this process are that the effects on the environment will be minor and the majority of effects can be effectively mitigated by the imposition of conditions suggested in Section 13 of this document. Where the effects cannot be effectively mitigated, when considered in the context of the overall project, the overall effects of the project are considered to be not greater than minor.

The proposal is not contrary to the requirements of the RMA or any of the relevant planning instruments.

DCC is continuing to work with directly affected landowners to finalise appropriate mitigation measures that will avoid remedy or mitigate adverse effects arising from the proposal.

13 Draft Conditions

This final section is intended to assist the Territorial Authority (DCC) by setting out the conditions that the Requiring Authority (DCC) has envisaged should be imposed in order to avoid, remedy or mitigate any significant adverse effects associated with the proposal. The list is not exhaustive, but gives an initial indication of what may be appropriate. DCC would be expected to recommend conditions and modify and add to the conditions set out below.

General

1. The activities permitted by this Notice of Requirement shall be undertaken generally in accordance with the description and assessment included in the documents lodged with and forming part of the Notice of Requirement.

Construction Management Plan (CMP)

2. A Construction Management Plan must be prepared prior to commencement of the works to demonstrate how the Designation will be complied with. The CMP will be submitted to Dunedin City Council.

Duration

3. The designation will not lapse until 15 years after the date that the designation was confirmed.

Construction

4. A minimum of 10 working days before construction commences, the requiring authority or its agent shall place a public notice in the local paper and letter drops to the occupiers of adjacent properties advising the community of date that works will be commencing.
5. DCC or its agent will regularly liaise with the occupiers of adjacent property.
6. The Contractor will be required to obtain a Traffic Management Plan from DCC which will set out the traffic control to be provided through the site.
7. The Contractor will be required to make provision for property access during the construction, including temporary access where necessary.

Archaeological and Heritage

8. An archaeological assessment is to be undertaken prior to work commencing and if recommended, an archaeological authority is to be obtained from the NZHPT.

Noise and Vibration

9. The following applies to the use during construction of vibrating rollers meeting the category definition of "B2":
 - When NOT vibrating, rollers may operate normally at any point along the roadway adjacent to the stables or other structures.
 - When vibration functions are ON, the point of closest approach to the stables' foundation is to be no nearer than 20 metres.
 - When vibration functions are ON, the point of closest approach to any dwelling foundation (or building of similar design and purpose) is to be no nearer than 10 metres.
 - Where, owing to the style of structure, condition etc of the dwellings it is considered that they are sensitive to vibration, the point of closest approach with the vibration function ON should be 20 metres.
10. The following applies to the use during maintenance of vibrating rollers meeting the category definition of "B2":
 - When NOT vibrating, rollers may operate normally at any point along the roadway adjacent to the stables or other structures.
 - When vibration functions are ON, the point of closest approach to the stables' foundation is to be no nearer than 20 metres.

- When vibration functions are ON, the point of closest approach to any dwelling foundation (or building of similar design and purpose) is to be no nearer than 10 metres.
 - Where, owing to the style of structure, condition etc of the dwellings it is considered that they are sensitive to vibration, the point of closest approach with the vibration function ON should be 20 metres.
11. The requiring authority or its agents shall ensure that any noise generated by construction activities will not exceed the limits specified in NZS 6803:1999 Acoustic – Construction Noise and DIN 4150-3: 1999. DCC will provide a structural assessment before work is commenced to residences within 250m of the bridge abutments.

Construction Times

12. Construction activities will generally only be undertaken between the hours of 7.00am to 6.00pm Monday to Saturday. The need may arise for limited specific work activities to be carried out outside these hours. Such specific work activities can only be carried out with the prior approval of Dunedin City Council.

Control of Stormwater Runoff

13. The requiring authority or its agent shall use appropriate silt control devices, such as silt fences, to intercept contaminated run-off before it reaches Mill Stream, Silver Stream or the Owhiro Stream.

Dust

14. Replacement hedges and landscaping will be established on adjacent properties where practical in advance of construction.
15. Water is to be sprayed on exposed surfaces as required to control dust.

Revegetation and Planting

16. Mitigation planting and stock proof fencing is to be installed as far in advance of construction as practical.

Class 1 Soils

17. Topsoil is to be stripped during the construction process, stockpiled and used to reinstate areas disturbed during construction. Any surplus is to be made available for use elsewhere.

Pest and Weed Control

18. All plant and machinery is to be adequately cleaned to avoid transmittal of pest plants and organisms, including didymo.

Storage of Dangerous Goods and Refuelling of Machinery

19. All storage of dangerous goods on site shall be in accordance with the Hazardous Substances and New Organisms Act. Any refuelling of plant or machinery must be undertaken well clear of Mill Stream, Silver Stream and Owhiro Stream or any other water course.
20. Written consent under s176 of the RMA from the NZ Railway Corporation for designation D419 must be obtained before work can commence on land subject to their designation

Flood Hazard Mitigation

21. The proposed road centreline must be no higher than the existing centreline level on the following sections of road: 665m north of Mill Stream through to Mill Stream (station 1400 to station 2065) and the road on either side of the Owhiro Stream (station 4960 to station 5260).
22. The two culverts across Riccarton Road South on the south side of the Dukes Road South intersection are to be replaced with a single box culvert 1.5m wide and 1.0m high.
23. A road drain is to be formed on the eastern side of Riccarton Road West from station 2190 to Dukes Road South and connected to the drain on the south side of Dukes Road South.

Advice Note

Scheduled Drains and Defences Against Water

Authority must be gained from the ORC under the ORC Flood Protection Management Bylaw 2008 before any work is undertaken to alter a scheduled drain or defence against water