



**Landscape Assessment for the Realignment of
Waitati Curve –State Highway 1**

QUALITY ASSURANCE STATEMENT

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NZ TRANSPORT AGENCY

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1 Introduction

MWH were commissioned by NZTA to design the realignment of Waitati Curve on State Highway 1, approximately 17.5km north of central Dunedin. The existing road has been the location of a number of crashes on the curve, some of which involved the store which exists on the western side of State Highway 1. The proposal realigns the state highway, relocates the existing store to the eastern side of the state highway and creates a new intersection with Harvey Street.

This report is a Landscape Assessment for this project and is to be submitted as part of the Notice of Requirement Application to the Dunedin City Council. The report briefly outlines the Statutory framework relevant to the project followed by a description of the existing landscape character of the receiving environment

2 District Plan / Legal Descriptions / QEII Covenant

The area affected by the proposed scheme is located within the rural zone of the Dunedin City District Plan, shown on Map 13. While the proposal is not located in a Landscape Conservation Area or a Coastal Preservation Area, there are a number of landscape or ecological features in the immediate area of the scheme which require addressing, most notably the likely effect on the QEII covenant over Part of Pt Sec 45, Blk I, Part of Sec 1 of 19 Blk II, North Harbour and Blueskin SD (shown as A on DP20879).

The following table is a list of Areas of Significant Conservation Value or Significant Trees either potentially affected by the proposal or in close proximity.

Table 2-1 : District Plan Areas of Significant Conservation Value and Significant Trees

District Plan Reference	Description / Significance	Potential Effect from Proposal without mitigation
C084	QEII Covenant - Coastal regenerating hardwood forest and forest regeneration	Potential loss of 980m ² of land from the property protected by the QEII covenant
T1136	Quercus robur - Oak	Loss of tree due to possible road alignment
C104	Edge of Blueskin Bay estuary	Nil – outside of project area
T1161	Dacrycarpus dacrydioides - Kahikatea	Nil – outside of project area
T1162	Podocarpus totara -Totara	Nil – outside of project area
G104	Group of Sophora microphylla – Sl Kowhai	Nil – outside of project area

3 Landscape Character

The receiving environment is characterised by the dominating topography surrounding Waitati inlet and Waitati river valley. The hills surrounding the area, including the Double Hill, Swampy and Mopanu quickly rise to elevations over 400m amsl giving a sense of enclosure when travelling along SH1 and entering into Waitati. Often atmospheric conditions are misty with low cloud trapped by the surrounding hills giving the area a unique feel and character.

Indigenous vegetation is common throughout the wider area with significant stands of regenerating kanuka on higher slopes and with steeply incised gullies. On the broad river flats at the base of Waitati Valley, kanuka is also common as well as a number of significant stands of mature Kahikatea and to a lesser extent totara. These trees give a real impression of the broadleaf forest that would have existed prior to felling to make way for farming.

As a general rule, the area is characterised by a dominance of natural landscape elements over cultural elements. Townships in the area including Waitati, on the south-western edge of the inlet and Warrington, on the northern side, are 'low key' in their character with low densities, large yards and significant areas of regenerating native vegetation. Buildings tend to be single or two storey with large set backs from internal roads. There is a growing number of rural residential properties in the area, which is extending built development onto higher slopes. However, these dwellings are still of a small number that they are subservient to the strong natural character of the receiving environment.

In the immediate area of the road realignment, the natural character is mixed with large areas of exotic weeds giving the area a lower sense of stewardship or care. Native vegetation is regenerating in places, especially on steeper slopes above the road corridor where disturbance from human activities has been less recent. Species include *Sophora microphylla*, *Pittosporum* species and other native pioneer species as well as the occasional exotic tree species. Weed species such as barberry and blackberry are also present and the climber *Muehlenbeckia sp.* covers large areas of the canopy.

On the flat land at the base of the escarpment, there is a marked difference in vegetation types, it is assumed largely due to periodic disturbance by human activities. At the southern end of the study area, a large stand of pines, approximately 30m in height, is present. The alignment then moves through an area of mostly tall fescue grass and young gorse which is starting to become established. Native species are largely restricted to the adjacent escarpment. At CH3500 (Drawing SA01 in Appendix A) there is a large stand of mature trees, including T1136. The remainder of the alignment passes through rural residential allotments with little vegetation of note.

4 The Proposal

The figures attached in Appendix 1 of this report show the proposed alignment of the State Highway at Waitati Curve. Drawing Z1630901-SA001B, shows the new alignment along with the possible new location for the store. This drawing also contains the chainage locations which are referred to in this report.

Drawing Z1630901-SA009A shows the area of land currently under the QEII covenant affected by the works and the location of the proposed compensatory planting.

5 Landscape Effects

CH4050-3850

For this portion of the road realignment, proposed works are largely confined to the existing road corridor with possible minor geotechnical works. Any changes on the landscape character of this portion of the road resulting from the realignment are considered negligible.

CH3850 – CH3550

From CH3850-3350 the portion of land affected by the road realignment which is currently protected by the QEII covenant (Figure 7-4). At the southern end of the study area, where the new alignment first leaves the existing road (photo 6) there will be some site clearance of existing vegetation, mostly small shrubs and weed species with few native species of any substantial size. The more substantial native species higher on the slope will not be affected by the proposed realignment works.

The existing stand of *Pinus radiata* at CH 3650-3700 will require removal with the realignment of the State Highway. While often aging pine trees offer nursery like conditions for regenerating native species to become established, no understorey growth was observed under the pines. For this reason, and the underlying purpose of the covenant, it is considered that the loss of the pines will have negligible impact on the landscape or ecological values on the immediate vicinity.

At CH3600, the QEII property is dominated by common weed species of gorse and tall fescue, showing signs of recent disturbance. The regenerating native vegetation on the escarpment behind the works area will be unaffected by the proposed works.

CH3550 – 3350

From CH3550-3350, the proposed alignment will require the removal of some existing vegetation, mostly plantings associated with the existing residential dwellings which are to be removed. The effected species include a number of weed or garden species such as tall fescue, convolvulus, gorse, broom, agapanthus and wilding pine (photo 9). Small areas of native bracken as well as larger specimen trees such *Prunus* sp., *macrocarpa*, *Chamaecypris* and *Eucalyptus* species will also require removal. The height of these trees ranges from 4-20m (photo 10 and 11), and although the larger trees are visually prominent, the vegetation in this area is generally of a low quality with limited landscape value with exception of the large *Quercus robur* (Significant Tree, T1136, under the Dunedin City District Plan) and a large beech tree. Weed and exotic garden species are the predominant vegetation cover and give the receiving environment a low level of stewardship (care).

CH3350 – 3050

The new alignment generally comes back on line for this portion with only a small corridor of vegetation affected along the bay side of the road. Vegetation here is exclusively exotic grass and weed species of negligible landscape value (photos 12 and 13).

Overall, it is considered that the realignment of State Highway 1 at Waitati will have minimal to negligible effect on the landscape and ecological value of the vegetation on existing landscape amenity. However, a number of mitigation measures are suggested to enhance native plantings in the area which will enhance the landscape and ecological value of the area, thereby having residual positive effects.

6 Mitigation Measures

While it is considered that the proposal will have negligible effects on the existing landscape character of the receiving environment, the following mitigation measures are proposed to either avoid, mitigate or compensate for any potential adverse effects:

1. Native planting of 7504 m² is proposed to be planted on the inside curve of the realignment (980m² of this area is to compensate for land effected which is currently under the protection of a QEII covenant). The following species are recommended to be planted at 1.5m centres:

Table 6-1 : Suggest Plant Species and Composition

Botanical Name	Common Name	Percentage of Composition
<i>Poa cita</i>	Silver tussock	20%
<i>Cortaderia richardii</i>	Toetoe	20%
<i>Phormium cookianum</i>	NZ Mountain Flax	20%
<i>Cordyline australis</i>	Cabbage tree	10%
<i>Pittosporum tenuifolium</i>	Black mapou	10
<i>Sophora microphylla</i>	SI Kowhai	5%
<i>Olearia paniculata</i>	Olearia	5
<i>Dodonaea viscosa</i>	Akeake	5%
<i>Podocarpus totara</i>	Totara	2%
<i>Dacrycarpus dacrydioides</i>	Kahikatea	3%

It is proposed that pre-planting weeding of the area will need to be undertaken with existing native species within the 7504m² space being retained. The proposed plants will supplement the existing plants, acting as infill while the existing plants will assist plant growth by providing nursery-like conditions.

2. Planting of a two metre wide strip of *Phormium cookianum* (NZ Mountain Flax) along inside edges of the proposed alignment, on the outer edge of the surface water channel where planting is not restricted by vehicle sight lines and where there is sufficient space. Mountain flax is not endemic to the coastal area but will allow sightlines to be maintained. On the outer curve a 2m wide strip tussock mix is proposed, consisting of *Poa cita*, *Chionochloa falvicans*, and *Carex testacea*;
3. Retention of the large *Quercus robur*, which is listed as Significant Tree T1136, under the Dunedin City District Plan as well as three other smaller trees in close proximity. Tree work is required to improve the form and health of the trees as well as improving sightlines under the canopies through to the store;
4. 5m either side of the existing stream, riparian planting is proposed. Plants are to be positioned to maintain views through to the store while allowing the ecological value of the stream to be improved. Proposed species would include *Carex secta*, *Cordyline australis*, *Coprosma propinqua*, *Chionochloa flavicans* and *Poa cita*.
5. Large grass areas are proposed adjacent to the carpark as informal sitting areas

7 Conclusions and Recommendations

Overall, given the low quality of existing vegetation along the proposed alignment, mostly being exotic weed or garden species with a limited numbers of native species, combined with the proposed compensatory planting I consider that the overall effects on the landscape will be positive. The proposed plantings will assist with the regeneration of native species in the receiving environment.

Appendix A: Engineer's Drawings

Appendix B: Landscape Assessment Figures



Scale: 1:25000
 4500 metres

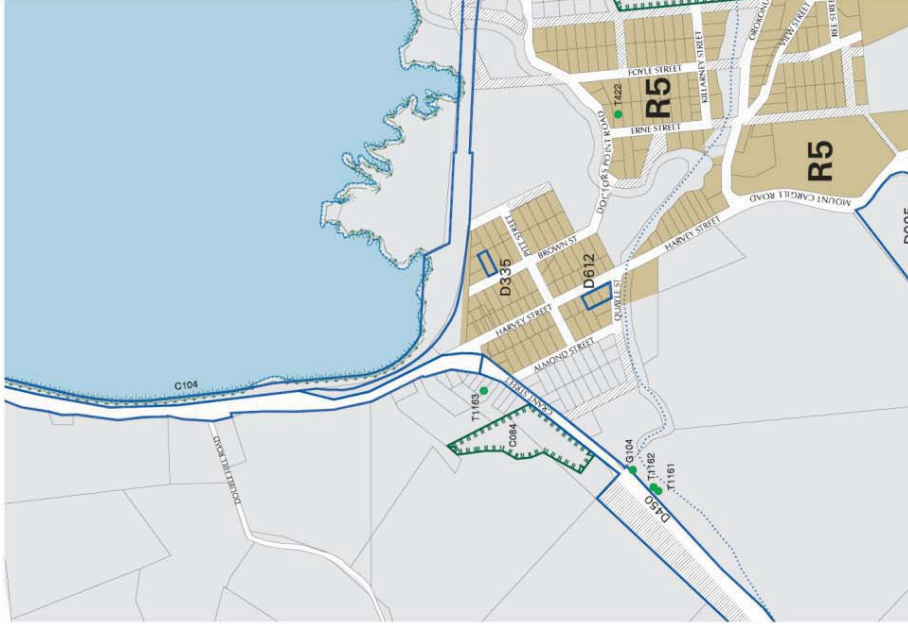


Figure 7-1: Location Plan and Map 13 of the Duned in City District Plan



Figure 7-2: Aerial and Viewpoint Location



Viewpoint 1 - The view from State Highway 1 at Waitati looking north across the Waitati Inlet to Wainwright.



Viewpoint 2 - View looking south towards Waitati



Viewpoint 4 - Looking north towards Waitati inlet. The cone in the foreground shows where the proposed realignment deviates from the current alignment, crossing onto land protected by the GEI/ covenant



Viewpoint 3 - View from the existing intersection at Harvey Street

Figure 7-3: Viewpoints



1. The view south from the intersection with State Highway 1 looking down Harvey Street. Blue-skin nurseries is to the right of the photo



3. T1136 is on the right of this photo. The proposed alignment may avoid the Significant tree passing on the left of the photo



6. At approximately Chainage 3750 (the Area marked as A3 in the above Engineering drawings), the vegetation affected is a mix of low shrubs and contains a large number of weed species such as blackberry. The native species further up the slope will largely be unaffected by the proposed works.



2. The image above is of a gallery in Waitati near the intersection. The character of the township is very rural with wide gravel verges and no formed kerb and channel. Native vegetation is common throughout the town and surrounds, enhancing the levels of amenity enjoyed by local residents and passing motorists.



4. This photo is of the back of the existing Waitati store which will be removed. The proposed alignment passes through the middle of the photo rejoining with the original alignment to the north.



7. At approximately Chainage 3650 - 3700, the realignment will require the removal of the existing stand of Pinus radiata. As can be seen in the photo, the understorey is largely free of any undergrowth.



5. The existing Waitati store



8. Taken from approximately Chainage 3600 back towards the QELI covenant site, the cone on the middle left of the photo marks the road alignment. The regenerating native vegetation on the escarpment will not be affected by the proposed works.

Figure 7-4 : Landscape Character and Vegetation Photos



9. At about CH2000, weed species such as *Convolvulus*, gorse, tar ficus, and stinging jays are common as well native *Banksia*. The vegetation is generally of a low quality with little sign of stewardship (core).



12. View north where the realignment comes back on line. A small area on the bypass of the road will be affected.



10. At the back of the existing shops, vegetation is typical of residential properties.



13. Looking south towards Waitati. A small area on the bypass of the road will be affected by the proposed realignment.



11. Looking south from the existing zone along the proposed alignment.

7-5 : Landscape Character and Vegetation Photos

LEGEND

- ① 2m wide strip of *Phormium cookianum* at 1500mm CRS
- ② Native plant mix of *Poa cita* (Silver tussock), *Cordyline australis* (Cabbage tree), and *Cortaderia richardii* (Toetoe) @ 1500mm CRS and grass hydro-seeding on areas disturbed by the improvement works but not required for permanent roads, including the reinstatement of the old road alignment (subject to consultation with the local community).
- ③ Street tree planting of *Dacrydium dacrydioides* (Kahikatea) at the entrance to Waitati
- ④ Possible retention of *Quercus robur* (T1136)
- ⑤ Indicative position of a new store
- ⑥ Indicative location of a new bus stop



Figure 7-6 : Landscape Mitigation Plan

SECTION A-A (CH3250)



SECTION B-B (CH3500)



SECTION C-C (CH3750)



Figure 7-7 : Road Cross Sections

COMPENSATORY PLANTING

An area of approximately 980m² is proposed as compensatory planting as shown on to compensate for the loss of existing vegetation on the property currently under the OEII covenant. The following species are recommended to be planted at 1.5m centres:

Botanical Name	Common Name	Percentage of Composition
<i>Poa cita</i>	Silver tussock	20%
<i>Cortaderia richardii</i>	Toetoe	20%
<i>Phormium cookianum</i>	NZ Mountain Flax	20%
<i>Cordyline australis</i>	Cabbage tree	10%
<i>Sophora microphylla</i>	SI Kowhai	10%
<i>Dodonaea viscosa</i>	Akeake	5%
<i>Podocarpus totara</i>	Totara	5%
<i>Dacrycarpus dacrydioides</i>	Kahikatea	5%

It is proposed that pre-planting weeding of the area will need to be undertaken with existing native species within the 980m² space being retained. The proposed plants will supplement the existing plants, acting as infill while the existing plants will assist plant growth by providing nursery-like conditions.

The species selected are native to the immediate area with the composition a guide to the percentage of each species to be planted.



Figure 7-8 : Compensatory Planting