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MILFORD DART TUNNEL

ASSESSMENT AGAINST STATEMENT OF OUTSTANDING UNIVERSAL VALUE

TE WAHIPOUNAMU WORLD HERITAGE AREA

EFFECTS ON LANDSCAPE VALUES

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INTRODUCTION

This report assesses the effects of the proposed Dart Milford Tunnel on landscape values described in 'Te Wahipounamu Statement of Outstanding Universal Value'.

It also recommends measures that might be taken to fulfil the 'management and protection' requirements of a World Heritage Area.

The report is based on a site visit (7/8 March 2013) and a review of documents including:

- Milford Dart, Hollyford Portal, Landscape Assessment Report, Baxter Design Group, footer dated 14-02-07
- Milford Dart, Routeburn Portal Current Design 2011, Landscape Assessment Report, Baxter Design Group, undated
- Milford Dart Tunnel Amendment to Concession Application to Adopt the Final Routeburn Portal Location, URS, 24 January 2011 –URS Plans C202, C203, C206
- Milford Dart, Concession Application Overview, Brown and Pemberton, August 2007
- Milford Dart, Concession Application and Environmental Impact Assessment, URS, June 2006
- Milford Dart Limited Notified Multi Conservancy Application, Officers Report to Decision Maker, 4 November 2011
- Te Wahipounamu Statement of Outstanding Universal Value, UNESCO World Heritage Centre, <http://whc.unesco.org/en/list/551>, retrieved 18 March 2012

TE WAHIPOUNAMU 'STATEMENT OF OUTSTANDING UNIVERSAL VALUE' (SOUV)¹

Places (or properties²) inscribed on the World Heritage List must meet the requirement for outstanding universal value, which is described in the World Heritage Conventions Operational Guidelines. To be considered of outstanding universal value a place needs to:

- meet one or more of the ten criteria
- meet the conditions of 'integrity'
- have an adequate system of protection and management to safeguard its future.

If it is a cultural property it must also meet the conditions of 'authenticity', although that is not relevant to Te Wahipounamu.

Criteria for determining Outstanding Universal Value

The ten criteria in the guidelines cover both cultural and natural value. Te Wahipounamu SOUV claims outstanding value under all four criteria that relate to natural values as follows:

¹ Attached as Appendix 1

² Or 'properties' in the terminology of the World Heritage Conventions Operational Guidelines

<i>Criterion vii</i>	<i>Contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance</i>
<i>Criterion viii</i>	<i>Be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features</i>
<i>Criterion ix</i>	<i>Be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals</i>
<i>Criterion x</i>	<i>Contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation</i>

The descriptions in response to these criteria in the SOUV can be paraphrased as follows:

Criteria vii

- Contains many of the natural features which contribute to New Zealand's reputation for superlative landscapes (the highest mountains, longest glaciers, tallest forests, wildest rivers and gorges, most rugged coastlines, deepest fiords and lakes...);
- World's best temperate rainforest in terms of extent, intactness and composition;
- Vast wilderness and spectacular mountains;
- World class primeval scenic beauty; and
- Only traces of human influence, and then mainly in peripheral areas.

Criteria viii

- Best example of Gondwana taxa as represented in modern ecosystems; and
- Outstanding example of Pleistocene glacial history (geomorphology).

Criteria ix

- Continuums of largely unmodified habitats;
- High degree of geodiversity and biodiversity;
- Notable examples of dynamic on-going plant successions and environmental gradients;

Criteria x

- Extensive range of New Zealand's unusual endemic fauna (particularly rare and endangered takahe, brown kiwi, rowi, mohua, kaka, kakariki, pateke).

Condition of Integrity

Integrity relates to the 'wholeness' and 'intactness' of the place and how it 'conveys its values'. In other words, integrity covers both actual intactness and perceptions of intactness.

The aspects underpinning integrity as described in Te Wahipounamu SOUV can be paraphrased as follows:

- Complete 'mountains-to-the-sea' and 'mountains-to-inland basins' landscape sequences;
- Full range of Pleistocene-modern glacial erosion and deposition landforms;
- Largely in its natural state (the 10% of New Zealand least disturbed or modified);
- Nearly contiguous network of reserved land, the boundaries of which are closely aligned with the area's main features;
- Extraordinary range of landform, soil, vegetation, latitude, altitude and rainfall gradient sequences.

The SOUV also identifies the following threats to integrity:

- Introduced pests and predators;
- Effects of global warming on icefields and glaciers; and
- Pressure from tourism at the main tourist attractions.

Protection and Management

The matters relating to protection and management requirements in Te Wahipounamu SOUV can be paraphrased as follows:

- Crown ownership (with one small exception);
- Legal protection as National Park or Reserve and associated Acts;
- Management by the Department of Conservation and its legislative mandates and requirements;
- Planning documents such as national park management plans, and a management structure that includes a single manager overseeing the World Heritage Area;
- The particularly high natural values which lead to priority being given to management of such values.

The SOUV also identifies the following challenges to protection and management:

- Impacts from tourism at key sites; and
- Impacts from introduced species

The SOUV states that these impacts are being addressed by management actions and continue to be a concern. It also states that traditional resource use by Maori is closely regulated but does not result in significant impacts.

EFFECTS ON LANDSCAPE VALUES IDENTIFIED IN THE SOUV

The effects can be divided into two contexts:

- Effects of a tunnel on the overall 'integrity' of the World Heritage Area; and
- Effects on the landscape values in the vicinities of the west and east ends of the tunnel.

Integrity Effects

Integrity effects³ relate to the extent to which a tunnel would detract from the natural landscape values of the World Heritage area described in the SOUV. Such effects would result from the tunnel's presence itself (including knowledge of its presence) rather than simply views of it.

The tunnel will modify and provide human thoroughfare through what is otherwise a natural mountain range. It will be represented on maps, and may influence people's perception of the area.

To weigh the nature and extent of such effects the following matters should be taken into account:

- The tunnel will connect at each end with existing public roads, at locations where there is already human presence (albeit of a somewhat different type and intensity);
- The eastern portal will be near the fringes of the Park – it will be approximately 2.8km after leaving a farmed and settled landscape in the Dart Valley;
- The western portal is more central within the natural area, but also connects directly to an existing public road (Hollyford Road). The portal will be approximately 10km from the intersection with Milford Road which is the main public road through the middle of Fiordland National Park;
- The alignment is beneath a part of the park which includes the Routeburn Track (with its path, huts and lodges). It is not a designated 'wilderness area'.

It is also worth considering that there are two existing underground features within the World Heritage Area - namely the Homer Tunnel (with which the Milford Dart tunnel would connect as part of an east-west route) and the underground Manapouri power station. Each has some effect on the natural integrity of the World Heritage Area and should not be used to justify further development. Nevertheless, both have been able to be accommodated within the World Heritage Area and the SOUV acknowledges traces of human presence, particularly in peripheral areas.

Taking these matters into account, I consider there will be some effects on the 'integrity' or intactness of the natural values, but the degree of such effect will be relatively minor given the tunnel's location and connections to existing infrastructure.

³ Integrity effects might also be described as 'intrinsic' effects

However, the degree of impact on integrity will also be influenced by the nature and degree of the more immediate effects on landscape values at each end of the tunnel. These effects, which would be influenced by the tunnel design and manner in which it is constructed, are discussed in the following section of the report.

Effects on Landscape Values at Each End of the Tunnel

Western End (Hollyford Portal)

The works at the western end comprise the portal and approaches, and also the separate disposal site for the excavated spoil.

Portal

There would be only a short approach (approximately 75m) connecting Hollyford Road with the portal, which will be in a box cut and cut-and-cover tunnel in the rising ground. The portal will be in a visually unobtrusive location in the alluvial toe slope of the mountain, some distance from the steep escarpment face of the Serpentine Mountains, and screened by the surrounding forest.

The main adverse effects in the vicinity of the portal will be clearance of currently intact natural forest⁴ over an area of approximately 0.8ha.⁵ During the construction period the cleared area and construction activities would occupy a frontage 75m wide on Hollyford Road.⁶ Most of the proposed 0.8ha of clearance appears to be the result of construction activities.

I agree with the officer's report that there will be potentially significant adverse effects on the natural character of the area during the construction period, but that the long-term effects following restoration would be minor.

However, given the significance of the World Heritage Area, any clearance of forest should be restricted to the smallest practicable area through careful and detailed design and construction methods. The application does not contain sufficient detail in this regard to determine whether this is the case, given that the finished road and portal would occupy only a small proportion of the cleared area.

Protection and Management (Western Portal)

The appropriate measures in terms of 'protection and management' would be to minimise such clearance by:

- Fine-tuning the alignment – for instance attention to detail to avoid the more significant trees;
- Maintaining a buffer of vegetation along Hollyford Road to reduce visibility of the construction area (by reconfiguring the construction footprint); and

⁴ Kamahi, rata, beech forest

⁵ Landscape Report, page 2

⁶ Landscape Report, page 3

- Minimising the footprint of the construction site and clearance. Construction methods and activities might be modified to reduce the construction area required, and it may be possible to locate further activities on the more modified spoil disposal site.

Spoil Disposal Site

The spoil disposal site will result in substantial works on the site of the former Hollyford airstrip, including clearance of the existing vegetation over an area of approximately 5.6ha and placing spoil to a height of some 7.5m.

Effects will include the following:

- Introduction of a large (estimated 268,000m³)⁷ artificial landform averaging approximately 7.5m high⁸ over an area of roughly 5ha⁹
- Clearance of natural vegetation over an area roughly 6ha.
- Visual effects of the construction site and the finished landform
- Effects on natural character of the Hollyford River

(There may be other potential effects, such as on water quality, outside the scope of this report)

The landscape assessment prepared for MDL¹⁰ says the spoil will raise the landform an average of 8m which will be “*approximately the same as the Hollyford Road at this section*” (page 3). This does not appear to be correct from the contour plans or on-site observations. Rather the existing airstrip appears roughly similar in elevation to the road, and the spoil will therefore create a higher flat-topped mound between the road and the river.

The following factors should be taken into account in appraising the nature and degree of effects:

- The new spoil disposal landform will be artificial in appearance: It will be a 7.5m high ‘island’ in the river flood plain, steep sided (1V in 1.5H), flat topped, and its toe armoured with rip rap at its upstream and downstream ends. It will appear out-of-place (i.e. in terms of geomorphology) and will therefore have effects on natural integrity;¹¹
- There will be visual effects during construction from the surrounding ranges, from the air, and I understand by reference to photos that it will also be visible in distant views (approximately 5km) from locations on the Routeburn Track. These effects will occur over a reasonably large area (approximately 5-6ha)¹² and it is understood a construction period of approximately 18 – 20 months.¹³

⁷ Amendment to Concession Application to Adopt the Final Routebourn Portal Location, URS (24 January 2011), page 11

⁸ Amendment to Concession Application to Adopt the Final Routebourn Portal Location, URS (24 January 2011), page 11

⁹ Scaled approximately from URS Plan C206, 24 January, 2011

¹⁰ ‘Milford Dart – Hollyford Portal, Landscape Assessment Report’, Baxter Design Group, undated

¹¹ I do not agree with the argument that the spoil landform will be more natural compared with the much smaller ephemeral gravel piles currently on the site

¹² Landscape Assessment Report says 8ha, page 2. The northern part of the site has now been excluded. Scaled off URS Plan C206 the area appears to be 5-6ha.

¹³ Officer’s report, page 75

- Although a 10m buffer from the edge of the river is depicted on URS Plan C206, the steep-sided, 7.5m high spoil disposal landform will nevertheless be close to the banks of the Hollyford River (and visible from the river) which will mean adverse natural character effects on what is almost a pristine river.

However;

- The site is already modified. The forest has been cleared in the past (and is part of the river flood plain subject to natural clearance by flood) and the site between Deadmans Creek and the Hollyford River comprises low regenerating vegetation (such as tutu and wineberry) and a mix of clearings, tracks and the former airstrip.¹⁴ Parts of the site are currently used as a gravel pit for processing road metal. It is one of the two most modified locations on Hollyford Road – the other being Gunns Camp;
- The site will be largely screened from the Hollyford Road by a buffer strip of more mature vegetation¹⁵ between Deadmans Creek and the road; and
- It is proposed to re-vegetate the sides of the spoil disposal site following construction, although an airstrip will be retained on its top.

In summary, the airstrip site has been modified and is probably the most suitable location for disposal of such spoil on the Hollyford Road. Nevertheless, there will still be potential significant effects in terms of the natural landscape values described in the SOUV. Therefore, while I agree with the officer's report that there will be significant temporary effects during construction, it is not possible to conclude the permanent effects will be minor.

Such effects could be sufficiently reduced through careful and detailed design and construction methods. But the application does not currently contain such information. For example, although the spoil landform would potentially have significant adverse effects on landscape values, there are no plans indicating the footprint or finished contours, or sections.

Protection and Management (Spoil Disposal Site)

'Protection and management' of the 'outstanding universal values' could include the following measures:

- The current water course of Deadmans Creek to be retained, and the buffer of kahikatea forest adjacent to the airstrip site between the Hollyford Road and Deadmans Creek to be protected;
- The natural river bank and margin vegetation to be retained along the Hollyford River, the set back of the spoil disposal site from the river increased, and its design refined to reduce effects on the natural character of the river;
- The spoil site to avoid the more intricate landscape at the northern end of the site near the confluence of Deadmans Creek with the Hollyford River (as

¹⁴The airstrip is gravelled, is in a rough condition, and is understood to be currently disused

¹⁵ Including a strip of kahikatea and swamp forest

included in the recommended condition in the officer's report for ecological reasons);

- The contouring of the spoil site to be refined to reduce its appearance as an obvious human form. For instance it might be constructed to mimic the form of natural river terraces which do occur in the valley (accepting that its artificial nature would remain evident to a trained eye);¹⁶
- The revegetation strategy for the site to reflect that it is to be undertaken on a steep sided landform; and
- Alternative means might be investigated to dispose of at least some of the spoil, in order to reduce the height of the proposed landform and increase the flexibility to contour it in a way that better integrates into the landscape, and increases the buffer between the landform and the river.

Some widening of the Hollyford Road will be also required, and it will be chip-sealed between the Milford Road and the tunnel entrance. However, I understand these matters would be considered as part of a separate resource consent.

Eastern End (Routeburn Portal)

Description

The eastern end will similarly consist of a short approach (approximately 200m) connecting Routeburn Road with the portal. The approach will be box cut into the rising alluvial toe slope, and will be some distance back from the steep escarpment slope of the Humboldt Mountains.

The site is adjacent to the eastern end of the Routeburn Track. The setting is a grassy clearing in the beech forest on the banks of Route Burn, which in turn is within an amphitheatre of mountains. The start / finish of the track is the swing-bridge across the river in front of the Routeburn visitor shelter which stands in the middle of the clearing.

The eastern portal will be approximately 130m¹⁷ behind the visitor shelter, higher on the slope, and within a box cutting.

Routeburn Road continues beyond the clearing through beech forest to a second clearing a short distance further on, which is occupied by the previous visitor shelter.

Biophysical Effects

The biophysical effects will include modification of the natural landform (toe slope) and clearance of a few matagouri bushes. The approach and portal are within grassland on the edge of the clearing. The biophysical landscape effects will therefore be minor.

It is proposed to create a mound approximately 750mm high on the downhill side of the portal approach box cut, which has the potential to spread the area of landform disturbance.

¹⁶ Note that the contouring will require vehicle access to the airstrip on top of the landform

¹⁷ Scaled off URS Plan C203

Effects on Experience for users of Routeburn Track

The more significant effects will be on visitor experience at the eastern end of the Routeburn Track. Although the east end of the tunnel will be 'behind' the visitor shelter, it will be very close and will share the same clearing in the beech forest. It therefore has the potential to seem obtrusively close in the context of the park's vast scale. To help understand the relative proximity, the tunnel entrance will be a similar distance from the visitor shelter as the swing-bridge entrance to the Routeburn Track that the shelter is designed to address.

The Landscape Assessment Report prepared for MDL maintains the proposal will be screened by the topography:

*"Due to the road, car park, infrastructure and portal being set at a level below that of the existing ground level the site unlikely to be visible, therefore the landscape and visual effects of the access road will be negligible"*¹⁸

*"The 'mound' and planting is not proposed to screen the proposal as it is unlikely very little if any aspect of the proposal will be visible from outside of the site, but rather to alter the viewer's perception of the distance between the viewer and the tunnel portal"*¹⁹

The officer's report has relied on this assessment.²⁰ In fact, without mounding and screening it appears from URS Plan C203 that parts of the proposal would be visible from the visitor centre.

- The top of the portal will be at RL491 whereas the lip of the cutting below the portal will be approximately RL486, so the top approximate 3-4 metres of the tunnel portal and the adjacent batters will be visible from the Visitor Shelter.²¹
- Similarly, although the portal approach itself will be in box cut, the higher side will be roughly 3m higher than the lower side as it approaches the portal, so part of the cut face is likely to be visible - although the difference decreases toward Routeburn Road. Plan C203 shows that the higher side of the cutting will be faced with a gabion wall.
- The road approaching the portal will be approximately 3m below the lower lip of the box cut, so the tops of buses may be visible entering and departing the tunnel depending on their height.
- Drawing C202 shows that the box cutting will extend further downslope during construction, so that during this period the top of the tunnel portal and cut batters will be a little more visible, and there will be clearer views into the construction area from Routeburn Road.

¹⁸ Milford Dart – Routeburn Portal Current Design 2011, Landscape Assessment Report, Baxter Design Group, undated, page 5

¹⁹ Ibid, page 4

²⁰ Officers Report, page 93

²¹ Even taking into account the vertical angle of view from the shelter

Even if the portal and buses were screened by mounding and planting, the tunnel will be sufficiently close that people are likely to be conscious of its proximity. For instance people are likely to be conscious of it where they have seen the tunnel approach with its gabion retaining wall and bus park from Routeburn Road immediately before arriving at the Routeburn visitor shelter, or because of the sound of vehicles entering / exiting the tunnel (or idling engines of queuing buses).

For these reasons, I do not consider the permanent effects on visitors to the Routeburn Track will be minor. Such effects could be sufficiently remedied and reduced through careful and detailed design and construction methods, or through re-configuration of either the tunnel or the eastern end of the Routeburn Track. The application does not currently contain such measures or sufficient detail.

Protection and Management

Measures to remedy or mitigate such effects might include the following:

- Planting, as proposed in the application, to redefine the edge of the clearing so that the tunnel approaches are no longer part of the clearing. Such planting would be carried out prior to construction;
- Reconfiguring the construction plans to restrict views into the construction area from Routeburn Road. (Plan C202 shows the excavation being wider during construction, and subsequently back-filled);
- Eliminating the proposed bus park proposed adjacent to Routeburn Road. Although some planting is shown between it and Routeburn Road, the bus park would still be obvious from the road. It appears from Plan C203 to extend very close to (if not into) the adjacent stream. A less obtrusive measure might be for buses to queue on the carriageway itself rather than in a separate bus park which has a layout more characteristic of urban contexts;
- Consideration be given to relocating the Routeburn visitor shelter (and the start / finish of the Routeburn Track) to the separate clearing at the road end near the 'historic' shelter. There are obvious disadvantages associated with such a move because it would mean abandoning recent investment, would separate the visitor shelter from the swing bridge that marks the 'real' start / finish of the track, would result in two competing buildings in the road end clearing, and would require an extension of the track along the banks of Route Burn (in order to avoid walkers having to use the road). However, it would increase the separation between the tunnel and users of the Routeburn Track; and
- It is noted that effects on the park at the eastern end of the tunnel could be avoided altogether by extending the tunnel a further approximate 1.7km (15% of the current length) so that it intersected Routeburn Road outside the park – albeit with obvious costs.

Some widening of the Routeburn Road will be required, which will involve removal of beech forest along the road edge between the National Park entrance and the portal, a distance of approximately 2.8km. The road will also be chip sealed. However, as with the Hollyford Road I understand these matters would be addressed as part of a separate consent application.

CONCLUSIONS

Values described in Te Wahipounamu Statement of Outstanding Universal Value' include the almost intact natural wilderness and scenic beauty of South West New Zealand, with only traces of human influence in peripheral areas.

A tunnel will necessarily detract from such values to a degree. However the degree of effect on the integrity of the World Heritage Area will be relatively minor because the ends of the tunnel are adjacent to existing public roads in areas where there is existing human presence.

The works at each end of the tunnel also have the potential to detract from the natural and scenic landscape values within their more immediate surroundings, and on the integrity of the landscape values.

At the west end the most significant effect will be the spoil disposal which will introduce an artificial landform over an area of approximately 5ha and up to 7.5m high. Such works will have effects on naturalness values described in the SOUV, including effects on landform, natural appearance, and the naturalness of the Hollyford River.

At the east end the most significant effects will be on visitor experience of the natural landscape because of the proximity of the eastern tunnel portal to the start / finish of the Routeburn Track.

In both instances, the application as presented would potentially have more than minor effects. The effects could be sufficiently reduced through more detailed and careful design. Such attention is reasonable given the nature of the values described in the SOUV and the need for 'management and protection' of the values.

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