



wildland consultants ltd  
fiordland link monorail | landscape audit

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# 1 Purpose of Report

Morgan+Pollard Associates have been commissioned by Wildlands Consultants Ltd to undertake a landscape audit of the Riverstone Holdings Ltd Concession Application to the Department of Conservation for a monorail and mountain bike track through approximately 30 km of conservation land extending from Mavora Lakes (Kiwi Burn) to Lake Te Anau (Te Anau Downs).

The concession application and related Environmental Impact Assessment has been prepared by Mitchell Partnerships and it includes specialist's reports on engineering, ecology, noise, landscape, traffic management and recreation planning. The specialist's reports are essential components of the applicant's EIA.

This landscape audit assesses the landscape issues pertaining to the EIA with a particular focus on the landscape effects as described and illustrated in the Fiordland Link Experience: Landscape Effects Report prepared by Stephen Brown Environments Ltd. Landscape effects include but are not limited to views and visibility therefore the landscape audit also discusses landscape effects/ impacts arising from matters within a number of the various reports, plans and attachments to the concession application.

## 2 Glossary of Abbreviations Used in this Report

Department of Conservation	DoC
Environmental Impact Assessment	EIA
Resource Management Act 1991	RMA
Outstanding Natural Landscape(s)	ONL
Riverstone Holdings Ltd	RHL
Morgan+Pollard Associates	MPA
Wildland Consultants Ltd	WCL
Stephen Brown Environments Ltd	SBEL
Boffa Miskell Ltd	BML

## 3 Background

The idea for a light rail journey between Queenstown and Te Anau was first raised in the 1980's. In 2003, RHL applied to DoC for a concession to construct and operate a monorail through DoC land. A year later RHL provided a draft EIA in support of the application. The monorail route was subsequently amended and in August 2006 a new EIA was submitted by Mitchell Partnerships for RHL to DoC. The ecological and landscape components of the EIA were audited by

Wildlands Consultants Ltd and they were found to be deficient in content and detail to the extent that the effects/ impacts of the proposal on ecology and landscape values could not be fully or accurately assessed. The audit of the Landscape, Natural Character and Visual Amenity report prepared by Boffa Miskell Limited involved Joby Barham of Wildland Consultants Limited and Ralf Krüger of MPA. They co-audited the project; Mr Krüger peer reviewed Mr Barham's drafts and provided advice on amendments.

In November 2009, RHL applied to DoC for a concession to construct and operate a monorail and construct an access track. This new application included a revised alignment for the monorail and the inclusion of the construction and maintenance track to be retained as a mountain bike track. The application therefore included a new/revised EIA prepared by Mitchell Partnerships and a completely new landscape assessment report prepared by Stephen Brown Environmental Limited. The new/revised alignment and the inclusion of a separate construction track and spur tracks generate a suite of engineering, ecological, recreational and landscape issues.

## **4 The Proposal: “The Fiordland Link Experience”**

Riverstone Holdings Limited propose to develop an alternative tourist experience for those wishing to travel from Queenstown to Te Anau - and beyond to Milford Sound. The proposal called “The Fiordland Link Experience” includes a catamaran crossing of Lake Wakatipu, a 4WD ‘road’ trip through the Von Valley to Mararoa River and a monorail journey through beech forest and river valleys between Lake Mavora and Te Anau Downs.

The application for concession identifies a corridor of land traversing the Snowdon Forest Conservation Area - public conservation land - along a distance of approximately 29.5 km from the Kiwi Burn car park at Mararoa River to Retford Stream bordering Te Anau Downs station. The proposed route travels along river flats, crosses major rivers, streams and gullies and traverses moderate to steep hillsides. The route is overwhelmingly confined within mid to old age beech forest; however in places it does travel along open areas of grassland such as the Kiwi Burn basin and the Upukerora River flats. In order to provide sufficient room to ‘accommodate’ the monorail track and the separate access track, as well as allow for ‘uncertainties’, a generous width to the corridor has been applied for.

The proposal identifies a 200m - in places 300m - wide corridor for the purpose of providing sufficient leeway for the formation of a separate vehicle track to enable the construction, management and maintenance of the monorail track, for the monorail track itself and for access to manage and maintain the ‘related corridor’. The total area of DoC land identified for the corridor exceeds 600 ha of forest, grassland basins and river flats.

The monorail route is primarily located within Snowdon Forest which is within the Te Wāhipounamu World Heritage Area- Fiordland. The World heritage area has been described as an encompassing outstanding landscapes/natural features.<sup>1</sup>

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<sup>1</sup> BOFFA MISKELL LIMITED - Southland Regional Landscape Assessment - August 1997

## 5 EIA, Audit Process and Objectives

### 5.1 EIA: Purpose and Definitions

The concession application to DoC is conducted prior to and outside of the resource consent application as prescribed in the Resource Management Act 1991.

EIA have been described as: *“a process of consciously and systematically identifying the direct or indirect effects, including cumulative effects of a proposed policy, plan or project, prior to the commencement of that activity. But EIA is more than an impact identification tool and in many definitions there are common and recurrent themes relating of prediction, identification of impacts, mitigation, alternatives, participation and monitoring that when considered together leads to improved outcomes for the environment (MfE 1999), (Gilpin 1995)”*.<sup>2</sup>

The Ministry for the Environment suggests that EIA can also achieve a wider range of benefits including helping to *“test project feasibility and design”*.<sup>3</sup>

The DoC reference resource for assessing consent application notes that *“Impact Prediction could clearly identify effects related to the proposal, assess the likelihood of occurrence and detail their potential magnitude.”*<sup>4</sup> The DoC report makes reference to studies that suggest that the applicants could consider – among other matters – *“relative magnitude”*.

Further the DoC resource report states in relation to Impact Evaluation that: *“if the physical conservation values are rare or vulnerable and the impact prediction tests indicate that those values are not resilient to the impacts of the proposed activity then, in all likelihood, the impact of the operation on those values will be significant.”*<sup>5</sup>

EIA invariably incorporate a level of ranking related to the effect. The words *‘significant effect’* commonly appear and the DoC reference resource for concession staff notes that, *“significance often refers to an effect that is outside the limit of acceptance which then must be avoided, remedied or mitigated back below this ‘acceptable limit’*.”<sup>6</sup>

*“Alternative designs, locations or timing of activities are fundamental impact mitigation measures. Alternative locations are a mandatory consideration for applications that require a lease such as buildings.”*<sup>7</sup>

The Kiwi Burn terminal, the Te Anau Downs terminal and the monorail itself are all structures that need to be assessed as buildings.

The architecture report by Salmond Architecture Ltd states:

*“The buildings have been designed to specifically address the issues raised by DoC and their consultants.*

*The proposal for the monorail terminals show buildings that are an appropriate form and scale for their locations.*

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<sup>2</sup> THOMPSON, A - Environmental Impact Assessment and Audit Best Practice, no date, page 5

<sup>3</sup> ibid page 6

<sup>4</sup> ibid page 10

<sup>5</sup> ibid page 11

<sup>6</sup> ibid page 5

<sup>7</sup> ibid page 14

*Materials are coloured to be recessive in the landscape, using a combination of natural materials and light and shadow to ensure the buildings have a minimal visual impact on the surrounding area.*

...

*Building services have a goal of neutral impact on the environment and are the subject of a separate engineering report.*

*The design is flexible enough to allow for expansion, additions and variations in height and siting as required ...<sup>8</sup>*

## **5.2 Audit Process and Field Work**

The EIA for the Application for Concession relates to a revised proposal and it addresses some, but not all, of the matters/ deficiencies raised in the initial audit process. The EIA includes new and revised reports on engineering, ecology and landscape. The new landscape report differs in approach, methodology and content from the original BML landscape assessment. SBEL have visited the site, undertaken a new landscape assessment and prepared a new landscape report.

The new landscape report has been audited by Alan Cutler of MPA and peer reviewed by Ralf Krüger. From earlier work undertaken for the initial WCL audit, Ralf Krüger is familiar with the proposed monorail corridor and the broader landscape.

The audit has involved the following steps:

- November 2009: Alan Cutler read the Application and background reports to gain an overview and broad understanding about the proposal
- 2 December 2009: Alan Cutler flew along the route in a helicopter and landed at the Kiwi Burn Road end, Kiwi Burn hut and the Te Anau Downs boundary to the Public conservation land
- February 2010: Alan Cutler read the Landscape Effects Report by SBEL prior to the ground survey and walk over the route
- 17 & 18 February 2010: Alan Cutler and Will Parker (Opus engineer), Kelvin Lloyd (WCL ecologist), Bronek Kazmierow (recreation consultant to DoC), Chris Visser (consulting project co-ordinator for DoC) and Beth Masser (DoC Te Anau Field Centre Public Relations Manager) walked most of the proposed monorail route. Alan, Will and Beth walked from the Kiwi Burn car park through to the Upukerora bluff. After a camp near the Whitestone River crossing Kelvin, Bronek and Chris returned to the Kiwi Burn car park via the alternative tramping route proposed by the applicant.
- March 2010: Alan Cutler undertook desktop analysis of the application by Mitchell Partnerships with particular emphasis on the detailed reports and plans relating to engineering, ecology and landscape
- March 2010: Alan Cutler prepared a draft landscape audit report
- March - April 2010; Ralf Krüger peer reviewed the draft audit and corrections and amendments followed
- March – reading of other audit reports including; recreation, ecology and engineering
- late April 2010: final draft was circulated to Kelvin Lloyd of WCL for comment and to DoC
- early May 2010: the final audit report prepared

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<sup>8</sup> SALMOND ARCHITECTURE LTD, Fiordland Link Experience, Riverstone Holdings, Monorail Terminal buildings for Kiwi Burn and Te Anau Downs, page 2

### 5.3 Scope of Technical Audit

The internal DoC reference resource; Environmental Impact Assessment and Audit Best Practice – A Thompson has been considered and the following key matters relating to the landscape audit identified:

- A - Are there any Information gaps?
- B - Is the assessment methodology appropriate and reliable?
- C - Is the assessment of impacts accurate?
- D - Has the report identified opportunities to remedy potential adverse effects or mitigate effects?

Gaps in information are discussed in a general way in Section 5. Gaps in landscape information, the methodology for landscape assessment, the accuracy of the assessment of impacts and the potential to remedy or mitigate adverse effects are discussed in Section 6.

To ensure that DoC have received the necessary information to make a decision on the application this report addresses the following topics:

- **Professional Standard** – has the report been produced to an appropriate professional standard?
- **Validity** – Is factual information correct?
- **Landscape Context and Character** – have the experts used the most appropriate methods to analyse the landscape?
- **Landscape Values** - have landscape, natural character, heritage, and amenity values been appropriately identified?
- **Impact Identification** – have the experts identified the actual and potential impacts of the proposal?
- **Impact Prediction** – have the experts identified the impacts correctly and assessed the significance of them?
- **Dealing with Impacts** - can the effects be avoided, remedied, or mitigated?
- **Alternatives, Mitigation and Monitoring** – has the expert proposed measures to avoid, remedy, or mitigate each significant impact and will these reduce the impact to below acceptable standards?
- **Risks** – what risks and uncertainties are there for DOC?

Section 6 of this report deals with each of the above topics with regard to the landscape effects report by SBEL. The audit of the above topics revealed gaps in information and this report therefore inevitably includes a level of repetition. Throughout the audit process it became apparent that gaps in technical/ detailed information were exacerbated by the methodology adopted for the landscape assessment. There exists a clear feedback loop/ interrelationship between deficiencies in information, the method used to assess landscape effects and subsequent limitations related to the assessment of landscape effects.

## 6 Key Matter: Information Gaps

### 6.1 General Comments

The primary difficulty in providing an accurate assessment of the impacts lies in the fact that the precise alignment for monorail track, the construction/ mountain bike track, the positions of the spur tracks and the tracks that will be retained for maintenance, have not been resolved. While a potential alignment of the monorail track has been 'flagged' the application identifies a 200m wide corridor, extending to 300 meters wide at the Upukerora Bluff, so as to enable site specific variations in the position of the monorail track and the separate construction, maintenance and mountain bike track.

The Preliminary Engineering Assessment states:

*A 200m wide easement is being sought for the monorail route. This width would accommodate the monorail and the construction/mountain bike track, and has been proposed for the following reasons:*

- *To provide a visual and experiential separation from the monorail, expected to be 70-80m in flat terrain.*
- *The mountain bike track could be on either side of the monorail, but is intended to be on the uphill side in sloping terrain.*
- *To provide some flexibility to suit topographic features, such as streams, gullies, steep banks etc.*

*As the monorail design is further developed, the optimal construction/mountain bike track location can be determined.<sup>9</sup>*

The exact position of the two primary elements, individually or in tandem, will have a physical and visual impact that varies to a significant degree. Two hundred meters is a substantial width and along certain sections of the route moving the alignments across this width would result in a significantly different impact on landscape, ecology and recreation values. Furthermore depending on the final alignment the impacts of 'vegetation management' within the 200-300m wide corridor will impact to varying degrees on ecological and landscape values. Potential impacts arising from changes to the 'flagged' alignment include changes to the forest 'structure', canopy, health and sustainability. Both, short and long term impacts on views and visibility will arise from changes to the alignments.

### 6.2 Engineering

#### 6.2.1 The 'Corridor'

The Preliminary Engineering Assessment acknowledges further work is required as follows:

*Further work will be required as the monorail proposal develops. Key aspects are:*

- *Monorail alignment, to be developed in conjunction with a supplier and a ground model.*
- *Access/mountain bike track standards and locations to suit construction and operation.*
- *Geotechnical investigation, especially in the areas of more difficult topography.*

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<sup>9</sup> OPUS; Fiordland Link Experience - Preliminary Engineering Assessment for Monorail Proposal – October 2009 Section 6 The Monorail Envelope page 34

- *An environment management plan including further development of erosion and sediment control measures.*
- *Development of monorail operational requirements*<sup>10</sup>

The engineering report identifies three sections where further survey and liaison with DoC would be necessary to determine the best or most feasible route within the corridor.<sup>11</sup> This would be in the vicinity of Kiwi Burn hut, Ascension Creek prior to the confluence with Upukerora River and at the 'Bluff Slip' opposite Takaro Lodge. The precise alignment of the monorail and the construction tracks through these three sections will impact to varying, and potentially significant, degrees on visual and landscape values.

### **6.2.2 Construction Issues**

The engineering report notes that, "... further specialised geotechnical investigations will be required as the project progresses"<sup>12</sup>. Furthermore the report states:

*Based on the investigations undertaken to date, we consider that the geotechnical conditions are suitable for construction of the monorail. However, the ground conditions will have a very significant effect on design, construction and cost. Further specific investigations will be required as the design is developed.*<sup>13</sup>

It is probable that design and construction changes arising from further geotechnical investigations will impact to varying degrees on visual and landscape values.

The report states:

*The access required during construction parallel to the monorail alignment needs to be of sufficient standard to provide access along the complete monorail route for a large amount of equipment for construction of the foundations and piers for the monorail.*<sup>14</sup>

It is evident from the engineering report (Section 5.4 and others) that the access track will have to be formed to a standard that can enable use by 4WD trucks and the 4WD support vehicles. Because these long wheel-base, double cab utilities do not have particularly tight turning circles, increased curve radii are to be expected. Furthermore "... travelling to several construction fronts from each depot ..." <sup>15</sup> involves the 4WD vehicles towing fuel tankers and compressors. Such vehicles will have a reduced ability to turn around corners as well as being able to turn around at the end of the working day. This ability will have to be catered for throughout the entire route. The construction operation will also necessitate the formation of passing bays to enable vehicles moving to and from the construction front to pass. Such bays will involve levelled hard fill areas approximately 6.0m wide by 12 m long. Formation with a 12 tonne excavator will inevitably result in a substantial amount of earthworks to form a track that can cater for such vehicles.

The proposal also requires the construction of spur 'tracks' to access the monorail route. The engineering report describes these as follows:

*A number of 3m wide spur tracks would be required to gain access to the monorail during construction of foundations and piers. It is envisaged that one spur track*

<sup>10</sup> ibid page 1

<sup>11</sup> ibid Section 4.3 page 9-12

<sup>12</sup> ibid Section 4.6 page 13

<sup>13</sup> ibid Section 4.6 page 18

<sup>14</sup> ibid Section 6.3.1 page 36

<sup>15</sup> ibid Section 5.5.1 page 31

would provide access to a number of foundations (10-15) that can be constructed linearly (i.e. from the farthest foundation back) without affecting overall project progress.<sup>16</sup>

The tracks constructed for the anticipated construction vehicles will inevitably have adverse effects/ impacts that are considerably greater than that generated by the formation of a single mountain bike track. The formation of a mountain bike track would only require a 1.5-2.0m wide surface. By doubling this width and in places quadrupling the width as well as catering for the generous turning requirements the adverse effects/ impacts will be significantly greater. It is considered that the “residual track” will be more akin to a gravel road than a track.

The engineering report includes typical cross sections. The typical side slope drawing (Sheet 3 revision R2) shows a maximum slope/ cross fall of 25°; however sections of the route would traverse hillsides that are considerably steeper. From the walk along the route it is evident that significant areas such as Ascension Creek and ascending to the terrace west of the Whitestone River crossing have slopes pitching up to 33°. Further work and detailing will be required before an assessment of the impact of the monorail and the construction track through these steep sections can be accurately assessed.

### **6.3 Vegetation and Ecology**

The ecological report prepared by Mitchell Partnerships includes a table identifying tasks and gaps in the preceding report, requiring addressing by a new or modified assessment.<sup>17</sup>

The ecological report states that “... the main effect of the proposed development is the clearance of forest and tussock vegetation and the creation of two lineal features in the landscape, the monorail and the construction track.”<sup>18</sup> Because the application is for a wide corridor there are unknowns. The ecological report acknowledges that “... given that the exact route will be subject to further revision within this corridor it is necessary to define criteria for selecting this final route.”<sup>19</sup> The list of ‘criteria’ will facilitate the retention of mature trees and the forest canopy and reduce adverse effects on ecological values. The ‘criteria’ provide the basis for a set of conditions that would be essential for the protection of both ecological and landscape values. Given ‘realities’ of balancing engineering issues, costs considerations and the diversity and quality of existing habitats, the ecological criteria for the final route will inevitably be tested.

#### **6.3.1 Vegetation Clearance for Construction**

The ecological report provides an estimate of the extent of vegetation; forest and grassland, throughout the corridor that may need to be cleared. While these are approximate estimates, the figures provide an indication that enables the overall scale of the operation to be considered. The report acknowledges that ongoing discussion with DoC is required as to the most appropriate way to manage the slash/ debris arising from vegetation clearance. While this matter has ecological implications, the retention or removal of cut material within the forest has

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<sup>16</sup> ibid Section 6.2 page 35

<sup>17</sup> MITCHELL PARTNERSHIPS - Terrestrial Ecology of the Proposed Fiordland Monorail Route – October 2009 Table 1 page 76

<sup>18</sup> ibid Executive Summary page i

<sup>19</sup> ibid section 8 page 96

potential implications for views into and through the forest from the monorail carriages and the mountain bike track.

### 6.3.2 Rehabilitation and Revegetation

The engineering report acknowledges that "... more consideration of the best approach to backfilling, rehabilitation and restoration is required including inputs from specialists."<sup>20</sup>

The engineering report continues:

*The access required during construction along the monorail alignment needs to be of sufficient standard to access approximately 5-8 piers in each direction. The amount of ground disturbance can therefore be limited to that required to create a working track for equipment. Track construction would require:*

- Strip topsoil to side for later reinstatement.
- 3m wide metalled pavement where required.

*The construction route on the monorail alignment would be completely reinstated after construction of the foundations and piers. The reinstatement would be able to proceed as soon as the 10-15 foundations and piers accessed from the spur track are completed.<sup>21</sup>*

This statement is considered to be incorrect because 'complete reinstatement' cannot be achieved. It is evident that if trees and large shrubs have been removed during the formation of the monorail track then they will not be replanted, nor will new trees be planted or trees allowed to naturally growing back within the 'safe operating corridor' for the carriages.

The ecological report acknowledges that there are unknowns as to the speed and ability of the canopy to reform.

To fully assess the impact and be certain in predictions, a detailed alignment of the corridor(s) is required.

### 6.3.3 Tree Removal for Operational Safety

The ecological report acknowledges that "... the potential for the long narrow canopy gap to increase wind-throw in the surrounding forest will require frequent monitoring and preventive measures such as removal of damaged or unbalanced trees."<sup>22</sup>

The engineering report notes that tree fall is a key issue related to both construction and operation. Section 4.4 of that report states:<sup>23</sup>

*There has been a large amount of tree fall at the site, a significant amount of this seems to have occurred recently. It appears to have been caused by a combination of wet ground, snow and wind.*

*The risk of a Beech Tree falling onto the monorail beam needs to be managed, and a number of measures can be considered such as:*

- Providing a realistic tree clearance width including "at risk" trees beyond the minimum clearance width.

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<sup>20</sup> OPUS; Fiordland Link Experience - Preliminary Engineering Assessment for Monorail Proposal – October 2009 Section 5.8 Rehabilitation page 33

<sup>21</sup> ibid Section 6.33 page 36

<sup>22</sup> MITCHELL PARTNERSHIPS - Terrestrial Ecology of the Proposed Fiordland Monorail Rout – October 2009 Executive Summary page i

<sup>23</sup>OPUS; Fiordland Link Experience - Preliminary Engineering Assessment for Monorail Proposal – October 2009 Section 4.4 page 12

- *Establish a process for identification, assessment and management of falling risk trees.*
- *Developing contingency plans, such as beam repair or replacement.*
- *Operational systems, for example remote detection and/or visual checking of the route on a daily basis.*

Removal of vegetation, beyond the monorail alignment but within the 200m corridor, which poses a safety risk, needs to be clarified by defining the parameters of an “at risk” tree. Removing unsafe trees could significantly increase the area of vegetation removal and have adverse effects on landscape, natural character, and amenity values. The ecological report discusses the need for regular inspections and liaison with DoC and the development of an operations management plan.

## **6.4 Landscape**

Section 6 of this report focuses on the landscape report; however the following preliminary and general observations are made. In the absence of a Table of Contents it is difficult to determine the underlying structure and to some extent the approach, logic and methodology adopted for the landscape report.

### **6.4.1 Previous Studies and Reports Appended to the EIA**

The landscape report does not make any reference to the previous landscape assessment report prepared by Boffa Miskell Limited nor does it make specific reference to the gaps in the BML report that were identified via the previous WCL audit. This is a different approach to that adopted and addressed in the ecological report. The landscape consultant appears to have made the presumption that this new landscape report is entirely *de novo*; however the ‘landscape’ is the same and most of the proposal is similar to and comparable to that assessed by BML. The absence of any reference to the preceding BML report and the related WCL audit constrains the ability of the EIA to comprehensively address potential landscape effects.

The landscape report appears to give limited, if any, acknowledgement and cross-referencing to the other specialist’s reports that form part of the EIA and the Application for Concession. In the absence of detail in the landscape report, related to the structure, construction and ecological impacts it would have been of considerable benefit if the landscape report had provided a higher level of cross referencing to the other reports.

### **6.4.2 Statutory Framework**

The landscape report does not make any reference to the RMA and in particular section 6b relating to Outstanding Natural Landscapes. As noted above, BML have identified the area that is within the Te Wāhipounamu World Heritage Area to encompass outstanding landscapes/natural features.

To assist in clarifying the validity of the Outstanding Natural Landscape classification, as part of this audit a brief assessment of the landscape has been undertaken. The meaning of “outstanding”, “natural”, and “landscape” has been traversed in Environment Court decisions.<sup>24</sup> The Court has noted that: *“While an outstanding natural landscape (“ONL”) is usually so obvious*

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<sup>24</sup> Wakatipu Environmental Soc Inc v Queenstown Lakes DC [2000] NZRMA 59 (EnvC)

*in general terms that there is no need for expert analysis, such analysis is required to determine where the ONL ends.*"<sup>25</sup>

Furthermore the Court has accepted criteria for the assessment of ONL based on the Amended Pigeon Bay Criteria. The criteria (or better factors) for assessing a landscape include, but are not limited to:

- A The natural science factors — geological, topographical, ecological, and dynamic components of the landscape;
- B Its aesthetic values, including memorability and naturalness;
- C Its expressiveness (legibility) — how obviously the landscape demonstrates the formative processes leading to it;
- D Transient values — occasional presence of wildlife or its values at certain times of the day or year;
- E Whether the values are shared and recognised;
- F Its value to tangata whenua;
- G Its historical associations.

These are now applied to the subject landscape.

### **A. Natural Science Factors**

The landscape includes significant components - geological, topographical and ecological – exhibiting natural science values. The strength of the landform and indigenous forest vegetation/habitat is such that the landscape is imbued with a significant degree of naturalness. The inclusion of river valleys, tussock grassland basins and interrelationship with wetlands contributes to the natural science values. Likewise, ecological values are very high.

### **B. Aesthetic Values**

Aesthetic values attributable to the landscape are extremely high. The combination of a forested hillsides and valleys with the open grasslands, the river corridors and the open tops provide a highly attractive setting. The forest, valleys and mountain tops display the effects of the seasons and they arouse the senses with their wildness and sense of remoteness. At a more intimate level, the river gorges and tussocky basins contribute towards the beauty, the wildness, the naturalness and the outstandingness of the landscape. The aesthetic values are considered to be high.

### **C. Expressiveness (Legibility)**

The landscape expresses the formative processes that shaped it. The rounded hillsides and terraced river valleys reflect hydrological processes at work. Vegetation patterns of forest, tussock grassland and wetlands also reflect natural processes and climatic variations. The landscape is moderate to highly expressive and legible.

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<sup>25</sup> Wakatipu Environmental Soc Inc v Queenstown Lakes DC EnvC C129/01,

## D. Transient Values

There is no doubt that this landscape is imbued with transience. The sub-alpine climate influences the appearance of the environment at a broad scale as well as at a fine level. Seasonal variations in vegetation also bring about changes in bird life. During winter valleys may be covered in snow and the forest canopy is relatively open. During summer the tussock grasslands become dense swards and darkening forest canopy attracts birds and insects. There is no doubt that the landscape exhibits transient qualities.

## E. Shared and Recognised Values

The landscape is visited, experienced and appreciated by locals, New Zealanders and international tourists. Summer is undoubtedly the most popular time; however during autumn and winter hunters visit the area. The Mararoa River gorge, located adjacent to the Kiwi Burn terminus - is frequented by kayakers and the short walk to the Kiwi Burn Hut is a popular family tramp. While not heavily visited the area is used and appreciated by many people and "... *its intact backcountry/ remote values (free of high levels of use experienced elsewhere in the Te Anau catchment) are of regional value for mainland Southland*".<sup>26</sup>

## F. Value to tangata whenua

It appears that these values relate to a much bigger area - being the Te Wāhipounamu World Heritage Area - than the landscape that is traversed by the proposed monorail route.

## G. Historical Associations

As above, it appears that these values are related to a bigger area than that traversed by the proposed monorail.

## Conclusion ONL Assessment

It is concluded that the landscape throughout the Snowdon Forest area and the proposed monorail route qualifies as an ONL.

The WCL ecological audit reviews the assessment of significance of ecological values and it notes that the applicant's ecological assessment is incorrect in a number of areas. The attached quote from the WC audit also identifies that the 'landscape' impacts (ecological, intrinsic, cultural or amenity values) arising from the removal of indigenous vegetation is matter that needs to be considered.

*The report states that the Southland District Plan does not identify criteria for the assessment of ecological significance, but this is untrue. The Southland District Plan includes a rule (HER3) governing clearance of indigenous vegetation which does not meet permitted activity standards. HER3(5) describes the ecological matters that the Council will have regard to when considering discretionary consents for clearance of indigenous vegetation.*

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<sup>26</sup> BRONEK KAZMIEROW –Technical Audit Report – Recreation 18 March 2010 – Section D page 4

- (a) *The significance of the affected indigenous vegetation or habitat of indigenous fauna in terms of ecological, intrinsic, cultural or amenity values, and the effects of the proposed activity on these values.*<sup>27</sup>

The SBEL assessment focuses on legislation, policy, and definitions specific to management of the Public conservation land. The report appears to have been strongly influenced by the four 'Strategic approaches'<sup>28</sup> that identify "promotion", "economic prosperity", "collaboration" and "sharing"; rather than focusing on conservation and preservation.

*Finally, it is also important to bear in mind the relevance of the landscape experience potentially offered by the Fiordland Link Experience proposal relative to other landscape 'experiences offered visitors and tourists to the area around Queenstown and Central Otago in general.*<sup>29</sup>

It is assessed that the above quote indicates that the landscape report has adopted an approach that is not consistent with an impact assessment – the approach demonstrated borders on promotion. It is irrelevant what the proposal aims to provide when compared with other experiences that may be available to tourists. What is relevant is an objective assessment of the implications this development could have, with regard to the conservation and preservation of the natural resources - the outstanding natural landscape of the area traversed by the proposed corridor.

#### **6.4.3 Construction and Rehabilitation Detail**

While the ecological report includes significant information about the construction and rehabilitation the landscape report is particularly 'light' on these matters.

The estimated areas of forest and grassland that will be cleared so as to enable construction are significant. Furthermore the estimates for the numbers of saplings, small trees, moderate trees, large trees and big trees are substantial. The ecological report states that "... removal of trees along the monorail corridor is likely to open up a patchily lineal canopy gap."<sup>30</sup> Given that the total area is substantial (26.3 ha) and the numbers of trees affected is so large - removal of approximately 20,000 trees, excluding saplings - there is clearly potential for adverse landscape effects. The landscape report however skims over potential effects/ impacts of tree removal at a detail level and potential effects of vegetation clearance at a broad scale.

The WC audit notes: "*In our opinion it is highly likely that tree felling and removal will cause significant damage outside the minimum clearance areas, because tree crowns will often be of greater width, it will be difficult to constrain all tree fall within the minimum clearance areas, and because construction activities will affect the roots of trees adjacent to the minimum clearance area. Additional damage would be caused by moving felled trees into the surrounding forest. The potential for additional damage from tree-felling operations has been significantly underestimated in the MP report.*"<sup>31</sup>

The WC audit report also notes that:

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<sup>27</sup> K LLOYD: Wildland Consultants – Fiordland Link Experience – Audit of Ecological Assessment April 2010 Section 4.4

<sup>28</sup> STEPHEN BROWN ENVIRONMENTS LTD - Fiordland Link Experience – Landscape Effects Report. Aug 2009 page 7

<sup>29</sup> ibid section 2.2 page 7

<sup>30</sup> MITCHELL PARTNERSHIPS Terrestrial Ecology of the Proposed Fiordland Monorail Route – October 2009 Section 7.3.1 page 78-80

<sup>31</sup> K LLOYD: Wildland Consultants – Fiordland Link Experience – Audit of Ecological Assessment April 2010 Section 4.5.1 page 10

*“On side slopes, there is potential for the construction track, spur roads, and monorail to have cumulative effects on the forest canopy, because the construction track will be closer to the monorail (20-30 m), there will be less flexibility as to track and monorail routes, and there will be greater potential for instability of cleared areas. As a detailed monorail route plan has not been prepared, and detailed geotechnical investigations have not been undertaken, the effects of this are uncertain.”<sup>32</sup>*

In conclusion the WC audit notes that; *“We consider that the report significantly underestimates the potential for creation of large canopy gaps along the route.”<sup>33</sup>*

The WC audit summary also concludes that; *“[l]oss of large red beech trees and tussock grassland cannot be remedied, and if unable to be avoided, will need to be mitigated, for example by protecting and/or enhancing similar unprotected ecosystems. Statements on rehabilitation lack detail and are unsubstantiated by supporting evidence. Rehabilitation will pose significant practical difficulties in open habitats. Indigenous grassland rehabilitation will be practically impossible to implement, and exotic dominance of disturbed sites in these grasslands is virtually guaranteed.”<sup>34</sup>*

The ecological report also mentions the possible need for toilets along the mountain bike route; however the landscape report mentions neither this or toilet facilities and the management of sewerage arising from the Kiwi Burn terminus building. The ecological report discusses the effect of the Kiwi Burn terminal and car park on vegetation and it recommends that a detailed landscaping and revegetation plan will be required. The landscape report is limited in detail as to the impacts arising from the terminus and while it refers to *“... screening by mounding and low tussock/ shrub planting ...”<sup>35</sup>* it makes no mention of a requirement of a landscape plan to screen and mitigate adverse visual effects.

The ecological report includes a section on the “Effects of Operating the Monorail”. This section discusses the numbers of trips, the volume of passengers and average speeds as well as the noise from the monorail and use of the mountain bike track. While this information is pertinent to assessing landscape effects the landscape report fails to include this information. The movement, sound and activity of large numbers of people will affect the landscape in a different way – and additional to the monorail itself.

#### **6.4.4 Views, Visibility and Perception**

The monorail route is physically – and preferably visually - separate from the construction/ access track and the proposal is that the ‘vehicle’ track shall be retained as a mountain bike track. The engineering report describes the separation as follows:

*The 3m wide mountain bike track would also be located to provide a visual separation from the monorail. At this stage this is intended to be 20-30m on sloping ground with the track generally on the uphill side, and 70-80m in flat country.”<sup>36</sup>*

Furthermore the engineering report states:

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<sup>32</sup> K LLOYD: Wildland Consultants – Fiordland Link Experience – Audit of Ecological Assessment April 2010 Section 4.5.1 page 10

<sup>33</sup> ibid Section 7

<sup>34</sup> ibid Section 7

<sup>35</sup> STEPHEN BROWN ENVIRONMENTS LTD - Fiordland Link Experience – Landscape Effects Report. Aug 2009 page 11

<sup>36</sup> OPUS; Fiordland Link Experience - Preliminary Engineering Assessment for Monorail Proposal – October 2009 Section 6.2 page 35

*At stream crossings, the main track or spur track would make use of light bridging units spanning bank to bank, thereby minimising disturbance to the stream itself. At the major rivers, permanent lightweight bridges will be required for mountain bikes.<sup>37</sup>*

It is evident, from walking the route, that visual separation throughout the open areas such as the Kiwi Burn Basin and the Upukerora River flats will not be possible and throughout areas of 'open' beech forest it will also be difficult to achieve visual separation of the monorail train and sections of the rail from the mountain bike track. It appears priority to avoid the users of the monorail seeing the mountain bike track or any mountain bikers; however the screening of the monorail and/ or the monorail carriages from the mountain bike track is not a prerequisite for the proposal. This is first and foremost a proposal for a monorail and the mountain bike aspect is a 'tack on' or a perceived opportunity arising from the need to form a construction track.

The landscape report comments on the visibility and potential landscape effects arising from the proposed Te Anau Downs Terminus that is located within Fiordland National Park. The report notes the terminus will not create an entirely new element because it will appear in context with the existing cluster of buildings, the lodge and the related node of development. The visibility of the rail crossing SH94 is perhaps the most critical issue; however the landscape report concludes that the landscape impacts on the National Park would be at worst minor.

The architecture report by Salmond Architecture Ltd describes the buildings graphically and verbally and assesses that:

*"The buildings will be concealed from view from the approach except for a glimpse from the road to Te Anau. The terminal will be visible from the monorail as it crosses the road to the site.*

*Vehicles can be screened by the contours, vegetation and by some retaining behind the terminal building.*

...

*The exact siting for the Te Anau Downs terminal and its relationship to other buildings on the site will be confirmed when all aspects of the brief have been finalised and the site surveyed."<sup>38</sup>*

The report continues to state:

*"Concept design directly addresses the concerns previously expressed by DoC*

*The siting of the building in the landscape minimises its visual impact and is consistent with the surrounding rural land use.*

*The form and scale of the building are appropriately scaled with regard to other buildings in the landscape.*

*The materials for the building are natural and recessive in colour.*

*The building services will have neutral impact on the environment.*

*The design connects the building to the landscape in a sympathetic way."<sup>39</sup>*

The statements made by the architect with respect to the appropriateness of design concept and philosophy are accepted. However, the visibility assessment should have been left to the landscape architect. Because the exact siting has not been fixed – as stated above - an assessment as to the visual impact can only be incomplete until this has eventuated.

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<sup>37</sup> ibid Section 6.2 page 35

<sup>38</sup> SALMOND ARCHITECTURE LTD, Fiordland Link Experience, Riverstone Holdings, Monorail Terminal buildings for Kiwi Burn and Te Anau Downs, page 9

<sup>39</sup> ibid page 10

The landscape report acknowledges only limited visibility and perception of the monorail, the carriages and the construction/ mountain bike track. This limited acknowledgement is inconsistent with the level of visibility to these elements that will inevitably occur along parts of the proposed route; including but not limited to views from the existing Kiwi Burn footbridge, parts of the formed track to the Kiwi Burn hut, a large portion of the main clearing within the Kiwi Burn and substantial portions of the Upukerora River corridor.

The landscape report quotes Objective 3 of the Mainland South West Otago Conservation Management Strategy (CMS 2000) as follows (underlining added):

*To ensure that any proposal for a monorail (or other similar activities) avoids damaging important natural values including landscape features in this unit; and that any proposed route through Snowdon Forest is fully assessed for its effects on the existing backcountry walk-in and/or remote recreation opportunities of that area.*<sup>40</sup>

The landscape report does not acknowledge the presence of a trail, primarily but not exclusively used by hunters, that follows much of the route from the Kiwi Burn hut to the Whitestone River. The landscape report fails to mention or discuss the presence of and the potential views and visibility by hunters and trampers using this trail. The route is apparent on the ground, marked with permolat markers, shown on topographical maps, it is within the proposed corridor and it is closely aligned with the monorail route between the Whitestone to the Upukerora. In failing to mention or acknowledging the past, present and future users of these trails in this remote setting for tramping and hunting the landscape report has made a significant omission.

The report appears to downplay potential visibility and the devaluation of the 'remote' landscape setting for the recreational users of the Upukerora. This valley has a moderate level of users by hunters, fishers, trampers, mountain bikers and 4WD recreationalists. It is accessible by 4WD and there is a hut - Army Hut – a relatively short distance upstream of the point the proposed monorail would enter the Upukerora River flats.

The Engineering report states:

*Initial discussions with ecology, landscape and geomorphology teams regarding proximity of trees, alignment to maximise vistas and avoiding areas of instability. These issues are by no means completely resolved at this stage but have been considered where possible.*<sup>41</sup>

The landscape report does not include any reference to the 'maximising of vistas' from the revised route. While the landscape report includes a substantial section on the wider experience of visiting Milford Sound and Fiordland National Park it is notably absent on a rigorous assessment of the scenic views and the value of the views that may be experienced from the monorail route, or the 'mountain bike' track.

While the landscape report is very vocal on the advantages the proposed experience would have to offer to its users, it is not substantiating these by way of assessment. The report does not discuss views and/ or visibility from the train or the mountain bike track. It does not discuss how the forest would appear while in a carriage travelling at 70 km/hr through it, with trees 2-3 m either side of the track. It does not discuss the potential views while travelling through the forest

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<sup>40</sup> STEPHEN BROWN ENVIRONMENTS LTD Fiordland Link Experience – Landscape Effects Report Aug 2009 page 6

<sup>41</sup> OPUS; Fiordland Link Experience - Preliminary Engineering Assessment for Monorail Proposal – October 2009 Section 3.2.2 page 8

or those views that may be experienced from the open river sections. It does not discuss alternative routes that could enhance the scenic experience or mitigate adverse effects on the ecology and scenic values of the forest could an alternative route be available.

## 7 The Landscape Effects Report

The key gaps in the landscape report have been identified in the previous section. It is now the task to review the report's rigour, objectivity and professionalism as well as the relevant findings necessary to enable DoC to correctly evaluate the impact the proposal will have on this landscape.

It will become evident that the information gaps identified have lead to deficiencies both, in the methodological approach and the relevance of conclusion throughout the report. These deficiencies will be discussed, as they arise.

The following sections discuss matters that may be considered in the audit process. Structural information has been drawn from the publication "Environmental Impact Assessment and Audit Best Practice".<sup>42</sup> The underlined subtitles pose questions that are related to the matter to be considered.

### 7.1 Professional Standard

- has the report been produced to an appropriate professional standard?

#### 7.1.1 Format and Presentation Style

The landscape report starts with an Executive Summary; it then proceeds into the introduction and the core sections. No table of contents is provided. The Executive Summary includes highlighted sentences; however these are only partially linked to the chapter headings and sections within the report. Furthermore the order of paragraphs within the Executive Summary is different to the ordering of chapters and sections within the core document. The Executive Summary appears to elevate generalised conclusions related to tourist experiences and the journey to Milford Sound rather than focus on the landscape impacts of the proposed monorail and construction/ mountain bike track. Overall the inclusion of a table of contents is a significant omission that limits the report's user's ability to link the Executive Summary with the remainder of the report and follow the line and the logic of the landscape assessment report. In simple terms – the document is difficult to use.

The layout of photos and overall pictorial presentation for each of the landscape 'segments' is more akin to a promotional brochure than an objective record related to site survey and analysis of the landscape. None of the photos have a caption identifying the photo point, the direction of view or the primary features within the photo. While they are a package of attractively presented images this is not the purpose of the landscape assessment. The different sized images, blank spaces and strength of the logo in the bottom right corner divert attention from the content and subsequently the basis for each of the 'defined' landscape segments. An objective landscape report requires a more informative and neutral format.

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<sup>42</sup> THOMPSON, A; Environmental Impact Assessment and Audit Best Practice

Although a bibliography would have been helpful, it is considered that this is not an essential requirement.

### **7.1.2 Field Work and Assessment Process**

The landscape report does not describe how the 'site' was assessed; what time of year and the means that were used to visit the photo points and survey the corridor. There is no evidence describing what sections of the proposed monorail and construction track were inspected and/or surveyed. It appears that neither Stephen Brown nor any landscape architect with his firm has walked the entire route. Site assessment has primarily been undertaken from a helicopter flying above the corridor and landing where clearings permit. It is understood that Mr Brown has walked sections of the Upukerora River corridor; however the extent of the landscape survey undertaken on foot is not provided. It is evident that some of the critical sections, such as the Ascension Creek section and the Upukerora Bluff section have neither been walked nor surveyed from the ground. The general description for 'segment' 21 does not appear to reflect the route over the bluff.

The mountain bike track crosses public conservation land at Lake Mistletoe prior to entering the National Park and the landscape report has not addressed visual and landscape issues related to this portion of the proposal or provided any explanation as to this omission. Neither SBEL nor MPA have surveyed this part of the proposal.

It is considered that a proposal of this magnitude – and coming with it a likely significant level of adverse impact – requires a thorough ground-based survey and on-site assessment. Significant amounts of the impact are to be expected on the internal forest areas – an aerial and desktop assessment is insufficient to arrive at informed conclusions.

### **7.1.3 Assessment Methodology**

The assessment considers four matters as described in section 2.2 – Assessment of the Fiordland Link Experience Proposal – of the report. For the purpose of assessing the effects of the proposal in the landscape matters 2 and 4 are not relevant to this audit. The second concluding statement relates to the tourist journey to Te Anau and Milford Sound; this is not an issue that needs to be considered and it is at odds with an objective analysis of the landscape impacts of the proposal. The fourth statement relates to "*landscape experiences*" for visitors to Southern Lakes and Central Otago. This matter is not an issue that need to be considered and it appears at odds with an objective analysis of the landscape impacts of the proposal.

The topographically defined catchments provide an excellent opportunity to describe the landscape. The route traverses five catchments - the Mararoa, Kiwi Burn, Whitestone, Upukerora and the Retford/ Te Anau Downs. The engineering report acknowledges the key catchments and their boundaries and DoC (correspondence from Chris Visser dated 12 Nov 2009) also reiterates the validity and practicality of assessing the monorail proposal with regard to catchment boundaries.

The manner in which the landscape report 'reduces' the landscape into 21 'segments', appears to be comprehensive and detailed; however it is at times illogical and unhelpful. The assessment methodology appears to be primarily pictorial and strongly reliant on a series of photographs taken during a single field trip. From the descriptions and related mapping it is evident that portions of the route/ corridor that have been allocated defined 'segments' have not been surveyed.

The landscape report does not include a clear and detailed description of the proposal. Without this detail, it is unclear if a comprehensive assessment of all the potential effects has been considered.

The report tabulates the descriptors/ definers of each 'segment' along with comments as to the 'immediate/ localised effects' and the 'external effects' a further clarification as to 'temporary' and 'permanent' effects is included in the 'localised effects' assessment. A 'composite effect/ conclusion' is derived for each 'segment'.

A summary table is provided; however it is not transparent how all of the ratings in the summary table relate to the comments in the 'segment' tables. For example the term 'limited' occurs frequently in the summary table; however it is neither defined nor is it included in the 'segment' tables. The report provides three matters the summary ratings have taken into account and it appears that these are, by and large, matters the 'segment' comments have also taken into account. The 'effects conclusions', both in the 'segment' tables and the 'summary' table appear to have taken a liberal - to avoid the term "partisan" - approach. It is considered that the conclusions tend to err on the side of the least effect assessment rather than the most effect assessment. The validity of adopting the least effect in the determination of the 'effects conclusion' is discussed below.

## 7.2 Validity

### – Is factual information correct?

The engineering report states:

*A detailed description of the route including topography is included in Stephen Brown Landscapes Report.*

This is not the case. The landscape report provides a comprehensive series of photos corresponding to various 'segments' along the route; however the report does not include information as to the timing and method of site survey. The apparent detail in the landscape report, i.e. the breaking down of the route into 21 'segments' appears to be thorough and rigorous; however while walking the route it became apparent that the basis and logic for some of the 'segments' is vague and barely perceivable. Conversely there are instances where significant differences in the landscape – topography, hydrology and vegetation – occur yet they have not been identified.

The SBEL methodology and reductionism approach to ranking landscape effects is considered to be flawed. As noted above, the landscape report includes a 'composite effects conclusion' derived from the 'localised effects' and the 'external effects'. If an aspect of a development has a visual/ landscape effect/ impact that is significant or substantial at a local level, this effect could not be devalued or dismissed when considering or ranking 'composite' effects on the broader landscape. Effects on the landscape, at a local scale, cannot and could not be devalued or disregarded. The broader landscape is relevant; however an accumulation of adverse 'local effects' can result in a significant detrimental effect on the broader landscape. The SBEL assessment prioritises 'external effects' over 'local effects' and it therefore brings into doubt the validity of the 'composite/ effects conclusions' rankings for each 'segment'/ 'route section'.

### 7.3 Landscape Context and Character

- have the experts used the most appropriate methods to analyse the landscape?

The analysis method adopted by SBEL drills down to very small 'segments' that are sections of the route. The report states the 21 sections have been described and assessed in terms of:

- *its geophysical character*
- *canopy species and heights*
- *understorey species and conditions*
- *the extent of stream / river disturbance – where applicable*<sup>43</sup>

The 'segments' are - as titled in the summary table<sup>44</sup> – 'route sections', they do not represent a landscape or even a landscape unit. From a walk along most of the route it is evident the apparent level of detail in the SBEL used to define and describe the 'segments' does not necessarily reflect clearly perceivable changes in topography and vegetation. Some of the small 'segments' are illogical, some are arbitrary and some are unhelpful in assessing potential impacts. For example segments 4, 5 and 6 could be described with respect to the effects on the Mararoa valley landscape and segment 9 arbitrarily incorporates both sides of the Kiwi Burn saddle. Segment 16 includes two different areas; the area around the saddle includes gently sloping ground with relatively open beech forest whereas the area to the north – Ascension Creek - includes steep hillsides, a defined and in places incised stream following a sinuous path, and intermittent patches of dense understorey. Furthermore the segregation of the Upukerora River into many segments, particularly the fragmentation into segments 17, 18 and 19, does not contribute towards a holistic and integrated understanding of the land forming processes, the landscape components and the outstanding natural character of the landscape corridor. The logic of isolating segment 18 is questioned as this isolates one river crossing, while not doing so for additional crossings further upstream.

By fragmenting/ reducing the route to small 'segments' the report opens itself up to a level of dislocation/ disassociation from the embedding landscape. An alternative and ultimately a more holistic approach would have been to describe the outstanding natural landscape and analyse the five primary catchments, that is; the Mararoa valley, the Kiwi Burn, the Whitestone, the Upukerora and the Retford/ Te Anau Downs. These catchments have physical and visual containment, while presenting through topography, vegetation and land use various zones within the landscape. The catchment approach has been used by Opus and it was requested by DoC (12 Nov 2009 correspondence from Chris Visser) as a reference for the audit process.

The following table sets this out.

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<sup>43</sup> STEPHEN BROWN ENVIRONMENTS LTD; Fiordland Link Experience – Landscape Effects Report, Aug 2009 page 7

<sup>44</sup> *ibid*, page 32

catchment and DoC zones	distance (km)	SBEL 'segment'
<b>Mararoa</b>		
Kiwi Burn Terminus	0.0 – 0.5	3
Mararoa River corridor	0.5 – 3.5	4 (river crossing), 5 (side terraces), 6 (forest) and part 7 (Kiwi Burn stream)
<b>Kiwi Burn</b>		
Kiwi Burn tussock grassland	3.5 - 4.5	Part 7 (stream) and 8 (Hut basin)
Kiwi Burn forest to saddle	4.5 - 6.5	Part 9 (Bare Peak forest)
<b>Whitestone</b>		
saddle to Whitestone flats	6.5 – 9.5	Part 9 (forest), 10 Basin forest south), 11(Limestone Hill south)
Whitestone flats to Upukerora saddle	9.5 - 17	12 (Limestone Hill), 13 (River crossing), 14 (Basin forest north), 15 (Mt Snowdon forest),
<b>Upukerora</b>		
saddle to river	17 - 21	16 (Snowdon Forest north)
River corridor	21 - 25	17 (south bank), 18 (crossing), 19 (Dunton flats), 20 (river margins), 21 (forest), part 22 (northern forest)
<b>Te Anau</b>		
Retford forest to DoC boundary	25 - 29.5	Part 22 (northern forest) and 23 (Retford forest)
Te Anau Downs Terminus		Section 4 – Fiordland National Park

**Table 1: Monorail Route - SBEL segments in relation to DoC zones**

The landscape report reflects on the broader landscape – The Wider Context: ONLs<sup>45</sup>, This reflection, along with the comments related to heritage values<sup>46</sup> and some of the comments related to Fiordland National Park,<sup>47</sup> appear to be at such an expansive/ extensive scale that the landscape effects – both perceivable and on biophysical values - are surmised to be minor, negligible or non-existent. It is logical that in comparison with a much broader context, effects may be diluted and subsequently downgraded; however this approach is neither helpful nor is it appropriate.

It appears that the attention applied to the effects related to each 'segment' and the leap to the much wider landscape has in some way dislocated the proposal from the existing 'sense of place'. The photographic images and descriptions for each of the segments fail to convey, in a holistic way, the natural character, the remoteness and the outstandingness of the landscape(s) within the public conservation land.

<sup>45</sup> ibid, page 35

<sup>46</sup> ibid, page 36 -37

<sup>47</sup> ibid, page 38

## 7.4 Landscape Values

- have landscape, natural character, heritage, and amenity values been appropriately identified?

The primary approach taken to assess the effects – via segments - has fragmented the landscape in a physical sense and made it difficult to comprehend the landscape in a holistic/perceptual manner. As noted above a descriptive analysis of the landscape, based initially but not exclusively on catchment boundaries, may have provided a more appropriate template to assess the effects of the development.

The ecological report provides an essential reference for the natural science values of the area and the proposed corridor. This report includes descriptions of the Ecological Districts as well as relevant matters within the Southland – West Otago Conservation Management Strategy (CMS). The report notes that the route crosses the southern part of Snowdon Forest and may enter the “Central Snowdon Remote Area”. CMS objectives for Snowdon Forest mention “*remote areas*” and “*remote from high use areas*”.<sup>48</sup> The landscape report also describes “... *the main values attributed to the area are recreational ...*”,<sup>49</sup> however it is the character and quality of the landscape that provides the setting for and the attractiveness of the area for recreational activities. Landscape is an inherently essential aspect of the remote and highly ‘natural’ setting for recreation.

Natural character is referred to within the report and ‘levels of naturalness’ are mentioned,<sup>50</sup> however the report never really describes the ‘natural character’ of the landscape(s). A catchment-based description may have provided a template for a broader and yet more comprehensive description of natural character throughout the proposed route.

The report mentions proximity to “*an identified remote area*”,<sup>51</sup> however throughout the ‘segmental’ analysis and related commentary it downplays potential visual and/ or perceptual effects the monorail and construction track may cause on remoteness and ‘sense of place’. By omitting to describe and emphasise, to a sufficient degree, landscape values pertaining to the outstanding natural setting and the remote characteristics, the SBEL report compromises the assessment of the potential effects.

The report includes a section on heritage values<sup>52</sup> and a long quote relating to the general history of South-Westland/ Fiordland – although the value to the assessment is questionable at best. The report does not include analysis of historical associations with the immediate landscape. A more local assessment of heritage/ cultural values related to hunting, runholding and recreation would be useful.

The report acknowledges that the landscape(s) would rate highly in terms of aesthetic values, transient values and values that are shared and recognised,<sup>53</sup> however these qualities are never

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<sup>48</sup> MITCHELL PARTNERSHIPS - Terrestrial Ecology of the Proposed Fiordland Monorail Route October 2009 Section 2.3 page 8

<sup>49</sup> ibid 2.3 page 10

<sup>50</sup> ibid page 35 et al

<sup>51</sup> ibid page 35

<sup>52</sup> STEPHEN BROWN ENVIRONMENTS LTD - Fiordland Link Experience – Landscape Effects Report August 2009 Section 3.2

<sup>53</sup> ibid page 35

discussed in detail nor are they directly applied to the landscape the route traverses. The RMA defines amenity as “*those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes*” (Part 1, Section 2). There is no doubt that the physical qualities and characteristics of the Mararoa River, the Kiwi Burn basin, the Whitestone valley and the Upukerora River corridor are valued by the recreational users that frequent and enjoy the area; however the report fails to acknowledge this fact. It is considered that an inclusion of a thorough assessment of those landscape values contributing to the amenity values is essential and could have been included. The key areas this needs to be expanded on are the Mararoa swing bridge area, the Kiwi Burn basin around the hut and the easily accessible portions of the Upukerora River corridor.

The report includes a broader discussion on the experience of visiting Milford Sound and Central Otago<sup>54</sup>. While this material may be interesting from a marketing perspective, it is largely irrelevant to the assessment of the landscape impacts that could arise from the monorail proposal. Furthermore the extent of this information, as compared with the limited information on design matters, interferes with the purpose of the assessment and clouds the objectivity of the report.

## 7.5 Impact Identification

- have the experts identified the actual and potential impacts of the proposal?

As already noted the landscape report does not provide an in-depth description of the details related to the proposal. The superficial description of the proposal<sup>55</sup> takes a cursory approach to the construction and operational matters and this may have influenced the assessment of landscape impacts. The paucity of design/ construction and rehabilitation information is in contrast to the Sections 4 and 5 of the report that delve into much broader matters not directly related to the assessment of the effects.

In contrast the ecological report includes information on construction methods and the scale of the monorail beam and the carriages<sup>56</sup>, the anticipated level of use, construction and retention of the access and spur tracks, restoration and rehabilitation. Section 7.1 of the ecological report includes information about two alternative construction methods as well as details about the construction and the monorail tracks. The piers may have an average height in side slope areas of between 2-3 m – partially extending to 5m in places - and even taller where gullies have to be crossed. The beam is to be 1 m deep. The construction details will inevitably result in a substantial structure that is potentially a highly visible element in the forest.

Where the monorail crosses open grasslands, the Mararoa River terraces, the Kiwi Burn Basin, the Whitestone River and throughout the Upukerora River corridor, the monorail beam will be permanently visible and the carriages will be highly visible when passing. The visual and landscape impact of the rail will be particularly pronounced at the river crossings and especially

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<sup>54</sup> *ibid* pages 39-46

<sup>55</sup> *ibid* section 2.3 page 8 & 9

<sup>56</sup> MITCHELL PARTNERSHIPS - Terrestrial Ecology of the Proposed Fiordland Monorail Route– October 2009 Section 7.1 page 73

in the Upukerora Valley, where the rail will have to be elevated to enable 4WD vehicles and mountain bikers to pass under it.

The report could have described in more detail potential visual effects of the rail and carriages across the Dunton Flats. To facilitate passage of 4WD vehicles and existing recreational users of the Upukerora Valley, the rail will have to be elevated in an area at the southern end of the Dunton Swamp.

To assist in an assessment of the proposal, it is recommended visual simulations be prepared. These could illustrate the rail and the carriages visible from a number of the critical view points. View points could include all or some of the following:

- from the Kiwi Burn swing bridge
- any view attainable from Lake Mavora Road
- from the Kiwi Burn Hut
- at the Whitestone crossing
- at the upstream crossing of the Upukerora River and the 4WD 'underpass'
- at the downstream Upukerora crossing
- traversing the Dunton flats (elevated rail and 4WD 'underpass')

The landscape report could have included comments with regard to the visual and landscape effects for the users of the informal trail linking the Kiwi Burn and the Whitestone as well as the marked trail closely aligned with the proposed route between the Whitestone and the Upukerora Rivers.

Important viewpoints and view shafts (e.g. prominent locations, public access points, and public roads) could have been located and photographs of the viewshaft included in the report. Viewpoints that will be affected by the proposal needed to be identified and mapped, and view shafts photographed. Potential views of the rail, the carriages and/ or any lineal clearance of the forest canopy from the Lake Mavora Road and Takaro Lodge could have been accurately assessed.

The landscape assessment could also have included a more comprehensive assessment of the potential visual and landscape effects of the lineal clearance of the forest canopy arising from construction and anticipated operational clearance. The report could have considered and commented on the effect of introducing a characteristically urban element - all monorails worldwide to date are located in cities - and a linear structure in an area perceived as highly natural. Further comment was required with regard to locating a highly engineered concrete structure and vehicle track adjacent to the Snowdon Remote Area and effects related to visibility, sound and general awareness of the monorail. The Snowdon Remote Area is notably absent of development, therefore the report needs to provide comment with regard to effects on tranquillity and the impact on the sense of remoteness..

## 7.6 Impact Prediction

- have the experts identified the impacts correctly and assessed the significance of them?

It is not transparent how the ratings in the summary table relate to the comments in the 'segment' tables. The 'effects conclusions' appear to have taken a 'liberal' approach; that is they tend to err on the side of the least effect assessment rather than the most effect assessment.

An example is 'segment' 3 where the terminus would have a significant level of disturbance during construction and a considerable "exposure" once complete. There is no doubt that the terminus would have a substantial and significant landscape effect at a local level; however the summary table describes this as 'limited' and the 'effects conclusion' reduces this even further to a 'low/ moderate' level.

This methodology and apparent reductionism approach is flawed. Local landscape effects (visibility/ visual) and broad scale landscape effects (perception of ONL character, cohesion and integrity) cannot be played off against each other. If an aspect of a development has a landscape impact that is significant at a local level, that impact assessment must translate further into the conclusive findings and must not be reduced or dismissed by "diluting it" over a larger area.

Construction, alignment and operation of the proposed terminal, the monorail and the mountain bike track are likely to have adverse effects on the character and quality of the outstanding natural landscape and hence on existing recreational use.

The proposed monorail and the retention of the construction track as a mountain bike track will adversely affect the sense of tranquillity and remoteness that is a significant part of the natural character of the Snowdon Forest.

The monorail will have significant effects on the dominance of the natural character in the area by introducing a substantial structure into a landscape which presently is almost devoid of any structures. The scale of the Kiwi Burn terminal, the long monorail track and the construction track are contrary to the natural character of the landscape.

MPA have assessed potential effects and arrived at a different set of conclusions from the summary table in the SBEL report. In the table below the MPA assessment and related comments are included next to the SBEL conclusions.

Route Section	SBEL Assessment			MPA comment
	Localised Effects	External Effects	Effects Conclusion	
3	Limited	Low / Moderate low	Low / Moderate	The terminal area is presently the starting point/ front door for a wilderness experience. The combination of river, gorge, grasslands, forest and expansive vistas contribute to the outstanding natural values. The terminus would be highly visible and it would significantly compromise natural landscape values. The potential adverse effects at this location would be <b>very high</b>
4	Limited	Low / Moderate low	Low	Similar effects to 3. The river is used for kayak training and any monorail bridge would be clearly visible from the river, the footbridge and the existing track along the right bank. Potential adverse effects would be <b>high</b> .
5	Very Limited	Low	Low	The SBEL table notes that " <i>appreciable modification</i> " of a natural river corridor will be a permanent effect. Visibility from the Mavora Lakes Road is "possible". MPA assesses the potential adverse effects to be <b>high</b> .
6	Low	Low / moderate *	Low / Moderate*	This part of the forest is presently still part of the 'front door' to the 'wilderness experience' of the Kiwi Burn track. The proximity to the existing track is such that effects must be assessed as being <b>high</b>
7	Moderate	Moderate / High*	Moderate*	The natural values of the stream corridor will be compromised and the monorail would be visible from the existing track. It is concluded that potential adverse effects will be <b>high</b> .
8	Limited / Moderate	Moderate / High*	Moderate / High*	The monorail would change the character and undermine natural values and the sense of remoteness within of the Kiwi Burn basin. Mitigation is not possible and that is why an alternative site for the hut and track is suggested. Potential adverse effects would be <b>very high</b>
9	Moderate	Very Low	Low	SBEL have not acknowledged the hunting/ tramping trail along this segment. Localised adverse effects could be very <b>high</b> and overall adverse effects <b>low to moderate</b>
10	Low	None	Very Low	The presence of the existing trail indicates that localized adverse effects could be <b>high</b> . Overall potential adverse effects may be <b>low to moderate</b> .
11	Limited / Moderate	Low	Low / Very Low	The presence of the trail indicates that localized adverse effects could be <b>high</b> whereas overall adverse effects may be <b>low to moderate</b> .
12	Limited	None	Very Low	The rail may be close to the bush edge and views to the open clearings may be created. The marked trail following this route means that localised adverse effects may be <b>high</b> , whereas overall adverse effects may be <b>low to moderate</b> .
13	Limited	Low	Low	The crossing is close to a private hut and the monorail would be clearly visible from a significant section of the river corridor. The marked trail following this route means that localised adverse effects would be <b>high</b> and overall adverse effects <b>moderate</b> .
14	Low	Very Low	Very Low	The route onto the terrace involves sidling across very steep ground; earthworks/ benching will create physical scars and the opening up of the forest canopy has the potential to create a rift in the forest. Major gullies are crossed and the route is closely aligned to an existing marked trail. Potential adverse effects are considered to be <b>moderate</b> .
15	Low	Very Low	Very Low	The existing trail and potential visibility to / from the clearings means that potential adverse effects would be <b>moderate</b> .
16	Limited / Moderate	None	Very Low	The route is close to and at times crosses over the existing trail. Numerous stream crossings are required and the steep country throughout Ascension Creek means that the monorail and the construction track would have a significant physical and visual effect. Potential adverse effects are assessed to be <b>moderate</b> .
17	Limited	Low	Low	The rail would cross over the existing 4WD track as well as the river. The monorail would be visible where it crosses the numerous clearings and the cavities created in the forest margin – where the rail enters and exits the forest – will be clearly visible as an unnatural aspect to the forest. The river corridor is used by a variety of recreational users and the rail and the carriages would be highly visible. The sense of remoteness would be significantly compromised. Potential adverse effects would be <b>moderate to high</b> .

Route Section	SBEL Assessment			MPA comment
	Localised Effects	External Effects	Effects Conclusion	
18	Limited	Low	Low	The crossing would be elevated above the braided river and it may have to be elevated to allow 4WD vehicles to pass under it. Natural values of the landscape would be compromised. Potential adverse effects would be <b>moderate to high</b> .
19	Very Low	Low / Moderate	Low / Moderate	The rail may have to be elevated to enable vehicles to pass under it. Outstanding natural values will be compromised along with the sense of wilderness/ remoteness. Potential adverse effects would be <b>moderate to high</b> .
20	Low	Low	Low	Significant openings in the forest canopy may be visible from the river flats and Takaro lodge. Potential adverse effects are assessed to be <b>low to moderate</b> .
21	Limited	None	Very Low	Adverse effects will arise particularly with regard to vegetation; however overall potential adverse effects may be <b>low</b> .
22	Limited	None	Low	Overall potential adverse effects may be <b>low</b> .
23	Limited	None	Low	Overall potential adverse effects may be <b>low</b> .

**Table 2: Summary of SBEL effects and MPA comments and assessment of potential adverse effects**

\* Subject to the current location of the Kiwi Burn Track and Hut: however relocation of both, as suggested in the Recreation Report (p.34) would substantially reduce such effects to a Low, even Very Low level.<sup>57</sup>

The assessment discusses the outstanding natural values of the broader landscape; however the following statement is illogical and at odds with the potential effects arising from this proposal:

*In light of the findings above, with reference to both perceived and biophysical landscape values, it is considered that the Fiordland Link proposal would have little or no impact on the ONL status and appeal of the Snowdon Forest and its margins.<sup>58</sup>*

## 7.7 Dealing with Impacts

- can the effects be avoided, remedied, or mitigated?

The report acknowledges Conservation General Policies as follows:

- *activities which reduce the intrinsic values of landscape, landform and geological features be located and managed so that their adverse effects are avoided or otherwise minimised (policy 4.5(b))*
- *activities requiring concessions avoid, remedy or mitigate any adverse effects (including cumulative effects) and maximise any positive effects on natural resources (including landscape, landform and geological features) (policy 11.1(b))*
- *New utilities should be of a scale, design and colour that relates to and is integrated with the landscape (policy 11.3(b)).<sup>59</sup>*

The landscape report is, however remarkably silent in discussing the avoidance, remediation and mitigation of adverse effects. It is possible that the landscape assessment has concluded that the level of visual exposure is at a sufficiently low level because the route has been confined

<sup>57</sup> ibid page 32-33

<sup>58</sup> ibid Section 3.1 page 35

<sup>59</sup> ibid section 2.1 page 6

mostly within the forest, and therefore – the avoidance, remediation or mitigation of potential adverse effects has not been deemed necessary for the limited viewing audience.

It is considered to be difficult - if not impossible - to avoid the adverse effects the proposed monorail and the construction/ mountain bike track would generate on the natural landscape character, tranquillity and sense of place and remoteness.

## 7.8 Alternatives, Mitigation and Monitoring

- has the expert proposed measures to avoid, remedy, or mitigate each significant impact and will these reduce the impact to below acceptable standards?

While the ecological report has discussed alternative construction approaches<sup>60</sup>, provided “Ecological Criteria for Selecting the Final Route”<sup>61</sup> and identified opportunities and mechanisms to mitigate adverse effects and undertake restoration,<sup>62</sup> the landscape report does not include specific sections dealing with these matters. While the landscape report may have referred to the information provided in the ecological report this is neither spelt out nor has it been made clear in the assessment. The ecological report provides three options for the mitigation of loss of habitat within the South Westland NZ World Heritage Area and it recommends one of these. The landscape report does not present options for landscape mitigation and it does not comment on the ecologically based “Operation Ark” proposal.

The only area where the landscape report provides comment on ‘avoiding’ effects is in regard to the potential replacement of the Kiwi Burn Hut and associated track. An alternative location for the Kiwi Burn Hut and track has been identified within the forest and associated clearings north of the existing hut and track. Because the report is silent on the alternative hut site and realignment of the track, it is assumed that the site and route have not been visited. From flying over the area it appears the alternative location is within a similar landscape with comparable natural character values, tranquillity, sense of place and remoteness. However, no comment is made in regard to the displacement of the existing facilities and potential users.

The landscape report is also relatively quiet in regard to remedying and mitigating adverse effects through revegetation and rehabilitation. It appears that SBEL has left it up to the ecological report to deal with these matters.

## 7.9 Risks

- what risks and uncertainties are there for DOC?

The Ecological report includes a section on “Monitoring” with the aim of addressing some, if not all, of the potential risks associate with the proposal. The landscape report does not include any recommendations or proposals to monitor landscape effects and address any post construction adverse effects that may arise over time due to the operation of the monorail and the mountain bike track.

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<sup>60</sup> ibid page 72- 73

<sup>61</sup> ibid pages 96-97

<sup>62</sup> ibid pages 98 - 102

The landscape report does not identify or discuss potential risks arising from the proposal. There is no comment as to potential visual and landscape effects that could arise from canopy clearance and or wind throw.

The proposal brings with it considerably risks related to the devaluation of outstanding natural character and change to the existing 'sense of place', a compromising of the existing levels of tranquillity and an undermining of the existing level of remoteness.

## 8 Conclusion

Landscape is a natural resource and conservation includes the preservation and protection of this natural resource to maintain and sustain the intrinsic values. The proposed monorail route passes through a landscape with intrinsic qualities and values that are entirely consistent with an outstanding natural landscape. The high level of naturalness and the 'remoteness' of the landscape means that any development or activity requires consideration with reference to the potential impact and any potential to compromise the quality and value of the highly natural landscape.

The Mainland Southland West Otago Conservation Strategy sets out to “[t]o maintain the ecological and landscape integrity of the Te Wahipounamu World Heritage Area”.

The ecological report concludes that “... there will be effects on the integrity of the Snowdon Forest Conservation Area and the South Westland NZ World Heritage Area.”<sup>63</sup>

The landscape report concludes with four statements. The first statement concludes the landscape effects would be “acceptable”; however the term “acceptable” is never defined or clarified in this report. It is up to DoC to determine if effects/ impacts are “acceptable” and it is the responsibility of the landscape assessment to provide sufficient information for the department to make such a determination. The SBEL report does not provide sufficient information for such a determination.

The second concluding statement relates to the tourist journey to Te Anau and Milford Sound; this is not an issue that needs to be considered and it is at odds with an objective analysis of the landscape impacts of the proposal.

The third statement concludes the proposal meets the relevant “tests” defined in the statutory documents for the management of the public conservation land. One is left to assume that by “tests” the report is referring to Section 6 of the Conservation Act, Conservation General Policies 4.5(b), 11.1(b), and 11.3(b) - (May 2007), The Mainland Southland West Otago Conservation management Strategy (DoC, 2000) – Objective 3, and ‘pertinent objectives of the Fiordland National Park Management Plan 2007. It is; however very difficult to see how this assessment has proven that the relevant ‘tests’ have indeed been satisfied.

The fourth statement relates to “landscape experiences” for visitors to Southern Lakes and Central Otago. This matter is not an issue that need to be considered and it appears at odds with an objective analysis of the landscape impacts of the proposal.

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<sup>63</sup> MITCHELL PARTNERSHIPS -Terrestrial Ecology of the Proposed Fiordland Monorail Route — October 2009 Section 11 page 108

The thoroughness of the 'impact identification' and the validity of the 'impact prediction' are questionable. Because the 'effects conclusions' for each 'segment' are of questionable validity the overall conclusions in the SBEL report are brought into question.

MPA have prepared a summary table of potential effects on the landscape and landscape values, using the terminology adopted by DoC and based on the sections of the proposed route as defined by the DoC. The DoC terminology is set out in table 4 below.

Section of monorail route (as per DoC )	distance (km)	Assessment of Effects (as per DoC terminology)
Mararoa - Kiwi Burn	0 - 6.9	Unmitigated Potential Significant Adverse Effect
Kiwi Burn Terminus	0 - 0.5	Unmitigated Potential Significant Adverse Effect
Mararoa River terraces	0.5 - 3.5	Unmitigated Potential Significant Adverse Effect
Kiwi Burn Tussock Grassland	3.5 - 4.5	Unmitigated Potential Significant Adverse Effect
Kiwi Burn	4.5 - 6.9	Potential Significant Adverse Effect
Kiwi Burn to Whitestone Flats	6.9 - 9.5	Potential Significant Adverse Effect
Whitestone Flats to Whitestone/ Upukerora Saddle	9.5 - 17.0	Potential Significant Adverse Effect
Whitestone/ Upukerora saddle to Upukerora River	17.0 - 25.0	Potential Significant Adverse Effect
Forest	17.0 - 21.0	Potential Significant Adverse Effect
Upukerora River Flats	21.0 - 25.0	Unmitigated Potential Significant Adverse Effect
Upukerora River to Private Property Boundary	25.0 - 29.5	Potential Significant Adverse Effect
Te Anau Downs Terminus Area		Potential Significant Adverse Effect

**Table 3: Summary Table of Effects**

No Effect	No effects at all
Minimal Effect	Minute (positive or adverse) effect that is basically unnoticeable
Temporary Effect	Effect that is temporary in nature
Minor Effect	Noticeable effect that has no serious effect
Potential Significant Adverse Effect	Potential adverse effect on the environment which can be avoided, remedied or adequately mitigated
Unmitigated Potential Significant Adverse Effect	Serious adverse effect on the environment and cannot be remedied or adequately mitigated
Insufficiently Assessed Effect	Effect where the information available is insufficient or inadequate to enable assessment of effects
Positive Effect	Effect that results in an improvement in the conservation values of the environment

**Table 4: DoC terminology for assessing effects**

It is noted that for all sections of the route Temporary Effects will arise during the construction phase. Furthermore the Temporary Effects would be categorised as Unmitigated Potential Significant Adverse Effects. It is also noted that the gaps in information and approach adopted in the SBEL report indicate that for much of the route the assessment can be considered to as fitting into the category of Insufficiently Assessed Effect.

There is no doubt that the visual and landscape impact of the Kiwi Burn terminus, the displacement of the Kiwi Burn hut and walking track, the effect of the monorail carriages 'flying' through the forest, the presence of the construction/ mountain bike track, the monorail passing along the Upukerora River flats will be very significant. It is concluded that the SBEL landscape report does not provide a thorough, rigorous and defensible assessment of landscape impacts.

There is no doubt that this proposal would significantly compromise the outstanding natural values of the landscape and the "*landscape integrity*" of Snowdon Forest Conservation Area and the Te Wāhipounamu South Westland NZ World Heritage Area.