MANUHERIKIA CATCHMENT WATER STRATEGY GROUP

FEASIBILITY STUDY

LANDSCAPE AND VISUAL AMENITY ISSUES REPORT

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INTRODUCTION

1 This report forms part of a Feasibility Study that assesses the feasibility of options for irrigation within the Manuherikia catchment. The options that are to be assessed for feasibility have been identified by a Prefeasibility Study. This report relates to landscape and visual amenity issues and discusses the feasibility of identified irrigation options in relation to the relevant statutory documents that regulate landscape and visual effects of activities.

2 While the Prefeasibility Study identifies a number of options for irrigation within the Manuherikia catchment, I have been asked to consider and report on the feasibility of two scenarios in relation to landscape and visual amenity issues. These are:

- Raising the water level of Falls Dam by 27 metres;
- Constructing a new dam at Mount Ida.

3 In relation to landscape and amenity matters, I understand that providing feasibility assessment in relation to these two scenarios (including in combination) will provide sufficient information to consider the feasibility of all options.

4 The Otago Regional Policy Statement, Otago Regional Plans and the Central Otago District Plan are statutory documents that set out Objectives, Policies and Rules regarding landscape and visual amenity for the relevant area. An assessment of the feasibility of the identified options in relation to landscape and visual amenity issues is essentially an assessment of how the landscape and visual effects of the options sit in relation to these statutory documents; are the effects likely to be fatal or problematic in relation to gaining resource consent or not.

5 In order to usefully advise on feasibility, this report provides a preliminary assessment and discussion of the landscape and visual effects of the identified options and reports on how these effects sit in relation to the relevant statutory documents. Where appropriate, this report also gives recommendations regarding mitigation or enhancement measures that may assist feasibility.

6 The methodology for the preliminary assessment of landscape and visual effects has been guided by:

- the landscape related provisions of the statutory documents;
- Best Practice Note 10.1 "*Landscape Assessment and Sustainable Management*" produced by the New Zealand Institute of Landscape Architects[1];
- the Guidelines for Landscape and Visual Impact Assessment produced by the UK's Landscape Institute and Institute of Environmental Management and Assessment[2];
- the UK's Guidelines for Landscape Character Assessment[3].

7 The scope of the area that has been considered in relation to landscape and amenity matters is generally the entirety of the Manuherikia catchment, incorporating the Manuherikia and Ida Valleys.

8 As part of the overall Feasibility Study, I understand that reports are being prepared in relation to both terrestrial and aquatic ecology. In this report, I shall endeavor not to stray into areas of ecology and shall confine myself to landscape and visual matters.

DESCRIPTION OF THE PROPOSED ACTIVITIES

9 In a broad sense, the activities proposed in relation to the two scenarios (the proposed activities, the proposal) seek to create improved consistency and efficiency of agricultural irrigation within the Manuherikia catchment. Many schemes providing irrigation currently exist but the proposed activities would mean that a larger area of land would be irrigable and irrigation would be more consistent. This would allow changes to farming practices including conversions to dairy farming but would not economically force such changes.

10 The raising of the Falls Dam and the construction of the Mount Ida Dam would obviously involve considerable physical works. These proposals would also involve the construction of associated infrastructure such as water distribution networks, access roading, etc. New or increased inundation areas would be created. Consequential changes to the landscape would include more intensive and extensive greening of farmland and alteration of farming patterns (potential

[1] New Zealand Institute of Landscape Architects Education Foundation; 2010; Best Practice Note 10.1 'Landscape Assessment and Sustainable Management'.
[2] Landscape Institute and Institute of Environmental Management and Assessment; 2013; 'Guidelines for Landscape and Visual Impact Assessment – 3rd Edition'; Routledge, Oxford.
[3] Carys Swanwick and Land Use Consultants; 2002; 'Landscape Character Assessment – Guidance for England and Scotland'; Scottish Natural Heritage and the Countryside Agency.

removal of trees and shelterbelts, presence of irrigators, increased or different farm structures). I note that many of these things are permitted activities and they may potentially occur even if the proposed dam works do not take place.

11 The proposed activities are described in detail in other reports and documents associated with the Feasibility Study. Numerous plans, figures, cross sections and elevations are included. The design of the proposed activities has not been finalised to a detailed level at the current stage of the project. For the purposes of the Feasibility Study, some design aspects remain flexible and unresolved, however sufficient detail is available to arrive at useful conclusions regarding feasibility. I will not repeat the description of the proposed activities that is set out in other documents, other than to make the following summary points that are relevant to an assessment of landscape issues:

Raising Falls Dam by 27 metres

- This option involves raising the full reservoir supply level from RL562 metres to RL588 metres by either raising the existing concrete faced rock fill dam (CFRD) structure or by constructing a new roller compacted concrete (RCC) dam structure. The CFRD approach would be likely to involve a 60 metre wide auxiliary spillway cutting on the southern side of the dam while the RCC approach will not.

- Detailed construction designs and methodologies have not been finalised, including the details of construction site layout, quarrying or production of materials on site, layout of site access roads, etc; however, the work done to date indicates that:

    - A CFRD design could source all required rock fill material from the spillway excavation. While vehicle access tracks have not been finalised, indicative alignments are set out in other reports relating to the Feasibility Study. A CFRD design is not particularly suited to progressive development (i.e. raising dam level in a number of stages).

    - A RCC design would locate the dam structure slightly downstream of the existing dam. Local aggregate could be used for concrete and a quarry site would need to be selected in this regard. A working and batching area is likely to be a short

distance down the gorge from the dam location. A RCC design is more suitable for progressive development.

- An earth embankment saddle dam would be constructed in Shamrock Gully to the west of the main dam structure.

- The raised dam could continue to incorporate hydropower generation in an amended and possibly improved form.

- Falls Dam lake (the inundation area) would approximately quadruple in area.

- The flow of the Manuherikia River downstream of the raised Falls Dam would be altered from its current state. A designed flow regime could be formulated and followed that provides for both irrigation and other environmental needs. A suitable regime would take account of factors such as iwi values, trout habitat, minimising algae accumulation, recreational use and the provision of fresh flow and flood events.

- A new high water race may be constructed as indicated on Appendix 1 of this report. Again, fully detailed design and alignment has not been resolved. For the purposes of this report, I have assumed the race to be as depicted on Appendix 1, terminating at Matakanui Station boundary. In addition to this race there will be other distribution infrastructure including intakes, siphons, etc.

- An area of approximately 25,000ha would receive reliable irrigation. This area is depicted on Appendix 1 of this report. Again, the area shown is not the result of final detailed design work and will be able to be resolved in detail following final design of the dam and race infrastructure. Of this area, approximately 6,300ha could be fully irrigated using existing infrastructure, and an additional 4,000 to 6,000ha could be partially irrigated. Within this 25,000ha area, more diverse farming practices would be enabled, including dairy farming, intensive sheep and beef farming and more intense cropping. Pivot spray irrigators are generally likely to be the most useful method of irrigation but would be used in conjunction with other spray irrigators.

Construction of a new Mount Ida dam:

- This option involves constructing a new rock/gravel embankment dam on the Ida Burn adjacent to Seagull Hill. The reservoir would be fed by the existing Mount Ida Race. A spillway and auxiliary spillway (to deal with flood events) would be incorporated into the dam structure.

- Detailed construction designs and methodologies have not been finalised, including the details of construction site layout, quarrying or production of materials on site, layout of site access roads, etc; however, a preliminary working design has been done.

- A reservoir (inundation area) of approximately 3.3ha would be created behind the dam.

- The flow of the Ida Burn downstream of the new dam would be altered from its current state. As described in relation to the Manuherikia, a designed flow regime can be formulated and followed that provides for both irrigation and other environmental needs including the provision of fresh flow and flood events.

- Distribution of irrigation water would follow one of two options:

    - Feed irrigation water into the existing race system to make existing irrigation more consistent and intense. This would enable existing K-Line and wild flood methods to be altered to pivot spray.

    - Amend and upgrade existing distribution infrastructure so that an area as approximately depicted on Appendix 2 of this report would receive reliable irrigation (approximately 2100ha). This area is yet to be finalised and is flexible to some degree. Again, within this area, more diverse farming practices would be enabled, including dairy farming.

Staging of the activities

- In relation both options discussed above, the physical works to create the dams and parts of the distribution networks are of a considerable scale. There will be a significant

construction phase for these activities (estimated to be approximately two years). As has been mentioned, the details of design and construction management are yet to be finalised but it is likely that significant areas of quarrying and/or site works will be required. As site works and construction are finished, there is likely to be some rehabilitation of worked areas. The activities would then enter a practically indefinite operational phase.

THE RELEVANT STATUTORY DOCUMENTS

12 As mentioned above, in relation to landscape and amenity issues, the feasibility of the proposed activities is essentially determined by how the landscape effects of the activities sit in relation to the relevant statutory documents. These statutory documents (and other relevant non-statutory documents) will be discussed throughout this report. In this section, I briefly set out the most important aspects of those documents in relation to feasibility.

13 The following statutory documents are relevant to the consideration of the landscape and amenity related effects of the proposed activities:

- The Resource Management Act 1991,
- The Otago Regional Policy Statement,
- The Otago Regional Plan: Water,
- The Central Otago District Plan.

The Resource Management Act 1991

14 Matters from Part 2 of the RMA that are relevant to the assessment of landscape and amenity effects of development are found in Section 5 (purpose), Section 6 (matters of national importance), and Section 7 (other matters). The most relevant matters are:

- the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development (Section 6(a));
- the protection of outstanding natural features (ONFs) and landscapes (ONLs) from inappropriate subdivision, use, and development (Section 6(b)); and

- the maintenance and enhancement of amenity values (Section 7(c).

15 The regional and district level statutory documents take full account of the relevant parts of the RMA.

The Otago Regional Policy Statement

16 The Otago Regional Policy Statement reiterates the Act's direction that ONLs and ONFs are to be protected from inappropriate use and development, but gives little more guidance that that.

The Otago Regional Plan: Water

17 The Otago Regional Plan: Water deals with the sustainable management of water resources within Otago. Section 5 and Schedule 1A relate to Natural and Human Use Values of Lakes and Rivers. This is the most relevant section in relation to landscape and amenity issues. The most relevant Objectives and Policies are:

5.3.1 To maintain or enhance the natural and human use values, identified in Schedules 1A, 1B and 1C, that are supported by Otago's lakes and rivers.

5.3.3 To protect the natural character of Otago's lakes and rivers and their margins from inappropriate subdivision, use or development.

5.3.4 To maintain or enhance the amenity values associated with Otago's lakes and rivers and their margins.

5.4.1 To identify the following natural and human use values supported by Otago's lakes and rivers, as expressed in Schedule 1:

(a) Outstanding natural features and landscapes;
(b) Areas with a high degree of naturalness;
(c) Areas of significant indigenous vegetation, significant habitats of indigenous fauna, and significant habitats of trout and salmon;
(d) Ecosystem values;
(e) Water supply values;
(f) Registered historic places; and
(g) Spiritual and cultural beliefs, values and uses of significance to Kai Tahu.

5.4.2 In the management of any activity involving surface water, groundwater or the bed or margin of any lake or river, to give priority to avoiding, in preference to remedying or mitigating:

(1) Adverse effects on:

(a) Natural values identified in Schedule 1A;
(b) Water supply values identified in Schedule 1B;
(c) Registered historic places identified in Schedule 1C, or archaeological sites in, on, under or over the bed or margin of a lake or river;

(d) Spiritual and cultural beliefs, values and uses of significance to Kai Tahu identified in Schedule 1D;
(e) The natural character of any lake or river, or its margins;
(f) Amenity values supported by any water body; and

5.4.8 To have particular regard to the following features of lakes and rivers, and their margins, when considering adverse effects on their natural character:

(a) The topography, including the setting and bed form of the lake or river;
(b) The natural flow characteristics of the river;
(c) The natural water level of the lake and its fluctuation;
(d) The natural water colour and clarity in the lake or river;
(e) The ecology of the lake or river and its margins; and
(f) The extent of use or development within the catchment, including the extent to which that use and development has influenced matters (a) to (e) above.

5.4.9 To have particular regard to the following qualities or characteristics of lakes and rivers, and their margins, when considering adverse effects on amenity values:

(a) Aesthetic values associated with the lake or river; and
(b) Recreational opportunities provided by the lake or river, or its margins.

18 Schedule 1A then sets out the natural and human use values associated with Otago's lakes and rivers. Most relevantly for current purposes, the Manuherikia River (main stream) is not identified as an ONL or ONF, although some habitat and ecosystem values are identified. Similarly, the Ida Burn is not identified as an ONL or ONF, although some ecosystem values are identified.

19 Some of the provisions cited above relate directly to landscape and amenity issues, others relate more closely to ecological issues, and yet others relate to heritage or other issues. Those that relate to landscape and amenity are most relevant to this report.

The Central Otago District Plan

20 Landscape issues are first discussed in Section 2.3.1 Of the Central Otago District Plan (CODP) which takes the form of a general discussion of landscape issues with particular regard to ONLs, which are identified by the CODP. The parts of the Manuherikia catchment that are ONFs or are within ONLs are shown on Appendix 3 of this report. Also identified and shown on Appendix 3 are significant amenity landscapes (SALs) that are identified by the CODP.

21 The proposed activities are located within the Rural Resource Area. The areas in which potential effects will occur (i.e. areas where landscape change is likely to occur as a result of irrigation) are also practically entirely within the Rural Resource Area.

22 Section 4.3 and 4.4 of the CODP set out the Objectives and Policies that relate to the Rural Resource Areas. The most relevant in relation to landscape and amenity matters are:

4.3.2 *Objective – Outstanding Natural Landscapes and Outstanding Natural Features, and land in the Upper Manorburn/Lake Onslow Landscape Management Area*
To protect the District's outstanding natural landscapes and outstanding natural features, and in the Upper Manorburn/Lake Onslow Landscape Management Area Including landforms) from the adverse effects of inappropriate subdivision, use and development.

4.3.3 *Objective – Landscape and Amenity Values*
To maintain and where practicable enhance rural amenity values created by the open space, landscape, natural character and built environment values of the District's rural environment, and to maintain the open natural character of the hills and ranges.

4.3.6 *Objective – Margins of Water bodies*
To preserve the natural character of the District's water bodies and their margins.

4.4.1 *Policy - Outstanding Natural Landscapes and Outstanding Natural Features, and land in the Upper Manorburn/Lake Onslow Landscape Management Area*
To recognise the District's outstanding natural landscapes and outstanding natural features and land in the Upper Manorburn/Lake Onslow Landscape Management Area which:

(a) Are unique to the district, region or New Zealand; or
(b) Are representative of a particular landform or land cover occurring in the Central Otago District or of the collective characteristics and features which give the District its particular character; or
(c) Represent areas of cultural or historic significance in the district, region or New Zealand; or
(d) Contain visually or scientifically outstanding geological features; or
(e) Have characteristics of cultural, historical and spiritual value that are significant to Kai Tahu Ki Otago;
(f) Have high natural character values and high landscape quality that can be distinguished from the general landscapes of the Central Otago District

And provide protection for them from inappropriate subdivision, use and development.

4.4.2 *Policy - Landscape and Amenity Values*
To manage the effects of land use activities and subdivision to ensure that adverse effects on the open space, landscape, natural character and amenity values of the rural environment are avoided, remedied or mitigated through:

(a) The design and location of structures and works, particularly in respect of skylines, ridgelines, prominent places and natural features,
(b) Development which is compatible with the surrounding environment including the amenity values of adjoining properties,
(c) The ability to adequately dispose of effluent on site,
(d) Controlling the generation of noise in back country areas,
(e) The location of tree planting, particularly in respect of landscape values, natural features and ecological values,
(f) Controlling the spread of wilding trees.
(g) Encouraging the location and design of buildings to maintain the open natural character of hills and ranges without compromising the landscape and amenity values of prominent hillsides and terraces.

4.4.4 *Policy – Riparian Margins*

To manage the effects of the use, development or protection of land within riparian margins of water bodies (including wetlands) to ensure that the natural character and amenity of water bodies and their margins are preserved, by, as far as practicable:

(a) Maintaining bank stability,
(b) Protecting, and where appropriate, enhancing riparian instream habitat quality,
(c) Maintaining and enhancing riparian vegetation,
(d) Maintaining water quality,
(e) Maintaining and enhancing public access to and along the lakes and rivers,
(f) Reducing the incidence and severity of flooding where this is achievable, and
(g) Maintaining and enhancing the safety and efficiency of navigation on the adjacent water body where this is relevant.

4.4.10 *Policy – Rural Subdivision and Development*

To ensure that the subdivision and use of land in the Rural Resource Area avoids, remedies or mitigates adverse effects on:

(a) The open space, landscape and natural character amenity values of the rural environment,
(b) The natural character and values of the District's wetlands, lakes, rivers and their margins,
(c) The amenity values of neighbouring properties,
(d) The safety and efficiency of the roading network,
(e) The loss of soils with special qualities,
(f) The ecological values of significant indigenous vegetation and significant habitats of indigenous fauna,
(g) The heritage and cultural values of the District,
(h) The water quality of the District's surface and groundwater resources, and
(i) Public access to or along the rivers and lakes of the District,

particularly through the use of minimum (and average) allotment sizes.

4.4.14 *Policy – Back Country Amenity Values*

To ensure that activities avoid, remedy or mitigate adverse effects on the open space, landscape, historic, natural character, natural quiet and amenity values of the quality and range of recreational opportunities available in, the District's back country and/or remote areas.

23 Again, some parts of the provisions cited above relate more closely to ecological issues, heritage issues or other issues. Those that relate more directly to landscape and amenity are most relevant to this report.

THE EXISTING LANDSCAPE CONTEXT

24 Section 2.3.1 of the CODP gives an overall description of the landscape character of the district. Most relevantly:

The Central Otago landscape is nationally (and internationally) renowned for its scenic quality. The physical landscape of the district is very much a product of geology, climate, and the early removal of forest on the mid slopes. More recent human activities have added an overlay at lower altitudes.

The predominantly Haast schist rock has been block faulted to produce northeast to southwest trending ranges, rising to well over 1000 metres. Their relatively gentle slopes overlook broad, shallow valleys filled with glacial outwash gravels, forming terraces whose steep edges are a significant feature. Further east, tertiary sediments have been preserved in the valley floors, including seams of lignite and oil shale. Erosion has left bare rock outcrops with vast numbers of rock tors whose unusual shapes and prominence make them highly distinctive features. The climate is sub-continental with very cold winters, hot summers and wide ranges of daily temperatures. Snow lies during several months above 1000 metres. Being far from the sea and in the lee of the Southern Alps precipitation is very low in the valleys, eg, Alexandra 344mm, increasing with height to 2000mm on the tops of the higher ranges.

Vegetation at the time of European settlement was dense shrublands and tussock grassland which has been modified by burning, grazing, oversowing and topdressing to produce predominantly exotic grassland. The Upper Manuherikia Valley and Maniototo Plain are irrigated to provide grass for pastoral production. In the Clutha and Lower Manuherikia Valleys, irrigation supplies pastoral production, orchards and vineyards.

Distinctive characteristics of Central Otago landscapes are the rock tors or outcrops at all altitudes, often providing very recognisable skyline features, the subtleties of the rippling ground contours revealed under a veneer of tussock grassland, and the bold patterning of beech forest or shrubland remnants along some water courses.

The results of human endeavour are highly visible aspects of the landscape because of the open nature of the country. Most noticeable are the homesteads, accompanied by stands of trees, usually poplar. These trees provide a spectacular display during the autumn months. Water races and small dams formerly used for gold sluicing and now for irrigation and isolated remnants of old stone cottages; and shelter belts of trees, especially in the Upper Clutha and Manuherikia Valleys, also give a sense of history. Remnant structures such as stone walls and associated decaying cottages are small in scale and add to rather than dominate the landscape. Former mining sites are now an integral and distinctive part of the District's landscape, particularly in places such as St Bathans, Bannockburn and the herring bone tailings at Northburn.

25 The Central Otago District Council (CODC) commissioned the Central Otago District Rural Review[4], (the Rural Review Report) which was completed in 2008, in order to provide a district-wide assessment of landscape character and to inform potential future Plan Changes. I consider it to be a useful independent assessment and description of the landscape character of the district. The landscape units identified and described by the Rural Review Report within the Manuherikia catchment are shown on Appendix 5 of this report. The identified units are rated in relation to their sensitivity on a scale of:

i. Extreme sensitivity

[4] "Central Otago District Rural Review – landscape assessment report and recommendations", LA4 Landscape Architects, a report to the Central Otago District Council.

ii. High sensitivity

iii. Significant sensitivity

iv. Moderate sensitivity

v. Limited sensitivity

vi. Low sensitivity

Landscape character of the Falls Dam area

26 In relation to the proposed Falls Dam activities, the existing Falls Dam and reservoir and the proposed enlarged reservoir are within *Unit 27 – Upper Manuherikia River* of the Rural Review Report. It appears most likely that any dam construction works and associated roading etc would also be within this unit.

27 In relation to *Unit 27 – Upper Manuherikia River*, the Rural Review Report notes that the Manuherikia starts in the Hawkdun and St Bathans Ranges draining into Falls Dam. It is a sensitive landscape in terms of potentially incorporating any changes or future development because of its high natural character values, however it has a small viewing audience due to its remoteness. Additionally, pasture regimes have altered the tussock vegetative character and power lines are also visible. Visual absorption capacity is low and sensitivity is rated as significant on the scale set out above.

28 As is discussed in detail in ecological reporting associated with the Feasibility Study, the area around the Falls Dam and its reservoir has had its original vegetative cover modified by many decades of pastoral farming. The general character of the flats surrounding the reservoir is of remote high country farmland rather than of wilderness, although character quickly becomes wilder as one climbs away from the reservoir. Wetlands to the western side of the reservoir add natural character and interest. On the eastern side of the reservoir, at the toe of the Home Hills, areas of considerable remnant native ecology fill a number of gullies. I understand that these areas are given some protection by legal covenants resultant from past tenure review.

29 In a general sense, the character of the Falls Dam area is of a remote, farmed high country area with a degree of wildness associated with it, as can be seen on Photographs 16 to 22 of

Appendix 7. The existing dam is an obvious and striking man made element. While perhaps less obviously so to many observers, the reservoir is also the result of human modification of the landscape. The gullies on the eastern side of the reservoir provide pockets of high natural character.

Landscape character of the command area of a raised Falls Dam

30 Practically the entire area that would have new irrigation enabled on it under the proposal is within *Unit 16 – Foothills of the Dunstan Range northwest of the Manuherikia River*. The potential high race itself is also within this unit.

31 In relation to *Unit 16 – Foothills of the Dunstan Range northwest of the Manuherikia River*, the Rural Review Report notes that the foothills and lower slopes of the Dunstan and other ranges within the district are distinguished by the generally rolling topography and deeply incised gullies. In places there are distinctive rocky hills. The higher slopes are clothed in tussock with green pasture below. There are clumps of natives and pines in some of the gullies. Some of the foothills are divided into rectangles with fields of varying sizes and uses. The landscape is generally expansive and open and creates a foreground to the Dunstan Range. The Rural Review Report finds that current agricultural practices, including changes in pasture regimes are appropriate except in higher exposed locations. Additional tree planting, particularly if it curbs erosion, should be encouraged. Visual absorption capacity is rated as moderate and sensitivity is limited.

32 Overall, the landscape character of the floor of the Manuherikia Valley is that of expansive, somewhat open, rolling farming country; divided into broad paddocks that are variously used for grazing and cropping. Considerable irrigation currently exists although this is not consistent throughout the year. There is a degree of contrast with the surrounding dun slopes of the hill and mountain country. The valley is relatively treed and, in conjunction with topography, this means that views are not extensively long. Stands of willows, poplars and lines of coniferous shelter trees punctuate the horizontal lines of the landscape and the trappings of farming production (fences, tracks, farm buildings, dwellings, occasional rural towns) are readily apparent.

33 The Photographs 1 to 9 of Appendix 7 illustrate the current character of the floor of the Manuherikia Valley.

Landscape character of the Manuherikia River

34 The Manuherikia River below the Falls Dam is *Unit 21 – Lower Manuherikia River* of the Rural Review Report. The report notes that below the Falls Dam the Manuherikia enters a gorge and then takes a braided form as it meanders through flat pasture and willows. It meets the Clutha at Alexandra in a rocky gorge. The lower Manuherikia, which includes the river flats and slopes northeast of Alexandra, incorporates more development than other (river flats) units, and the extent of this increases as one approaches Alexandra. The Rural Review Report notes that, in general, buildings sited along river banks may adversely affect the river's character, however the lower Manuherikia offers more opportunities for development, provided buildings are sited carefully. The river is exposed to view from the State Highway and existing development in the area. Visual absorption capacity is moderate and sensitivity is rated as limited. There is opportunity for additional development, provided that existing trees are retained, houses are not placed in prominent locations, and care is taken to retain rural character.

35 Details of the current character of the Manuherikia River watercourse are given in the reports of the ecologists and hydrological engineers associated with the Feasibility Study. I understand that the watercourse is significantly degraded from an ecological perspective. Flows are often low resulting in unwanted weed accumulation, particularly upstream of the Dunstan Creek confluence. Even from a purely landscape character or visual perspective, the course of the Manuherikia lacks natural character. Grazing often goes right to the water's edge and willows and broom abound along its banks. Varied or native vegetative riparian communities are rare. Certainly the river provides an often picturesque amenity but natural character is relatively low. An illustration of the river is provided by Photograph 6 of Appendix 7.

Landscape character of the Mount Ida Dam area

36 In relation to the proposed Mount Ida Dam activities, the proposed structure and reservoir are within *Unit 23 – Ida Valley, Maniototo, Taieri Plains*.

37 In relation to *Unit 23 – Ida Valley, Maniototo, Taieri Plains*, the Rural Review Report notes that the Ida Valley is very open and exposed with flat terrain. This expansiveness and farming land uses are the main characteristics of the valley. The openness is an important quality that is vulnerable to change. Visual absorption capacity is ranked as very low for the valley but sensitivity is limited.

38 While the proposed dam and inundation location is within identified *Unit 23*, it is more correctly a relatively isolated upper part of White Sow Valley with a somewhat different landscape character to the Ida Valley as a whole. The ecological work identifies exotic pasture grasses as being dominant but these are interspersed with tussock species including some large, relatively intact sweeps. Modified sedge-lands and matagouri shrub-lands are also present. The overall character is of a remote high country valley; farmed but not intensively and still relatively high in natural character. Looking north up the valley, the valley floor forms a fittingly golden foreground to the dun mountain slopes. This character is illustrated by Photograph 13 of Appendix 7.

Landscape character of the command area of the proposed Mount Ida Dam

39 The area that would potentially have new irrigation enabled as a result of the Mount Ida Dam is contained within *Unit 23 – Ida Valley, Maniototo, Taieri Plains* of the Rural Review Report, which is discussed above. At a finer scale, the command area of this dam is separated into two areas; 1000ha in the upper Ida Valley to the north of Oterehua, and 1000ha in White Sow Valley between the dam itself and Reed Road.

40 Both the upper Ida Valley and the White Sow Valley have a much simpler, less rolling form than the Manuherikia. This means that views are often very long and landform is more legible. The upper Ida Valley area has the character of open, expansive grazed paddock land; relatively verdant at some times of the year and rather arid at others. Both SH85 and the Central Otago Rail Trail (CORT) pass through it. Of similar character is the relevant part of White Sow Valley that lies to the south of SH85; farmed pasture land in large paddocks. Views are very long, expansive and open due to flat, uninterrupted topography. The relevant part of White Sow Valley that lies to the north of SH85 is somewhat less modified in character, being less intensively farmed, particularly its western half that accommodates the course of the course of the Ida Burn.

41 Photographs illustrating the character of the upper Ida and White Sow valleys are included in Appendix 7.

Landscape character of Ida Burn

42 The Rural Review Report does not describe the Ida Burn itself. The ecological reporting shows that in the vicinity of the proposed dam structure, partially intact native vegetative communities occupy dry braid areas and wetter bogs and sedge-lands. In this vicinity, and generally to the

north of SH85, the course of the Ida Burn takes the form of a gravel bed that accommodates various braids within open tussock/grass land cover, as can be seen on Photograph 13 of Appendix 7. Flows are often low and at times the watercourse is dry. As the Ida Burn continues west into the Ida Valley, it traverses more managed farmland and its course become more modified, often grazed to its edge and accommodating willows as it progresses past Oterehua and the Ida Burn Dam towards the Poolburn Gorge.

Landscape values associated with the relevant areas

43 The preceding paragraphs discuss the landscape character of the relevant areas. Landscape value is the relative value that is attached to different landscapes by society[5]. The relevant statutory documents discussed in the previous section of this report are of help in this regard. Also of some help are some non-statutory documents, although these have not been through the official public process that the statutory documents have.

44 The statutory documents make it clear that the community places value on:

- The natural character and amenity values of water bodies in Otago Region generally, especially those identified as outstanding (which the water bodies potentially affected by the proposed activities are not).
- Some identified ecosystem and habitat values in relation to the Manuherikia River and the Ida Burn.
- The ONLs of the Central Otago District. In relation to the proposed activities, part of the inundation area of a raised Falls Dam is within an ONL.
- Back country characteristics of the Central Otago District in general and the amenity value of landscapes. Of particular relevance in this regard are the identified SALs.

45 In relation to the proposed activities, I consider that the statutory documents show that the areas of landscape that are potentially affected by the proposed activities are valued by the community in the way that all rural landscapes are valued but they are not elevated in value the way that some particular landscapes are (the identified ONLs). The exception to this is the part of an

[5] Landscape Institute and Institute of Environmental Management and Assessment; 2013; 'Guidelines for Landscape and Visual Impact Assessment – 3rd Edition'; Routledge, Oxford, page 157.

enlarged Falls Dam reservoir that would encroach into the identified ONL. In addition, the Falls Dam itself and the existing reservoir are within a SAL.

46 Relevant non-statutory documents that provide some guidance regarding community values in relation to landscape include the Community Proposition document prepared for the Manuherikia Catchment Water Strategy Group and the World of Difference information regarding the Central Otago District.

47 I understand that the Community Proposition document was prepared following public consultation and submissions in order to reflect community views regarding water and irrigation management in the Manuherikia catchment. In relation to how landscape might be valued, the document states:

> *"The essential character of Central Otago has particular meaning for those who live there and the increasing number of people who visit … For many, the strong seasonal colour palette is reflected in the regional identity, which represents Central Otago's climatic extremes. The most distinctive point of difference is colour – the blue of the big sky and the gold of the rolling hills"*[6]

48 The Community Proposition document gives comments on many issues but in relation to landscape specifically, the document states the following aspirations for a successful irrigation regime:

- While aspects of the appearance of the area may change, the landscape will have retained key elements of its essential character;
- Maintaining braided river habitats;
- Preservation of Dunstan Creek Valley;
- Minimum visible landscape change on elevated areas;
- Retention of natural appearance of surrounding hills and natural valleys;

[6] "Manuherikia Valley Water – A Community Approach to Water Use and Management – Community Proposition", a report prepared for the Manuherikia Catchment Water Strategy Group, 20 April 2013, page 5.

- Development of alternative vegetation cover compatible with pivots and other aspects of irrigation development.

- Protection and enhancement of lake and river character for the appreciation of visitors.

49 "A World of Difference" is a tourism marketing initiative created in conjunction with the Central Otago District Council. I have no knowledge of what degree of public input was involved. The body of information relating to the World of Difference initiative is contained on its website. It does not directly relate to landscape but does reflect some of the sentiments set out in the Community Proposition, describing Central Otago as "*breathtakingly different with vast undulating landscapes, rugged snow-capped mountains, clear blue rivers, deep gorges and tussock-clad hills*"[7].

50 In summary, following on from paragraph 44 above that relates to statutory documents, I consider that the relevant non-statutory documents give some more guidance regarding landscape values in relation to the proposed activities specifically. They reinforce that the natural character of water bodies is valued and that elevated land and hill country is more valued than valley floor lands. They also give useful detail on the aspects of the landscape that contribute to visual amenity.

Aspects of the landscape resource that are potentially affected by the proposed activities

51 The above paragraphs give a description of the landscape character and values associated with the areas that are potentially affected. Landscape effects are the effects that activities may have on the landscape as a resource in its own right[8]. The aspects of the landscape that are potentially affected by the proposed activities (landscape receptors)can be identified as:

- The landscape character of the Falls Dam and reservoir area;

- The landscape character of the command area of a raised Falls Dam;

- The landscape character of the Manuherikia River;

- The landscape character of the Mount Ida Dam and reservoir area;

- The landscape character of the command area of the proposed Mount Ida Dam;

[7] A World of Difference website homepage, 28 May 2014, http://www.centralotagonz.com/.
[8] Landscape Institute and Institute of Environmental Management and Assessment; 2013; 'Guidelines for Landscape and Visual Impact Assessment – 3rd Edition'; Routledge, Oxford, page 157.

- The landscape character of the Ida Burn.

POTENTIAL VISIBILITY OF THE CHANGES TO THE LANDSCAPE THAT THE PROPOSED ACTIVITIES WILL BRING

52 Visual effects are the effects that activities may have on specific views and on the general visual amenity experienced by people[9].

53 In relation to a raised Falls Dam and its associated reservoir, these new elements in the landscape will be potentially visible from the land immediately adjacent to them, being the very northern end of Fiddlers Flat Road and the areas north of the reservoir accessed via Home Hills Runs Road. They will also be potentially visible (at longer distances) from the following elevated areas:

- Much of the west-facing slopes of the Hawkduns;
- Some of the west-facing slopes of Home Hills;
- Some of the east-facing slopes of Tunnel Hill;
- Some of the east-facing slopes of the Saint Bathans Range;
- Some of the east-facing slopes of the Dunstans in the vicinity of Dunstan Peak and A3NK.

54 As can be seen on Appendix 4, some of this elevated land is publicly accessible, being managed by DOC, and is used recreationally.

55 In relation to the proposed Mount Ida Dam and its associated reservoir, these new elements in the landscape will be potentially visible from the land immediately adjacent to them. An unformed paper road also allows public access close to the dam and reservoir location and round to Home Hill Runs Road from SH85. A farm track currently runs close to, but not on, the alignment of this paper road. The dam and reservoir would also be potentially visible from the following elevated areas:

[9] Ibid, page 158.

- Some of the south and west facing slopes of the Hawkduns/Ida Range;
- The west-facing slopes in the vicinity of Little Mount Ida and Woodney Hill;
- Some of the south and east facing slopes of the Idaburn Hills and Seagull Hill;
- Some of the northern part of Rough Ridge in the vicinity of A3G7.

56 As can be seen on Appendix 4, little of this elevated land is publicly accessible apart from the relevant slopes of the Hawkduns and the Ida Range.

57 Regarding the proposed distribution infrastructure, the details of these aspects of the project are currently somewhat uncertain. In broad terms, the works associated with a high race (depending on alignment, reinstatement of disturbed ground, etc) will theoretically be visible from much of the floor of the Manuherikia valley as it extends southeast of the race, and also from the west facing slopes of the Blackstone Hills. Obviously distances, rolling topography, vegetation, structures and minor landforms will, in practice, often screen or inhibit this theoretical visibility. In addition, other individual elements of distribution infrastructure (intakes, aqueducts, etc) will be visible within certain public and private areas.

58 The command areas and the changes to landscape patterns within them will be broadly visible from the elevated lands that surround and separate the valley floors (Raggedy Range, Dunstans, North Rough Ridge). These elevated areas are generally in private ownership but some public access routes cross them. The changes to landscape patterns within the command areas will also be immediately and obviously visually apparent to observers that live, work or travel within the valley floor lands of the command areas. These are populated agricultural areas that include a number of small rural settlements. The presence of people, activity, traffic, etc will all increase. Many well used roads, including State Highway 85 (SH85) and the CORT pass through these areas.

59 The watercourses of the Manuherikia River and the Ida Burn are generally lined by publicly accessible places and are crossed by many roads and the CORT. Observers in these public places, as well as those on adjacent private properties, have the opportunity to gain views of the watercourses themselves.

60 Observers within the various areas set out above (visual receptors), including travelers on the roads and trails are potentially affected by visibility of the changes that the proposed activities will bring. Photographs showing the existing visual situation form Appendix 7 to this report.

THE LANDSCAPE EFFECTS OF THE PROPOSAL

61 Paragraphs 24 to 51 above discuss the existing landscape context of the proposed activities and the landscape character of the various potentially affected areas and features. I will discuss the potentially affected aspects of the landscape resource in turn and comment on implications for project feasibility. Given that the purpose of this report is to advise on project feasibility, only a preliminary assessment of effects has been undertaken. A full assessment of effects will require full detail of the proposed activities and more rigorous assessment work.

The landscape character of the Falls Dam and reservoir area

62 The location of the existing Falls Dam and the proposed raised dam structure (whatever form that may take) is immediately outside (west of) the ONL identified by the CODP (as is shown on Appendix 3 of this report). In this vicinity, the ONL takes in public (DOC) and private land that that forms the western slopes of the Home Hills that climb towards the southeast. The ONL includes the three larger streams that drain into the Falls Dam from the Home Hills (the gullies that contain these streams are also subject to conservation covenants). The ONL also includes public (DOC) land that descends from the Hawkduns to meet the northern edge of the existing reservoir. The ONL then also takes in elevated land on the western side of the existing reservoir but not the lower land of Shamrock Gully, which (along with the dam itself and the surface of the reservoir) are within a SAL.

63 It is noteworthy that the Rural Review Report did not categorise the land around the Falls Dam reservoir as being part of an ONL. That report categorised the steep slopes of the Hawkduns above the Mount Ida Water Race as ONL (shown in purple on Appendix 5), not any land below that.

64 In relation to the dam location itself, I consider that the construction of a new raised dam will certainly increase the effect on landscape character of the existing dam; it will be significantly larger and therefore of more significance in terms of its influence on perceived landscape

character. The scale of proposed works is large and the new structure will, in practical terms, be permanent and irreversible. However, it will not bring an entirely new effect; it will be an intensification or expansion of the influence of the existing dam structure. I therefore consider that the susceptibility of landscape character to be altered by the new dam and associated works is lower than in most locations in the district. The dam location is not identified as being part of an ONL, meaning that it is less valued in terms of landscape character than other parts of the district, however, it is identified and being part of a SAL, indicating that visual amenity in this area is valued.

65 In an overall sense regarding the dam works themselves, I consider that while the magnitude of effect on landscape character is high in a local sense, the specific location is not particularly sensitive to this character change, given the presence of the existing dam. I consider that final design and finishing of the dam structure (particularly its downstream face and immediate vicinity) could and should be done so as to reduce discordance with existing landscape character as much as is practical. This may involve design of landform/earthworks to mimic or abstract natural forms and revegetation/rehabilitation of all disturbed ground to tie into surrounding vegetative cover or to create ecological and visual interest. In relation to consent-ability or feasibility, these appear to be issues that could be suitably resolved rather than causing insoluble problems.

66 In relation to an enlarged reservoir area, I refer to Appendix 6. A reservoir resultant from a 27 metre raise of the dam will encroach into the identified ONL to the north of the existing reservoir towards Ten Chain Creek. It will also encroach into the vegetated gullies on the eastern side of the existing reservoir that are within the ONL. It will spread further west into Shamrock Gully, part of the identified SAL. I understand that for part of the year, a variable but considerable area of this reservoir would be dry and take the form of mudflats. Again, while a man-made reservoir in this location will not be an entirely new effect, the influence that the reservoir has on landscape character will dramatically increase, the new reservoir being very significantly larger. I understand that from an ecological perspective, the gullies within the ONL on the eastern side of the reservoir are particularly susceptible to this change in that flooding of them will practically negate their value. As discussed, the areas identified as ONL within the district are highly valued in landscape terms. Therefore the expansion of the reservoir to the east and north will flood land that is valued in its current state. I consider that the effect on landscape character of this vicinity

that results from the reservoir expansion will be of a high degree. Mitigation measures could potentially soften this effect through suitable edge treatment of the reservoir, possibly with ecological enhancement or even significant offset areas adjacent to the expanded reservoir that seek to create new areas of ecological and natural character merit.

67 Regarding consent-ability or feasibility, these issues regarding the reservoir relate to Section 6(a) and 6(b) of the RMA. They are therefore very significant issues and will have some effect on feasibility. I am aware of a recent decision of the Supreme Court of New Zealand that relates to Sections 6(a) and 6(b), known as the King Salmon decision[10], although I am not fully aware of its implications. It appears that the decision may have the effect of making activities that have any adverse effect an ONL less feasible than has previously been thought.

68 Notwithstanding the above (and as previously noted) the boundaries of the ONL identified by the CODP do not follow the boundaries of the areas identified by the Rural Review Report. They appear to follow (at least in part) cadastral boundaries. On the face of it, there appears to be a valid case to conclude that while the northern part of an expanded reservoir would be within an ONL identified by the CODP, the actual landscape character of this area is no different to the area that is not identified as an ONL, hence the effect of the northern part of the expanded reservoir is no different to the effect of the southern part. This may help the ability of the project to gain consent if an 'overall broad judgment' approach to consenting is taken rather than an 'environmental bottom line' approach. The King Salmon decision appears to endorse the latter. In any event, the location of the reservoir is certainly sensitive in terms of its character and the change proposed is of a high magnitude.

69 Following on from the above, my overall comment regarding the expanded reservoir is that it will cause significant uncertainty for feasibility. This uncertainly will reduce if the area of the new reservoir that encroaches into the identified ONL is reduced and if significant offsets are proposed.

The landscape character of the command area of a raised Falls Dam

70 The area that will receive new and more consistent irrigation as a result of the Falls Dam work is described approximately in in paragraphs 30 to 33 above. The landscape character effect in

[10] Supreme Court decision SC82/2013 [2014 NZSC 38], Environmental Defence Society Incorporated vs The New Zealand King Salmon Company Limited.

relation to this area is essentially the intensification of productive land use such that the current farming pattern that covers this valley floor will be incrementally be replaced by another farming pattern; one that involves the reduction of dry-land areas, the intensification of existing irrigation, different farming practices including dairying, consequential agricultural structures, water distribution infrastructure including intakes, races, presence of pivot irrigators, reduction of shelterbelts and trees in general, an increase in green, verdant appearance of pasture, increase in traffic and general busyness, and other consequential changes. Rather than a replacement of the current farming pattern, this change is perhaps better described as an intensification of the existing pattern.

71 The exact detail of the changes in land use pattern that will occur are somewhat uncertain but some examples of newly irrigated areas exist such as the southern part of the Mackenzie Basin, although that landscape was significantly different to the Manuherikia Valley in a number of ways. With reference to the various areas of new/improved irrigation set out on Appendix 1, I understand that it is likely that:

- The change in the "Galloway" area will be relatively slight. This is an area of lifestyle block properties. It is likely that while irrigation will become more intense, it will not involve large scale operations or pivots.

- In the "Manuherikia" area (again, a lifestyle block area), the irrigated area will approximately double. Increased efficiency is likely to encourage intensification and growth of orchards and vineyards. The Springvale to Chatto Creek area is likely to go to pivot irrigation and be more consistently green throughout the year.

- The valley from Cambrians down to Omakau will undergo the most change. Crop/grass production intensity would practically double. Pivots would be common and the land would be consistently green (pivots are already increasing dur to the efficiency requirements of the ORC). Intensity of activity, traffic, structures and presence of people would similarly increase. The "Downs" and "Greenfields" areas would undergo the most change, from only slightly irrigated to consistent irrigation via pivots.

- The main intake structure is likely to be approximately 500 metres upstream of the Manuherikia River bridge on Loop Road, which would involve a 5 to 6 metre high weir

and intake. Another possibility is to not use an intake structure but to construct a canal up to the dam structure itself.

72 I understand that water quality regulations that primarily come from the Regional Plans will mean that part of the new pattern that covers the valley floor will be increased fencing and exclusion of grazing from watercourses.

73 The scale of the landscape character effect is very large; effectively an area of some 25,000ha will undergo a considerable alteration in landscape character over time. The alteration is likely to be permanent in practical terms. The valley floor area is, of course, currently irrigated and farmed and has been for many decades. Existing schemes provide irrigation and have capacity to provide more. In this respect, the valley floor area is not as susceptible to the specific change that is proposed as many other areas of landscape would be (such as the Mackenzie Basin example). The community place value on the valley floor lands (as all rural landscapes) but less so than on the identified SALs (which are often elevated areas) and ONLs. As noted previously, the Community Proposition places more value on elevated lands than on valley floors.

74 In an overall sense, I consider that while the magnitude of effect is high, the landscape character of the Falls Dam command area is not highly sensitive to the particular change that will occur. Mitigatory factors will be of relevance. While the relevant area will become more verdant, this may include significant native and riparian vegetation as well as sweeps and stands of tree planting that contribute positively to landscape character. I understand that while shelterbelts often need to be removed, an area of pivot irrigation need not be devoid of trees; significant stands can be located within gaps between pivot circles. If some suitable vegetation policy was adopted throughout the command area, this could create positive/offset effects in relation to natural character and rural amenity. On balance, I consider that these effects can potentially be suitably managed in relation to project feasibility.

The landscape character of the Manuherikia River

75 The landscape character of the watercourse of the Manuherikia is discussed in paragraphs 34 and 35 and is relatively degraded in terms of flows and vegetation. The existing flow characteristics of the river have been altered from their natural state through irrigation takes over past decades. In my understanding, a raised Falls Dam would enable the formulation of a flow regime down the Manuherikia that provides managed variation of flow volumes including fresh

flow and flood events. I understand that a flow regime could be potentially formulated that (particularly above the Dunstan Creek confluence) significantly improves the watercourse's ecological health in relation to weed accumulation, maintains and improves the braided habit of the river, provides improved trout habitat and increases recreational opportunities. Similar to the existing situation, this flow regime would be the result of human management, rather than nature.

76 As has been mentioned, I understand that in the event of a raised Falls Dam scenario, Regional Plan regulations are likely to require increased fencing of waterways and exclusion of stock from the margins. There appears to be the potential to provide improved riparian vegetation along the course of the Manuherikia in conjunction with a managed flow regime. This sort of vegetative improvement would require considerable work (weed/willow clearance and new planting) and could be done in conjunction with creating riverside recreational spaces and access.

77 Based on my understanding set out above, there is a potential positive effect on the landscape character of the Manuherikia River downstream of the dam location. This potential effect is of a relatively large scale, covering the watercourse all the way to the Clutha but would be most significant in the upper parts of the catchment. While the flow regime itself will be the result of human intervention, as would any weed clearance and riparian vegetation improvement work, natural processes and patterns (plant, bird and fish ecosystem health and expansion) would potentially significantly improve in relation to the current situation. Natural character could significantly improve overall. While the watercourse is currently relatively degraded, the statutory documents and the Community Proposition make it clear that significant value is placed on rivers, particularly their natural character. Overall, I consider that the identified potential positive is of relatively high significance and can assist project feasibility (potentially offsetting other adverse effects to some degree). To be of most value, this positive effect must be ensured by a carefully formulated and realistically deliverable flow regime, in conjunction with some programme including funding (possibly in conjunction with other entities or community groups) for ongoing riparian improvement works.

The landscape character of the Mount Ida Dam and reservoir area

78 The location of the proposed Mount Ida Dam adjacent to Seagull Hill is not within an ONL or SAL identified by the CODP and is within an area of limited sensitivity identified by the Rural Review Report.

79 In relation to landscape character, the construction of a new dam in this location, regardless of the details of its construction, will bring a very considerable change to this northern part of White Sow Valley (generally the part of the valley north of SH85). A dam and its associated reservoir will become defining elements of this part of the valley; they will come to characterise it. The scale of the character change will be considerable but will generally be confined to the part of the valley that lies north of SH85 and south of the track that ascends Little Mount Ida. The change will be permanent.

80 The existing landscape character of this part of White Sow Valley is certainly susceptible to change. Its farmed golden high country atmosphere will be altered by the activities that are proposed, although elements of this character can remain intact around the dam and reservoir. The value that is attached to the landscape character of the relevant area is not as high as in other parts of the district. Rural amenity in general is, of course, valued but this location is not singled out by the relevant community documents in the way that other locations are.

81 Overall, I consider that the magnitude of the landscape character change is high but is restricted to a specific part of the valley. The sensitivity of the particular location is not unusually high compared to the rural landscapes of the district in general.

82 As discussed in relation to the Falls Dam and reservoir, I consider that final design and finishing of the dam structure and the edge treatment of the reservoir could and should be done so as to reduce discordance with existing landscape character as much as is practical; including giving consideration to design of landform/earthworks and revegetation/rehabilitation of all disturbed ground to tie into surrounding vegetative cover or to create ecological and visual interest. Again, some degree of positive or offset effect in relation to natural character could be provided through creation of ecosystem restoration areas or similar.

83 Regarding consent-ability or feasibility, it appears that the landscape character effects of the Mount Ida Dam and reservoir are likely to be carefully scrutinised via the resource consent

process but are ultimately likely to be tolerable provided detailed design is appropriate, suitable mitigation/offset measures are proposed and positive effects stem from other aspects of the project overall.

The landscape character of the command area of the proposed Mount Ida Dam

84 The area that will potentially receive new and more consistent irrigation as a result of the Mount Ida Dam is described in paragraphs x to xx above, taking in part of the upper Ida Valley and part of White Sow Valley. Intensive irrigation would be available to these areas. As described in relation to the Falls Dam command area, the landscape character effect in relation to this area is essentially the intensification of productive land use such that the current farming pattern that covers this valley floor will be incrementally be replaced by another greener, more intensive farming pattern.

85 The scale of the landscape character effect is much smaller than in relation to the Manuherikia Valley; effectively an area of some 2,100ha will undergo a considerable alteration in landscape character over time. As with the Manuherikia Valley, the relevant valley floor areas are currently farmed and have been for many decades; also some degree of irrigation is extant. This means that the relevant valley floor areas are not as susceptible to the specific character change that is proposed as many other areas of landscape would be. The community place value on all rural landscapes but the relevant areas are not identified as being parts of an SAL or ONL. Additionally, the community generally place more value on the less modified elevated landform areas of the district.

86 The magnitude of effect is less than that associated with the command area of the Falls Dam. As discussed, the valley floor lands that form the command area of the Mount Ida Dam are not highly sensitive to the particular change that will occur. However, these areas are particularly open and expansive; the character change will be pronounced and will decrease openness. As discussed in relation to the Manuherikia area, the landscape pattern that will emerge within the Mount Ida Dam command area may include significant native and riparian vegetation as well as sweeps and stands of tree planting that contribute positively to landscape character. If some suitable vegetation policy was adopted throughout the command area, this could create positive/offset effects in relation to natural character and rural amenity.

87 Overall, I consider that provided suitable conditions/undertakings are put in place to ensure the abovementioned mitigatory measures, the effects on the landscape character of the relevant Ida and White Sow valley floor areas can suitably managed such that they are not a primary threat to project feasibility.

The landscape character of the Ida Burn

88 The landscape character of the watercourse of the Ida Burn is discussed in paragraph 42. For much of the year it has very low or practically non-existent flows. As discussed in relation to the Manuherikia River, I understand that a Mount Ida Dam would enable the formulation of a flow regime that provides managed variation of flow volumes including fresh flow and flood events and that improves the Ida Burn's ecological health, braided habit, trout habitat and increases recreational opportunities. Regional Plan regulations are likely to require that in the presence of increased irrigation, there is more fencing of waterways and exclusion of stock from margins. Again, there appears to be the potential to provide a relatively extensive positive effect in terms of improved riparian vegetation, natural character and recreational spaces along the course of the Ida Burn and these are issues that are of value to the community. This potential positive effect can assist project feasibility, provided a carefully formulated flow regime and a programme for ongoing riparian improvement works can be put in place.

*Summary regarding landscape effect*s

89 The proposed suite of activities will result in effects on the landscape as a resource in its own right. In relation to project feasibility, I consider that these effects will have the following implications:

- The detailed design and finishing of the new Falls Dam and Ida Burn Dam structures should be so as to reduce discordance with the existing landscape character as much as is practical. This may involve design of landform/earthworks to mimic or abstract natural forms and revegetation/rehabilitation of all disturbed ground to tie into surrounding vegetative cover or to create ecological and visual interest.

- A suitable vegetation policy should be adopted and put in place in an ongoing way in relation to the command areas of the Falls and Mount Ida Dams to guide the treatment

of riparian areas and on-farm tree planting being incorporated into irrigated operations as appropriate so as to enhance or offset effects on natural character and rural amenity.

- A carefully formulated flow regime should be put in place in relation to both the Manuherikia River and the Ida Burn. Project feasibility would also be improved by a programme for ongoing riparian improvement works (in relation to natural character and recreational opportunities).

- The creation of the Ida Burn Dam reservoir will bring considerable landscape character effects that will be carefully scrutinised by the resource consent process. These will be contentious to some degree but unlikely to be fatal to project feasibility provided that mitigation measures (edge treatment, vegetation, rehabilitation of all disturbed areas) and possible offsets (areas of new habitat/natural character creation) are appropriately included.

- The expansion of the Falls Dam reservoir into the identified ONL to the north and east of the existing reservoir will cause significant uncertainty for feasibility. This uncertainty will reduce (but will not be eliminated) if the encroachment into the ONL is reduced and if significant offsets (most likely creating areas of ecological/habitat/natural character merit) are given.

THE VISUAL EFFECTS OF THE PROPOSAL

90 The potential visibility of the proposed activities is discussed in paragraphs 52 to 56 above. I will discuss the likely effects of this visibility on the quality of views and amenity experienced by observers below and comment on implications for project feasibility.

Visual effects of a raised Falls Dam and reservoir

91 The structure of a raised Falls Dam will be visible to observers immediately adjacent to it, i.e. those on public land adjacent to the southern end of the reservoir, or those immediately south of the structure in the area of Fiddlers Flat Road. Such observers are likely to be engaged in some recreation or visiting the area to specifically see the dam. A raised dam will be considerably larger than the existing structure and may be slightly downstream, however, it will still only be visible from its immediate surroundings due to its containment within the gorge. The visual

difference between the existing and proposed situations will be considerable; the dam will be a strikingly large element. While the magnitude of this visual effect will undeniably be high, measures such as treating the form and vegetative cover of the downstream dam surface so as to blend with surroundings would reduce visual contrast with the structure's context to a degree. Also, given that a dam structure currently exists and that observers will have the expectation of seeing a dam structure, I do not consider that they are particularly sensitive in terms of having visual amenity affected by the raised structure. Many observers are likely to visit the dam out of visual interest. Overall in relation to the dam structure itself, I consider that the potential observers are not particularly sensitive to the visual change. While the magnitude of visual effect will be high, it will not necessarily be entirely adverse. I consider that in a balance with all the other effects of the project, this visual effect would be manageable in terms of project feasibility.

92 The reservoir of a raised Falls Dam would cover a very large area. The area of the existing huts would be inundated and for periods of the year there would be very significant mudflats. The most significant expansion would be to the north of the existing reservoir. Observers that experience the visual effects of this expansion are those in the vicinity of the dam as described above or those in the area to the north of the existing reservoir, being users of the relevant part of Home Hills Runs Road, users of the reservoir itself or its shore, or users of the DOC land covering the west facing slopes of the Hawkduns and the area of fan topography northeast of the reservoir. Apart from farm owners/workers, these observers are likely to be engaged in recreation of some sort. The visual scene of the shallow basin that accommodates the reservoir will change quite dramatically under the proposed situation. The reservoir surface will dominate and define this vicinity in a visual sense.

93 Recreational observers as described above are sensitive to visual effects. Visual amenity or scenic beauty are likely to be strong contributors to such an observer being in this location at all. The statutory documents categorise the relevant area as being part of an ONL, indicating that the community place high value on the scenic qualities (amongst other qualities) of this location. Overall, I consider that the relevant observers are relatively highly sensitive to visual effects.

94 A outlined above, the scale and magnitude of the visual effect of an expanded reservoir are very high. However, the effect is unlikely to be unequivocally adverse, in the way that a large area of built form or industrial/mining activity might be in this visually wild context. The reservoir will appear natural to some degree and to some observers and may have some scenic quality of

itself. Its fluctuating level including large areas of mudflats at times will detract from this apparent naturalness. As discussed in relation to landscape character effects of the reservoir, edge treatment and areas of increased natural character (through native revegetation for example) would go some small way to mitigating the overall visual effect.

95 In summary, I consider that the visual effect of the expanded reservoir will be of a high degree but not necessarily wholly adverse. This issue will be examined and scrutinised in detail through a resource consent process. Offset measures are likely to be required. If these are carefully formulated, I do not consider that this visual effect on its own is fatal to project feasibility.

Visual effects of a Mount Ida Dam and reservoir

96 The structure of a Mount Ida Dam will be visible to observers travelling on SH85 or the CORT as they pass over the Ida Burn river corridor (for a stretch of approximately 800 metres of the road and trail). These views would be at distances of between 1.8 and 2 kilometres. The reservoir surface would not be visible in these views. A paper road also allows public access up this northern part of White Sow Valley towards Mount Ida and round to Home Hill Runs Road. This paper road in unformed (a farm track runs beside it) but it would allow legal access close to the dam structure and reservoir location. In addition to the dam structure there is likely to be a significantly improved road allowing access to the dam from SH85.

97 Travelers on SH85 or the CORT are susceptible to alterations or degradations to visual amenity and landscape aesthetics, particularly users of the CORT. The visual qualities of the landscape that are experienced from the CORT are of international renown. Notwithstanding this, the location of the proposed dam is not within an area identified as an ONL or SAL by the CODP, indicating that the relevant views are not as valuable as others. Nonetheless, I consider that the visual qualities appreciated by these CORT and SH85 users are sensitive to change.

98 Given the viewing distances from SH85 and the CORT, the dam structure will be a relatively minor mid-ground element in the view to the north. If it visually discords with its context, its visual effect could be high but if it visually blends in, its visual effect is likely to be of a lower degree. In my understanding, the downstream face of the Mount Ida Dam is envisaged to be an earth structure of some form. As discussed in relation to the Falls Dam, if this face is formed and vegetated so as to blend into its context, this would provide significant mitigation of visual effect. Even in this scenario, there will be plain visual evidence of irrigation activity by way of spillways,

races and an improved access road. Overall in relation to the dam structure itself, I consider that although the potential observers are relatively sensitive to this sort of change (particularly the CORT users), the visual effect could be made to be of a relatively low magnitude. Details of mitigation measures will be important but I do not see a primary threat to project feasibility.

99 In relation to the reservoir, potential observers include those that travel up the unformed paper road towards the north from SH85 and distant observers within the elevated DOC land on the Ida Range. Observers within the DOC land are at least 6 kilometres from the reservoir location. The reservoir will appear as a small part of a very broad landscape scene. I consider its visual effect to be of a particularly low degree for these observers. The paper road that runs past the dam location is currently entirely unused. Hypothetically, if the current project does not proceed, there is the potential for some future formation of the paper road (whether a vehicle track or a pedestrian/cycle trail) that would allow public observation of the Ida Burn in its current state, however this seems a somewhat remote possibility. The construction of a dam in this location is likely to improve public access and may create some public recreational amenity. Realistically, I consider that the reservoir of a Mount Ida Dam will have little visual effect other than on occupiers and users of the private land on which it is located.

Visual effects of irrigation and associated activities within the command area of the Falls Dam

100 The landscape character effects of the proposed activities in relation to the Falls Dam command area are discussed in paragraphs 70 to 74 of this report. The relevant visual effects will essentially be the effects of this landscape character change on the visual experience of observers. Observers that will potentially have their visual experience changed include those on the elevated lands that overlook the floor of the Manuherikia Valley (i.e. the Dunstans and the Raggedy Range) and those that live, work and travel within the valley floor area including users of SH85 and the CORT.

101 The Dunstans and Raggedy Range are generally in private ownership although they are crossed by some public roads and routes and contain some public areas. Currently, an observer within these elevated areas feels some contrast when viewing the valley floor; even in summer it is visually more verdant than the immediate surroundings of the mountains. Under the proposal, this effect would markedly increase. The valley floor will appear more consistently and deeply

green, with more of a patchwork of orderly production including the visible circles of pivot irrigated land. The visual contrast with the simple dun mountain slopes will be heightened. The scale of this visual change will be very large and in practical terms it is likely to be permanent; the magnitude of visual effect is very high. For most observers in these elevated locations, I consider that in visual terms, this contrast between the mountains and the valley floors is not necessarily adverse; in some ways it heightens the special character of being in the mountains. While it will be heightened, this visual contrast already exists. Overall, I consider that the visual effect on observers on high topography looking down on the valley floor will not be adverse to the degree that it threatens project feasibility.

102 The visual experience of travelling the roads and working on the farmland of the floor of the Manuherikia Valley would change considerably as a result of the proposal, as has been alluded to in relation to landscape character. A much greener, busier (visually and otherwise) form of visual pattern would surround observers of this sort in the future. The change would cover a large area and the views from many roads and individual locations would be affected; the visual effect would be of a very significant magnitude.

103 Those that live and work within a particular rural landscape often perceive it quite differently to travelers or visitors. Often it viewed less romantically as a place of production, employment and daily life (which is not to ignore its beauty). As a generalisation, I consider that those that live in, work in and occupy the valley floor of the Manuherikia are less sensitive to the visual effects on the valley floor itself than travelers or visitors. I take support in this generalisation from the statutory and non-statutory documents that have been discussed. While many views will considerably change, the identified SALs and ONLs will not be affected. As has been discussed, the manner in which significant tree planting is incorporated into the new pattern of the valley floor will have bearing on the visual experience that ultimately appears. Community consultation, input and the formulation of some policy or strategy in relation to planting within the irrigated areas could avoid or mitigate/offset visual effects on these observers. I consider that with suitable resolution of details, effects that jeopardise feasibility could become a low risk in relation to visual effects on valley floor occupiers.

104 With reference to Appendix 1, some 50 kilometres of SH85 traverses the area within which new or more intense irrigation will occur. This highway is well used by both locals and tourists and provides many picturesque vistas through the Manuherikia. The nature of these views will

change, particularly the foregrounds. Travelers currently have the visual experience of a farmed, rolling, somewhat treed valley floor. It is likely that the visual qualities will convey a less remote, busier picture under the proposed situation. Travelers on this highway (such as tourists) are perhaps more sensitive to the visual change to more intense agriculture than locals are. Some road users may value some specific vistas and may feel that visual amenity has been unreasonably affected. Again, it is relevant that the area is not identified as a SAL or ONL. Visual amenity is not as valued here as in other parts of the district. It is difficult to gauge what specific visual effects issues may come out of a public notification process but, for the purposes of this report, it appears that visual effects on these road users could be managed without fundamentally affecting overall project feasibility.

105 Users of the CORT are perhaps more sensitive to visual effects again. They are engaged in an activity closely associated with scenic quality. In relation to the command area of the Falls Dam, the CORT runs from Clyde to the Poolburn Gorge. The most noticeable change to visual patterns is likely to take place in relation to the stretch of trail between Chatto Creek and Poolburn Gorge. This stretch of trail already passes through orderly farmed land. In visual terms, the foreground contrasts to a degree with the backgrounds, being the less managed elevated topography. It is possible that some individual valued views may be affected but in a general sense, I do not see a fundamental change or severe adverse effect in relation to visible composition of the landscape.

Visual effects of irrigation and associated activities within the command area of the Mount Ida Dam

106 Many of the comments above in relation to visual effects within the command area of the Falls Dam also apply to the command area of the Mount Ida Dam. The character change that will occur as a result of irrigation enabled by the Mount Ida Dam is discussed in paragraphs 84 to 87 above.

107 The elevated areas that overlook the land that will potentially receive new or more intense irrigation (North Rough Ridge and Little Rough Ridge) are in private ownership. Long views (of approximately 6 kilometres and more) are available from public (DOC) land in the Ida Range.

108 Again, the visual experience of travelling the roads and working on the farmland within the command area of the Mount Ida Dam would change considerably as a result of the proposal,

with a greener, busier visual pattern surround observers of this sort. The change would at a much smaller scale than in the Manuherikia Valley and (with reference to Appendix 2) would generally affect parts of:

- SH85;
- Nelson Road;
- Ida Valley Omakau Road;
- Reef Road;
- White Sow Valley Road;
- Nursery Road;
- Reed Road.

109 SH85 is well used. Ida Valley Omakau Road is the main road to access the Ida Valley. The other listed roads appear to be of relatively low use.

110 Again, I consider that generally, those that live and work within this area are likely to be less sensitive to the visual effects on the valley floor itself than travelers or visitors since they are likely to perceive the relevant area as a working landscape rather than a purely picturesque landscape. The manner in which tree planting is incorporated into the new pattern of the valley floors will influence the final outcome and community input will be important. Given the long views and simple topography in the Ida and White Sow Valleys, it may be that minimal or less tree planting is appropriate here compared to the Manuherikia. I do not see that visual effects on local occupiers will be of primary concern in relation to project feasibility.

111 Approximately 4 kilometres of SH85 crosses the command area of the Mount Ida Dam. The landscape as viewed from these stretches of highway takes the form of rolling agricultural pasture backed by the Hawkdun and Ida ranges. While the agricultural patterns are likely to become more visually intense and busy under the proposed project, given the brevity of these stretches, I do not consider that the visual experience of a highway user will be significantly affected.

112 Approximately 4 kilometres of CORT also crosses the command area of the Mount Ida Dam. Again, the foreground of views will become more intensely green and managed and contrast with the mountain backdrop will be heightened. The overall visual characteristics that are experienced may be somewhat less wild and natural than currently. Again, given the brevity of the relevant stretch and the current agricultural patterns, I do not see that visual effects as experienced from this particular part of the CORT are particularly significant in relation to project feasibility.

Visual effects of changes to the flow of the Manuherikia River and the Ida Burn

113 The landscape character changes in relation to the courses of the Manuherikia River and the Ida Burn have been discussed in paragraphs 75 to 77 and 88. Users of roads, trails and riverside public spaces have the opportunity to view the river corridors themselves. As discussed in relation to landscape character, I understand that there is the potential to put in place a managed flow regimes that improve the watercourses in terms of braided habit and vegetation. These measures are likely to improve the visual characteristics of the watercourses to some degree. Further positive measures could take the form of riparian revegetation work. Overall, there does not appear to any adverse visual effect that would significantly affect feasibility.

Summary regarding visual effects

114 The proposed suite of activities will result in effects on specific views and on the general visual amenity experienced by people. In relation to project feasibility, I consider that these effects will have the following implications:

- The detailed design and finishing of the new Falls Dam and Ida Burn Dam structures should be so as to visually blend into their context as much as is practical. This is likely to primarily be achieved by earthworks finishing and vegetative rehabilitation.

- There is likely to be discussions and public submissions in relation to some individual views within the command areas of the proposed dams, whether from roads, private viewpoints or parts of the CORT. If appropriate, it may be that specific mitigation measures could be proposed in relation to these issues as they come up. Regarding the command areas overall, the formulation of a policy or strategy, in consultation with the

community, in relation to planting within the irrigated areas could avoid or mitigate/offset visual effects and this should be investigated.

- The expansion of the Falls Dam reservoir will bring visual effects of a high degree in relation to users of nearby public land. The effect will not necessarily be unequivocally adverse since the expanded reservoir may visually appear natural to some observers. Its level fluctuations and associated mudflats will detract from this however. Some mitigation measures may assist in relation to these visual effects. While this visual effect will be significant in relation to the resource consent process, it does not appear to be fatal to project feasibility in itself.

- The creation of the Ida Burn Dam reservoir not result in significant visual effects other than on the owners/occupiers of the land on which it is located due to minimal public access. These effects will not significantly affect feasibility.

CUMULATIVE EFFECTS

115 Cumulative landscape and visual effects are those that "*result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments or actions that occurred in the past, present or are likely to occur in the foreseeable future*"[11]. Cumulative effects assessment generally considers the additional effect that a project will have in conjunction with other projects of the same type[12].

116 This report has considered both the contemplated Mount Ida Dam and the raised Falls Dam. It has considered the effects of these in relation to the existing environment, which includes the current irrigation and associated farm practices that are being undertaken. There are numerous small scale dams and irrigation schemes in operation around the Manuherikia catchment and these have formed part of the environment as I have considered it.

117 Ultimately, in terms of landscape and visual issues, I do not see that the most relevant effects of the proposed project are cumulative effects; rather they are stand-alone effects of the actual activities that are proposed on the receiving environment.

[11] Landscape Institute and Institute of Environmental Management and Assessment; 2013; 'Guidelines for Landscape and Visual Impact Assessment – 3rd Edition'; Routledge, Oxford. Paragraph 7.2. Page 120.
[12] Ibid, paragraphs 7.6 to 7.12. Pages 121 to 122.

CONCLUSIONS

118 An assessment of feasibility in relation to landscape and visual amenity issues is essentially an assessment of how the landscape and visual effects of the proposed activities sit in relation to these statutory documents; the key issue being whether or not the effects are likely to be fatal or problematic in relation to gaining resource consent.

119 While a number of details of the proposed activities are yet to be finalised, I have conducted a preliminary assessment of the visual and landscape effects of the proposed activities in order to draw conclusions regarding project feasibility. I have considered the conclusions of the preliminary assessment of effects in relation to the relevant parts of the statutory documents as well as some relevant non-statutory documents.

120 The conclusions of my preliminary assessment have the following implications in relation to project feasibility:

- The detailed design and finishing of the new Falls Dam and Ida Burn Dam structures should be so as to reduce discordance with the existing landscape character and to visually blend with their context as much as is practical. This may involve design of landform/earthworks to mimic or abstract natural forms and revegetation/rehabilitation of all disturbed ground to tie into surrounding vegetative cover or to create ecological and visual interest.

- A suitable vegetation policy should be adopted and put in place in an ongoing way in relation to the command areas of the Falls and Mount Ida Dams to guide the treatment of riparian areas and on-farm tree planting being incorporated into irrigated operations as appropriate so as to enhance or offset effects on natural character and rural amenity. There is likely to be discussion and public submissions in relation to some individual views within the command areas of the proposed dams, whether from roads, private viewpoints or parts of the CORT. If appropriate, it may be that specific mitigation measures could be proposed in relation to these issues as they come up.

- A carefully formulated flow regime should be put in place in relation to both the Manuherikia River and the Ida Burn to improve and maintain the ecological health and braided habit of

the watercourses. Project feasibility would also be improved by a programme for ongoing riparian improvement works (in relation to natural character and recreational opportunities).

- The creation of the Ida Burn Dam reservoir will bring considerable landscape character effects that will be carefully scrutinised by the resource consent process. These will be contentious to some degree but unlikely to be fatal to project feasibility provided that mitigation measures (edge treatment, vegetation, rehabilitation of all disturbed areas) and possible offsets (areas of new habitat/natural character creation) are appropriately included.

- The expansion of the Falls Dam reservoir into the identified ONL to the north and east of the existing reservoir will cause significant uncertainty for feasibility through landscape character effects and, to a lesser degree, visual effects. This uncertainty will reduce (but will not be eliminated) if the encroachment into the ONL is reduced and if significant offsets (most likely creating areas of ecological/habitat/natural character merit) are given.

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