BEFORE THE HEARING COMMISSIONERS APPOINTED BY OTAGO REGIONAL COUNCIL

Under	the Resource Management Act 1991
In the matter	of the proposed Otago Regional Policy Statement 2021 (excluding provisions renotified as part of a freshwater planning instrument)

STATEMENT OF EVIDENCE OF BRADDYN (BRAD) THOMAS COOMBS (LANDSCAPE AND NATURAL CHARACTER) ON BEHALF OF CONTACT ENERGY LIMITED

23 November 2022

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1. QUALIFICATIONS AND EXPERIENCE

1.1 My name is **Braddyn (Brad) Thomas Coombs**.

1.2 I am a Principal of Isthmus Group Limited. I have 25 years' experience working as a Landscape Architect in Aotearoa / New Zealand and the United Kingdom.

1.3 I have a Bachelor of Horticulture from Massey University (1995) and a Bachelor of Landscape Architecture (Hons) from Lincoln University (1997).

1.4 I am a fellow, registered member and a past president of the New Zealand Institute of Landscape Architects Tuia Pito Ora (**NZILA TPO**). I have the Ministry for the Environment Making Good Decisions RMA Decision Making Accreditation and I have acted as an Independent RMA Commissioner on several occasions.

1.5 Of relevance to these proceedings, I have worked on the following projects:

(a) review of the Horizons One Plan, Waikato Regional Policy Statement (**RPS**), New Zealand Coastal Policy Statement (2010), Marlborough District Plan, Palmerston North City Council Plan Changes 15A-H, Rodney District Landscape Strategy, Rangitaiki District Plan, Greater Wellington RPS, Tararua District Plan, Horowhenua District Plan, Wellington City Plan Change 33 and Otakanini Plan Change 8, in relation to landscape and natural character provisions for renewable energy projects for Mighty River Power (as it was then, now Mercury Energy);

(b) preparation of the Lakes A Zone provisions for the Rotorua District Plan, including confirmation by the Environment Court (1998-2001 and 2003-2004);

(c) the Kapiti Coast, Taupo, South Waikato, Papakura (as it was then), Upper Hutt and Porirua district-wide landscape assessments (2006-ongoing);

(d) preparation of landscape, natural character and visual assessment reports and evidence for several renewable energy

projects including geothermal power stations in the northern Taupo basin (for Contact Energy Limited (**Contact**) and Mighty River Power), the Turitea and Long Gully wind farms and site and project feasibility reports for potential hydro generation schemes throughout New Zealand (2006-ongoing);

(e) landscape and/or natural character assessment of a number of potential wind farm sites for Contact throughout Aotearoa / New Zealand, including within the Otago and Southland regions;

(f) landscape and/or natural character assessment of a number of electricity transmission line and substation projects for upgrades and new lines for Transpower and Powerco (2006-ongoing);

(g) peer review of dozens of landscape and visual assessment reports for a range of district and regional councils throughout Aotearoa / New Zealand (1998-ongoing); and

(h) project management of the preparation of landscape schedules for priority areas of outstanding natural features and landscapes (**ONFLs**) and rural character areas (**RCAs**) for the Queenstown Lakes District Council (2021-2022).

1.6 I have undertaken a number of site visits to the Otago Region for a number of projects and specifically to the Clutha River / Mata Au valley on 7 and 8 April 2022 (by helicopter and car), on 9 and 10 June 2022 and on 31 October and 1 November 2022. I have driven many of the rural roads in the Central Otago District, specifically to observe the landscapes of the area. For the Queenstown Lakes priority area schedule work described above and other project work within the district I have spent several days driving through the district observing the landscape.

1.7 In summary, I am familiar with the landscapes of the Otago region, having undertaken project work and holidaying in the area for over 20 years.

2. CODE OF CONDUCT

2.1 I have read the Environment Court's Code of Conduct for Expert Witnesses, and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in my brief of

evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

3. SCOPE OF EVIDENCE

3.1 In preparing my evidence I have reviewed:

(a) the proposed Otago Regional Policy Statement (**proposed RPS**);

(b) Contact's submissions and further submissions;

(c) the Otago Regional Council's (**Regional Council**'s) section 42A report, including the version showing recommendations from the Regional Council's supplementary evidence and additional supplementary evidence (**section 42A report (October version)**); and

(d) the other statements of evidence prepared on behalf of Contact (including both corporate and expert evidence).

3.2 The purpose of my evidence is to provide:

(a) an overview of best practice landscape assessment methodology as relevant to this planning process;

(b) a description of the landscape values associated with the Clutha / Mata-au River;

(c) an overview of the landscape effects of the Clutha Hydro Scheme (**CHS**);

(d) an overview of the potential landscape effects of new renewable energy projects in the region; and

(e) a review of relevant provisions from the proposed RPS against the above matters.

4. EXECUTIVE SUMMARY

4.1 The NZILA TPO has recently published *Te Tangi a te Manu*, the Aotearoa New Zealand Landscape Assessment Guidelines[1] (**TTatM**). TTatM represents the collective profession's approach towards the identification and assessment of landscapes under the RMA in Aotearoa. There are some areas where the proposed RPS and TTatM are not completely aligned, which in my view is unfortunate, given that TTatM represents current best practice. I have reviewed the proposed provisions against the TTaTM and recommended amendments where appropriate.

4.2 The Clutha Mata-au River and its catchments are a large-scale river and landscape system which covers a broad area of the lower South Island. In a Te Ao Māori sense the various landscape features and components that make up the overall system are inter-connected. This is a mountains to sea approach that stretches from the upper catchments of Lakes Wānaka, Hāwea and Whakatipu along the Clutha Mata-au River to the Pacific Ocean at Inch Clutha. This is an approach that is promoted in the best practice national guidance set out in TTaTM

4.3 In a RMA sense there is a tendency to break up the overall Clutha Mata-au system into its landscape components – mountains, hills, flood plains, rivers, streams, lakes, etc. However, the large-scale system has inter-connected landscape values that span districts and the Otago region.

4.4 The Clutha Mata-au River system also accommodates the nationally significant CHS. While the CHS is physically large infrastructure, it is a relatively small part of a much larger system and is a recessed feature in the overall scale of the landscape.

4.5 The Clutha Mata-au River and landscape contains several areas of outstanding landscape and natural character values. Many of the most natural of these areas are outside of the environs of the CHS but some are also within. Some outstanding natural landscapes contain areas of reserves, water bodies and hydro lakes that were created or altered as

[1] The guidelines were unanimously adopted at the AGM of NZILA TPO in May 2021. The illustrated printed and Pdf version was published in July 2022.

a result of the development of the CHS. Therefore, renewable electricity generation and outstanding landscape values co-exist in the same areas within the Clutha Mata-au River.

4.6 While current district plans have identified outstanding landscape features and landscapes within the environs of the CHS (that is, even with the CHS being part of that landscape), it is less likely that a new hydro scheme could be consented within an area that has existing outstanding landscape values under the provisions of the proposed RPS. In my opinion, the proposed RPS should be able to provide for new renewable electricity generation in order to meet New Zealand's emissions reduction targets. For example, while the focus of outstanding landscape values is the protection of the status quo, the CHS illustrates that landscape values can evolve from their original natural state and still be outstanding in a RMA sense. I consider the proposed RPS should focus on the management of effects on landscape *values*, rather than protection of existing *areas* from any change.

4.7 Specific values-based landscape assessment provides an opportunity for new renewable electricity generation projects, including hydro, wind and solar projects to be accommodated within the Otago region. I have recommended amendments to provisions in the NFL Chapter to this effect and other amendments based on best practice guidelines as set out in TTatM.

4.8 I have also reviewed the Proposed Energy Sub-Chapter developed by **Ms Hunter** and other expert planners for generators of renewable electricity generation. I consider the approach set out in those provisions for the management of landscape and natural character to be appropriate.

4.9 I have also reviewed the provisions in the Land and Freshwater Chapter relevant to natural character and recommended some amendments to those provisions based on best practice; as well as an acknowledgement of the current condition of the Clutha Mata-au, which has been significantly and permanently altered by the development of of the CHS.

5. LANDSCAPE ASSESSMENT IN AOTEAROA / NEW ZEALAND

5.1 The assessment of landscape areas and values has evolved considerably in Aotearoa / New Zealand since the enactment of the Resource Management Act 1991 (**RMA**). The identification and protection of ONFLs became a matter of national importance under section 6(b) and the related identification and protection of areas of outstanding natural character under section 6(a). Recognition of natural character values also required the identification of an inland boundary for the coastal environment.

5.2 Since the early 1990s landscape architects have become the primary assessors of landscape areas and values under the RMA. Early Environment Court decisions identified the "Amended Pigeon Bay Criteria", later known as the "Amended Wakatipu Environmental Society Incorporated (**WESI**) Criteria" as the starting point for the assessment of outstanding landscape areas and values.[2] The "criteria" (which are not actually criteria, but rather factors to be taken into account) were used for some time as somewhat of a 'checklist' for landscape assessment. Many district and regional landscape assessments have been prepared utilising the Pigeon Bay 'factors' as a starting point for the identification and recording of the district's or region's outstanding natural features and landscapes.

5.3 Landscape assessment methods and approaches have evolved since the use of the factors that were developed in the Pigeon Bay and WESI Environment Court decisions. The evolving approach towards landscape assessment under the RMA has led the 'grouping' of landscape assessment attributes and values into three dimensions:

(a) physical;

(b) associative; and

(c) perceptual.

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[2] C180/1999 *Wakatipu Environment Society and others vs Queenstown Lakes District Council*. The Pigeon bay criteria include but are not restricted to: the natural science factors - the geological, topographical, ecological and dynamic components of the landscape; its aesthetic values including memorability and naturalness; its expressiveness (legibility): how obviously the landscape demonstrates the formative processes leading to it; transient values: occasional presence of wildlife; or its values at certain times of the day or of the year; whether the values are shared and recognised; its value to tangata whenua; its historical associations.

5.4 This grouping of attributes and values has been widely adopted by the profession and accepted by decision makers, including the Environment Court, as being a useful basis for the organisation of attributes and values.

5.5 The NZILA TPO has recently published *Te Tangi a te Manu*, the Aotearoa New Zealand Landscape Assessment Guidelines[3] (**TTatM**). TTatM represents the collective profession's approach towards the identification and assessment of landscapes under the RMA in Aotearoa. TTatM sets out a number of important guiding principles in relation to the assessment of landscape resources, including the following:

(a) the role of an expert landscape assessor under the RMA;

(b) the incorporation of Te Ao Māori world view into the understanding and assessment of landscapes in Aotearoa;

(c) the need to define the word landscape and the meaning of landscape through professional practice and assessment;

(d) assessing landscapes and ascribing character and value to landscape; and

(e) specific considerations around the assessment and management of outstanding natural landscapes (s 6(b) RMA) and natural character (s 6(a) RMA).

5.6 TTatM also includes useful guidance around how to engage with tāngata whenua when assessing landscapes.

5.7 I consider TTatM is of relevance to the proposed RPS, as it represents what is currently considered best practice in landscape and natural character assessment in New Zealand. As will be discussed later, there are some areas where the proposed RPS and TTatM are not completely aligned, which in my view is unfortunate, given that TTatM represents current best practice.

[3] The guidelines were unanimously adopted at the AGM of NZILA TPO in May 2021. The illustrated printed and Pdf version was published in July 2022.

6. CLUTHA / MATA AU RIVER

Overview

6.1 The Clutha Mata au River and its landscape catchments is a whole of landscape system that spans from the mountains to the sea – *maunga ki te moana* and from (almost) one side of the South Island - Te Waipounamu to the other[4]. While the mountains, catchments, tributaries and river cross through territorial boundaries, from a Te Ao Māori perspective the landscape system is all connected and should be acknowledged as a single system which includes and encompasses the interconnected idea of mountains to sea.

6.2 The te reo name Mata au which is given to both the northern branch at its lower reaches and to the river itself means a current or eddy on the surface of water,[5] referencing the swirling waters of the river for most of its length.

6.3 The Clutha / Mata au is also connected to other identified outstanding natural features and landscapes throughout its catchments, including Mount Alpha, the Remarkables, Dublin Bay, Lake Whakatipu, Lake Wanaka, Lakes Hayes, the Kawarau River, the Shotover River (Kimi Ākau), Lake Dunstan (Te Wairere) and the Roxburgh Gorge. While each feature or landscape is distinctive and recognisable it in own right, they also form a relatively small part of a much larger and overall system that is connected to the Clutha / Mata au River.

6.4 The Clutha Mata au River is the second longest river in Aotearoa and the longest in the South Island, flowing southeast for 338km to the Pacific Ocean. It is also the highest volume and swiftest river in Aotearoa, with a catchment of 21,690 square kilometres and discharging a mean flow of 614 cubic metres per second.

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4 The upper catchments of Lakes Wanaka and Whakatipu are approximately 25km from the west coast of the South Island and drain to the Pacific Ocean, almost 250km to the southwest at the mouths of the Clutha Mata au Koau and Matau Branches.

5 https://teara.govt.nz/en/1966/clutha-river

Upper catchment

6.5 The upper catchment of the Clutha Mata au River is steep schist hinterland which has been through several glaciations, the most recent of which between 12,000 to 25,000 years ago.

6.6 Lakes Wānaka and Hāwea are the natural reservoirs that feed the top of the Clutha Mata au River. Lake Wānaka is the fourth largest lake in Aotearoa, with a surface area of 192km² and is 300m deep. The highly valued landscapes that form part of the catchment of Lake Wānaka include the McKerrow Range, the Young Range, the Harris Mountains and Minaret Peaks. The main tributaries into Lake Wānaka are the Matukituki and Makarora Rivers.

6.7 Lake Hāwea is the ninth largest lake in Aotearoa, with a surface area of 141km² and is 392m deep. The catchment of Lake Hāwea includes the Young Range, the Huxley Range and Mount Burke. The main tributary to Lake Hāwea is the Hunter River at the north end of the catchment.

6.8 At the upper end of the river, near Luggate and approximately 10km downstream from the outlet at Lake Wānaka is a rare switchback feature known as the 'Devil's Nook'. The Clutha Mata au River then travels through a gorge at Queensberry, before opening out into Lake Dunstan just below the Lindis Crossing. Te Wairere / Lake Dunstan, the expanse of water that is backed up behind the Clyde dam, stretches for some 30km in the main channel of the Clutha Mata au and also up into the lower reaches of the Kawarau River, forming the Kawarau arm.

6.9 The Kawarau River is fed by Lake Whakatipu and the Shotover River (Kimi Ākau). Lake Whakatipu is the third largest lake in Aotearoa, with a surface area of 291km² and is 380m deep. It is also Aotearoa's longest lake at 80km in length. The catchment of Lake Whakatipu includes the Hector Mountains (including the Remarkables), the Eyre Mountains (Walter and Cecil Peaks), the Thomson Mountains, the Livingstone Mountains, the Humboldt Mountains and the Richardson Mountains (including Ben Lomond).

6.10 Lakes Wānaka, Hāwea and Whakatipu and their catchments contain some of the most recognisable and spectacular landscapes in Aotearoa.

6.11 The Shotover River (Kimi Ākau) provides much of the sediment load that creates the discolouration of the waters of the Kawarau River, which is most notable where it meets the deeper blue waters of Lake Dunstan at the Kawarau junction. The Kawarau River flows through the gorge of the same name through richly surveyed gold mining areas, until it meets the Kawarau Arm of Lake Dunstan.

Te Wairere / Lake Dunstan

6.12 The waters of Te Wairere / Lake Dunstan are relatively calm, in comparison with the rest of the swiftest flowing river in Aotearoa. Lake Dunstan is used for paddling, rowing and other recreational water sports, with reserves developed on the banks of the lake and the Lake Dunstan mountain bike trail developed and opened recently between Clyde and Cromwell on the true right bank, below and through the Kawarau Arm.

Clyde to Roxburgh

6.13 Below the Clyde dam, the Clutha Mata Au continues its journey past Alexandra and into Lake Roxburgh, behind the Roxburgh dam. Sections of the Roxburgh Gorge are also identified as outstanding natural features or landscapes, with the gorge sides climbing steeply some 400m above the lake level. Lake Roxburgh is also valued for recreational uses, including biking, walking, fishing and paddling.

Downstream of Roxburgh

6.14 Below the Roxburgh dam the riverbed flattens out and flows past Roxburgh, Beaumont, Tuapeka Mouth and Clydevale, before it reaches Balclutha and the gently meandering and flowing Mata au and Koau Branches at Inch Clutha and the Pacific Ocean.

Scale and inter-connectedness of the river and its catchments

6.15 Maps showing sequential photographs of the Clutha Mata au River as it flows from its upper catchments in Lakes Whakatipu and Wanaka to the Pacific coastline are illustrated in **Figures 1** and **2** in the photographs in **Figures 3** to **26** in **Attachment BC.1** to this evidence.

6.16 The purpose of the explanation and the maps and photographs of the whole of landscape system that makes up the Clutha Mata au River

catchment and waters is to illustrate the scale and inter connectedness of the system which traverses the width of the entire region and the three districts of Queenstown Lakes, Central Otago and Clutha.

6.17 The scale of the maps in **Figures 1** and **2**, the breadth of the landscape coverage of the Clutha Mata au River and its catchments from west to east across the lower part of the South Island, and the variety of landscape types illustrated in the photographs in **Attachment BC.1**, when considered together, all indicate the scale and interconnectedness of the mountains to sea sequence.

6.18 The Otago region contains both spectacular large-scale landscapes and also nationally significant infrastructure, urban and tourism areas. The landscape is sufficiently large and bold that it can accommodate large infrastructure while retaining its outstanding landscape values. This is evidenced by parts of the environs of the CHS containing areas that are identified as outstanding natural landscapes and features in the relevant district plans, as I explain below.

Outstanding natural features and landscapes

6.19 Large areas of the Clutha Mata-au River and landscape system upstream of the CHS are identified as outstanding natural features or landscapes within the Queenstown Lakes District Plan. Broad areas and large-scale landscape areas and features in Lakes Whakatipu, Wānaka and Hāwea and within their catchments are identified as having outstanding landscape values. The Clutha Matau-au River upstream of Lake Dunstan, the Shotover River (Kimi Ākau), and the Kawarau River and Gorge upstream of the Central Otago district boundary are also identified as outstanding nature features or landscapes in the Queenstown Lakes District Plan.

6.20 These areas are largely unaffected by the CHS, however, the Lake Hāwea control gates are within the upper catchment above the Hāwea River.

6.21 Based on the GIS mapping tool on the Central Otago District Council web site, there are a number of areas identified as "significant amenity" or outstanding natural feature and landscape within that district plan in the environs of the CHS. Moving from upstream to downstream, these include the following: The upper section of the Kawarau Arm, above

Ripponvale is identified as an outstanding natural landscape. Significant amenity landscapes are identified around the Bannockburn inlet. Outstanding landscapes are identified on either side of and including Te Wairere / Lake Dunstan below Cromwell. Outstanding landscapes are also identified on the eastern side of the upper Lake Dunstan (around Crippletown). Significant amenity landscape are also identified on either side of and including Lake Roxburgh.

7. CLUTHA HYDRO SCHEME

Overview

7.1 Within the broad landscape and river context of the Clutha Mata au River as described and illustrated above, the CHS includes the culvert gate structure that controls flows from Lake Hāwea into the Hāwea River[6], the Clyde and Roxburgh dams and the respective Lakes Dunstan and Roxburgh. Of the 338km length of the Clutha Matau Au River system, the dammed lakes affect or hold water within approximately 60km of the length – approximately 30km at Lake Dunstan and 30km at Lake Roxburgh. The lakes retain the long, enclosed lineal characteristics of a river system, however the waters are calmer and flatter, with the waters widening towards the head of the dam.

7.2 The Roxburgh dam began construction in 1949 and was commissioned in 1956. The concrete gravity dam was constructed using 1.5 million tonnes of concrete. The Roxburgh dam is 76m high and 364m long, with a base of 61m wide and a crest of 10.7m.

7.3 Lake Roxburgh covers an area of approximately 6km², stretching nearly 30km back up through the Roxburgh Gorge towards Alexandra. The Lake Roxburgh construction village had as many as 724 houses during the height of construction and is on the west side of the dam and the substation.

7.4 The Clyde dam was conceived as one of the controversial 'Think Big' projects in the 1970s and 1980s and was constructed between 1982 and 1993. The Clyde dam is the third largest hydro-electric dam in Aotearoa, constructed with one million cubic metres of concrete in the

6 Control of flows out of Lake Hāwea effectively turns Lake Hāwea into storage for the rest of the hydro scheme.

dam and a further two hundred thousand cubic metres of concrete in the powerhouse. The dam is 100m high and 490m long, with a base 70m wide and a crest 10m wide.

7.5 Lake Dunstan was filled in stages in 1992 and 1993 with an area of 26km², stretching some 30km back up past Cromwell towards Bendigo (Clutha Mata au River) and the Kawarau Arm. The construction of the dam led to the discovery of geological instability at Cairnmuir and in other places above Lake Dunstan, leading to widespread and expansive dewatering works.

7.6 The Roxburgh and Clyde dams are illustrated on the maps in Figures 1 and 2 (location) and in the photographs in **Figures 27** – **32** in **Attachment BC.1**. Lakes Dunstan and Roxburgh are illustrated in photographs in **Figures 7, 12, 13, 14 15, 16, 17, 19, 20** and **21**.

Effects of the CHS on landscape and natural character

7.7 The broad scale of the landscape and visual effects of the construction of the Roxburgh and Clyde hydro-electric dams on the Clutha Mata au River include the creation of a large concrete dam face, powerhouse, associated substation, access roads, carpaking and buildings to services the dams. Electricity line connections are also prominent features feeding into the wider transmission network. As the gravity fed dam systems sit into the base of the river valley and into a recessed or cut down river bed, they tend to blend into the landscape, rather than sit proud of it. Surprisingly, even the larger Clyde dam is sometimes not immediately visible when looking across the top of the broader landscape, with the Cairnmuir Mountains rising some 500m above the face of the dam within 1km to the west at the south end of Lake Dunstan. The large-scale muscular landscape dwarfs the largest and combined components of the dam.

7.8 Given the typical design parameters for a gravity fed hydro dam, both Roxburgh and Clyde dams are located in narrow parts of the river gorge systems, ensuring that the head of the dam can be constructed efficiently, bridging between strong landform buttresses on either side.

7.9 The Roxburgh dam, in particular, fits into the broader landscape, without expansive visibility, as Stage Highway 8 (SH8) passes approximately 800m to the west of the dam climbing over an elevated

shoulder landform beyond the Lake Roxburgh Village. See **Figures 30**-**32**.

7.10 The Clyde dam occupies a more open section of the Clutha Mata au River corridor, below Lake Dunstan. The lower gorge slopes have been engineering and earth-worked to accommodate the dam works and access roads. SH8 passes to the east of the dam in a much more elevated and prominent position, revealing expansive views over the dam, the township of Clyde and Lake Dunstan. See **Figures 18** and **27-29**.

7.11 From closer viewing locations (less than 500m) both dams are large imposing engineered structures, dominating the river valley immediately below the dam faces. Within 500m to 1km the dominance of the scale of the structure, along with the sound of electricity generators and the release of the water at the base of the dam are indicative of the renewable energy generation function of the infrastructure. The dams and the history and scale of their construction are intriguing and are effective at inviting visitors to stop at the visitor areas to take photographs and read about the history of the CHS.

7.12 The lakes behind the dams have drowned large areas of land, approximately 6km² for Lake Roxburgh and 26km² for Lake Dunstan. Lake Dunstan, in particular, was controversial as it drowned productive land and areas on the edge of the township of Cromwell. Ecological and displacement effects of the lakes were widespread at the time of construction and filling.

7.13 The lakes themselves have introduced new and potentially more useable flat-water areas for recreational uses. Lakes are more easily accessed by boat and for swimming, paddling and rowing than fast flowing rivers. Since the filling of the lake's reserves, walking and cycling tracks have been developed along the edge of the lakes to improve access to and along the lake edges. The Lake Dunstan mountain bike trail has recently been opened, providing access to the picturesque western side of Lake Dunstan, which has typically been admired by passing motorists on SH8. The Lake Dunstan mountain bike trail is a popular and useable recreational cycling connection between Clyde and Cromwell and connects to a wider network of cycle trails, including the Otago Rail Trail to the south at Alexandra. The

Roxburgh Gorge trail is a similarly spectacular cycling trail, providing access through the scenic Roxburgh Gorge above the dam.

7.14 The creation of access and reserves along the edge of the more useable flat-water lakes are positive aspects of CHS.

Flow and sedimentation characteristics

7.15 As **Mr Foster** explains, the CHS is largely a "run of river" hydro-electric power scheme, however there is some storage capacity behind the Clyde and Roxburgh dams and in Lake Hāwea.[7] These features control the amount of water passing through the Clyde and Roxburgh dams to meet the electricity generation requirements of Aotearoa, meaning that there are periods where flows in the river are varied, beyond those which might ordinarily occur with a naturally flowing river.

7.16 The difference between low and high flows in the Clutha Mata au River create a difference in the character of the river. While the Clutha Matau au River is a swift and high-volume river, at low flow rates, the river has a more calm and benign character, with exposed riverbanks. The sound and energy of the river is calmer, particularly in the lower sections. At high flow rates and in areas where the river passes through narrow gorges, the river generates more energy and noise from the rushing waters.

7.17 The Shotover River (Kimi Ākau) generates a large amount of schist sediment flow into the Kawarau River and into the Lake Dunstan at the Kawarau arm. This sediment creates the turquoise colouring in the lower Kawarau River which is visually obvious at the Kawarau Junction and from Cromwell. See **Figures 12** and **14** in **Attachment BC.1**.

7.18 The transport of sediment from the Shotover River (Kimi Ākau) into the Kawarau River and the Clutha Mata au River is a natural process which creates bars within the river. The greatest amount of sediment transport and deposition is during flood events. After passing through the faster flowing Kawarau Gorge the sediment load makes its way to the slower waters of the Kawarau Arm and settles out on the floor of the Arm and Lake Dunstan. The tipping face, or the downstream section of the sediment deposits is currently advancing into the Dunstan Arm of the Clutha Mata-au River and is anticipated by **Mr**

[7] Foster EIC, para 5.4.

Foster to make its way to the Clyde dam by approximately 2105[8]. The Kawarau Arm of Lake Dunstan and the Upper Clutha are now taking on the appearance and physical characteristics of a riverine environment as the sediment settles in the slower waters of the lakes.[9]

7.19 As **Mr Foster** explains, the Clyde and Roxburgh dams have altered the dynamic flow of this sediment transport process, with much of the sediment now accumulating behind the Clyde dam, however, some sediment continues to pass through the dams, particularly during times of flood.[10] Lakes Dunstan and Roxburgh, as described above, are relative calm spots along the 338km of the catchments, tributaries and river of the Clutha Matau au system, along with the naturally occurring lakes Whakatipu, Wānaka and Hāwea.

7.20 In summary, the CHS has interrupted the natural flow of the Clutha Mata-au River by holding back water; creating long flat lakes; and interrupting (but not totally blocking) the flow of sediment. However, despite this interruption, the overall process of the transportation of water (and some sediment) from the headwaters of the catchment to the Pacific Ocean along the Clutha Mata-au River system continues today.

8. POTENTIAL EFFECTS OF RENEWABLE ENERGY DEVELOPMENT

8.1 As described and illustrated above, it is possible for large scale renewable energy infrastructure to be present within bold and outstanding landscapes while retaining those outstanding values. The particular types of renewable energy projects in the Otago region, being gravity fed dams in river valleys and gorges means that the infrastructure sits 'into' the landscape. The dams, as large as they are, are contained within even larger and bolder landscapes.

8.2 This type of renewable energy infrastructure within outstanding landscapes is not unique to the Otago region, with Lake Karapiro and some surrounding landscapes on the Waikato run of river hydro scheme also being identified as having outstanding landscape values. While under current landscape assessment methods it is common to

8 Foster EIC, para 6.44.
9 Foster EIC, paras 6.35 (in respect of the Kawarau Arm) and 6.50 (in respect of the Upper Clutha).
10 Foster EIC, para 6.41.

see assessments identifying outstanding landscape values within hydro electricity generations areas, it is also generally accepted that if outstanding natural landscapes and features are treated with a strict "avoid" policy in the relevant plans, it is extremely unlikely, if not impossible to gain consent for a new large scale hydro generation scheme. However, this may not be the case, if the planning framework adopts a values based approach, which is also consistent with national guidance.

8.3 As I have described, hydro-electric generation schemes can be well suited to a bold and large-scale type of landscape with dams, substations, lakes and transmission lines generally able to be accommodated as 'recessed' features within the landscape. This is particularly so if a values based approach is adopted.

Need for new renewable electricity generation

8.4 **Ms Nelson** has referred to the emissions reduction target of net zero emissions by 2050; and the Government's aspirational target of electricity generation being renewable by 2030.[11]

8.5 **Mr Hunt** has developed on this and explained the very large increases in renewable electricity generation that are required to meet New Zealand's decarbonisation goals, with around 1,100 GWh of new capability being required on average every year until 2050 (which is roughly equivalent to adding a new set of Clyde and Roxburgh dams to the system every 3.5 years until 2050).[12]

8.6 Mr Hunt also explains that a diversity of generation sources will be important (eg wind, solar, hydro and geothermal).[13] Therefore, an important part of the overall electricity generation profile for Aotearoa is the need to increase the amount of wind and solar generation.

8.7 Wind farms and solar farms tend to sit on top of the surface of the landscape. In the case of wind farms they must functionally be located in the areas where the wind resource is located. This tends to be on the tops of hills or on the coastal edge. This locational requirement tends to make wind farms visually and physically prominent.

11 As described in the evidence of **Ms Nelson**: Nelson EIC, para 5.2.
12 Hunt EIC, para 6.15.
13 Hunt EIC, from para 6.23.

8.8 The likely overall effect of the current surge of investigations and applications for new wind and solar generation farms is not yet known, however, it is clear that the landscapes of Aotearoa will have to accommodate a wider range, number and scale of renewable electricity generation projects if we are to meet the 2050 decarbonisation target.

8.9 For these reasons, the provisions of the proposed RPS should be balanced to ensure that the region can play its part in accommodating the additional renewable electricity generation that is required.

8.10 In addition to the requirement to accommodate new renewable electricity generation within the region, the current rate of climate change is likely to result in changes in landscape and natural character values along the length of the Clutha Mata-au River and landscape systems. It is likely that by 2050, not only will there be increased renewable electricity generation throughout the landscape of the region, but the region's landscapes will also have evolved in response to the changing climate.

8.11 Given the specific tension between the identification and protection of outstanding landscape and natural character values and the need to accommodate an increasing amount of renewable electricity generation across the region, it is important that landscape assessment methods are best practice, up to date and values based. Through thorough values based landscape assessment, it has been demonstrated that renewable electricity generation can be accommodated within and alongside outstanding natural features and landscapes.

9. THE PROPOSED RPS – NFL CHAPTER

9.1 This section of my evidence provides my assessment of the following proposed landscape and natural character provisions, referring to the version of the provisions in the section 42A report (October version):

(a) NFL-O1;

(b) NFL-P1;

(c) NFL-P2;

(d) NFL-P3;

(e) NFL-P6 (and CE-P6; EIT-INF-P13A);

(f) EIT-INF-P13 and the alternative drafting proposed by the renewable electricity generators; and

(g) APP9.

9.2 In this section, I provide observations in relation to how the proposed provisions relate to the landscape attributes and values of the Clutha Mata au River system and catchment and also in relation to the identification and management of landscape values throughout the region in general, with a particular focus on what this could mean for new renewable electricity generation activities.

9.3 I also comment on the proposed provisions in the Proposed Energy Sub-Chapter as provided in the evidence of **Ms Hunter**.

NFL-O1

> **NFL-O1 – Outstanding and *highly valued natural features and landscapes***
>
> The areas and values of Otago's outstanding and *highly valued natural features and landscapes* are identified, and the use and development of Otago's *natural and physical resources* results in:
>
> (1) the protection of outstanding natural features and landscapes, and
>
> (2) the maintenance or enhancement of *highly valued natural features and landscapes*.
>
> (3) the restoration of outstanding and *highly valued natural features and landscapes*.

9.4 I consider this objective is generally appropriate, however, as I explain below, I have some concerns about the process for identifying outstanding vs highly valued natural features and landscapes.

9.5 The objective states that outstanding natural features and landscapes should be "protected"; whilst highly valued natural features and landscapes should be "maintained or enhanced". I consider a hierarchy of response is appropriate; recognising that outstanding natural features and landscapes have higher values than highly valued ones.

9.6 However, the "protection" of outstanding natural features and landscapes should not be interpreted to mean that the attributes and

values should be stopped in time, with no further change. As described above, a dynamic landscape system such as a large volume river and its tributaries and catchments will necessarily change over time and attributes and values can be enhanced or degraded through natural or anthropocentric (including climate change) forces on those landscapes. I therefore consider that protection should be measured dynamically against the values that are sought to be protected; rather than inferring that no change should occur.

NFL-P1

> **NFL-P1 – Identification**
>
> In order to manage outstanding and *highly valued natural features and landscapes* outside the coastal environment, identify:
>
> (1) the areas and values of outstanding and *highly valued natural features and landscapes* in accordance with APP9, and
>
> (2) the capacity of those natural features and landscapes to absorb use or development while protecting the values that contribute to the natural feature and landscape being considered outstanding or <u>maintaining the values that contribute to the natural feature and landscape being</u>[1334] highly valued.

9.7 This policy is supported by NFL-M1 which directs territorial authorities to include in their district plans maps and a statement of values of the areas of outstanding and highly valued natural features and landscapes.

9.8 I consider that identifying the areas and values that relate to outstanding and highly valued landscapes is useful in that it follows the guidance in TTatM that the landscape itself is not what is to be protected, but rather the values that led to the landscape being recognised. I do note, however, that TTatM applies this approach to outstanding natural features and landscapes only; and not also to highly valued ones. As I discuss below, I do have some concerns about the proposed provisions for highly valued natural features and landscapes.

9.9 Focusing on outstanding natural features and landscapes, I consider it is appropriate to identify the values that make those outstanding. This leads to a more thorough understanding and recording of the attributes and values of individual landscapes. In the case of the Clutha Mata au system, the broad scale and interconnected nature of the landscape(s) means that overall landscape values can be protected while some areas or attributes that do not add value to the landscape can be subject to subdivision, use or development.

NFL-P2

> **NFL-P2 – Protection of outstanding natural features and landscapes**
>
> Protect outstanding natural features and landscapes outside the coastal environment from inappropriate subdivision, use and development by:
>
> (1) avoiding adverse effects on the values of the natural features and landscapes where there is limited or no capacity to absorb use or development, and
>
> (2) avoiding, remedying or mitigating other adverse effects.
>
> (3) managing the adverse effects of infrastructure on the values of outstanding natural features and landscapes in accordance with EIT-INF-P13.

9.10 I note that this policy has been amended to direct that the effects of infrastructure on outstanding natural features and landscapes should be managed through EIT-INF-P13. I consider it is appropriate for there to be a specific pathway for the consideration of the effects of infrastructure on landscape, as I discuss further below.

NFL-P3

> **NFL-P3 – Maintenance of *highly valued natural features and landscapes***
>
> Maintain or enhance *highly valued natural features and landscapes* outside the coastal environment by:
>
> (1) avoiding significant adverse effects on the values of the natural feature or landscape, and
>
> (2) avoiding, remedying or mitigating other adverse effects.

9.11 The maintenance or enhancement of the amenity aspects of highly valued landscapes is consistent with the wording in section 7 of the RMA. However, clause 1 of the policy directs that significant adverse effects on values are to be avoided. As set out in the evidence of **Ms Hunter**,[14] this wording is not consistent with the wording in section 7 of the RMA. I agree that section 7(c) "amenity" landscapes should be managed through avoiding, remedying or mitigating adverse effects on the values of those landscapes.

9.12 Clause 2 of the policy refers to avoiding, remedying and mitigating other effects. As set out above, I consider the focus of the assessment should be on the values, and therefore this clause should be amended to refer to effects on values, which again, is consistent with the wording of section 7(c) RMA.

NFL-P6 (and CE-P6; EIT-INF-P13A)

> **NFL-P6 – Coastal features and landscapes**
>
> Natural features and landscapes located within the coastal environment are managed by CE–P6 and implementation of CE–P6 also contributes to achieving NFL-O1.

9.13 For ease of reference, CE-P6 is set out below:

> **CE-P6 – Natural features and landscapes (including seascapes)**
>
> Protect natural features and landscapes (including seascapes) in the coastal environment by:
>
> (1) identifying their areas and values, at minimum by land typing, soil characterisation and landscape characterisation, in accordance with APP9,
>
> (2) avoiding adverse effects of activities on outstanding natural features and landscapes (including seascapes),
>
> (3) avoiding significant adverse effects and avoiding, remedying, or mitigating other adverse effects of activities on other natural features and natural landscapes (including seascapes), and

[14] Hunter EIC, para 13.7.

(4) promoting restoration or enhancement of natural features and landscapes (including seascapes) where they have been reduced or lost.

9.14 Policies NFL-P6 and CE-P6 are more restrictive than the policies for infrastructure outside the coastal environment (NFL-P2 and EIT-INF-13). This is confirmed by new proposed policy EIT-INF-P13A

> **EIT-INF-P13A – Managing the effects of infrastructure, nationally significant infrastructure and regionally significant infrastructure within the coastal environment**
>
> When managing the effects of infrastructure, nationally significant infrastructure and regionally significant infrastructure within the coastal environment the provisions of the CE – Coastal environment chapter apply.

9.15 These policies in practice present a preference for the location of infrastructure outside of the coastal environment. However, in the case of renewable electricity generation, such as wind or tidal, there is often a functional need to be within or close to the coast, or the sites that are best suited are within the coastal environment. By setting a higher bar for infrastructure within the coastal environment, the best or most efficient sites and forms of renewable energy projects may be discouraged.

9.16 Where there is a functional need for infrastructure to be in a particular location, for example, a wind farm on a windy coastal edge, then the direct relationship between the wind being present and the wind farm being there because of it, makes sense in terms of people's acceptance of the requirement and location of the infrastructure. I consider there should be some specific treatment of infrastructure within the coastal chapter.

9.17 As identified above, it is possible for renewable electricity generation projects to exist within outstanding landscape areas without necessarily diminishing those values for which the landscape is recognised. In fact, as the CHS example shows, some landscape values, such as recreational values can be enhanced by the creation of lakes and

reserves as a result of renewable electricity development. Infrastructure should be appropriate to the environment (including the landscape values) that it is being accommodated within.

9.18 The wording in policy CE-P6 has moved away from the protection of the values of an outstanding natural features or landscape to instead refer to the protection of the natural feature or landscape itself. In my opinion, a values based approach is preferable, consistent with the national guidance set out in TTatM and should be adopted in the coastal provisions.

EIT-INF-P13 and the alternative drafting proposed by the renewable electricity generators

9.19 Large scale, nationally significant renewable electricity generation projects are often unable to avoid all adverse effects, particularly on outstanding landscape and natural character values.

9.20 The section 42A report writer has acknowledged this by providing a specific pathway for the consideration of landscape effects of infrastructure outside the coastal environment in NFL-P2 (referred to above) and EIT-INF-P13, which is set out below for ease of reference:

> **EIT-INF-P13 – Locating and managing effects of infrastructure, nationally significant infrastructure and regionally significant infrastructure outside the coastal environment**
>
> When providing for new infrastructure, nationally significant infrastructure and regionally significant infrastructure outside the coastal environment
>
> (1) avoid, as the first priority, locating infrastructure in all of the following:
>
> (a) significant natural areas,
>
> (b) outstanding natural features and landscapes,
>
> (c) natural wetlands,
>
> (d) outstanding water bodies,
>
> (e) areas of high or outstanding natural character,
>
> (f) areas or places of significant or outstanding historic heritage,
>
> (g) wāhi tūpuna and areas with protected customary rights, and

(h) areas of high recreational and high amenity value, and

(2) if it is not demonstrably practicable to avoid locating in the areas listed in (1) above because of the functional needs or operational needs of the infrastructure, nationally significant infrastructure and regionally significant infrastructure manage adverse effects as follows:

(a) for nationally significant infrastructure or regionally significant infrastructure:

(i) in significant natural areas, in accordance with ECO-P4,

(ii) in natural wetlands, in accordance with the relevant provisions in the NESF,

(iii) in outstanding water bodies, in accordance with LF-FW-P12,

(iiia) in relation to wāhi tūpuna, in accordance with HCV-WT-P2

(iv) in other areas listed in EIT-INF-P13(1) above, minimise the adverse effects of the infrastructure on the values that contribute to the area's importance,

(b) for all infrastructure that is not nationally significant infrastructure or regionally significant infrastructure, avoid adverse effects on the values that contribute to the area's outstanding nature or significance.

9.21 The approach is to require such infrastructure to first avoid areas of outstanding natural features and landscapes; but where it is not demonstrably practicable to do so, to then minimise adverse effects on the values that contribute to the area's importance.

9.22 I consider the focus on values is appropriate. I understand that renewable electricity generation can often have a functional or operational need to locate in an area that contains an outstanding feature or landscape; further, that it may not always be possible to completely avoid adverse effects on the values that contribute to the area's outstanding nature or significance.

9.23 Values based landscape assessment and a requirement to "minimise" appear to provide the opportunity for outstanding natural landscapes and features to accommodate appropriate renewable energy

infrastructure; however, I note there may be debate about what "demonstrably practicable" or "minimise" actually mean.

9.24 I note that **Ms Hunter** together with the expert planners for the other renewable electricity generators have developed an alternative approach for managing the effects of renewable electricity generation as follows:

> **EIT–EN–P5 Managing effects**
>
> When providing for new or upgraded renewable electricity generation activities:
>
> (1) Avoid, where practicable, locating such activities in the following areas:
>
> (a) Scheduled wāhi tupuna, and areas with protected customary rights,
>
> (b) Scheduled significant natural areas,
>
> (c) Natural wetlands,
>
> (d) Scheduled outstanding natural features and outstanding natural landscapes,
>
> (e) Scheduled outstanding water bodies,
>
> (f) Scheduled areas of outstanding natural character,
>
> (g) Scheduled areas or places of historic heritage value,
>
> (2) Where it is not practicable to avoid locating in the areas listed in (1) above, because of the functional needs or operational needs of renewable electricity generation activities, manage adverse effects as follows:
>
> (a) In wāhi tupuna, in accordance with HCV-WT-P2,
>
> (b) In a scheduled significant natural area, where more than minor residual adverse effects on biodiversity cannot be practicably avoided, remedied or mitigated, offsetting and/biodiversity compensation must be considered in accordance with APP3 and/or APP4,
>
> (c) In natural wetlands, in accordance with the NESF,
>
> (d) In all other areas listed in (1) above, manage the adverse effects of the renewable electricity generation activities on the values that contribute to the area's importance by:
>
> (i) Avoiding adverse effects, where practicable,
>
> (ii) Where adverse effects cannot be practicably avoided, they are remedied or mitigated to the extent practicable,
>
> (iii) Where they cannot be practicably remedied or mitigated, regard shall be had to offsetting and/or compensation of more than minor residual adverse effects.

(3) In areas outside (1), avoid, remedy or mitigate significant adverse effects and when considering any residual adverse effects have regard to offsetting measures and compensation.

9.25 The specific nature of the wording of the policy provides an opportunity to manage the potential effects of a proposal within a given area. Constraints are identified which must be avoided if practicable. However, if those constraints cannot practicably be avoided because of functional or operational need, then the effects on the values that contribute to the area's importance must be managed through an effects management hierarchy, including consideration of offsetting and/or compensation.

APP9

9.26 APP9 is labelled "identification criteria" for outstanding and highly valued natural features and landscapes (including seascapes). It then states that the areas and values of outstanding and highly valued natural features and landscapes (including seascapes) are to be identified using a range of physical, sensory and associated attributes, which are listed in the Appendix.

9.27 The list of attributes in APP9 are based on an amended list of the Pigeon Bay factors, which evolved into the WESI factors (as explained in section 5 of my evidence above). As noted above, these factors should be considered as factors or attributes, rather than criteria. These attributes are used by landscape assessors as a non-exhaustive list of attributes or factors that should be taken into account. I therefore consider the Appendix should be renamed as "attributes for outstanding and highly valued natural features and landscapes (including seascapes)".[15]

9.28 APP9 also organises the list of attributes into three groups, being physical, sensory or associative. The organisation of the attributes into three overlapping dimensions is best practice, however, in order to be consistent with national best practice guidance, the attributes should be

15 See TTaTM, section 4.

referred to as "physical, perceptual and associative" as described in TTatM.[16]

9.29 The benefit of organising the attributes into the three dimensions of landscapes is that it tends to avoid the formulaic use of the attributes by assessors and rather encourages the assessor to consider the context for the landscape assessment. For example, the list of attributes to be considered for an urban, rural or coastal context would be different.

9.30 APP9 should also be amended to make clear that the list of attributes is non-exhaustive and should be used as a starting point. Some attributes will be less relevant, depending on the context, and is some cases there may be more specific factors that should be used to assess the attributes and values of the landscape.

9.31 APP9 is also silent on the threshold that is required for a landscape to reach before it becomes highly valued or outstanding. Some regional guidance on the appropriate threshold of significance for outstanding and highly valued landscapes would be appropriate.

10. THE PROPOSED RPS – LF CHAPTER

10.1 The LF Chapter also contains provisions relevant to natural character. Some of those are now to be heard through the freshwater planning process, but those that remain to be heard through this process, and which are relevant to natural character include:

(a) LF-FW-O10 (Natural character);

(b) LF-FW-P11 (Otago's outstanding water bodies);

(c) LF-FW-P12 (Identifying and managing outstanding water bodies);

(d) LF-FW-P13 (Preserving natural character and instream values);

(e) LF-FW-P13A (Effects management hierarchy (in relation to natural wetlands and rivers);

(f) LF-FW-P14 (Restoring natural character and instream values);

16 This is more consistent with section 5 of TTaTM and also how the dimensions are described in the Matakana Island Decision [2017] NZEnvC 147, paragraphs 112-114.

(g) LF-FW-M5 (Outstanding water bodies); and

(h) APP1 (Criteria for outstanding water bodies).

Outstanding water bodies

10.2 The freshwater objective, policies and methods listed above closely link the identification of outstanding waterbodies with outstanding natural features and landscapes. LF-FW-P11 (3), for example, states that any water body or part of a waterbody contained within an outstanding natural feature or landscape identified in accordance with NFL-P1, will be an outstanding water body. Given the interconnectedness of the lakes and rivers of the Clutha Mata-au system, as described in my evidence above, this could have the unintended outcome of leading to the whole of the Clutha Mata-au system being identified as an outstanding water body.

10.3 LF-FW-P12 requires any identified outstanding water bodies and their significant and outstanding values to be protected. It is therefore important that outstanding water bodies and their values are carefully and accurately identified. If outstanding water bodies are identified over such broad areas, this could lead to unintended consequences.

10.4 APP1 sets out criteria for identifying outstanding water bodies, and states that any water body with one or more of the stated values can be outstanding water bodies. The listed values are grouped under ecology, recreation, landscape, Karst system / subterranean waters, natural character and geology.

10.5 As with APP9, APP1 is labelled as a list of criteria, however, the listed values are rather attributes. APP1 also states that one or more of the listed values must be outstanding. The complexity and the competing nature of some of the values identified in APP1, for example, ecology vs recreation, where recreation values could adversely affect ecological values, would mean it would be difficult to make a cohesive assessment of outstanding water body values across a broad scale. An assessment of the values of waterbodies against the listed values in APP1 would either be generic at a broad scale or very detailed and elaborate.

10.6 Further, given the scale of change affected by the CHS, an assessment of landscape and natural character attributes towards whether the waterbody is outstanding, must consider the CHS.

10.7 I also consider that to the extent that they are relevant to the values that are to be considered for the assessment of an outstanding water body, the values and indicators for landscape and natural character should be consistent with the relevant chapters of TTatM.

Natural character

10.8 The freshwater chapter also includes policies that could be impossible to achieve in the Clutha Mata-au, given that the natural character and instream values of parts of the system are so different from their original natural state. For example, LF-FW-P13(4) refers to wherever possible "sustaining the form and function of a water body that reflects its natural behaviours". LF-FW-P14 refers to restoring a form and function that reflects the natural behaviours of the water body. Sustaining a natural form or restoring a natural form of river in respect of the Clutha Mata-au is unlikely to be practical or sensible given the permanent and significant effects of the CHS on this system. The scale of such a landscape intervention requiring active restoration of values would also be a challenge. **Ms Hunter** has recommended amendments to these provisions in her evidence that I support in this respect.[17]

Braddyn Thomas Coombs

23 November 2022

17 Hunter EIC, section 9.

ATTACHMENT BC.1 – FIGURES AND PHOTOS OF THE CLUTHA MATA-AU AND THE CHS