

Memorandum

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Attention: Mark Geddes

Company: c/- Grey District Council

Date: 21 September 2023

From: Rhys Girvan

Message Ref: Barrytown Mineral Sands Mining Project: Landscape Peer Review

Project No: BM230199

1. I have been engaged by Grey District Council (Council) to peer review technical landscape related matters arising from a resource consent application which seeks to mine and recontour approximately 63 ha. (Mine Disturbance Area) of the larger 115 ha. Application Area located at 3261 Coast Road (hereinafter referred to as the Site). The Site is located to the north of Canoe Creek and approximately 4.2 kilometres north of Barrytown and 9 kilometres south of Punakaiki within the Barrytown Flats.

Qualifications and experience

2. I hold the qualifications of Master of landscape architecture from Lincoln University and Bachelor of Arts majoring in psychology from the University of Canterbury. I am a registered member of the New Zealand Institute of Landscape Architects (NZILA).
3. I have practiced as a landscape planner for approximately 19 years. I have worked for Boffa Miskell Limited for over 11 years, formerly in our Wellington office and then in our Christchurch office from 2018. Prior to joining Boffa Miskell, I have worked as a Council Officer for Queenstown Lakes District Council (formerly Civic Corp and Lakes Environmental) and as a consultant for a large multi-disciplinary environment planning and design practice in London.
4. I have a broad range of landscape planning experience including recent relevant experience assessing mining and extraction land use activities. This has included the preparation of landscape assessments and subsequent evidence provided at Council hearings for Project Martha in Waihi (2018), Belmont Quarry Expansion in Wellington (2014), Ashford Park Gravel Extraction in Otaki (2016) and Wheatsheaf Quarry Expansion in Canterbury (2022).

Code of conduct

5. I have read the Code of Conduct for Expert Witnesses set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this memo and will continue to comply with it while giving oral evidence before Council Hearings as required. My qualifications as an expert are set out above. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

Involvement with the Resource Consent Application

6. I have been involved in this project since March 2023 when I was engaged by Grey District Council. I prepared a further information request (FIR) on the 5th of May 2023 and undertook a site walk over with Council's consultant planner, Mark Geddes and applicant representatives including Naomi Crawford on the 24th May 2023. During the Site visit, I also visited several neighbouring properties which have potential to obtain views of the Site, and for which minor visual effects had been identified. Following the Site visit, I also raised additional queries in response to the compensation of onsite mitigation (email dated 29th May 2023).
7. I have read the following reports in preparing this peer review:

Naomi Crawford, Glasson Huxtable Landscape Architects (5th July 2023, Revision 7) Barrytown Mineral Sands Mining Project: Landscape and visual Assessment of Effects ('Assessment' and 'Graphic Supplement').

Memo to Mark Geddes from Naomi Crawford, dated 11th July 2023 (Letter).

Landform Model (25 July 2023) (Doc No. BJL5790-06, version 5).

Ecological Solutions (2023) Wetland and Riparian Plan.

Statutory Context

8. I consider the **Statutory Provisions**¹ gives a sound overview of the Resource Management Act (RMA), New Zealand Coastal Policy Statement (NZCPS), West Coastal Regional Policy Statement (RPS), Grey District Plan (GDP) and Proposed Te Tai o Poutini Plan (TTPP) on relevant landscape and natural character matters. I agree that the key statutory matters are:
 - a. The entire Site forms part of the **Coastal Environment**, within which Section 6a of the RMA and Policies 13, 14 and 15 of the NZCPS apply.
 - b. Within the Coastal Environment, the Site is not identified as having high or outstanding natural character.
 - c. The Site or its immediate setting is not part of any Outstanding Natural Landscape at the Regional or District scale.
 - d. The Site is currently zoned **Rural** in the Grey District Plan, within which the mining activity triggers a discretionary activity resource consent. Such land use must:
 - i. **preserve the natural character of the coastal environment** and protect it from inappropriate subdivision, use and development.
 - ii. **retain the character of the rural environment** in which amenities include its **openness and spaciousness, natural features and presence of indigenous vegetation.**
9. The Site is also identified within a Mineral Extraction Zone in the TTPP, however this is not yet operational and should therefore be given limited consideration within the landscape assessment.

Project Description

10. The proposed mining of mineral sands (ilmenite, garnet, and the possible extractions of lesser concentrations of zircon and gold) entails the excavation of up to 9 metres below existing ground

¹ The Assessment, Section 7.

level in 10 approximately 3ha. panels or strips contained within a larger defined Mine Disturbance Area. Supporting infrastructure comprises of an approximately 2,750 m² “L” shaped Processing Plant which reaches between 10 and 15 metres above ground level alongside Associated Facilities comprising of lower amenity and office blocks and carparking for approximately 50 vehicles. The combined Processing Plant and Associated Facilities are located along the southern boundary of the Site approximately 430 metres from Coast Road (SH6). All buildings are proposed to adopt recessive colours. A new internal access road connects the proposed Processing Plant with SH6 along the Site’s southern boundary before curving north to avoid removal of any vegetation on the corner of 3195 Coast Road and SH6. Proposed construction activity also entails a central drain and holding ponds comprising a Clean Water Facility (CWF) and Mine Water Facility (MWF).

11. Before mining commences, a permanent 1.8m high bund is proposed to be constructed along the northern part of the eastern roadside boundary of the Site and partially planted with native vegetation along the roadside aspect. Further native planting is also proposed along the margins of Collins Creek, the southern margin of part of the Northern Drain and areas along the western boundary adjoining the active coastline and coastal lagoon prior to mining commences. Further planting is proposed at the eastern end of the Site’s northern boundary to be determined in consultation with both sets of adjacent landowners to the north of the Site. During operation, a 4.5 m high stockpile bund and adjoining stockpile area is proposed through the centre of the Site, running parallel with and approximately 360 metres from SH6. Further native planting is proposed along the southern end of the stockpile bund once formed.
12. Extraction activity is anticipated to occur over 5 to 7 years with consent proposed for 12 years. As mining is completed rehabilitation of mined areas is proposed to occur progressively using overburden and topsoil obtained from within the Site, albeit at a lower elevation as a consequence of extraction activity. Once mining has been completed, an additional area to the east of the stockpile bund is proposed to be recontoured to return the Site to pastoral grass with improved provision for drainage. A shorter part of the proposed processing plant (up to 10 metres) is also proposed to be retained and repurposed to support farming activity following rehabilitation. All other buildings and facilities near the Processing Plant will be decommissioned and removed. The proposed CWF is to be converted to support permanent wetland planting.

Description of Landscape Characteristics and Values

13. The Assessment sets out a reasonably thorough description of the landscape, albeit focussing primarily on physical landscape attributes encompassing landform, landcover and land use. Section 4 of the Assessment sets out an analysis of these physical attributes at three separate scales, namely the Project Site, Intermediate Context and Wider Context. In response to my FIR, I acknowledge some consideration of perceptual and associative attributes has been distributed throughout the Assessment including as part of informing potential issues relating to amenity values.
14. In perceptual terms, I consider the landscape character associated with the Site predominantly expresses a working rural aspect of a reasonably coherent and legible coastal plain. The broader Barrytown Flats reflects a mosaic of open farmland, dispersed rural settlement, small coastal streams and vegetated swamp areas. Areas of pasture are commonly interspersed with remnant, regenerating and planted vegetation which frequently frames and punctuates views along this section of coastal environment. In places panoramic open views towards the sea remain, including when passing adjacent to the Site seen across intervening areas of farmland.
15. The Assessment recognises the local hapū is Ngāti Waewae of Ngāi Tahu. Whilst some Māori and European history is identified, the Assessment demonstrates more limited understanding of any associative landscape values which endure. The Assessment of Environment Effects included with

the application identifies that the Regional Land and Water Plan² recognises Canoe Creek as waahi taonga, cultural materials and traditional campsite. The application also records that the applicant has engaged with Te Rūnanga o Ngāti Waewae throughout the development of this application and continues to do so, however the extent that such engagement has informed the Assessment remains unclear including any reliance on third parties, omissions and gaps.

16. The proposed Mine Disturbance Area is dominated by pasture within which indigenous vegetation is extremely limited, including a few isolated kahikatea trees and a small, planted area of flax. Some more extensive indigenous vegetation and associated coastal habitats occurs within the wider Site. This includes coastal wetland areas within Canoe Creek Lagoon. There is very limited existing riparian vegetation established along the margins of most existing streams and stock access and some slumping is apparent.

Coastal Environment

17. The Assessment recognises the Site forms part of the coastal environment. Whilst it is unclear why the Assessment, refers to this finding as “conservative”³, relevant requirements of NZCPS in relation to the Coastal Environment have been identified and have largely been considered.
18. Within the coastal environment I acknowledge the TTPP currently identifies parts of the adjoining Barrytown Hills as an Outstanding Natural Landscape (42: Paparoa Ranges) and an area of Outstanding Natural Character (ONC Area C40) as illustrated on **Figure 6** of the Graphic Supplement. As part of the TTPP process, I understand the extent of ONC has subsequently been reviewed and is no longer considered to be outstanding, whilst retaining recognition as an area of high natural character⁴.

Landscape Effects

19. As with the description of the landscape characteristics and values, the Assessment primarily addresses biophysical landscape effects based on **landform, landcover and land use**, identifying no more than **low-moderate** and **minor adverse effects**. Beyond this, more limited justification has been provided to qualify **landscape character** effects which the Assessment identifies as **low** level (and minor) during the Project and **very low** (less than minor) in the longer term.
20. In terms of **landform**, I agree that the Site expresses a combination of ongoing coastal and geological processes as well as man-made interventions. During operation, progressive landform changes are proposed within the Mine Disturbance Area which shift across the Site rather than occur simultaneously and all at once. Temporary bunding and stockpiles will occur within the context of landform modification with additional permanent bunding, and access introduced within this area of the Site. Once completed, the Mine Disturbance Area will be reinstated with drainage patterns supporting pastoral land use and reflecting modified linear humps and hollows in keeping with the existing and surrounding rural land use which continues to fall towards the coast.
21. I have identified that the Mine Disturbance Area provided in **Figure 17: Landscape Mitigation Plan** of the Graphic Supplement differs from the Rehabilitation Boundary as defined in the Palaris Report: Final Landform 25 July 2023 [sic]. Specifically, the final landform in the Palaris Report shows works occurring inside the identified 200 m offset from the road boundary and within the larger Site. Whilst the Assessment notes the 200 m offset from SH6 is arbitrary as it is unlikely there is suitable material

² The Schedule 7C: Spiritual and cultural beliefs, values, and uses of significance to Poutini Ngāi Tahu

³ The Assessment, page 28.

⁴ Brown NZ Ltd. (March, 2022) West Coast Landscape Study: Review Of Outstanding Natural Landscapes & Area Of High & Outstanding Natural Character

to mine in this area due to the existing grading⁵, the extent to which the potential for effects within this area will be avoided remains unclear given this apparent discrepancy in the application.

22. In terms of **landcover**, I agree with the Assessment that the Mine Disturbance Area is almost entirely comprised of pasture with some sedges and drainage channels and some isolated remnant and planted native vegetation. I also agree that the Site and wider area includes natural systems encompassing the interface with the sea to the north of Canoe Creek, lagoons, rivers, springs, wildlife habitats and remnant areas of bush which require a careful balance between measures necessary for their conservation and the progression of mining activity⁶. In this context, I consider the disturbance of pasture and limited indigenous vegetation removal, including the proposed clearance of four isolated kahikatea trees as proposed, will result in **low-moderate adverse effects** given this more modified area of the Site. Given the proposed reinstatement of pasture within the Mine Disturbance Area and planting with the wider Site, I agree this has potential to result in **low positive** effects in the longer term, given effective ongoing management.
23. In terms of rehabilitation, I note the Assessment identifies retaining the majority of new planting⁷, however the areas where planting implemented during operation is to be removed is unclear. Whilst I acknowledge the planted end of the stockpile bund will need to be disturbed as the bund is removed, if additional large areas of planting are removed this may reduce or potentially nullify any identified low positive effects.
24. In terms of **land use**, the Assessment identifies that the existing farming operation which has occurred within the Site for many years, will temporarily change from a rural activity to a mining extraction activity. I agree with the Assessment this is different to anything currently being carried out on the Barrytown Flats notwithstanding some historical associations which have occurred⁸. Whilst such land use effects during operation are inherent in any mining application of this nature, I agree this application includes rehabilitation measures within the Mine Disturbance Area which enable the existing land use to be re-established and ensure no more than limited **low** level and relatively short term and reversible effects.
25. The Assessment provides relatively limited discussion qualifying identified **low level landscape character** effects, briefly referring to the Project's short timeframe, graduation of effects across the Site (largely dependent on when and where the mining activity is occurring), and the ability for rehabilitation to occur. Whilst I agree the Project has relatively confined and largely reversible landscape character effects within the defined Mine Disturbance Area and includes opportunities for positive long-term benefits across the wider Site, I consider the extent of change which occurs during operation, including the scale of built form, removal of isolated remnant trees, and associated scale and nature of mining activity within established farmland will appear atypical of the rural activity which currently prevails. In this context, I consider the coherence of this rural landscape will be disrupted during operation and consequent landscape character effects will be greater than identified in the Assessment, albeit no more than **low-moderate adverse** (minor). I agree long term landscape character effects have potential to be **low adverse** (less than minor) through effective rehabilitation.
26. I concur with the Assessment that any adverse effects on the 'outstanding-ness' of the Barrytown Hills will be very limited⁹, and consider any effects on this area will be **low adverse** (less than minor) during operation and **very low adverse** following rehabilitation.

⁵ The Assessment, Footnote 53.

⁶ The Assessment, Page 47.

⁷ The Assessment, Section 11.5, table 5.

⁸ The Assessment, page 49.

⁹ The Assessment, page 26.

Visual Effects

27. I consider the Assessment provides a reasonably detailed and plausible assessment of visual effects which includes reliance on a range of representative views from surrounding public and private viewpoints and implementation of recommendations as illustrated in the accompanying Landscape Mitigation Plan. As stated above, I have visited the Site and neighbouring properties for which minor visual effects have been identified in the Assessment and generally agree with the identified nature and level of visual effects.
28. I have discussed the reference to “124° primary field of view extent” shown on panorama photographs included with the Graphic Supplement with the author of the Assessment and understand this is based off a standard template which is incorrect. Based on the viewing distances also provided beneath each photograph (“...A3 sized prints to be viewed at approx. 250 mm”), the horizontal field of view of panoramas provided in the Graphic Supplement is much narrower and appears to be around 90°. The Assessment has also included site visits and representative viewpoints from adjoining properties for which access has been obtained for the purpose of completing an assessment of visual effects.
29. Having visited the deck referred to at 3316 Coast Road (SH6), Lot 2 DP 3403 – R Mirza and S Hillerby, I consider intervening trees often ‘frame’ rather than ‘screen’ available coastal views. Notwithstanding this, I agree that the Processing Plant and access road will principally remain concealed from this vantage point whilst mitigation measures proposed along SH6 and around the Processing Plant will not reduce visual effects within the remainder of the Site¹⁰. Based on the nature of framed views between intervening trees, combined with viewing distance and the progressive nature of the project within the Mine Disturbance Area, I consider visual effects will result in slightly greater adverse effects, which I consider to be **low-moderate** (minor) during operation.
30. As stated above, I generally agree with the Assessment in terms of the description and remaining levels of visual effects which have been identified. In considering the nature of visual effects on neighbouring properties, the Assessment explicitly refers to the 200-metre SH6 offset zone remaining untouched by mineral extraction and mining activity¹¹, which differs from the landform plan prepared by Palaris (July, 2023). Given this discrepancy, the proposed adherence to this setback should be confirmed and any consequent increase in effects should be clarified. For completeness, I have included my peer review of all identified visual effects on the assumption this 200-metre offset is maintained in paragraph 38 below and consider adverse effects would likely increase if this setback is reduced.

Natural Character Effects

31. In response to the FIR, the Assessment has set out further analysis in terms of matters which may contribute to the existing and consequential changes in natural character. This aspect of the Assessment identifies the relevant areas within which natural character effects have been assessed as the “land and the coastline”¹² however the relationship between these areas and the Site is not defined. No additional specific understanding of the natural character of the Coastal Marine Area has been provided except for noting the “potential for further resource use and development” in this area¹³. The Assessment is also unclear in terms of the level of natural character which exists and the

¹⁰ The Assessment, page 61.

¹¹ The Assessment, pages 57 and 59.

¹² The Assessment, page 32.

¹³ The Assessment, page 38.

level of natural character effects which will occur during operation, whilst identifying there will not be any adverse long-term effects on natural character¹⁴.

32. In terms of the existing level of natural character of the Site, the Assessment identifies that, “the site sits between two areas which have higher natural character”¹⁵. Having observed the Site, I agree that the Mine Disturbance Area has lower levels of natural character in its wider coastal environment, which has resulted from historic vegetation clearance, landform changes and ongoing farming activity. Along the coastline, the Site includes active gravel and sand beaches. Lagoon areas support native vegetation and associated coastal habitats along an active, open and exposed coastal edge. Given this context, I consider the level of natural character of the Site is at least **moderate** overall.
33. Whilst direct effects will be avoided beyond the Mine Disturbance Area, I consider the potential for natural character effects on adjoining coastal areas within the Site and wider coastal environment are not clearly identified. The Assessment states the 20-metre buffer between the active Mine Disturbance Area and natural features such as Collins Creek and Canoe Creek Lagoon will offer protection during operation. Further minimum areas of planting are identified within the Landscape Mitigation Plan and referred to in the Wetland Construction and Riparian Planting Plan (Ecological Solutions, April 2023) however the consequent changes to existing natural, elements, patterns and processes during operation remain unclear.
34. As part of assessing natural character, the Assessment identifies that, “Coastal processes and patterns (tides, waves, sedimentation, storm surges, erosion etc.) will continue”¹⁶. Similarly, in relation to relevant biophysical, ecological, geological and geomorphological aspects, the Assessment states “the modification of the site behind the coastal edge will not detract from the highly expressive and natural processes that are the dominant element of the unit”¹⁷. I consider this analysis is overly generic and would likely remain true of much of the coastal environment of New Zealand, irrespective of the level of modification in adjoining areas.
35. Specifically, the Assessment does not qualify the potential nature of biophysical effects, including implications to the ecology, hydrology or water quality within the adjoining Canoe Creek Lagoon during operation. When combined with the increased activity and experiential changes including lighting and noise resulting from within the Mine Disturbance Area, I consider the Project has potential to result in some adverse natural character effects during operation, which have not been addressed. Based on my Peer Review and varied nature of levels of natural character within the Site, I consider there is potential for some **moderate adverse** natural character effects.
36. Once completed, the Assessment concludes that there will be significant long-term benefits arising from additional new planting across the Site. As set out in Te tangi a Te Manu, significant equates to high or very high effects¹⁸. Whilst I consider some adverse natural character effects may occur during operation and the restoration of native planting has potential to have beneficial natural character effects, I do not consider any natural character effects to be significant, in the context of the modified working rural landscape and adjoining coastal environment that will largely prevail or in terms of NZCPS Policy 13.
37. As stated in paragraph 18, I recognise and agree that the Barrytown Hills do not have Outstanding Natural Character and consider any adverse natural character effects on this area will be no more than **low** (less than minor).

¹⁴ The Assessment, page 36.

¹⁵ The Assessment, page 35.

¹⁶ The Assessment, page 33.

¹⁷ The Assessment, page 33.

¹⁸ Te Tangi a Te Manu, page 151.

Summary of Effects

38. Based on the findings of my peer review as described above, I have set out a summary of the comparative level and nature of effects based on NZILA's standard 7-point scale as identified in the table below:

Effects Assessment	Glasson and Huxtable Identified Level and Nature of Effects		Boffa Miskell Identified Level and Nature of Effects	
	During Mining Activity	Long Term - Following Project Completion	During Mining Activity	Long Term - Following Project Completion
Landscape Effects				
Landscape Effects on Landform	Low to Moderate (Minor)	Very Low (Less than minor)	Moderate Adverse (More than minor)	Very Low Adverse (Less than minor)
Landscape Effects on Landcover	Not stated	Low Positive	Low Adverse (Less than minor)	Low Positive
Landscape Effects on Land use	Low (Less than minor)	"further reduce"	Low Adverse (Less than minor)	Very Low Adverse (Less than minor)
Effects Landscape Character	Low (Minor)	Very Low (Less than minor)	Low-Moderate (Minor)	Low Adverse (Less than minor)
Barrytown Hills - Outstanding Natural Landscape	"Very Limited"	"Very Limited"	Low Adverse (Less than minor)	Very Low Adverse (Less than minor)
Natural Character Effects				
Site (Including Mine Disturbance Area and Canoe Creek Lagoon)	Not stated	"Not be any" "significant long-term benefits"	Moderate Adverse (More than Minor)	Low Positive
Visual Effects				
State Highway 6	Low (Less than minor)	Not stated	Low Adverse (Less than minor)	Very Low Adverse (Less than minor)
Burke Road	Negligible	Not stated	Very Low Adverse (Less than minor)	Neutral
Pakiroa Beach foreshore and the Tasman Sea	Low (Less than minor)	Not stated	Low Adverse (Less than minor)	Very Low Adverse (Less than minor)
Paparoa Ranges (ONL)	Negligible	Negligible	Very Low Adverse (Less than minor)	Neutral
*S. Langridge & R. Wildbore - 3323 SH6 LOT 2 DP 3375	Low (Minor)	Very Low (Less than minor)	Low Adverse (Minor)	Very Low Adverse (Less than minor)
*R. Langridge & D. Van Den Berg - 3323 SH6 LOT 3 DP 3375	Low to Moderate (Minor)	Very Low (Less than minor)	Low-moderate Adverse (Minor)	Very Low Adverse (Less than minor)
*R. Mirza & S. Hillerby - 3316 SH6 LOT 2 DP 3403	Low (minor)	Very Low (Less than minor)	Low-Moderate Adverse (Minor)	Very Low Adverse (Less than minor)
B. O'neil & J. Costello - 3261 SH6 LOT 2 DP 412689	<i>Written Approval – not considered</i>	<i>Written Approval – not considered</i>	<i>Written Approval – effects not considered</i>	<i>Written Approval – effects not considered</i>
C. Cowan - RS 6674	<i>Written Approval – not considered</i>	<i>Written Approval –not considered</i>	<i>Written Approval –not considered</i>	<i>Written Approval – effects not considered</i>
*G. & G. Langridge – 3195 SH6 LOT 1 DP 3574	Low to moderate (Minor)	Low (Less than minor)	Low-moderate Adverse (Minor)	Low Adverse (Less than minor)
M. Morgan & M. Radford - 3172 SH6 RS 5327	Very Low (Less than minor)	Not stated	Very Low Adverse (Less than minor)	Very Low Adverse (Less than minor)
Differences between the findings of the Assessment and Peer Review have been highlighted . * denotes properties visited for the purpose of this peer review.				

Conclusions

39. Overall, it is considered the Assessment provides a reasonably clear and valid understanding of the physical landscape and consequent landscape and visual effects. Notwithstanding this, there are some shortcomings, particularly in terms of identifying perceptual and associative landscape values and qualifying natural character effects during operation which I consider should be addressed. Beyond these, I consider the overall conclusions of the landscape and visual effects and long-term natural character effects remain reasonably sound and plausible in the context of the modified working rural landscape within which they will occur.