



RS Sand Limited – Resource Consent Applications

Sand Quarry at 77 Newcombe Road, Cambridge



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1 Introduction

Aggregates are fundamental to the lives of everyday New Zealanders and without an on-going supply, the cost of concrete production and the development of buildings, roads and infrastructure would increase or come to a standstill. Quarrying needs to be carried out as close to where materials will be used as possible to keep transportation costs low and help minimise building costs and emissions. With sand resources running out locally and regionally, a future supply of sand for regional construction activities will assist in providing affordable sand for houses and infrastructure.

Kinetic Environmental Consulting Limited (Kinetic Environmental) on behalf of RS Sand Limited (RS Sand) seek resource consents to establish and operate a sand quarry located at 77 Newcombe Road, Cambridge (the Site).

Up to 400,000 tonnes of sand per year is proposed to be extracted over five stages and for approximately 25 years. A new vehicle crossing from Newcombe Road is to provide access to the quarry and an average of 78 trucks per weekday are anticipated. Bunds and landscaping will be provided along the western, southern, and eastern boundaries of the pit and plant areas to screen the activities. A groundwater take is proposed to operate the screening and processing plants and suppress dust. Quarry Management, Dust Management, Erosion and Sediment Control, and Traffic Management plans will be used to avoid, remedy, and mitigate the operational effects of the quarry. Ecological restoration, enhancement and mitigation measures are proposed to achieve No Net Loss and Net Gain for key biodiversity values.

The quarry will provide a local source of sand for development within the district and region, approximately 58% of sand is anticipated to be required for Cambridge North, Cambridge South and Te Awamutu.

Consents are required from Waikato Regional Council (WRC) and the Waipā District Council (Waipā DC) to enable soil disturbance/earthworks and vegetation clearance, the taking, diversion and discharge of water, the location of the vehicle entrance, surface of the parking, loading and manoeuvring areas, and large-scale overburden disposal. Copies of the WRC and Waipā DC application forms are attached in **Appendix A**.

This report is prepared in support of an application for the above resource consents and describes the nature of the proposal in detail and assesses it against the relevant provisions of the Resource Management Act 1991 (RMA), the National Environmental Standards (NES), the relevant Policy Statements, Plans and Regulations. This report and the Assessment of Environmental Effects (AEE) have been prepared in accordance with Section 88 and the Schedule 4 of the RMA.

2 Site and Surrounding Environment

2.1 Site

The general location of the Site is approximately 3km to the east of the Cambridge town centre, between the Waikato River and Karapiro Stream (refer to **Figure 1** below).





FIGURE 1: General Location (approximate location of Site identified in blue).

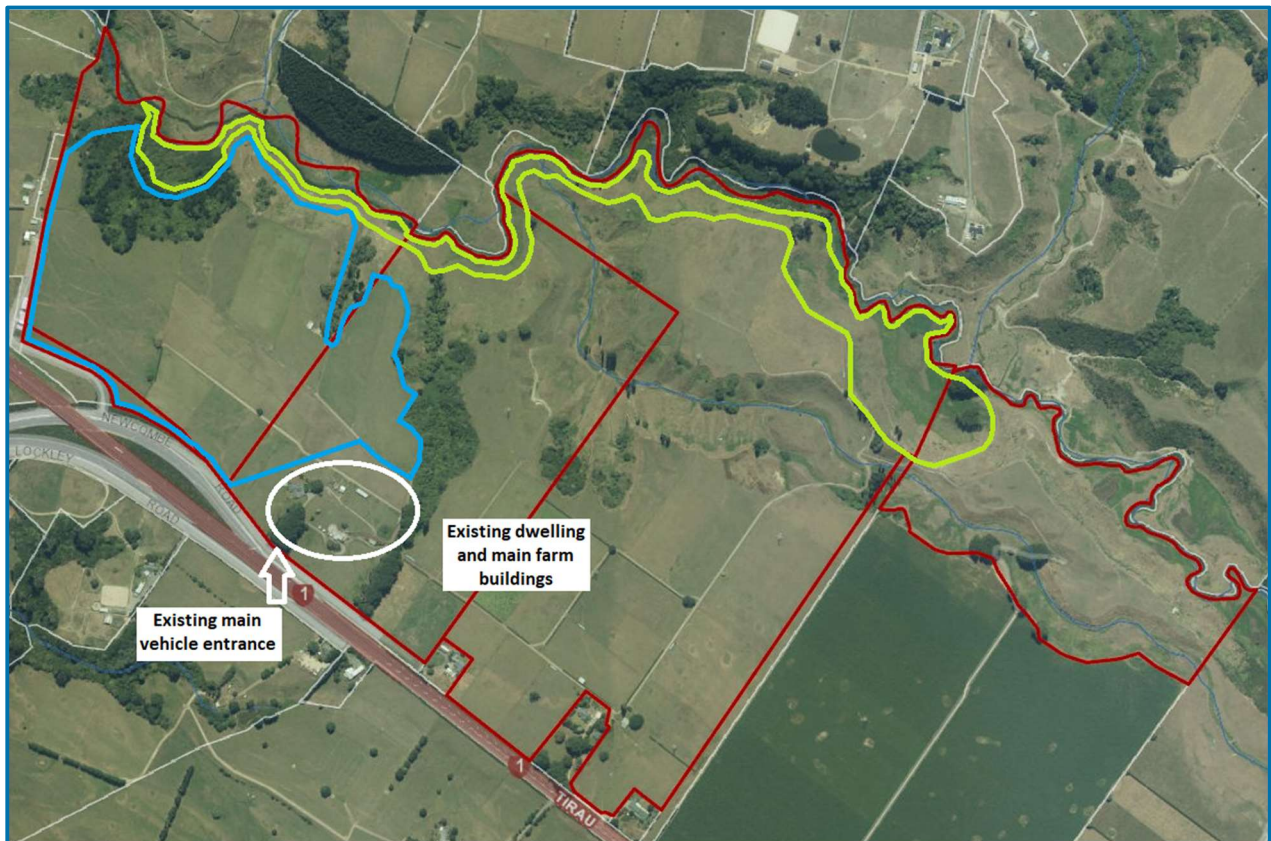


FIGURE 2: Property Boundaries (red) and approximate Area of the Site (quarry area in blue and ecological restoration in green).



The property boundaries identified in **Figure 2** above are contained in three Records of Title (RTs) and total approximately 135ha in area, refer to Section 4 below of further details. Most of the buildings on the properties are located north of the main vehicle entrance, approximately 70-180m from Newcombe Road. The main buildings in this area comprise of a dwelling with attached garage, milking shed and several large farm buildings.

The Site is located in the western portion of the property and is only 41ha of the available land, comprising of a 27ha quarry area and 14ha ecological restoration area. The Site is an irregular shaped rectangle with the northern boundary following the alignment of the Karapiro Stream. The main vehicle entrance to the Site is located approximately halfway along its Newcombe Road frontage, however, there are farm entrances from SH1/Tirau Road towards the south-eastern corner of the Site. The Site is currently use for dairy farming.

The topography of the Site is generally flat with areas incised by gullies associated with the Karapiro Stream and its tributaries. The southern half of the Site is at a similar level to Newcombe Road (approximately RL75), while the banks of the Karapiro Stream and its tributaries are approximately 45m lower (RL 30). While most of the Site is grazed by dairy cattle, portions of the gullies and slopes down to the streams contain exotic dominated forest, scrub and forest, mixed exotic and native forest, and floodplain, gully basin and seepage wetlands (refer to **Figure 3** below).

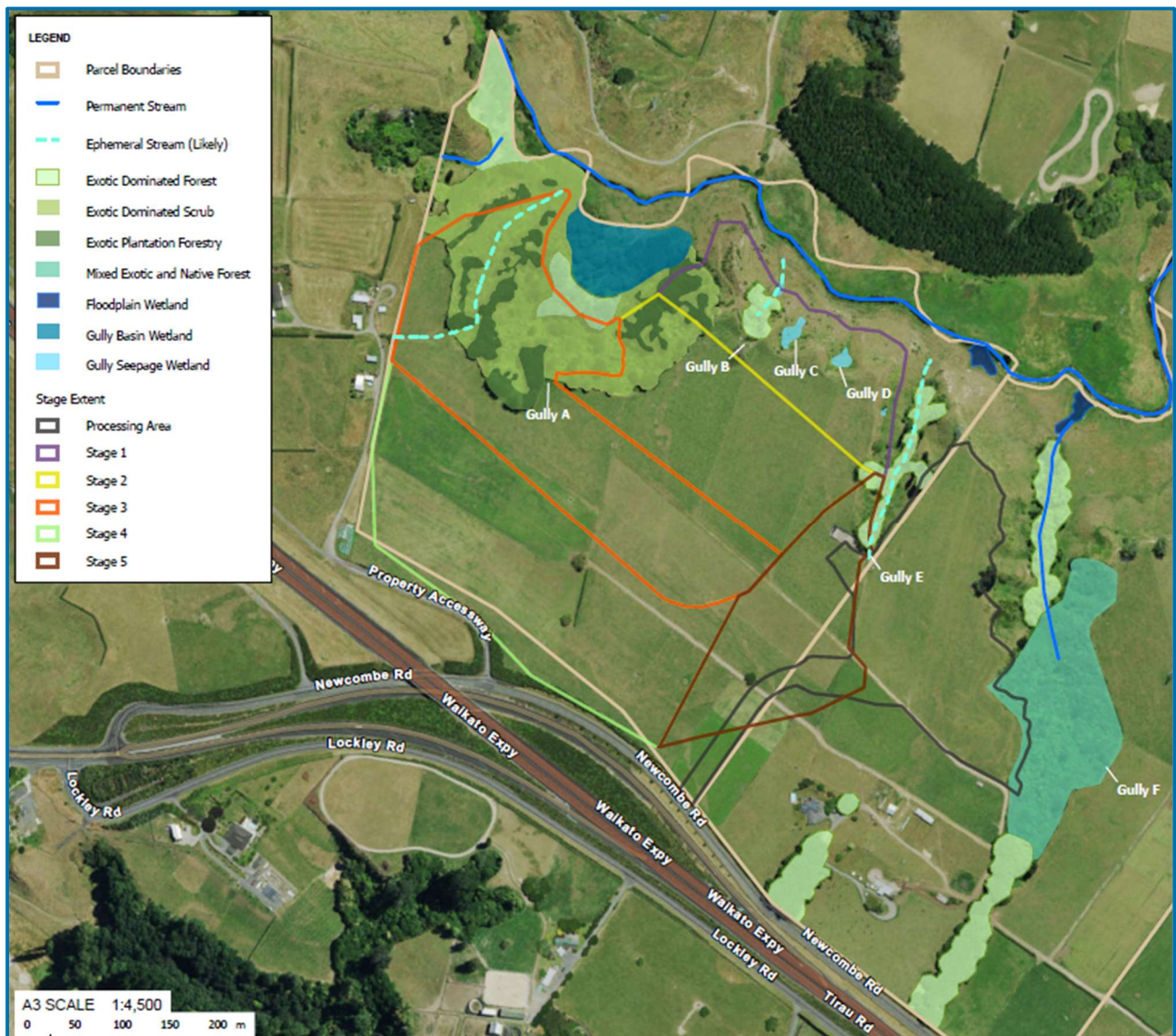


FIGURE 3: Habitat/Vegetation Map (Figure 1 of the Ecology Assessment).

Three Transpower overhead high voltage (110kV) electricity transmission lines cross the middle of the Site (HAM-KPO-A, ARI-HAM-A and ARI-HAM-B), refer to **Figure 4** below. The associated structures are located at the top of the incised gullies and comprise of double circuit steel towers and single circuit single poles.



FIGURE 4: Transpower Transmission Lines (lines in red and Site in blue).

2.1.1 NZ Archaeological Association and Heritage New Zealand Pouhere Taonga

The NZ Archaeological Association's (NZAA) ArchSite and Heritage New Zealand Pouhere Taonga's (HNPT) Heritage List/Rārangi Kōrero do not identify any recorded sites of significance to Māori, heritage buildings, sites, or objects on the Site.

2.1.2 Waikato Regional Council Maps

The Site is in or contains the following WRC map areas/features:

- Biodiversity and Environment (Biodiversity Vegetation 2012).
 - Broadleaf Indigenous Hardwoods.
 - Deciduous Hardwoods.
 - Manuka and Kanuka.
- Catchment Management Zone – Central Waikato.
- Iwi Information.
 - Waikato Tainui, Ngaati Hauaa and Ngāti Hinerangi Treaty Settlement Area.
 - Waikato Tainui Te Kauhanganui Incorporated and Raukawa Charitable Trust Iwi Authorities.
 - Waikato River Co-Management Area.
 - Joint Management Agreement Area.
- Water Classification.
 - Surface water (Karapiro Stream).
 - Trout habitat.
- Soil LUC Themes (refer to **Figure 5** below).
 - (nz2s-3) Arable - Soil Limitation (upper flat areas).
 - (nz7e-30) Non Arable - Erosion Limitation (gullies associated with the Karapiro Stream).



The WRC Iwi Information map does not identify any recorded waahi tapu, sites of significance, managed or co-managed sites on the Site.

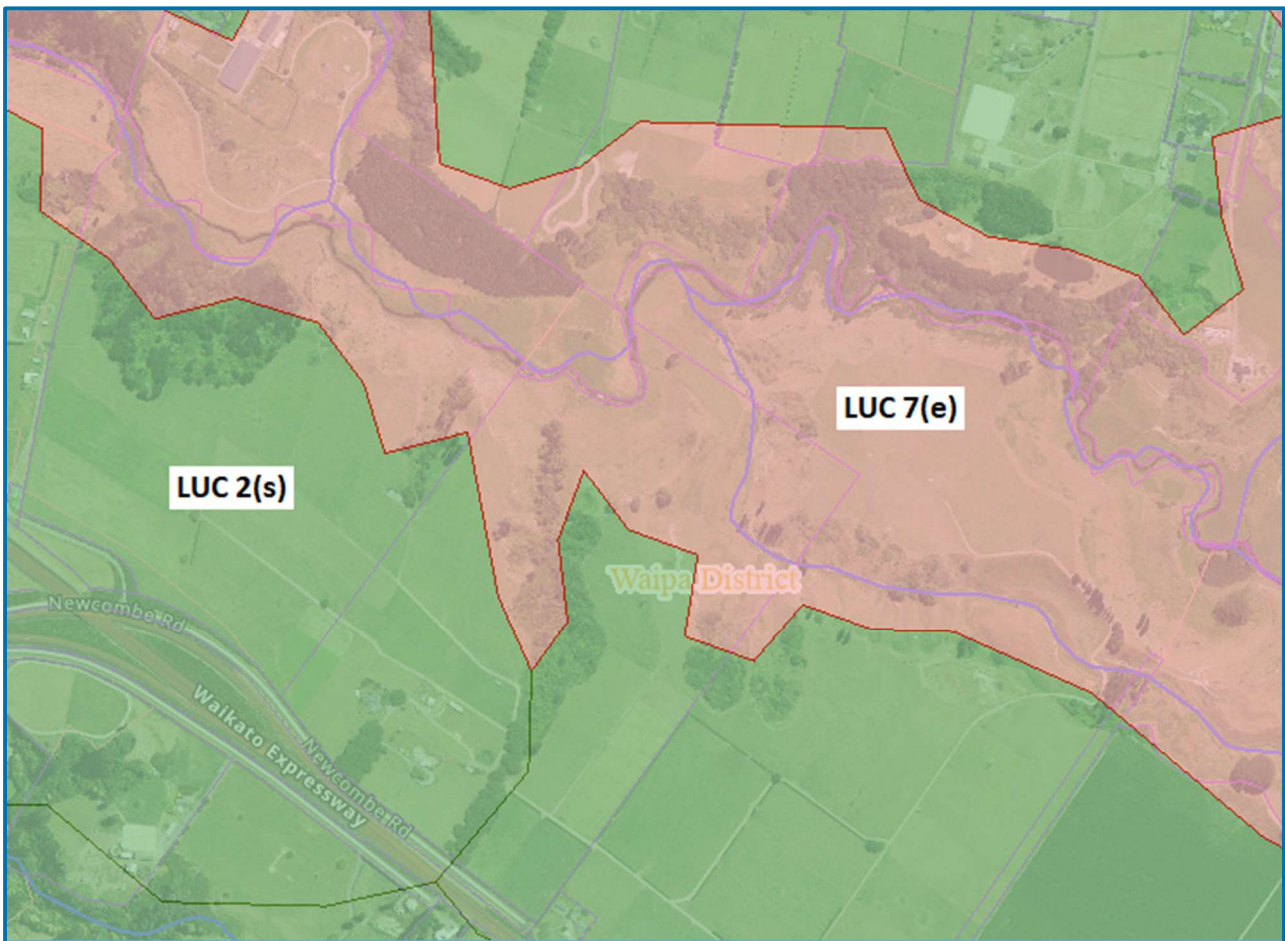


FIGURE 5: WRC Soil LUC Themes.

2.2 Surrounding Environment

The environment surrounding the Site is also zoned Rural under the District Plan and is relatively flat with incised gullies associated with the Waikato River, Karapiro Stream and their tributaries.

Properties along French Pass Road to the north largely comprise rural lifestyle and small rural properties that are currently used for grazing and equine activities. The built environment to the north of the Site mainly consists of dwellings and accessory buildings within 300m of French Pass Road.

South of the Site, the properties typically consist of large rural landholding used for grazing, cropping and equine activities. Similarly, the built environment to the south mainly consists of dwellings and accessory buildings within 300m of State Highway 1 (SH1)/Tirau Road.

Vegetation in the surrounding environment includes farm shelterbelts and patches of native and exotic vegetation within the gullies of the Waikato River, Karapiro Stream and their tributaries.

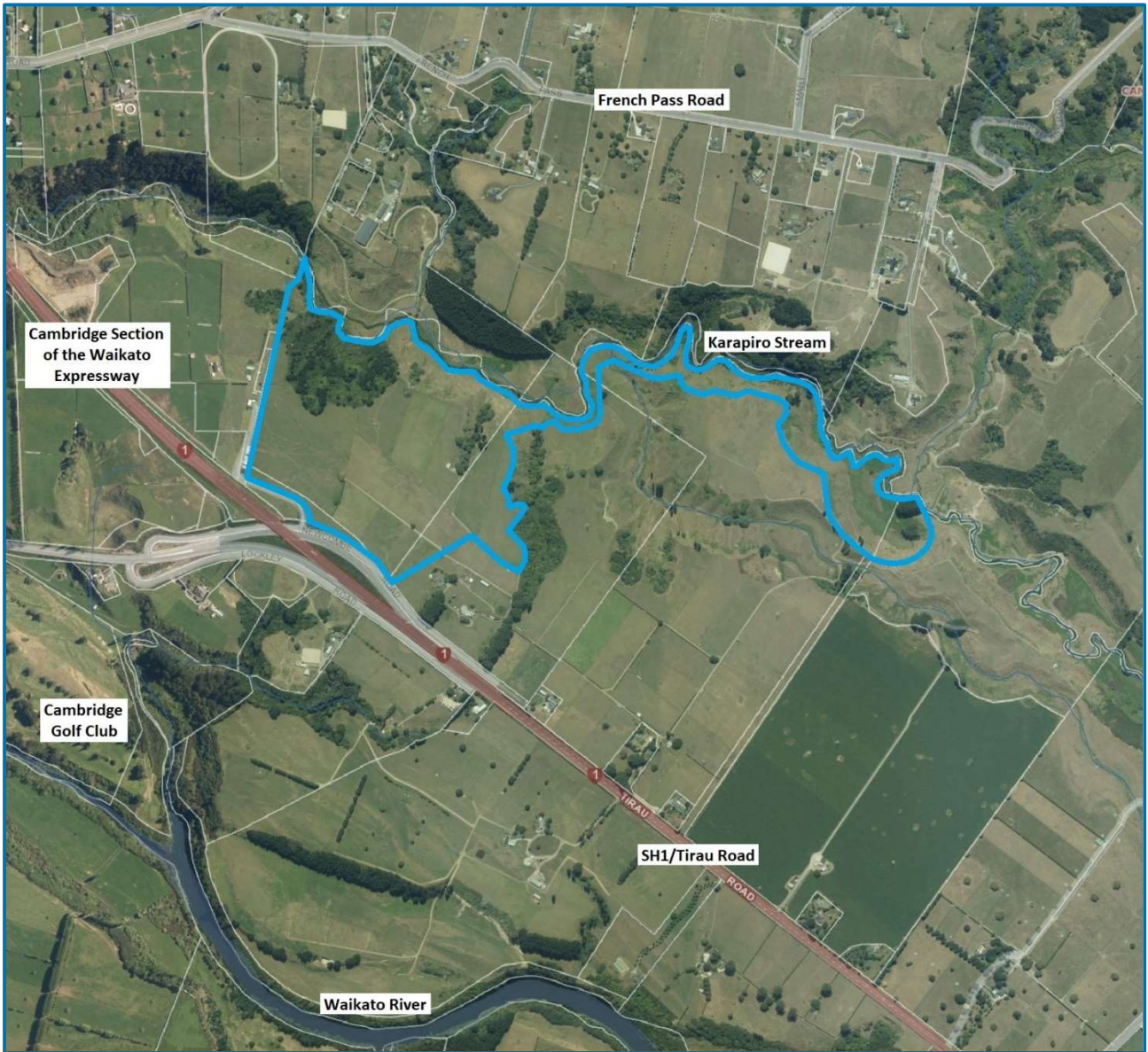


FIGURE 6: Surrounding Environment

3 Previous Waikato Regional Council Consents

RS Sand was granted land use consent AUTH143188.01.01 on 14 April 2021 to construct, use and maintain 11 wells on the Site for ground water monitoring purposes. The bores are located at map reference NZTM 1820396 E 5803022 N (pit area).

RS Sand was granted land use consent AUTH143939.01.01 on 1 December 2021 to construct, use and maintain a test bore for an industrial water supply on the Site. The test bore is located at map reference NZTM 1820756 E 5803020 N (plant area) and was assigned identifier number 72_10873 by WRC.

4 Records of Title

Table 1 below summarises the relevant interests on the three existing RTs, copies are attached in **Appendix B**.

RT	Legal Description	Size	Date Issued	Relevant Interests
841793	Sec 41 SO 510550 and Sec 61 SO 510550	28.96 ha	27 June 2018	<ul style="list-style-type: none"> 12129517.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen. Appurtenant hereto is a right of way created by Easement Instrument 11167910.1. H080406 Gazette Notice declaring SH1 (Awanui-Bluff) fronting the within land to be a limited access road.
821177	Lot 2 DP 520523	33.16 ha	4 December 2018	<ul style="list-style-type: none"> 12129517.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen. H080406 Gazette Notice declaring SH1 Awanui - Bluff fronting the within land to be a limited access road.
908965	Lot 2 DP 541191 and Lot 4 DPS 86453	72.55 ha	2 December 2019	<ul style="list-style-type: none"> 12129517.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen. Appurtenant to Lot 4 DPS 86453 is a right of way specified in Easement Certificate B658708.5. H080406 Gazette Notice declaring SH1 (Awanui-Bluff) fronting the within land to be a limited access road. B664281.4 Certificate pursuant to Section 91 Transit New Zealand Act 1989. The easements specified in Easement Certificate B658708.5 are subject to Section 243 (a) RMA. 9351117.1 Bond pursuant to Section 108(2)(b). 8535308.1 Consent Notice pursuant to Section 221 RMA.

TABLE 1: Records of Titles Details

The above listed interests do not restrict the proposal from proceeding for the following reasons:

- The Compensation Certificate pursuant to Section 19 of the Public Works Act 1981 relate to agreement for the payment of compensation in relation to the Cambridge Section of the Waikato Expressway (the Expressway).
- The Site no longer gains access from SH1.
- Section 91 of the Transit New Zealand Act 1989 relates to authorisation of crossing places on limited access roads.
- Bond 9351117.1 relates to a previous 'Transferable Development Right' subdivision.
- Consent notice 8535308.1 relates to a previous 'Dwelling for a Person with a Long Association with a Holding' subdivision, and vegetation and building distances to Hamilton-Karapiro A, Arapuni-Hamilton A and Arapuni-Hamilton B transmission lines and support structure foundations.

5 Description of Proposal

RS Sand proposes to establish and operate a sand quarry at 77 Newcombe Road, Cambridge. The quarry is proposed to extract up to 400,000 tonnes of sand per year (depending on demand) for approximately 25 years from the western portion of the Site (the Proposal).

The quarry is made up of a 23 hectare pit area towards the western boundary and a 4 hectare plant area (for processing and stockpiling) to the east of the pit. Refer to **Appendix C** for plans of the proposed sand quarry.

The pit area is estimated to contain 7,409,700 tonnes (4,116,500m³) of sand resource, comprising a mixture of pit sand and concrete sand. The quarry is proposed to extract and process up to 400,000 tonnes of sand from the pit area per year (depending on demand) for approximately 25 years, based on the following indicative stages:

Stages	Years and Areas	Overburden	Pit Sand	Concrete Sand	Total Sand
1	0 to 1.5 (2.8 ha)	38,700 tonnes / 21,500 m ³	38,700 tonnes / 21,500 m ³	414,000 tonnes / 230,000 m ³	452,700 tonnes / 251,500 m ³
2	1.5 to 6.4 (3.7 ha)	115,200 tonnes / 64,000 m ³	115,200 tonnes / 64,000 m ³	1,335,600 tonnes / 742,000 m ³	1,450,800 tonnes / 806,000 m ³
3	6.4 to 13.4 (6.8 ha)	189,900 tonnes / 105,500 m ³	189,900 tonnes / 105,500 m ³	1,920,600 tonnes / 1,067,000 m ³	2,110,500 tonnes / 1,172,500 m ³
4	13.4 to 20.2 (6.3 ha)	229,500 tonnes / 127,500 m ³	229,500 tonnes / 127,500 m ³	1,819,800 tonnes / 1,011,000 m ³	2,049,300 tonnes / 1,138,500 m ³
5	20.2 to 24.8 (3 ha)	131,400 tonnes / 73,000 m ³	131,400 tonnes / 73,000 m ³	1,215,000 tonnes / 675,000 m ³	1,346,000 tonnes / 748,000 m ³
TOTALS	24.8 Years (22.6 ha)	704,700 tonnes / 391,500 m³	704,700 tonnes / 391,500 m³	6,705,000 tonnes / 3,725,000 m³	7,409,700 tonnes / 4,116,500 m³

TABLE 2: Proposed Indicative Stages, Timeframes and Volumes

As shown in the **Appendix C** plans, excavations of the pit area will begin 10-15m from the Karapiro Stream and move south towards Newcombe Road. The stages are approximately 120m wide and will excavate approximately 35m below the existing ground level of the existing terrace. The bottom of the pit area will be approximately 10m above the level of the Karapiro Stream bank. An internal pit road will link the pit and plant areas.

The proposed plant area includes a processing plant (approximately 6m high and 20m wide) located in the middle of the plant area and a water recycling pond towards the north. The plant building will use and discharge water to and from the recycling pond to grade the sand with spirals, screens, conveyors, and pumps on multiple levels. Graded sand will be stockpiled around the plant area. The southwestern portion of the plant area will contain an office and breakroom building, maintenance workshop, car parking, weighbridge, and wheel wash facility.

5.1 Access

Access from Newcombe Road to the quarry will be provided via a new vehicle crossing approximately 150m to the west of the Site's existing access and 660m from the Newcombe Road – Tirau Road intersection.

For Stages 1–4 (Years 1–20.2), a 20m wide internal road will be constructed from the new vehicle crossing to the plant area. The road will initially be positioned over Stage 5 and along the existing fence line to limit the impact on the existing dairy farm and dwelling on the Site. For Stage 5 (Years 20.2–25), the internal road will be moved south to provide access to the sand beneath Stage 5.

5.2 Establishment

To establish the quarry, the top 2m of ground within the plant area will be stripped to form a level and stable platform, while the top 7.5m of Stage 1 will be stripped to access the sand beneath. The stripped material is assumed to comprise of 50% overburden and 50% pit sand.

Overburden from the plant area will be used to form bunding along the western and southern boundaries of the pit area, the eastern boundary of the plant area to screen the activities, refer to green areas on the Site Plan and Processing Area and Bund Plan in **Appendix C**. The bunds are proposed to be approximately 3m high in relation to existing ground level, 10m wide and will be planted with vegetation capable of growing up to 2-3m high. Overburden not required for perimeter bunding and progressive rehabilitation will be mixed with pit sand and sold.

Once the plant area has a stable platform, screening and processing plants will be positioned towards the centre of the area. **Figures 7 and 8** below show examples of screening and processing plants.





FIGURE 7: Screening Plant Example



FIGURE 8: Processing Plant Example

Overburden from each stage will be screened and processed to remove the sand content. Soil from the overburden material will be placed along the northern boundary of the next stage up to 5m high (in relation to existing ground level) and re-grassed for screening and storage for the future reinstatement of the stage it came from. Sand from the overburden material will be stockpiled around the plant area and sold.



5.3 Operation

The quarry is proposed to operate for up to 50 weeks of the year on the following basis:

- Monday to Friday – 7:00am and 5:00pm.
- Saturday – 7:00am and 12:00pm.
- Sunday and public holidays – Closed.

A 30-50 tonne excavator will be used to extract sand from the pit area, while 30-40 tonne articulated dump trucks will transport the sand to the plant area via the internal pit road. **Figure 9** below shows representative examples of an excavator and articulated dump truck.



FIGURE 9: Excavator and Articulated Dump Truck Example

Once sand has been through the screening and processing plants, a loader will stockpile sand by grade around the plant area, as well as load sand onto trucks to leave the Site. The figure below shows an example of a loader.



FIGURE 10: Loader Example

An average of 78 trucks per weekday and up to a maximum of 200 trucks could visit the site on the busiest day (depending on the demand for sand).

Quarry Management, Dust Management, Erosion and Sediment Control, and Traffic Management plans will be used to avoid, remedy, and mitigate the operational effects of the quarry. Refer to **Appendix D and E** for RS Sand's draft Quarry Management Plan (QMP) and Erosion and Sediment Control Plan (ESCP).

5.4 Groundwater Take and Diversion

Extraction of groundwater is required to operate the plant and suppress dust associated with the proposed quarry. The required daily take is likely to be a maximum of 1,100m³, which results in an annual groundwater take of 290,000m³.

The groundwater take sought considers the percentage of areas expected to open at any one time and comprises of the following:

- 500m³ water per day at 29 litres per second (105 m³/hr) for sand processing in the plant building.
- 600m³ water per day for dust suppression of the plant area, internal roads and max bench and batter area (Stage 3).

As each stage of the pit area is excavated below the perched aquifer (approximately 65m RL) and regional aquifer (approximately 32m RL), groundwater will be diverted to the lowest point in the pit and ESC devices.

5.5 Ecological Restoration, Enhancement and Mitigation

The Proposal will result in the loss of approximately 2.08 ha of exotic plantation and dominated forest, 0.98 ha of exotic dominated scrub, 3,090 m² of seepage wetlands, 23.72 ha of long-tail bat habitat and 3.06ha of copper skink habitat (refer to Section 8.6.6 for further details). RS Sand propose to undertake the following ecological measures to achieve No Net Loss and Net Gain for key biodiversity values:

- Approximately 12.5 ha of habitat restoration and enhancement within the existing Karapiro stream floodplain and associated gully slopes along the northern boundary of the Site to:
 - Create additional habitat and ecological connectivity for bats and other native forest fauna along approximately 2 km of riparian margin and to linking up two Significant Natural Areas (SNAs).
 - Provide buffering and ecological connectivity for approximately 3.73 ha of floodplain and gully seepage wetlands through the native revegetation of associated wetland margins.



- Approximately 1.2 ha of native mitigation planting along the northern boundary of the Site to reduce the potential for adverse effects on adjacent wetlands.
- Approximately 20 m / ha of cut up stockpiled felled native (preferably) or exotic logs deployed into restoration sites that cannot move or enter streams.

Native planting will be staged over a five-year period commencing in the first winter planting season following obtaining consents, and all plants will be eco-sourced and will include species that:

- Were historically present onsite.
- Have a high chance of survival and establishment within planted areas due to the appropriateness of site conditions for associated species.
- Provide a diversity and early supply of resources for fauna (e.g. year-round availability of fruits and flowers for native birds).
- Provide good roosting habitat for bats and other indigenous terrestrial fauna in the longer term.
- Are supported by iwi partners through iwi consultation and inputs.

Plantings will be protected from livestock browsing and weeds through stock exclusion fencing and a 20-year weed control programme, infill planting and control of mammalian browsers will also be undertaken as required. Long-term protection of all restoration and habitat enhancement sites will be achieved through protective covenants.

5.6 Rehabilitation

On the completion of each stage, the excavated pit floor and final faces will be reinstated as part of the Site's rural activity (currently dairy). The soil from the overburden material will be spread around the completed stages using a bulldozer as shown in **Figure 11** below.



FIGURE 11: Bulldozer Example

On completion of quarrying of the resource all buildings associated with the quarry will be removed and the processing area reinstated. The bund material will be either re-spread to form final batter slopes no greater than 3:1 or left in situ. The entire quarry area will be re-grassed prior to removing the erosion and sediment controls and the quarry's vehicle crossing onto Newcombe Road will be removed.



6 Resource Consents Required

This section sets out the documents and rules which the proposal requires resource consent. Refer to **Appendix F** for a full assessment against the relevant rules.

6.1 National Environmental Standards

6.1.1 Air Quality

NES for Air Quality sets a guaranteed minimum level of health protection and is made up of 14 separate but interlinked standards, including:

- Seven standards banning activities that discharge significant quantities of dioxins and other toxics into the air.
- Five standards for ambient (outdoor) air quality.
- A design standard for new wood burners installed in urban areas.
- A requirement for landfills over 1 million tonnes of refuse to collect greenhouse gas emissions.

The NES also requires regional councils and unitary authorities to manage air quality under the RMA.

The Proposal does not include the release of dioxins or other toxins, new wood burners in urban areas or a landfill. Additionally, the Site is not located within a polluted airshed. Therefore, the standards of the NES for Air Quality are not relevant to the Proposal.

6.1.2 Freshwater

The NES for Freshwater sets requirements for carrying out certain activities that pose risks to freshwater and freshwater ecosystems. The standards are designed to:

- Protect existing inland and coastal wetlands.
- Protect urban and rural streams from in-filling.
- Ensure connectivity of fish habitat (fish passage).
- Set minimum requirements for feedlots and other stockholding areas.
- Improve poor practice intensive winter grazing of forage crops.
- Restrict further agricultural intensification until the end of 2024.
- Limit the discharge of synthetic nitrogen fertiliser to land and require reporting of fertiliser use.

As the Proposal involves vegetation clearance, earthworks, land disturbance, and the taking, use, diversion, and discharge of water within and within 100m of natural inland wetlands (floodplain, gully basin and gully seepage wetlands), the proposed sand quarry requires resource consent as a **Discretionary Activity** under Regulation 45A of the NES for Freshwater.

6.2 Waikato Regional Plan

The Waikato Regional Plan (Regional Plan) became operative on 28 September 2007¹.

The proposal requires resource consent under the following Regional Plan rules:

¹ except for the following proposed variations: No. 2 – Geothermal Module, No. 5 – Lake Taupo Catchment, No. 6 – Water Allocation, No. 7 – Minor Variation and Geothermal Maps.



Regional Plan Resource Consents			
Rule No.	Rule Name	Activity Status	Reason
Chapter 3 – Water Module			
3.3.4.24	Groundwater Takes	Discretionary	The proposed groundwater take is from the Hamilton Basin – South aquifer and Table 3-6 does not list a Sustainable Yield for the aquifer.
3.5.4.5	Discharges – General Rule	Discretionary	The proposed discharge of treated water from the erosion and sediment control structures to Karapiro Stream is likely to contain a small amount of contaminants (e.g. silt).
3.6.4.13	Stopbanks, Diversions and any Associated Discharges of Water	Discretionary	As each stage of the pit area excavated below the perched aquifer (approximately 65m RL) and regional aquifer (approximately 32m RL), groundwater will be diverted to the lowest point in the pit and ESC devices. The diversion and subsequent discharge of water does not comply with Rules 3.6.4.6, 3.6.4.7, 3.6.4.8, 4.2.9.1, 4.2.9.2 or 4.2.9.3.
Chapter 5 – Land and Soil Module			
5.1.4.13	Soil Disturbance, Roding and Tracking and Vegetation Clearance	Discretionary	The proposed soil disturbance, roading and tracking, and vegetation clearance activities do not comply with the conditions of Permitted Activity Rule 5.1.4.11.
5.1.4.15	Soil Disturbance, Roding, Tracking, Vegetation Clearance, Riparian Vegetation Clearance in High Risk Erosion Areas	Discretionary	The project involves (approximately): <ul style="list-style-type: none"> • 750m of roading and tracking activities. • 4,601,500 m³ of soil disturbance activities (access road, plant and pit areas). • 27 ha of soil disturbance activities (plant and pit areas). • Cut slope batter height of 35 m over a distance of 1,200 m. • 27 ha of vegetation clearance activities (plant and pit areas).
5.2.5.3	Large Scale Overburden Disposal	Discretionary	The proposed discharge of overburden does not comply with Rules 5.2.5.1 and 5.2.5.2 as it includes high risk erosion areas and the total volume disposed of at the completion of quarrying activities will be approximately 438,000 m ³ (pit area and 50% of the plant area).

TABLE 3: Resource Consents Required under the Regional Plan

Overall, the proposal is a **Discretionary Activity** under the Regional Plan.

6.3 Waipā District Plan

Map 4 of the Waipā District Plan (District Plan) identifies the following areas and features on the Site:

- Rural Zone.
- Designation Approved – D20 (Expressway – Cambridge Bypass).
- Formed Local Road.
- Cultural Landscape Area Alert.
- High Voltage Electricity Transmission Lines and Structures.

District Plan Map 4 does not identify any recorded archaeological, cultural or heritage sites or items on the Site.

The proposal requires resource consent under the following District Plan rules:

District Plan Resource Consents			
Rule No.	Rule Name	Activity Status	Reason
Section 4 – Rural Zone			
4.4.1.4(h)	Discretionary Activity Status Table	Discretionary	The Proposal is for a mineral extraction activity (sand quarry) that is not within 500m from the lakes identified under subsection (h).
Section 16 – Transportation			
16.4.2.5	Vehicle Entrance Separation from Intersections and Other Vehicle Entrances	Discretionary	While the proposed vehicle crossing is at least 600m from any intersection, it is approximately 160m from the nearest vehicle crossing to the east.
16.4.2.15	Parking, Loading and Maneuvering Area	Discretionary	As the surface of the proposed parking, loading and maneuvering areas will be sand and metal, they will not provide a completely dust free environment.
16.4.2.23	Car Park Landscaping and Lighting	Restricted Discretionary	Given the proposed activity is a quarry, no trees are proposed in the parking area.
Section 26 – Lakes and Water Bodies			
26.4.2.1	23m Setback from Lakes and Water Bodies	Restricted Discretionary	As the northern extent of Stage 1 is 10-15m from the Karapiro Stream, earthworks and vegetation removal will be undertaken within 23m of the edge of the stream.

TABLE 4: Resource Consents Required under the District Plan

Overall, the Proposal is a **Discretionary Activity** under the District Plan.

6.4 Overall Activity Status

After reviewing the NES Freshwater, Regional Plan and District Plan, the Proposal is a **Discretionary Activity** overall.

6.5 Duration

Given the nature of the establishing works and expected demand for sand, RS Sand seek an enduring consent from Waipā DC and thirty five year consents from WRC.

7 Consultation

Initial consultation with stakeholders below began in December 2020.

7.1 Ngā Iwi Tōpū O Waipā

Ngā Iwi Tōpū O Waipā (NITOW), translated as The Assembled People of Waipā, is a group that represents all hapū in the Waipā District. They meet monthly and consider resource consent applications. They also consider other issues that are bought directly to Iwi for consultation and consideration.

As identified above, RS Sand contacted NITOW in relation to the proposal in December 2020 and the first Site walkover was attended by representatives of Ngaati Korokii-Kahukura and Ngaati Hauaa Iwi Trust (Ngaati Hauaa) in January 2021. The representatives identified that Ngaati Korokii-Kahukura and Ngaati Hauaa's initial interests were:

- The Karapiro Stream.
- Enhancement of the gullies.
- Bats and lizards.

Liaison between Ngaati Korokii-Kahukura, Ngaati Hauaa and RS Sand continued throughout 2021, updating the representatives on the progress of the specialist assessments and changes to the proposal due to further work.



A second Site walkover in February 2022 was attended by mana whenua and representatives of Ngaati Korokii-Kahukura and Ngaati Hauaa. The history of the area, cultural connections, draft specialist assessments and proposed ecological mitigation measures were discussed.

In April 2022, RS Sand engaged Te Hira Consultant Limited (Te Hira) to consult with mana whenua to confirm their collective cultural values, issues, mitigation recommendations and environmental position statement, and prepare a Cultural Impact Assessment (CIA).

On 10 May 2023, RS Sand received confirmation from both Ngaati Korokii-Kahukura and Ngaati Hauaa that they had approved the CIA as prepared by Te Hira. Following this, the CIA was received on 12 May 2023 and is attached as **Appendix Q**.

Subject to the conditions and recommendations by RS Sand, Ngaati Korokii-Kahukura and Ngaati Hauaa have confirmed a neutral position in relation to the Proposal. Waikato-Tainui endorses the recommendations and position of Ngaati Korokii-Kahukura and Ngaati Hauaa as tāngata whenua of the area where the Site is located.

A Memorandum of Understanding (MOU) between RS Sand, Ngaati Korokii-Kahukura and Ngaati Hauaa has been established to provide for future partnership outcomes.

7.2 Waka Kotahi NZ Transport Agency

During initial consultation (December 2020 – February 2021), Waka Kotahi NZ Transport Agency (Waka Kotahi) identified that:

- Waipā DC Roding Team's desire for a slip lane/s or other direct accesses to the north from the southern interchange of the Expressway.
- Waka Kotahi do not have the appetite to investigate northern slip lane/s or other direct accesses as:
 - Strategically there is no need or negligible demand for this type of access arrangement.
 - There is reasonable access to alternative interchanges for land uses.
 - This interchange was specifically designed so that the Expressway would not be used for short trips (i.e., on at the Southern Interchange, off at the SH1B Interchange), this proposal would undermine the intent of this arrangement.
 - Old State Highway 1 through Cambridge saw a reduction in trips, as such it was considered that there would be sufficient capacity to provide for growth on the local network.
- Direct access to SH1 would not be supported.

RS Sand met with Waka Kotahi in March 2021 to discuss the proposal further and Waka Kotahi raised the following matters:

- Concerns with additional traffic at the intersection of Newcombe Rd and Tirau Rd. The intersection was designed for a small number of traffic movements to and from the existing properties on Newcombe Road. Waka Kotahi consider that the intersection would need to be upgraded (sightlines, acceleration and deceleration lanes). Upgrades to the intersection could result in non-compliances with the Cambridge Section designation conditions (e.g., landscaping).
- Southbound trucks should be able to get up to 100km/hr before they merge into SH1.
- Northbound trucks using Tirau Rd are Waipā DC's concern, but NZTA considers that there should be sufficient capacity in the old SH1 alignment.
- The draft Integrated Transportation Assessment (ITA) should cover:
 - Upgrades recommended to the Newcombe Rd and Tirau Rd intersection.
 - Traffic movements from additional properties along Newcombe Rd when the C2P project closes direct access to SH1 south on the Cambridge Section.
 - Whether southbound trucks can get up to 100km/hr before they merge into SH1.

Waka Kotahi was provided an updated draft ITA in September 2021, and they requested additional details relating to:

- Sightlines.
- The SIDRA assessment.



- The tracking of material.
- The pavement assessment.
- The existing Revital Quarry (no longer part of RS Sand).
- Reinstatement of the Site.
- Staging of the quarry operations.
- Maximums of vehicles heading south.

The ITA in **Appendix K** has been updated in response the Waka Kotahi's requests above.

7.2.1 Transpower New Zealand

Transpower NZ (Transpower) confirmed in December 2021 that the HAM-KPO-A 110 Kv transmission lines traverse diagonally across the northern portion of the Site and that the towers (HAM-KPO-A0013 and HAM-KPO-A0014) are both elevated approximately 50m above level ground.

Operational engineers from Transpower's undertook a preliminary assessment of the proposed works in relation to the NZ Electrical Code of Practice for Electrical Safe Distances (NZECP 34) and identified that any mobile plant traversing the hill approximately 100m from transmission tower HAM-KPO-A0013 for access or creation of the pit area should be limited to a maximum reach height of 4.0 meters in order to comply with the NZECP34.

Transpower requested and have been provided additional details in relation to the methodology, location and staging of earthworks/soil disturbance in proximity to the transmission lines, as well as DXF models of the proposed works.

Transpower recommend several conditions (refer to **Appendix G**) in relation to:

- New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001).
- Operation of mobile plant.
- Earthworks.
- Bund height.
- Dust management.
- Quarry management plan.
- Planting.
- Rehabilitation methodology.

RS Sand have confirmed that they agree to Transpower's recommended conditions and offer them as "Augier" consent conditions. Accordingly, Transpower has provided their written approval for the Proposal, refer to **Appendix G**.

7.3 Waipā District Council Roading Team

RS Sand met with Waipā DC's Roading Team as part of a pre-application meeting in February 2021.

The roading team considered that access to the Site was the major issue to be resolved. They considered that the current design and layout of the Newcombe Road/Tirau Road intersection has limitations for heavy vehicles and there would be safety concerns with the number of trucks using the intersection, and the impacts this has on users of Tirau Road and the Expressway on and off ramps.

Trucks travelling through the northern Central Business District (CBD) area of Cambridge was raised as a concern as Waipā DC has undertaken traffic calming measures on the main route through Cambridge and reduce heavy vehicles in the township since the road was handed back to Council (previously it was SH1 before Expressway opening in December 2015).

In addition to the road pavement and traffic safety effects of the proposed number of trucks, Waipā DC's Roading Team also raised the potential increase in noise and vibration effects on the Cambridge.

The ITA in **Appendix K** has also been updated in response Waipā DC's Roading Team comments above.



7.4 Adjacent Properties

Initial consultation letters were sent to the adjacent properties in **Figure 12** and **Table 5** below on 16 September 2021. The letters provided a summary the proposal and informed the properties that RS Sand would like to meet to understand their views and concerns.



FIGURE 12: Adjacent Property Locations

Ref #	Physical Address	Approx. Dwelling Distance	Direction
1	41 Newcombe Rd	20m	West
	1/41 Newcombe Rd	120m	
2	2/42 French Pass Rd	170m	North
3	42 French Pass Rd	325m	
4	94 French Pass Rd	620m	
5	116 French Pass Rd	610m	
6	130 French Pass Rd	610m	



7	111 Newcombe Rd	365m	South
	111A Newcombe Rd		
8	98 Lockley Rd	360m	
9	324 Tirau Rd	340m	
10	64 Lockley Rd	200m	
11	14 Lockley Rd	200m	

TABLE 5: Adjacent Property Details

RS Sand has continued engage with a number of adjoining or adjacent property owners since first making contact and this is proposed to continue throughout the application processing.

8 Assessment of Environmental Effects

Section 88 and Schedule 4 of the RMA require RS Sand to assess any actual or potential effects that the proposal may have on the environment and the ways in which any adverse effects may be mitigated. Schedule 4 of the RMA requires that the assessment is in such detail as corresponds with the scale and significance of the actual and potential effects that the activity may have had on the environment.

8.1 Permitted Baseline

The permitted baseline is a concept designed to disregard effects on the environment that are permitted by a plan or have been consented to regarding who is affected and the scale of the effects.

8.1.1 Tree Planting

Rule 4.4.2.58 of the District Plan states that:

No trees within a woodlot forest, commercial forest or shelterbelt which are or are likely to grow to more than 6m in height shall be planted closer than any of the distances specified below:

- (a) *30m from any dwelling on an adjoining site; or*
- (b) *30m from any site boundary of the Residential Zone or Large Lot Residential Zone or Marae Development Zone; or*
- (c) *20m from any strategic arterial road and 10m from any other road or railway; or*
- (d) *10m to a vertical line directly below an overhead power or telephone line; or*
- (e) *5m from the edge of any lake or from the banks of any water bodies except trees which are planted for river protection works, soil conservation or for conservation planting.*

In reverse, the rule permits up to 6m high woodlot forests, commercial forests or shelterbelts to be planted on the Site boundaries, 30m from a dwelling on an adjoining property, 20m from any strategic arterial road and 5m from the banks of Karapiro Stream.

8.1.2 Noise

Rule 4.4.2.15 of the District Plan requires that operational noise levels from permitted activities do not exceed the following limits within the notional boundary (20m from the most exposed external walls) of any dwelling:

- (a) Day time - 7.00am to 10.00pm 50dBA (L_{eq})
- (b) Night time - 10.00pm to 7.00am 40dBA (L_{eq})
- (c) Night time single noise event 70dBA (L_{max})

Additionally, Rule 4.4.2.15 of the District Plan permits construction noise levels in accordance with New Zealand Standard (NZS) 6803:1999 Acoustics – Construction Noise (NZS6803). Refer to **Table 6** below for the construction noise limits under NZS 6806.



Time of week	Time period	Typical duration (dBA)		Short term duration		Long term duration	
		L _{eq}	L _{max}	L _{eq}	L _{max}	L _{eq}	L _{max}
Weekdays	0630-0730	60	75	65	80	55	75
	0730-1800	75	90	80	95	70	85
	1800-2000	70	85	75	90	65	80
	2000-0630	45	75	45	75	45	75
Saturdays	0630-0730	45	75	45	75	45	75
	0730-1800	75	90	80	95	70	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75
Sundays and public holidays	0630-0730	45	75	45	75	45	75
	0730-1800	55	80	55	85	55	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75

Where:

- (a) "Short-term" means construction work at any one location for up to 14 calendar days;
- (b) "Typical duration" means construction work at any one location for more than 14 calendar days but less than 20 weeks; and
- (c) "Long-term" means construction work at any one location with a duration exceeding 20 weeks.

TABLE 6: NZS 6806 Recommended Upper Limits for Construction Noise received in Residential Zones and Dwellings in Rural Areas

8.1.3 Conclusion

As the above adverse effects are permitted under the District Plan, they form the permitted baseline. In accordance with Section 104(2) of the RMA, the Proposal's adverse effects on the environment within the limits above should be disregarded.

8.2 Landscape and Visual Effects

RS Sand engaged Mansergh Graham Landscape Architects Limited (MGLA) to undertake a Landscape and Visual Assessment (LVA) on the proposal, refer to **Appendix H**. Below is a summary of the findings of the LVA.

The LVA included a combination of mapping analysis and field assessment, and evaluates:

- The existing landscape character of the site and its place in the local and regional context.
- The potential landscape and visual effects of the proposal from typical viewer locations.
- An overview of the effects of the proposal on landscape and rural character values.

8.2.1 Existing Landscape and Visual Character

The relationship between the surrounding major geographical features and the human modifications that have occurred upon them are important factors to consider when assessing how the proposal will influence existing amenity values and the rural character.

The surrounding area is characterised by alluvial plains and terraces of the Waikato Basin, as well as hill country to the east. Spurs and ridges are legible due to pastoral landcover across much of the area. The Karapiro, Mangaone and Mangawhero streams have cut down through the river terraces to form deep and incised gullies and channels within the wider landscape. The profile and paths of these streams have been progressively modified by the surrounding land use.

Although the landscape is predominantly rural in appearance, some small businesses, lifestyle blocks and urban development has influenced the landscape and natural character of the Site and surrounding environment. Sanatorium Hill (495m), Te Tapui (492m) and Maungatautari Mountain / Sanctuary Mountain (1296m) are key features within the wider landscape.



The Site is located on a flat and open river terrace on the upper edge of the Karapiro Stream gully and is characterised by its pastoral land use and mix of native and exotic vegetation, hedgerows, rural housing, and farm buildings and fencing. Most of the taller terrestrial vegetation is located on the steeper lands associated with the Karapiro Stream gully and its tributaries to the east.

8.2.2 Effect Ratings

The LVA used a rating system consistent with the recommended 7-point scale contained within Te Tangi a te Manu - Aotearoa New Zealand Landscape Assessment Guidelines, **Table 7** below compares the effect ratings with the RMA thresholds.

Document	Effect Ratings						
Te Tangi a te Manu – Aotearoa NZ Landscape Assessment Guidelines	Very Low	Low	Low - Moderate	Moderate	Moderate - High	High	Very High
Act	Threshold						
RMA	Less Than Minor	Minor	More Than Minor		Significant		

TABLE 7: Landscape Assessment Guidelines Ratings and RMA Thresholds

8.2.3 Landscape and Character Effects

The Proposal will have **No** adverse effects on the surrounding steeply undulating terrain and hill country. Dominant ridgelines and spurs, large and small tracts of native bush and pastoral land with hedgerows, shelterbelts, post and wire fencing, and scattered rural buildings make up the existing landscape and character. The proposed sand quarry is not of sufficient scale to affect the key characteristics of the landscape.

The landscape and character effects on the flat alluvial plains and river terraces associated with the Waikato River and Karapiro Stream will be **Low** on the wider landscape and **Moderate-High** within the Site during operation. The Proposal will not directly affect the plains and terraces in the wider landscape but will result in a noticeable change to the topography of the Site (reduction in height from RL75 to RL40). Once operation is completed, the proposed rehabilitation works will make the Site look like the terrace landforms associated with the Waikato River and reduce the effect rating on the Site to **Low**.

Although the proposal will not directly affect the Waikato River, the Proposal will have **Low** adverse effects on the wider landscape of the valley and riparian margins of the Karapiro Stream. Additionally, the Proposal will have **Moderate-High** effects within the Site during operation as the edge of the valley will recede and approximately 3.4ha of vegetation will be removed. The rehabilitation to emulate the terrace landforms and planting of the remnant gully slopes will reduce the adverse effects on the Site to **Low**.

8.2.4 Visual Effects

Zone of Theoretical Visibility

Zone of Theoretical Visibility (ZTV) analysis was used to identify areas from where the Proposal would potentially be visible from. As the ZTV analysis used a Digital Elevation Model (DEM) from a combination of lidar and site-specific survey data, above ground features are not included and the ZTV maps identify the “worst-case scenario”. Additionally, not all areas of the quarry will necessarily be visible at any one time, with different parts of the working faces becoming visible in different locations over time as the extraction occurs. Refer to Appendix Four of the LVA for the ZTV maps.

The key findings from the ZTV analysis and site investigation include:

- Intervening vegetation in combination with the gently undulating to flat terrain means that the application site and the proposed sand quarry is reasonably contained within a small visual catchment (within 1km).
- Although theoretically visible from elevated locations to the north and west including Sanitorium Hill/Maungakawa Scenic Reserve (approximately 4km), parts of Leamington to the southwest, and parts of Cambridge to the north-west, a combination of intervening vegetation, which will largely obscure views of the Site, and the large separation distances mean that the proposed sand quarry will not be easily discernible (if visible at all) from these locations.
- The proposed quarry will be visible from locations directly west and south-west of the application site, along SH1.



- d. The application site may be viewed from locations along French Pass Road, through gaps in roadside vegetation.

As views into the pit will be screened by the upper (undisturbed) edges of the quarry and the earth bund around the outside of the extraction area, the Proposal will become less visible as the pit depth increases.

Visual Absorption Capability

The Visual Absorption Capability (VAC) of the surrounding landscape is one of the main factors that will influence a proposals' visual effect. This is the landscape's ability to integrate a development, or feature, into its existing visual character without significant change.

The Site's ability to visually absorb the change associated with the Proposal is considered to range between **Poor-Neutral** to **Very Good**. From a VAC perspective, the wider river terrace landscape is well suited for the Proposal. Although the Proposal will excavate the existing farming landscape, the proposed rehabilitation will create a new landform that will be similar in appearance to other naturally occurring terrace landforms in the wider landscape and will be able to be returned to pasture. Additionally, notable views are generally restricted to within 1 km of the Site due to intervening vegetation and wider views diminish to the point where the Proposal will be less notable. The Site is not likely to be visible from locations to the south of State Highway 1.

Identified View Locations

Based on existing views, viewing frequency, viewer types, availability of the view from public property, viewer distance and the viewing time and framework available at the time of the study, five representative View Locations (VL) have been identified from within the ZTV.

View Location 1 – Newcombe Road

VL1 is located at the existing entrance to the Site and represents one of the few opportunities to view the Site from Newcombe Road. Most views from visitors to the Site and people travelling along Newcombe Road are limited due to the screening provided by existing vegetation.

The view is typical of those able to be attained from the wider surrounding rural landscape and is characterised by the flat to gently undulating pastoral farmland interspersed with shelter belts, hedge rows, post and wire fencing, farmhouses, and ancillary buildings. The Karapiro Stream gullies are not visible from this location and views beyond are largely screened by the existing dense vegetation on the sides of the gullies. This view is backdropped by the Maungakawa hills, which derives its visual amenity from a relatively uncluttered rural vista with few buildings visible.

This view does not have high public amenity value. While initial works and excavations will be visible and the movement of equipment and machinery will draw attention to the Site, as Stage 1 and plant area are lowered into the landscape, activity within the Site will become increasingly difficult to see until the floor of the extraction area and stockpile area are completely crested by the leading edge of the working face. The bund proposed around the plant area will increase the height of the gully edge and partially obscure existing views across the landscape beyond.

As excavation progresses towards Newcombe Road, the leading edge of the pit will become increasingly visible with proximity. As the pit expands to the west, the existing pine growing in the northeast part of the site will be lost, opening views to the landscape beyond. The tops of the stockpiles and the screening and processing plant may be visible above the surrounding natural landform.

Due to the generous amount of visual screening along Newcombe Road, there are minimal opportunities to view the Site from Newcombe Road and State Highway 1, or the dwelling at the end of the road. Additionally, the proposed planted earth bund along the eastern and southern site boundaries will screen views into the Site and the rural landscape beyond from this viewer location. Although the Proposal will change the landscape from open pastoral to compartmentalised by planted earth bunds along the Site boundaries, it is unlikely to change the overall rural character of the view or result in a loss of visual amenity.

The proposal will therefore have a **Low** adverse effect on the surrounding landscape visual and amenity values from this location during its operation, and a **Very Low** adverse effect following completion and restoration.

View Location 2 and 3 – State Highway 1

VL2 is located directly south of the Site and represents the most direct/clear view from the surrounding public locations, while VL3 is located to the west of the Site on the Expressway and represents views first attained when travelling from



the north. Both views are slightly elevated and most of the viewing audience is expected to be transient, only obtaining fleeting views of the Site.

From these views, visual amenity is derived from a rapidly changing series of rural landscape features in the foreground juxtaposed against the constant backdrop of the hill country beyond. Viewer attention is drawn towards the skyline ridge and does not have particularly high public amenity value. While initial works and excavations will be visible and the movement of excavation equipment and machinery will draw attention to the Site, the views will be fleeting, and the planted earth bund will mitigate the differentiation from a normal farming activity.

Like VL1, these views are typical of the wider surrounding rural landscape, the Karapiro Stream gullies are not visible, views beyond are largely screened by the existing dense vegetation on the sides of the gullies and backdropped by the Maungakawa hills. Similarly, while the Proposal will change the landscape from open pastoral to compartmentalised by planted earth bunds along the Site boundaries, it is unlikely to change the overall rural character of the view or result in a loss of visual amenity.

The Proposal's adverse effect on the surrounding landscape visual and amenity values will **Low-Moderate** from VL2, and **Low** to **Low-Moderate** from VL3 due to the greater separation distance. Following completion and restoration, the Proposal will have a **Very Low** adverse effect.

View Location 4 – 41 Newcombe Road

VL4 is representative of the views from the two dwellings at 41 Newcombe Road, one located approximately 20m from the Site boundary and the other approximately 120m from the boundary.

While the occupiers of the dwelling closest to the Site boundary are expected to have panoramic views across the open pastoral landscape from Maungatautari Mountain to the hill country north of French Pass, views of Maungakawa are screened by the existing pine trees with the Site's western gully. The visual amenity associated with the existing rural character from VL4 is largely derived from the available hill country views (which forms the backdrop to the east) and the open nature of pastoral grassland in the fore-midground.

While the proposed 3m high earth bund along the western boundary of the Site will completely screen the work associated with overburden stripping VL4, the loss of visual amenity is likely to occur during construction of the bund. Large machinery would temporarily operate within 20m of the dwelling, and the completed bund will partially obstruct views across the open rural landscape to the east and is likely to shade the dwelling, creating adverse effects on existing amenity values. However, it will not be high enough to visually dominate the dwelling or create a sense of containment to the extent that perceptions of open space, commonly associated with the rural environment, are lost. Additionally, taking into account that 6m high woodlot forests, commercial forests or shelterbelts are permitted 30m from the nearest dwelling on 41 Newcombe Road (refer to Section 8.1.1 above), the effects of the combined bund and planting height of 5-6m will not result in adverse effects over and above the permitted baseline. Once the bund and planting are completed, the occupants of this dwelling are unlikely to be able to see the working faces of the pit or the pit floor.

Like VL1-3, the compartmentalisation of the open pastoral landscape is a common occurrence within the wider surrounding rural environment and while the Proposal will result in a change from an open pastoral landscape to a landscape compartmentalised by the planted earth bunds along the western site boundary, the landscape character will remain rural.

The proposed earth bund is likely to result in a **Low-Moderate** to **Moderate** adverse visual and landscape effects on the dwelling closest to the Site, reducing to **Low** to **Low-Moderate** for the dwelling further to the west (depending on the design and configuration of the earth bund and planting). Following completion and restoration, the landform will have a **Very Low** adverse effect on the landscape and visual amenity values.

View Location 5 – French Pass Road

VL5 is northeast of the Site on French Pass Road and represents one of the few publicly accessible views for road users and adjacent residents.

Most of the Site is screened from views from VL5 by foreground vegetation and the terrace landform. Visual amenity is derived from directed views across the rural landscape and does not have particularly high public amenity value. There may be clear views of the Site from private property and dwellings along French Pass Road, particularly those located near the northern edge of the Karapiro Stream gully.

Unlike views from VL1-4, the working faces, floor of the pit and machinery will be visible from this location. As the quarry progresses, the working face of the pit will move southwards towards SH1 and the floor of the pit will be rehabilitated to



reduce the amount of the open pit visible and extent to which the pit sand is seen in contrast to the surrounding pastoral and vegetation. Once completed and restored, the Site will not appear out of place within the context of the surrounding river terraces.

The combination of limited views of the Site and vehicle speed and will mean that viewers travelling along French Pass Road will only have fleeting views of the Proposal and will experience it the context of the wider rural landscape and similar land-use activities.

The Proposal will have a **Low** adverse effect on the surrounding landscape visual and amenity values VL5 during operation and **Very Low** adverse effect Following completion and restoration.

Private View Locations to the North

The Proposal has the potential to be viewed from elevated locations along the northern site of the Karapiro Stream gully and most of the effects on views from the dwellings located between French Pass Road and the Site will be like those from VL5.

Requests to visit private property on the northern side of the Karapiro Stream were declined at the time of the LVA, and therefore the assessment of effects from these private view locations have been undertaken remotely, using aerial photography, ground inspection from surrounding public locations, reverse sighting from the application site and the use of the analytical and the 3D interactive digital models and simulations.

No dwellings have been identified as having a direct view into the proposed sand quarry from an identifiable living court or living area. Although some locations within each property are likely to have views of the Site. Refer to Appendix Six of the LVA for a digital simulation of the changes that will occur within the Site (from Location A of the LVA's Figure 9).

The processing area will be screened from view from the private properties to the north by the surrounding bund, with only the tops of the processing plant and tops of the sand stockpiles potentially visible. While the working face and floor of the pit will likely be visible from elevated locations along the northern side of the gully, they will progressively move southwards towards SH1 and the floor of the pit will be rehabilitated to reduce the amount of the open pit visible, reducing the extent to which the pit sand is seen in contrast to the surrounding pastoral and vegetation. Once the quarry is completed and restored, the Site will not appear out of place within the context of the surrounding river terraces.

The adverse visual and landscape effects of the Proposal from along the top and within the gully will likely range between **Low-Moderate** and **Moderate** during the operation, **Moderate** level effects are likely to occur during Stage 1-3 (when working benches are open and closer. The beginning of Stage 1 will have temporary **Moderate-High** effect until the temporary Stage 1 bund is constructed and grassed. The effects will further decrease to **Low-Moderate** for Stage 4 and 5 as quarrying proceeds south and the previous stages are rehabilitated.

Following completion and restoration, the adverse effect on the landscape and visual amenity values will **Very Low**.

8.2.5 Recommended Mitigation Measures

The LVA recommends the following mitigation measures to minimise the extent of quarry and/or overburden disposal areas open at any one time, reducing effects on visual amenity and allowing the quarry to better integrate with the surrounding landscape:

- a. The implementation of the Ecological Restoration proposed in the Newcombe Road Sand Quarry: Ecology Report prepared by Alliance Ecology.
- b. The establishment of planting capable of growing up to 2-3m high, on the earth bunds. Only low growing species should be planted along the top of the bund adjacent to the dwellings located adjacent to the western boundary (VL 4), to ensure the overall height of the bund is minimised at this location, and potential shading effects are reduced.
- c. The establishment of a bund and/or planting to prevent headlight glare along the main accessway to the site.
- d. The retention of all existing vegetation (outside of the quarry footprint) within the site which screens or partially screens the site from surrounding locations. This should include existing hedgerows and the mature specimen trees lining the entranceway to the site.
- e. The progressive rehabilitation of the site back to pasture (as quarrying progresses) including the recontouring of all excavated areas to resemble a natural river terrace, the reestablishment of a topsoil and subsoil profile suitable for the pastoral land use, and the re-grassing of the site.



8.2.6 Conclusions

While the Proposal will change the appearance of the Site, the establishment and operation of the sand quarry will not change the extent that it affects the wider rural landscape. Once completed and rehabilitated, the Site will integrate back into the landscape. Accordingly, the adverse landscape character and visual amenity effects on the surrounding areas accessible to the public and 41 Newcombe Road will be ***less than minor*** or ***minor***.

The adverse landscape character and visual amenity effects from Stages 1, 2 and 3 on private view locations to the north will be ***more than minor***. However, as quarrying proceeds south, and the eastern walls and floor of these stages are rehabilitated, the effects will reduce to ***minor*** for Stages 4 and 5 (until stage 5 is rehabilitated). As above, once rehabilitated, the effects on private view locations to the north will be ***less than minor***.

8.3 Noise Effects

Hegley Acoustic Consultants Limited (Hegley Acoustic) has modelled the noise effects of the proposal and prepared a Noise Assessment, refer to **Appendix I** for more details. Below is a summary of the assessment.

The Proposal's noise has been modelled using the Brüel & Kjær Predictor programme v2021.1, which is an environmental noise calculation software package that uses a digital terrain model with ground conditions and noise sources at the various locations on the ground. During construction, the noise model is based on plant being at the closest point to the dwellings when forming the proposed bunds. Operational noise is based on each activity being undertaken at the most exposed location to the neighbours with the maximum plant operating at any one time. Accordingly, the Noise Assessment predicts the worst case experienced by the neighbours and most of the time the level of noise received will be 5 – 10dBA Leq lower.

8.3.1 Predicted Noise

Refer to Figures 10-12 of the Noise Assessment for the predicted noise contours during construction, extraction from the west and extraction at half the final depth (RL57.5).

The existing dwellings at 41 Newcombe Road (1 and 2 in Figure 13 and Table 1 of the Noise Assessment) are the closest to the proposed sand quarry and have the highest predicted noise levels, refer to **Figure 13** and **Table 8** below.

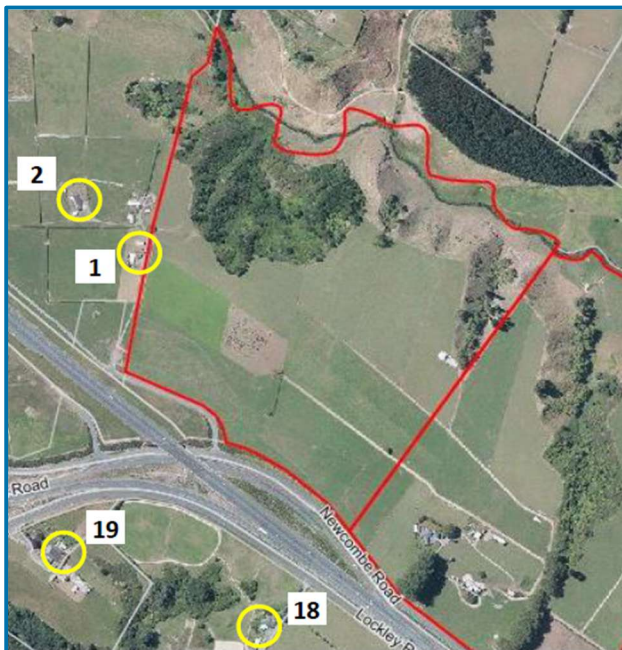


FIGURE 13: Extract from Figure 13 of the Noise Assessment

Dwelling	Physical Address	Construction	Initial Excavation	Excavation Half Depth
1	41 Newcombe Rd	69	47	36
2	1/41 Newcombe Rd	56	40	33

TABLE 8: 41 Newcombe Road Predicted Noise Levels (dBA L_{eq})



As the Proposal's predicted noise levels on the dwellings at 41 Newcombe Road do not exceed the 75dBA L_{eq} construction limit set out in NZS6803 or the District Plan 50dBA L_{eq} daytime noise limit, the Proposal's will not result in adverse noise effects on the environment beyond the permitted baseline.

Additionally, the plant noise predicted for dwellings to the south and east of the Site will be masked by traffic noise from the SH1.

8.3.2 Conclusion

As the noise model used the worst case experienced by the neighbours, most of the time the noise levels will be lower than predicted as there will be less equipment operating than has been assumed and the plant will be further from the closer dwellings.

The noise levels predicted for the dwellings to the north, east and south of the Site will be well within the limits of NZS6803 and the permitted activity standards of the District Plan.

Similarly, although the two dwellings on 41 Newcombe Road are the closest to the Proposal and have the highest predicted noise levels, construction of the proposed bund along the western boundary of the Site will allow compliance with the limits of NZS6803 and the bund will ensure that the Proposal's noise levels will be well within the requirements of the District Plan.

Accordingly, the adverse noise effects of the Proposal will be less than minor.

8.4 Air Quality Effects

Appendix J contains an Air Quality Assessment of the Proposal by Pattle Delamore Partners Limited (PDP). Below is a summary of the findings of the Air Quality Assessment.

The assessment has been undertaken in accordance with the Ministry for the Environment (MfE) Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emission – November 2016 (MfE GPG Dust). PDP has undertaken a qualitative assessment of the potential effects of the large earth moving project and bulk handling of materials, and used the Frequency, Intensity, Duration, Offensiveness, Location (FIDOL) assessment tool to predict the effects of the Proposal.

8.4.1 Meteorological

Wind can have a significant effect on dust generation and transportation, and when wind speeds at ground level reach 5 m/s they have the highest potential to transport dust off-site.

While the Karapiro Automatic Weather Station (AWS) is the closest, PDP consider that the data obtained indicates that the wind direction appears to be heavily influenced by the local terrain features and would not represent the likely wind conditions at the Site. Therefore, PDP have used the Hamilton Airport AWS data as a more accurate representation of the meteorological conditions on the Site. The prevailing wind directions at the Hamilton Airport AWS are from the west, and to a lesser extent from the north and south. Winds from the northeast to southwest have the potential to transport dust to the nearest receptor of the Site and exceed 5 m/s 0.4 and 1.1 percent of the time respectively.

8.4.2 Potential Emission Sources

Particulate matter in the environment generally comprises on suspended and deposited particulate. Suspended particulate matter stays suspended in the atmosphere for long periods of time and are normally measured as Total Suspended Particulate (TSP). Deposited particulate matter falls from the air due to its aerodynamic diameter and density and normally has a diameter of greater than 20 μm .

A subfraction of finer particulate matter generated by quarry activities fall into the category of PM_{10} , which is regulated by the NES for Air Quality. PDP's quarry experience indicates that PM_{10} is normally not measurable above background levels withing a few hundred metres from processing and handling areas.

Dust generated from quarries can contain Respirable Crystalline Silica (RCS) if siliceous materials are disturbed. PDP have assessed the potential risk of silica in Section 8.4.6 below and also noted that any mitigation measures to control dust will also control RCS emissions.



The following quarry activities have the potential to generate dust:

- Enabling works.
- Material excavation and processing.
- Operational vehicles on haul roads.
- Wind erosion of working areas.
- Rehabilitation of completed areas.

Mitigation measures that control suspended and deposited particulate, also control PM₁₀ and RCS. The following measures are proposed to mitigate the potential effects of the Proposal:

1. Minimising the area of vegetation, overburden and soil removal.
2. Establishing vegetation on final exposed areas or areas that will not be disturbed for long periods of time.
3. Use of water to dampen/suppress exposed areas, material to be processed and internal roads.
4. Chemical stabilization.
5. Speed reduction (20 km/h) on internal roads.
6. Locate stockpile below the existing ground level.

8.4.3 Receptors

Refer to **Figure 14** and **Table 9** below for the location of the receptors considered by the Air Quality Assessment.



FIGURE 14: Extract from Figure 3 of the Air Quality Assessment



Receptor	Address	Distance to Pit (m)	Direction to Pit (m)
R1	42 French Pass Rd	300	North
R2	94 French Pass Rd	450	North
R3	111A Newcombe Rd	380	Southeast
R4	64 Lockley Rd	275	South
R5	12 Lockley Rd	330	Southwest
R6	41 Newcombe Rd	50	West
R7	333 Tirau Rd	530	Southeast

TABLE 9: Location of Receptors Located Close to the Site (Table 2 of the Air Quality Assessment)

8.4.4 Dust Emissions

The size and density, wind speed and direction, height of release and the distance from discharge to receptor are important factors when considering dust effects. They are interconnected and how they combine determines the potential for an effect to occur. Typically:

- Heavier and larger particles required higher wind speeds to become airborne.
- Large particles will deposit faster than smaller particles of a similar density.
- More dense particles will deposit faster than less dense particles of a similar size.
- Particles will travel further before depositing with a stronger wind.

While PDP consider that the Proposal's mitigation measures above will likely reduce particles of 50 and 100 µm to within 50m of sources that are located at ground level (typical height that dust is released from earth moving activities), the Air Quality Assessment has used the MfE GPG Dust distance of 300m from unmitigated dust sources as a conservative indication if no mitigation measures were applied.

As identified in **Table 9** above, Receptors R1, R4 and R6 are between 50m and 300m from the Proposal. Receptors R2, R3 and R5 are more than 300m away, are unlikely to be affected by dust during any wind speed and were not considered further under the Air Quality Assessment.

8.4.5 Dust Effects

The effects assessment was based on quarrying activities and wind speed at the existing ground level. As most of the activities will occur below the existing ground level, PDP's assumptions are very conservative and dust effects are likely to be significantly less once the enabling works are completed.

Frequency

Frequency relates to how often dust discharges have an effect on sensitive receptors. For dust nuisance to occur, dust producing activities need to occur at the same time as winds above 5 m/s.

As identified above, data from the Hamilton Airport AWS shows that northeast to southwest winds above 5 m/s blow between 0.4 and 1.1 of the time, and they have the potential to blow dust towards receptor R6 (the closest receptor). Given that the activities and winds need to coincide, the chances of dust nuisance occurring at receptor R6 are smaller than 1.1 percent and less likely to occur. Additionally, as excavations deepen below the existing ground level, dust producing activities will be more sheltered and the frequency of a dust nuisance on receptor R6 will be further reduced.

Receptors R1 and R4 will likely experience very similar frequency of wind speeds as receptor R6, less than 1.1 percent. Winds from the west southwest, west, and west northwest have a higher frequency of stronger winds (1.7 to 7.2 percent of the time), but the closest receptor downwind of the Proposal is over 2km away and is unlikely to experience dust nuisance even if no mitigation measures were used.

Based on guidance from the Institute of Air Quality Management, the nearby receptors will experience infrequent strong winds. Given the proposed mitigation and monitoring measures, PDP considers that the frequency of any effects from the Proposal will be low.

Intensity

Intensity relates to the concentration of dust that is likely to be experienced at any potential receptor.



While receptor R6 is only 50m from the Stage 4 excavations, the intensity of dust will be reduced with good mitigation measures and by the time works get to Stage 4, the excavations will be below the existing ground level and the proposed bunds and vegetation will be well established. Therefore, PDP consider that the Air Quality Assessment is conservative. As the remaining receptors are 275m or more from the Proposal, the dust concentrations experienced at the receptors should be minimal.

Given the proposed mitigation measures and the distances to the receptors, PDP considers that any off-site concentrations are unlikely to cause adverse effects.

Duration

Duration is the length of time that dust discharges are likely to occur.

Based on the monitoring programme in Table 3 of the Air Quality Assessment, if an event were to occur, PDP considers that the worst duration would be limited to no more than 1-2 hours.

Offensiveness

While the type of material in dust can have different levels of offensiveness, the material on-site comprises of soils and sand that form part of the existing environment. As the Site and neighboring properties are used for farming activities, it is not unusual for such properties to experience higher levels of dust and have a higher tolerance for dust effects. Therefore, PDP consider that any dust from the Proposal is less likely to be considered offensive.

Due to the limited frequency of strong winds, the proposed activities, distance to sensitive receptors and the proposed mitigation measures, PDP considers that dust emissions are unlikely to result in any off-site offensive or objectionable effects.

Location

While the Proposal's dust emissions will reduce with distance, the proposed processing and most of the excavations below ground level will have the greatest effects on dust emissions.

Although receptor R6 is 50m from the proposed quarry pit and has a greater potential for dust effects than the other receptors, the low frequency of stronger winds towards receptor R6 mean that any dust effects will be low.

FIDOL Conclusion

PDP considers that it is unlikely that most of the receptors will be affected by dust. All but receptor R6 would be 275m or more from the potential emission sources and nuisance dust is likely settle out before reaching the dwellings.

While receptor R6 would be 50m from emission sources, with appropriate mitigation measures and the low frequency of strong winds towards the receptor, the potential for dust emissions can be controlled to acceptable levels. Additionally, once works excavate below the existing ground level, there will be virtually no dust effects beyond the boundary.

Subject to appropriate mitigation measures, PDP consider that it is unlikely that the Proposal will create any nuisance dust.

8.4.6 Silica Effects

As there are no New Zealand standards or guidelines for silica concentrations, PDP assessed the potential risk of community silica exposure using a United States Environmental Protection Agency (US EPA) methodology. The US EPA data indicates that exposure levels below 1 mg/m³ year have no increased risk of developing silicosis.

Nine samples (including overburden, fines, and sand) were collected from the Site and analysed for silica content. The samples ranged from 7 to 16 percent silica, with an average content of approximately 11 percent. PDP used the highest silica content of 16 percent in the risk assessment to be conservative.

Based on an average ambient Total Suspended Particulate (TSP) of 9 µg/m³ and a 16 percent silica content, PDP estimated silica exposure from the proposed sand quarry to be 0.10 mg/m³. Additionally, the TSP data likely overestimates the actual PM₁₀ averages for the area and the estimated exposure is based on the standard 70 years rather than the 25 years proposed.

Given the above, PDP do not consider that there would be any significant additional silicosis risk to the community living near the proposed sand quarry.



8.4.7 Conclusion

As dust producing activities need to occur at the same time as winds above 5 m/s for dust nuisance to occur and mitigation measures are proposed, there is a low likelihood of off-site dusts effects on nearby sensitive receptors.

While receptor R6 is the closest to the Proposal at 50m, winds above 5 m/s only blow towards the receptor 0.4 to 1 percent of the time and the proposed mitigation measures will further reduce the likelihood of dust sources during stronger winds. The remaining receptors surrounding the Site are further away from the Proposal and are less likely to be affected by dust.

As the Site and surrounding area are used for rural activities, they are likely to experience an existing higher level of dust and therefore dust from the Proposal may not be considered unusual. Additionally, once excavations are 3m below existing ground level or the height of the proposed bunds, any potential dust emissions from the Proposal should be well contained on the Site.

The Proposal will not pose significant additional risk to people in the surrounding area developing silicosis. Using an US EPA methodology and the highest silica percentage from the samples (16 percent), PDP estimated the silica exposure from the proposed sand quarry to be 0.10 mg/m³, well within the US EPA limit of 1 mg/m³ year to have no increased risk of developing silicosis.

8.5 Transportation Effects

RS Sand engaged CKL NZ Limited (CKL) to undertake an ITA for the proposal, refer to **Appendix K**. Below is a summary of the findings of the ITA.

8.5.1 Existing Environment

Newcombe Road is a two-way, two-laned no exit Local Road (under the District Plan) with a posted speed limit of 100 km/hr. It intersects with Tirau Road approximately 300m west of the Expressway and generally runs parallel to the Expressway on-ramp. The intersection is a give-way priority T-intersection which is offset from Lockley Road by approximately 50m. Right turn bays to both Newcombe and Lockley roads are provided in the centre of Tirau Road and are offset to avoid conflicts with each other.

Tirau Road/former SH 1 is identified as a Major Arterial Road under Appendix T5 of the District Plan.

Traffic numbers on Newcombe Road are estimated to be 20 Vehicles Per Day (VPD), while in 2021, Tirau Road was recorded as having 6,865 VPD (including 12.4 percent or 2,356 Heavy Commercial Vehicles (HCVs) per day). Prior to the Expressway being completed, the 2013 traffic count for Tirau Road was over 19,000 VPD.

The only crash in the area (Newcombe Road and within 100m of the intersection with Tirau Road) recorded on Waka Kotahi's Crash Analysis System was a single vehicle crash on the Expressway off-ramp to Tirau Road (approximately 50m east of Newcombe Road). The driver lost control and hit the wire barrier on the side road, the crash did not result in any injuries. Driver distraction and fatigue were identified as potential factors in the crash, no road related factors were identified. Given the low severity and frequency of crashes reported, no road safety issues have been identified in the vicinity of the Site.

8.5.2 Traffic Generation

Two types of truck are expected to transport sand from the Site, 28 tonne truck and trailers, and 10 tonne truck only units. Some of the truck and trailer units will likely be replaced with 36 tonne High Productivity Motor Vehicles (HPMVs), which will reduce the overall number of trucks. However, the ITA adopted the truck and trailer units for the purpose of assessing traffic volume effects.

Up to 19,862 trucks are anticipated per year, comprising of 11,188 (56%) truck and trailers, and 8,674 (44%) truck only units. On average, 78 trucks per weekday and 8 trucks per hour (16 truck movements) are expected. Depending on the extraction rate and demand, up to 200 trucks per day and 20 trucks per hour (40 truck movement) are anticipated on the busiest days (once every couple of months).

Rule 16.4.2.22 of the District Plan measures VPD car equivalents, vehicles exceeding a gross mass of 3.5 tonnes are taken as 10 Car Equivalent Movements (CEM). Therefore, the Proposal is expected to generate around 800CEM on average and up to 4,000CEM per day on the busiest days.



8.5.3 Traffic Effects

Trip Distribution

The likely markets for sand from the Proposal are the Waikato Region and the upper North Island. **Figure 15** and **Table 10** below show the expected truck distribution proportion and numbers.

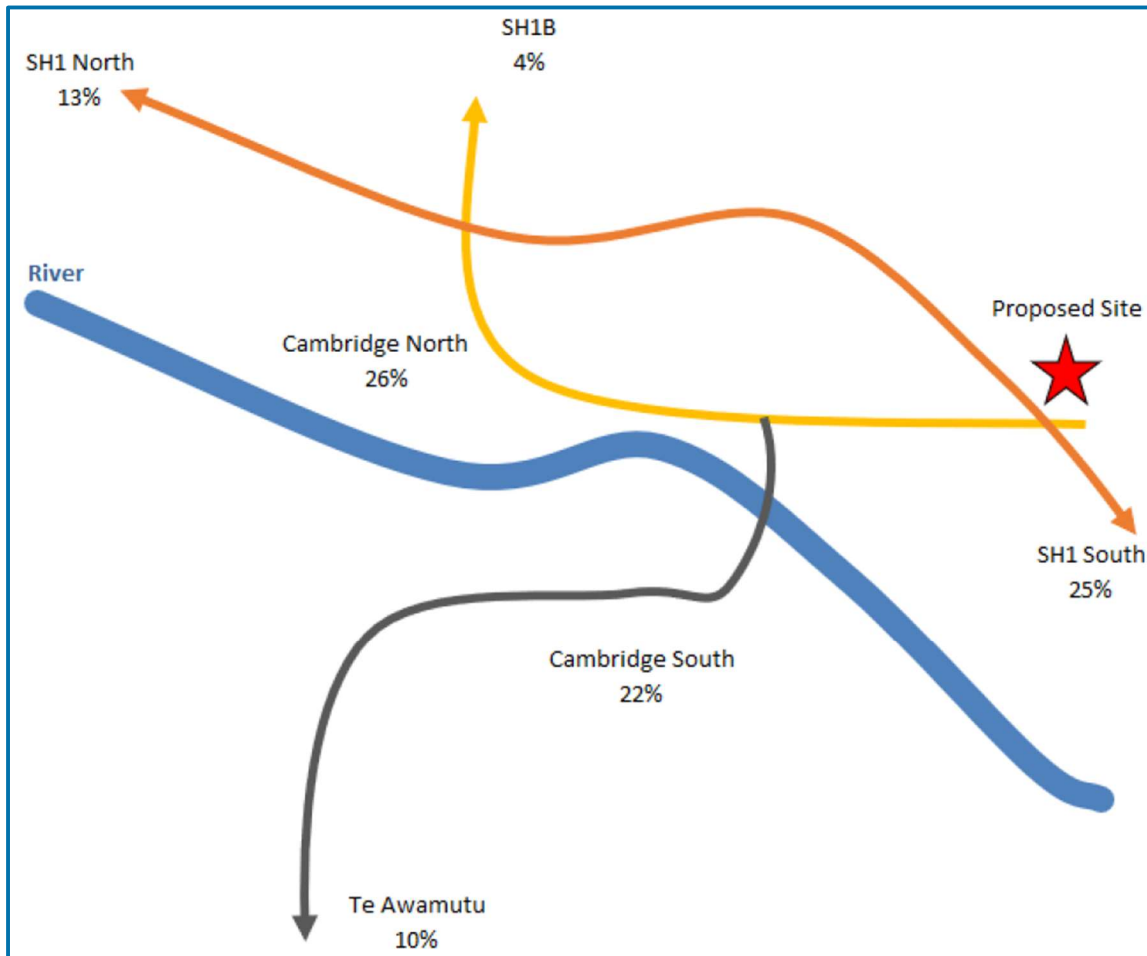


FIGURE 15: Expected Truck Distribution (Figure 5 of the ITA)

Direction	Expected Proportion	Typical Trucks / Day	Peak Trucks / Day
SH1 North	13%	10	25
SH1B North	4%	3	7
SH1 South	25%	20	49
Te Awamutu	11%	9	21
Cambridge North	26%	20	52
Cambridge South	22%	17	45
Totals	100%	78	200

TABLE 10: Truck Distribution Summary (Table 1 of the ITA)

As the 2017 Waipā Growth Strategy and District Plan (Appendix S1 – Future Growth Cells) identify significant residential and industrial/commercial growth to the north and south of Cambridge, approximately 48% of sand from the proposed quarry is anticipated to be used within the Cambridge area. Accordingly, restricting or confining truck access to certain routes is not considered to be practical. Sand from a local source would reduce the overall effect on the wider roading network by reducing the length of delivery truck trips and would also reduce the amount of carbon emissions.

Waipā District Roads

While all vehicles to the Site would use Tirau Road, as identified above, the road previously formed part of SH1 and carried some 19,000 vehicles per day, of which 2,356 were HCVs (around 230-240 HCV trips per hour). Tirau Road currently carries around 6,285 vehicles per day, of which 754 are HCVs (110-120 trips per hour). While the Proposal would result in an additional 16 truck movements per hour on average, Tirau Road is a Major Arterial Road under the District Plan and an increase to 770 HCVs per day would be approximately a third of what was previously carried on Tirau Road. While measures to protect the town centre from HCV access have been implemented on Tirau Road since the opening of the Expressway, the road has a primarily through traffic function, including carrying HCVs. Therefore, CKL considered that vehicles from the Proposal can be accommodated by the surrounding road network.

At peak times approximately 15 trucks per hour would turn right out of Newcombe Road onto Tirau Road, following the old main road right onto Albert Street, onto Queen Street, turn right at the roundabout onto Victoria Street and then continue north on SH1B to the Hautapu interchange with Expressway. The route is also used by other trucks associated with the industrial areas within Cambridge and is therefore considered appropriate for the proposed sand quarry. The Proposal would increase truck movement frequency on this route from around one truck movement approximately every 1 minute 30 seconds to one truck movement every 1 minute 5 seconds, a level of change that is unlikely to be discernible day to day.

To avoid central Cambridge and local residential roads, trucks could head west on Kaipaki Road and reconnect with the state highway network at SH3 (Ohaupo Road) or SH21. Both options are notable detours from the most direct route. While they would result in an increased Vehicle Kilometres Travelled (VKT) of 3km (2-3 minutes longer) to Hamilton, they would add approximately 25km (18 minutes) to the northern Cambridge growth cells and have a greater impact on Waipā district roads.

Trucks delivering to the south or east will turn left out of Newcombe Road onto Tirau Road and use the interchange to access SH1 to the southeast. It is anticipated that an average of one truck (two movements) per hour would use this route.

A review of the Newcombe Road pavement has been undertaken. The current pavement of Newcombe Road is designed to accommodate approximately 800 trucks per year. The trucks associated with the Proposal would likely result in the pavement failing within 1-2 years and will need to be completely rebuilt. The following maintenance plan is proposed for 3-4 years to maximise the life of the current pavement structure:

- Inspection of the pavement surface on a quarterly basis including Benkelman Beam testing.
- Rut filling and pothole repairing. This would be undertaken annually within April/May before the wet season with any potholes being repaired as soon as they are identified.
- Flushing of the chip seal will require localised water cutting.
- Rehab proposal based on 25-year design life:
 - Import 80 mm M/4 AP 40 over the high spots.
 - In situ Stabilise 180 mm depth 1.5% Cement, compact to subbase industry standard.
 - Import 160 mm M/4 AP40 cement modify 1.5% cement compact to basecourse industry standard.
 - Chipseal Grade 2/4 or 3/5, followed by a single coat grade 5 three months after Grade2/4.

The pavement will be considered to have failed if the Benkelman Beam test results show rutting more than 20mm and this would trigger the reconstruction of Newcombe Road from the Site access to the intersection of Tirau Road. Conditions of consent can require the above maintenance plan and appropriate reconstruction of Newcombe Road.

State Highway Roads

Although Waipā DC Roading Team's would like slip lane/s or other direct accesses to the north from the southern interchange of the Expressway (as identified Section 7.1.2 above), Waka Kotahi have confirmed that they have no appetite to investigate northern slip lane/s or other direct accesses. Additionally, there is relatively low demand (average of 7 trucks per day (1 per hour) are anticipated to travel north out of Cambridge) and that the cost of constructing northern lanes or direct access is likely to be high.

The Safe Intersection Sight Distance (SISD) from Austroads is at least 285m for an operating speed environment of 110km/h. As the visibility from Newcombe Road east towards the Expressway interchange offramp is 290m, it is considered appropriate. The visibility west from Newcombe Road is currently reduced to 110m due to vegetation on the western side of the intersection. Accordingly, CKL recommend that the vegetation is trimmed back and maintained so



that it does not reduce visibility. Subject to trimming and maintenance, CKL consider that the visibility west from Newcombe Road will be appropriate.

Figures 8 and 9 of the ITA show turning 23m truck movements into and out of Newcombe Road. Trucks can turn at the intersection in an appropriate manner, while allowing concurrent inbound and outbound manoeuvres, and not coming into conflict with a truck waiting to turn right in. While it is unlikely that there will be more than one truck wishing to turn right at any one time as the average traffic demands to and from the south are less than 2 VPH, the right turn lane and hatched area is long enough to accommodate two truck and trailers.

The length of the southbound Expressway on-ramp from Newcombe Road is approximately 1km and has a 1% upgrade. Austroads states that for a 1% upgrade, trucks require 2km to reach 80km/h and 890m to reach 70km/h. Therefore, the likely operating speed of southbound trucks joining the Expressway via the interchange on-ramp is 70km/h.

The ITA considered alternative routes for southbound trucks to join the Expressway or SH1. Southbound trucks using the Victoria Street / Hautapu interchange likely join the Expressway at 70km/h as the southbound on-ramp is only approximately 650m long and trucks must accelerate from rest as the interchange is controlled by signals. As the posted speed limit of the Expressway at the Victoria Street / Hautapu interchange is 110km/h (rather than 100km/h at the Tirau Road / Southern interchange), the speed difference between trucks using the on-ramp and vehicles on the Expressway is likely to be larger at the Victoria Street / Hautapu interchange. CKL consider that southbound trucks are therefore trucks are not expected to join the Expressway travelling at 90km/h.

Southbound trucks could also travel through Leamington and re-join SH1 at Maungatautari Road. This would result in trucks joining SH1 from rest without any auxiliary acceleration lanes and a significant increase in distance. Accordingly, this route is impractical based on the sand quarry operations and does not allow for trucks to join the mainline at a higher speed.

From the above options, CKL consider that using the existing southern interchange of the Expressway is the optimal route as it has the longest on-ramp length, allows trucks to merge with mainline traffic and does not affect the function of the Expressway and SH1. As an average of only seven trucks per day are expected to head south on SH1 and the length of the on-ramp will allow trucks to join the mainline at a similar speed to a regular interchange, the effects on the Expressway and SH1 is assessed as being less than minor.

8.5.4 Access Effects

The new vehicle crossing proposed to the sand quarry will have sight distances of at least 200m in both directions, which complies with Waka Kotahi's 190m visibility requirement under RTS6 for roads with operating speeds of 110km/h.

The proposed access is at least 600m from the intersection with Tirau Road but is approximately 160m from the nearest vehicle crossing to the east. While the location of the access does not meet the 200m District Plan requirement to the nearest vehicle crossing, the neighbouring crossing serves a single dwelling, will not cater for large volumes of traffic. and the reduced separation is expected to result in less than minor effects.

CKL consider that the proposed access is appropriate for the Proposal and is likely to result in less than minor effects on the wider road network.

8.5.5 Road Safety Effects

As the road safety record within the Cambridge urban area and along Kaipaki Road (as a possible alternative route) over the last five years has a relatively low number and severity of crashes involving trucks (24 out of 329 and 4 out of 56 respectively), CKL consider that there are no existing safety issues or significant differences with trucks using the roads within Cambridge or Kaipaki Road. When traffic within Cambridge is higher, Kaipaki Road is likely to be the more efficient option and during off-peak time, travelling through Cambridge may be the preferable route. CKL therefore consider that truck drivers and operators will be able to select their route based on the present conditions at the time of travel and that no consent conditions are considered necessary to restrict truck movements.

8.5.6 Expressway Extension

The ITA has considered the potential extension of Newcombe Road as part of Waka Kotahi's Cambridge to Piarere (C2P) project. While the design of the extension has not been confirmed, it would be adjacent to the state highway through to Karapiro Road to provide access to properties that would no longer have direct access to SH1.



The extension to Hickey Road would provide access to an additional six properties, it is possible that an extra six vehicles per hour or 60 vehicles per day may use Newcombe Road. CKL consider that the properties south of Hickey Road would be more likely to head towards Karapiro Road as this is more direct route to get to SH1 with a new interchange proposed at that location. Given Newcombe Road's existing low volumes of traffic and that Tirau Road use to carry over 19,000 VPD, CKL are of the view that the additional traffic from the C2P project is unlikely to create any notable congestion in conjunction with trucks from the proposed sand quarry.

In terms of the wider road network, the additional vehicle from the C2P project already exist on the network and therefore the potential extension of Newcombe Road is not considered to have a perceivable effect on the wider network.

8.5.7 Parking

As the District Plan does not include parking requirements for quarry activities, an industrial activity is the closest activity that best represents quarrying and requires a minimum of one space to be provided per 100m² of floor area. Given the Proposal only includes an office and workshop, it is unlikely to include more than 100m² floor area and therefore only one car park is required. As it is unlikely that more than 10 staff will operate from the Site at any time, no bicycle parking is required under the District Plan.

Given at least one car park can be provided and that the parking demands of the activity can be contained within the Site, the parking effects will be less than minor on the wider road network.

8.5.8 Conclusions

There is sufficient network capacity to accommodate these traffic demands with routes used by trucks being part of, or formerly part of the State Highway network. The trucks generated by the Proposal will be significantly less than when these roads operated under state highway conditions.

The ITA has considered alternative routes for trucks and concluded that there is no requirement to restrict certain routes given local trips will use local roads, and that the Hautapu and southern interchanges of the Expressway and SH1B are the best options for regional trips.

CKL conclude that there are no traffic or transportation reasons not to grant consent to the proposed sand quarry, subject to consent conditions being applied requiring the vegetation on the western side of the Newcombe Road intersection to be trim back and maintained, and the maintenance and reconstruction of Newcombe Road pavement.

8.6 Ecological Effects

Alliance Ecology Limited (Alliance Ecology) has prepared an Ecology Assessment on the proposal, refer to **Appendix L** for more details. The Ecology Assessment also includes a Long-Tail Bat Assessment by Bluewattle Ecology Limited (Bluewattle Ecology). Below are summaries of the assessments.

8.6.1 Ecological Characteristics and Values

Flora

While the predominant vegetation type on the Site is pasture, there are three stands of mature exotic trees along the driveways and around buildings near Newcombe Road, and several side gullies that contain vegetation. Refer to **Figure 16** below for the gullies and vegetation identified by the Ecology Assessment.



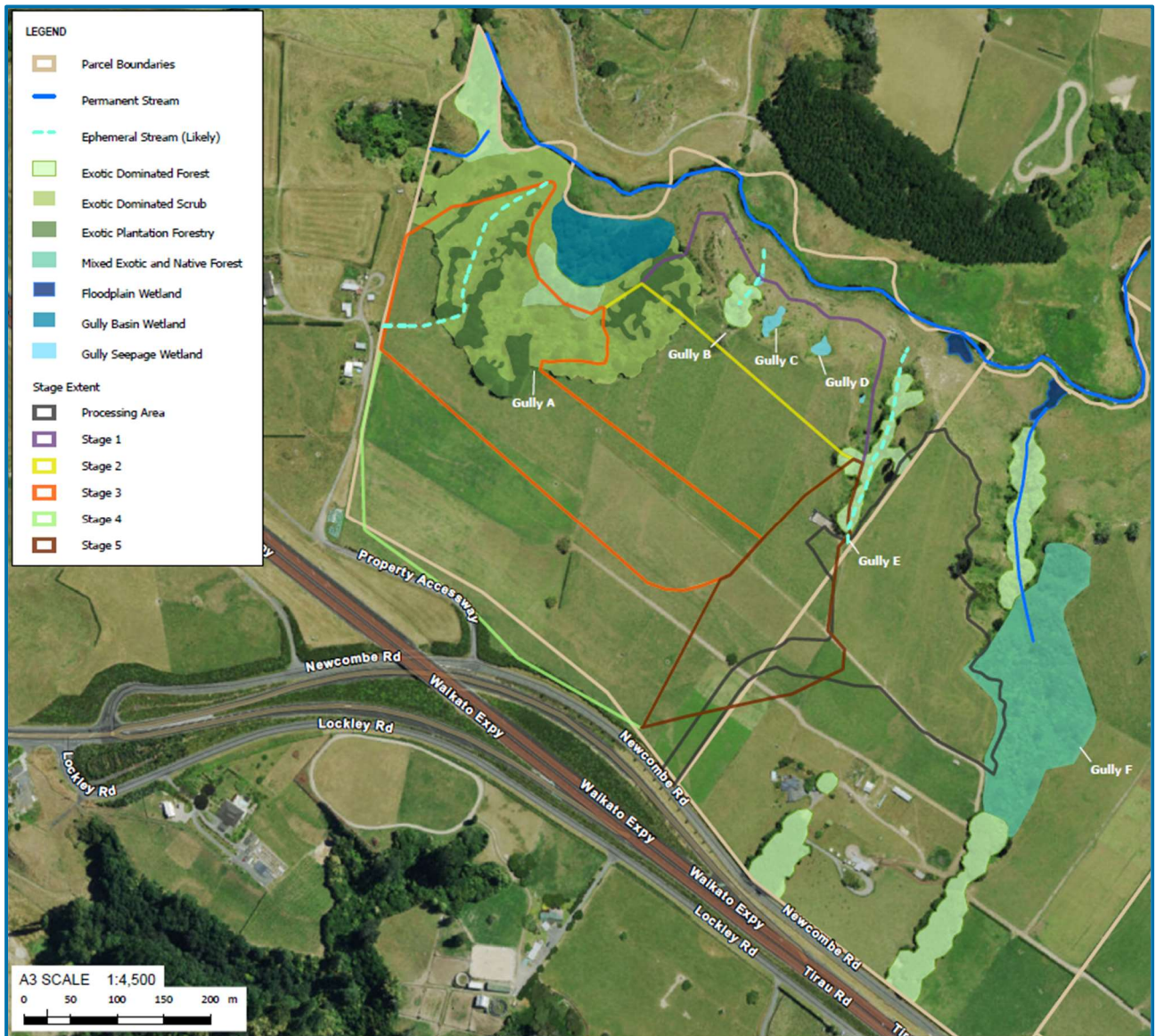


FIGURE 16: Extract from Figure 1 of Appendix A of the Ecology Assessment

The habitat/vegetation types identified in the figure above comprises of:

- Exotic Dominated Forest – Dominated exotic crack willow, poplar, grey willow, English privet, Eastern buckthorn, and hawthorn.
- Exotic Dominated Scrub – Mixed exotic scrub dominated by blackberry, Chinese privet, exotic bindweed, gorse, pampas, Himalayan honeysuckle, Japanese honeysuckle raspberry, inkweed, and broom.
- Exotic Plantation Forest – Exotic pine is approximately 20 – 25 years old with sparse understory.
- Mixed Exotic and Native Forest – Even mix of native mahoe, treefern, cabbage tree and karamu, with exotic crack willow, poplar, grey willow, English privet, Eastern buckthorn, and hawthorn.

Long-Tailed Bats

Two baseline acoustic surveys for long-tailed bats were undertaken in December 2019 and June 2020, refer to the Long-Tailed Bat Report by Bluewattle Ecology in Appendix B of the Ecology Assessment. Bat detectors were positioned at the locations in **Figure 17** below.



FIGURE 17: Location of Detectors Deployed (Figure 2 of the Long-Tailed Bat Report)

The December 2019 to January 2020 survey weather conditions were optimal for bat emergence (greater than 10°C, mean rainfall was low at 0.37 mm and wind conditions were mild). The survey recorded 159 bat passes over 21 monitoring nights. As the total bat passes averaged 0.95 passes per detector per night, Bluewattle Ecology considered the results an indication of a low level of bat activity.

The weather conditions for the May to June 2020 survey were reasonable (one night's dusk temperature dropped to 7.4°C, the coldest temperature recorded was -1.9°C, rainfall was present once and the wind conditions were mild). A total of 4,709 bat passes over 41 nights were recorded, averaging 14.4 bat passes per functional detector per night. Bluewattle Ecology consider the bat activity level to be low-moderate, although Site 13 detected a high-level average of 177 bat passes per night, indicating a potential bat roost.

Other Fauna

The Site may also support the following birds or fish:

- New Zealand pipit – At Risk (Declining).
- New Zealand Falcon – At Risk (Declining).
- Kaka – At Risk (Recovering).
- Bellbird – Regionally Uncommon.
- Kereru – Not Threatened.
- Tui – Not Threatened.
- Australasian bittern – Threatened (Nationally Critical).
- Spotless crane – At Risk (Declining).
- Copper kink – Not Threatened.
- Auckland tree weta – Regionally Uncommon.
- *Peripatus novaezelandiae* – Regionally Uncommon.
- Black mudfish – At Risk (Declining).

Refer to Table 3.4 of the Ecology Assessment for more details of the species and likely habitat and populations on the Site.

8.6.2 Potential Adverse Effects

Construction and operation of the proposed sand quarry has the potential to result in a range of adverse effects on terrestrial and wetland values.

Construction activities would/could result in:

- Approximately 27.09 ha of terrestrial and wetland vegetation/habitat loss, comprising of:
 - 23.72 ha of pasture grassland.
 - 1.55 ha of exotic pine plantation forest.
 - 0.98 ha of exotic dominated scrubland.
 - 0.53 ha of mature exotic-dominated forest.
 - 0.309 ha of native gully seepage wetland.
- The creation of habitat edge effects, altering the composition and health of adjacent vegetation.
- Direct mortality or injury to species.
- Habitat fragmentation and isolation due to the loss and reduction of available habitat types, and severance of habitat.
- Noise, vibration or dust effects.
- Sediment runoff to wetlands and watercourses.

8.6.3 Measures to Avoid, Remedy or Mitigate Potential Effects

To avoid, remedy or mitigate the above potential adverse effects on flora and fauna (excluding bats), the following measures are proposed:

- Vegetation clearance and earthworks footprint is kept to a minimum.
- Seasonal constraints on vegetation clearance to avoid or minimise effects on fauna that are legally protected under the Wildlife Act (1953).
- Vegetation clearance protocols (including physical delineation and directional felling to avoid vegetation).
- Sediment control measures will be undertaken to avoid or minimise effects on wetlands and the aquatic receiving environment.
- Vegetation/habitat clearance salvage and relocation operations for nationally 'Threatened', 'At Risk', Regionally uncommon or legally protected species present or potentially present.
- The use of bunding and mitigation plantings to primarily reduce potential effects on surrounding habitats associated with general disturbance.

To avoid, remedy or mitigate the above potential adverse effects on long-tailed bats, the following measures are proposed:

- A survey and risk profile inventory of all potential bat roost trees is undertaken in accordance with best practice before sand extraction begins;
- A Bat Management Plan (BMP) should be prepared by a recognised bat expert and implemented across the site which will outline detailed protocols around potential bat roost tree removal and ongoing monitoring; and
- The loss of habitat of bats within the site is suitably mitigated, including appropriate offset measures such as buffer planting, animal pest control, erection of artificial bat roosts, habitat restoration, and long-term protection of high quality bat habitat areas. The type and quantum of any mitigation measures is best determined by biodiversity offset compensation or quantitative modelling.



8.6.4 Level of Effects

Subject to the measures above, the Proposal's levels of effects range from Very Low to High. The Ecology Assessment notes that:

- The level of residual effects on bats is expected to be High due to the loss of long-tailed bat habitat.
- The effects on other individual native terrestrial fauna species are Very Low or Low, and the overall cumulative level of residual effects on the native fauna assemblage is Moderate.
- The level of residual effects on gully seepage wetlands is assessed as being Moderate.

The Ecology Assessment identifies that Moderate or higher effects levels warrant habitat restoration or enhancement measures to offset or compensate for the loss in value. Refer to Section 8.6.7 below and Section 5 of the Ecology Assessment for details of the proposed offset or compensation measures.

8.6.5 Ecological Values

The ecological values of each habitat type for nationally 'Threatened' or 'At Risk' species informed the overall Level of Effects assessment. Below is a summary of the terrestrial vegetation and wetland habitat types from Table 4.3.1 of the Ecology Assessment with Moderate or higher ecological value.

Ecosystem Type	Value of Habitat Type	Ecological Value
Mixed exotic native secondary forest (Gully B)	<p><u>Representativeness</u> – Moderate</p> <ul style="list-style-type: none"> • Indigenous species common but exotic species also common, grazed by stock in the more accessible areas and indigenous biodiversity is compromised by the full suite of introduced mammalian browsers. <p><u>Rarity/distinctiveness</u> – Moderate</p> <ul style="list-style-type: none"> • Not a threatened ecosystem type but forest with a high proportion of native plant species is locally uncommon in the landscape. <p><u>Diversity and Pattern</u> – Moderate</p> <ul style="list-style-type: none"> • Several indigenous plant species are present, but diversity is compromised by livestock browsing and predation and browsing from introduced mammalian pests and from the abundance of invasive weeds. <p><u>Ecological Context</u> – Moderate</p> <ul style="list-style-type: none"> • Relatively large tract of forest that provides ecological connectivity in the landscape 	Moderate
Gully seepage wetlands	<p><u>Representativeness</u> – Moderate</p> <ul style="list-style-type: none"> • Representative species composition but indigenous biodiversity compromised by livestock browsing and trampling as well as browsing and predation pressure from introduced mammalian pests <p><u>Rarity/distinctiveness</u> – High</p> <ul style="list-style-type: none"> • Wetlands are a nationally threatened ecosystem type. <p><u>Diversity and Pattern</u> – Low</p> <ul style="list-style-type: none"> • Several indigenous plant species are present, but diversity is compromised by livestock browsing and predation and browsing from introduced mammalian pests and from the abundance of invasive weeds. <p><u>Ecological Context</u> – Moderate</p> <ul style="list-style-type: none"> • Small size so limited value for ecological buffering or ecological connectivity but do provide hydrological function in the landscape. 	Moderate
Gully Basin Wetland (bottom of Gully A outside the footprint)	<p><u>Representativeness</u> – Moderate</p> <ul style="list-style-type: none"> • Representative species composition but indigenous biodiversity compromised by livestock browsing and trampling as well as browsing and predation pressure from introduced mammalian pests. <p><u>Rarity/distinctiveness</u> – High</p> <ul style="list-style-type: none"> • Nationally threatened ecosystem type and possibly one of more nationally "Threatened" or "At Risk" wetland bird species are present. <p><u>Diversity and Pattern</u> – Moderate</p> <ul style="list-style-type: none"> • Several indigenous wetland plant species are present, but diversity is compromised by livestock browsing and predation and browsing from introduced mammalian pests and from the abundance of invasive weeds. 	High



	<u>Ecological Context</u> – High <ul style="list-style-type: none"> Small size so limited value for ecological buffering or ecological connectivity but do provide hydrological function in the landscape. 	
Floodplain wetlands (Floodplain outside the project footprint)	<u>Representativeness</u> – Low <ul style="list-style-type: none"> Representative species composition but indigenous biodiversity compromised by livestock browsing and trampling as well as browsing and predation pressure from introduced mammalian pests. <u>Rarity/distinctiveness</u> – High <ul style="list-style-type: none"> Wetlands are a nationally threatened ecosystem type and possibly one of more nationally “Threatened’ or ‘At Risk’ wetland bird species are present. <u>Diversity and Pattern</u> – Low <ul style="list-style-type: none"> Several indigenous wetland plant species are present but diversity is compromised by livestock browsing and predation and browsing from introduced mammalian pests and from the abundance of invasive weeds. <u>Ecological Context</u> – Moderate <ul style="list-style-type: none"> Moderate size so limited value for ecological buffering or ecological connectivity but do provide hydrological function in the landscape. 	Moderate

TABLE 11: Moderate and Higher Habitat Values from Table 4.3.1 of the Ecology Assessment

Similarly, below are the species from Table 4.3.2 of the Ecological Assessment that are Moderate or higher ecological value.

Fauna	Observed Within, or Close to the Site	Ecological Value
Long-tailed bat (Pekapeka)	Yes	Very High
Pipit (Pīhoihoi)	No, but expected to be present	High
New Zealand Falcon (Kārearea)	No, but possibly present	Moderate
Kaka	No but possibly present on occasion	Moderate
Bellbird (Korimako)	No, but assumed present in low numbers	Moderate
Kererū	No, but assumed present in low numbers	Moderate
Tūī	Yes	Moderate
Australasian bittern (Matuku hūrepo)	No, but assumed present on occasion in floodplain wetlands	Very High
Spotless crane (Pūweto)	No, but possibly present in Gully basin wetland	High
Auckland tree wētā	No but assumed present	Moderate
Peripatus	No but assumed present	Moderate

TABLE 12: Moderate and Higher Species Values from Table 4.3.2 of the Ecology Assessment

8.6.6 Magnitude of Effects

The Ecology Assessment assessed the magnitude of effects based on the extent, intensity, duration and timing of effects associated with the Proposal, and the assessment is independent of the Ecological Value assigned to each habitat/vegetation type and species.

Table 13 below summarises the Moderate or higher magnitude of effects from Table 4.3.2.1 of the Ecology Assessment, which considers the measures to avoid, remedy or mitigate in Section 8.6.3 above.

Biodiversity Value	Project Effects	Efforts to Avoid, Remedy or Mitigate	Magnitude of Effects
Exotic plantation forest (Gully A)	Permanent loss of 1.55 ha of forest.	<ul style="list-style-type: none"> Further refinement of project footprint. Vegetation clearance protocols. Native mitigation plantings to buffer potential indirect effects. 	Moderate
Exotic dominated forest (gullies A, B C, F, G)	Loss of 0.53 ha of forest.	<ul style="list-style-type: none"> Further refinement of project footprint. Vegetation clearance protocols. Native mitigation plantings to buffer potential indirect effects. 	Moderate

Exotic dominated scrub	Loss of 0.98 ha of scrub.	<ul style="list-style-type: none"> • Further refinement of project footprint. • Vegetation clearance protocols. • Native mitigation plantings to buffer potential indirect effects. 	Moderate
Gully seepage wetlands	Loss of an expected 0.309 ha of wetlands.	<ul style="list-style-type: none"> • Further refinement of project footprint. • Vegetation clearance protocols. • Native mitigation plantings to buffer potential indirect effects. 	Moderate
Long-tailed bats	Loss of up to 23.72 ha of variable quality habitat. Potential indirect negative effects associated with general disturbance and effects on ecological connectivity.	<ul style="list-style-type: none"> • Further refinement of project footprint. • Avoidance of clearance during bat breeding season when detection of roost sites is less likely. • Implementation of bat tree felling protocols to reduce the potential for harm to roosting bats. 	Moderate
Copper skink	Loss of at least 3.06 ha of variable quality habitat.	<ul style="list-style-type: none"> • Further refinement of project footprint. • Salvage and relocation protocols. 	Moderate

TABLE 13: Moderate and Higher Magnitude of Effects from Table 4.3.2.1 of the Ecology Assessment

8.6.7 Proposed Compensation Package

Alliance Ecology undertook Qualitative Biodiversity Models (QBM) to determine the type and amount of compensation required to achieve expected No Net Loss and Net Gain outcomes for long-tailed bats, the native forest fauna assemblage, and wetlands. QBM provide:

- Additional transparency, process and rigour to the process of addressing residual adverse effects through compensation measures at proposed habitat restoration/ enhancement site(s).
- Guidance on whether No Net Loss or Net Gain outcomes are expected to be achieved.
- 'As close to offset as possible' end of the compensation continuum.

To achieve No Net Loss and Net Gain for key biodiversity values in each location within 10 years of the Proposal's impacts, the QBM confirmed that the following is required:

- Approximately 12.5 ha of habitat restoration and enhancement within the existing Karapiro stream floodplain and associated gully slopes along the northern boundary of the Site to:
 - Create additional habitat and ecological connectivity for bats and other native forest fauna along approximately 2 km of riparian margin and to linking up two SNAs.
 - Provide buffering and ecological connectivity for approximately 3.73 ha of floodplain and gully seepage wetlands through the native revegetation of associated wetland margins.
- Approximately 1.2 ha of native mitigation planting along the northern boundary of the Site to reduce the potential for adverse effects on adjacent wetlands.

The native revegetation is proposed to be staged over a five-year period commencing in the first winter planting season following obtaining consents. The plantings will be protected from livestock browsing through stock exclusion fencing and will also include a 20-year weed control programme with relatively intensive control until canopy-cover is achieved (between 5 – 10 years). Infill planting and control of mammalian browsers (e.g. rabbits and hares) will be undertaken as required.

All native plants will be eco-sourced and plant composition will include species that:

- Were historically present onsite.
- Have a high chance of survival and establishment within planted areas due to the appropriateness of site conditions for associated species.
- Provide a diversity and early supply of resources for fauna (e.g. year-round availability of fruits and flowers for native birds).
- Provide good roosting habitat for bats and other indigenous terrestrial fauna in the longer term.
- Are supported by iwi partners through iwi consultation and inputs.



Felled trees and fallen logs in various states of decomposition are ecologically important to forest regeneration processes and as habitat for a wide range of flora and fauna. Felled native (preferably) or exotic log deployment into revegetation sites will be undertaken and a minimum of 20 m / ha of cut up stockpiled logs will be deployed into restoration sites that cannot move or enter streams. Long-term protection of all restoration and habitat enhancement sites be achieved through protective covenants.

Alliance Ecology considers that all biodiversity compensation principles of the Draft National Policy Statement for Indigenous Biodiversity (NPS IB) will be met through the proposed measures to address adverse residual effects on biodiversity values that cannot be adequately avoided, remedied or mitigated.

8.6.8 Conclusion

While the Proposal would result in potential adverse effects on moderate and high value habitats and species on the Site, the proposed measures to avoid, remedy or mitigate the adverse effects will reduce their magnitude to no more than Moderate levels. For those potential adverse ecological effects that cannot be avoided, remedied or mitigated, a compensation package is proposed to ensure that they are addressed to an expected Net Gain standard within 10 years of impact.

Conditions of consent can ensure that the above measures and compensation package are developed and implemented through Ecological Management Plans (EMPs), including biodiversity outcome monitoring at impact and habitat restoration sites to verify that intended ecological outcomes have been achieved (where feasible). The EMPs should also include contingency measures to set out the process if the intended ecological outcomes are not met within the specified timeframes.

8.7 Hydrology Effects

Attached in **Appendix M** is a Hydrology Assessment prepared by Te Miro Water Limited (Te Miro Water). Below is a summary of the findings of the assessment.

The Site gently slopes north towards the Karapiro Stream gully edge at a very flat grade with minor depression. There are three side gullies which are steep, protrude into the Site from the main Karapiro gully, and display no permanent water other than seepage flows in the lower reaches (approximately 2-3 m above the top of stream bank). The gullies are remnant features from a time when the Karapiro Stream was much larger and an actively incising river system. Given the well-drained in situ sub soils and deep groundwater table, no farm drains or underdrain network was identified on the Site.

Te Miro Water undertook a 2D rain on grid model using TUFLOW software to check the proposed quarry floor level in relation to the 100yr flood level for Karapiro Stream. The model confirmed that the maximum flood level is at least 5m below the proposed lowest quarry floor level due to the incised stream and wide floodplain in this area, refer to Appendix A of the Hydrology Assessment for the 100yr flood map.

The gully between the proposed plant and pit areas has no noticeable flow in the gully head, however seepage was apparent where the side gully joined the main Karapiro Stream (approximately 2-3 metres above the top of Karapiro Stream bank). The side gullies therefore do not have a permanent baseflow in their upper reaches and seepage zones emerge within the lower level. The 2D model supports this with depression storage areas within the Site, but no noticeable overland flow paths or watercourses leading to the small side gullies (only minor sheet flows less than 100mm in extreme events).

Te Miro Water did not observe any other channels or obvious overland flow paths/ephemeral streams across the Site which gives further indication that the side gullies are remnant features from when the Karapiro Gully was in an active channel forming phase as part of the main Waikato River. The side gullies may display some surface flows during extreme events due to local runoff from the side walls, however most of the water that lands on the site will not reach these gullies due to the flat topography and well drained soils.

As there are no permanent or ephemeral channels or streams within the Site and the 100 year floodplain is at least 5m below to lowest level of the pit floor, surface flows are not expected to be impacted because there is no identifiable catchment flowing to each side gully and no permanent stream flow within the gully for most of its length until seepage flow where it drops to the gully floor.



8.8 Groundwater Effects

RS Sand engaged Wallbridge Gilbert Aztec Limited (WGA) to undertake a Groundwater and Groundwater Take Assessments for the Proposal, refer to **Appendix N**. Below is a summary of the findings of the Assessments.

8.8.1 Groundwater

Hydrology

The Site is situated within the Hamilton Basin (a 2,000 km² tectonic basin traversed by the Waikato River), which is filled with up to 300 m thick Tauranga Group alluvial sediments (gravels, sands, silt, muds, and peats of fluvial, lacustrine and distal ignimbric origin). The Hinuera Formation of the Tauranga Group underlies much of the Hamilton basin and was deposited by braided river systems of the Waikato River.

The Hinuera Formation contains the aquifers used most extensively across the Hamilton Basin for water supplies. The most productive aquifers consist of well sorted coarse sands and gravels, and the lithological variability generally results in several zones of higher permeability within each of the formations rather than a single, continuous aquifer. The upper layers within the formation contain perched aquifers which can dry out over the summer period and will drain to the closest gully system.

Regional groundwater flows around Cambridge are generally towards the northwest and major groundwater discharge occurs into the Waikato River and its tributaries located in deeply incised gullies. The Hinuera Aquifer is used in nearby rural areas for domestic and stock water supplies, and the deeper Hautapu Aquifer is used by the Fonterra Hautapu Dairy Factory to supply water to the plant and other irrigation bores in the area.

WGA reviewed the drilling information gathered for geotechnical purposes and a production bore was drilled on Site, and considers there to be at least three aquifers on the Site:

- A Perched Aquifer at approximately 65 m RL (7 m deep).
- An Unconfined Aquifer at approximately 33 m RL (39 m deep).
- A Confined Aquifer at approximately 19 m RL (53 m deep).

In terms of groundwater quality, water in the shallow Hinuera Aquifer to the north of the Karapiro Stream has been identified locally as having high nitrate-nitrogen concentrations. Local groundwater quality data is not available to confirm if shallow water quality on the Site is similar and a search of the WRC's bore database revealed no local groundwater quality information.

WGA estimates the current average groundwater flow within the proposed pit area is 1.5 L/s to 2.5 L/s over one year derived from recharge. Their estimate is based on a catchment area of 16 ha and a local annual recharge of between 288 mm and 500 mm per year. WGA considers that some of the recharged water is slowly percolating down to the regional aquifer, which is likely locally discharging directly to the Karapiro Stream and the Waikato River.

Effects on Groundwater

The Proposal's effect on groundwater will be limited to close to the pit area. The gullies to the east and south of the Site will restrict the extent of any potential effects on the perched aquifer in those directions. Similarly, the Karapiro Stream gully will limit the extent to which any groundwater drawdown effects to the north and seepage in this direction is likely significantly less than approximately 2.5 L/s averaged over one year.

The groundwater level in the perched aquifer to the west could reduce within about 400 m of the proposed pit area, as it will form a new groundwater discharge area closer than the current situation.

Recharge groundwater is still anticipated to flow to the Karapiro Stream under the proposed quarry but will drain through the floor of the pit area, rather than through farmland soils and the current perched aquifer. Recharge to the regional aquifer may be slightly higher once the quarry has been developed compared to the current farming land use.

Refer to **Figure 18** below for the consented groundwater takes within 1 km of the Site listed on the WRC's database.

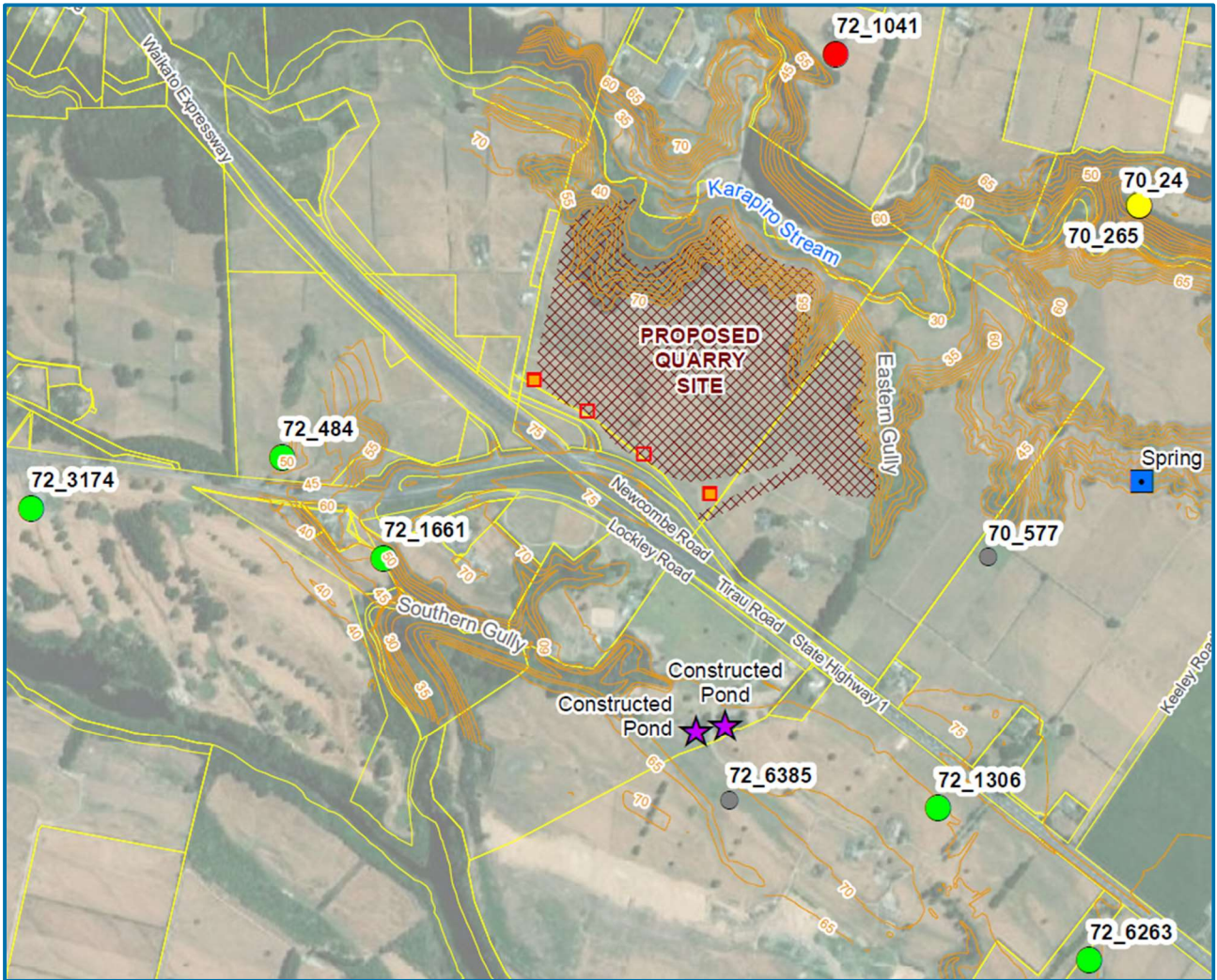


FIGURE 18: Consented Groundwater Takes within 1 km of the Site (Extract from Figure 1 of the Groundwater Assessment)

There are 12 bores within 1 km of Site (Table 1 of the Groundwater Assessment), 6 of which are to the north of Karapiro Stream, and WGA consider they will not to be affected by the Proposal. Most of the remaining 6 bores are closer to the gully to the south of the Site than to the proposed sand quarry and are 60 m deep or more, which results in the gully to the south having a stronger influence on local groundwater levels than the Proposal. While Bore 70_577 is located to the east of the Site, has an unknown depth and could be tapping the perched aquifer, the gully to the east of the Site will restrict drawdown effects in that direction.

There are two artificial ponds to the south of the Site that appear to have been constructed to approximately 65 m RL. The ponds may be sourcing shallow groundwater from the perched aquifer, but WGA has not visited the property. The Proposal would result in the discharge area for the perched aquifer moving from approximately 850 m to approximately 500 m north of the ponds. However, WGA consider that the strong influence of the nearby gully approximately 150 m to the west of the ponds will be the main controlling factor in controlling groundwater levels in the ponds.

Recommended Monitoring

To monitor the groundwater drawdown effects of the Proposal on the perched aquifer in the direction of the Expressway and the two artificial ponds, WGA recommends a series of at least four shallow piezometers and two deeper piezometers along the southern boundary of the quarry.

At least two piezometers screened in the regional aquifer approximately 150 m apart are recommended to be installed along the southern boundary of the quarry. The piezometers are to have pressure transducers installed to automatically record water levels and be downloaded every 3 months, recording for at least 6 months but preferably 1 year prior to the excavation starting is recommended to establish a baseline.

Conclusion

The Site contains an interpreted perched aquifer at approximately 65 m RL and two regional aquifers below approximately 33 m RL. The effect of the Proposal on groundwater will be limited to drawdown of the perched aquifer in the immediate vicinity of the excavated pit. The gullies to the north, east and south of the Site will limit the extent of any drawdown effects in these directions.

Nearby registered bores and springs are not considered to be potentially affected due to the limiting effect of the gullies on quarry-induced drawdown or their proximity to other discharge locations such as the Waikato River. If the neighbour to the west of the Site has an unregistered bore, it could be materially affected and WGA recommends that a discussion with the landowner take place to determine the depth and location of any bore on the property, and whether deepening of the bore or the provision of another water supply to the property is required.

Groundwater level monitoring in both the perched and regional aquifers is recommended for the southern boundary of the property in at least six piezometers in four locations.

8.8.2 Groundwater Take

As identified in Section 5.4 above, a maximum groundwater take of 1,100m³ of water is required per day, comprising of 500m³ at 29 litres per second (105 m³/hr) for sand processing and 600m³ for dust suppression. Below is an explanation of the required groundwater take.

While 1.5 m³ of water is normally required to process a tonne of sand, the proposed processing plant reuses approximately 75% of the water. Therefore, the Proposal only requires 0.4 m³ of water to process a tonne of sand. As 1,455 tonnes of sand are anticipated to be processed each day, the Proposal requires approximately 582 m³/day of water for processing.

To suppress dust, up to 50 m³ of water per day is proposed to be used on 0.8 ha (20%) of the plant area, 2 ha of internal roads, and a maximum open quarry area of 7.25 ha (Stage 3). Therefore, the total area of 10.05 ha requires approximately 503 m³/day of water for dust suppression.

Stepped Rate Pumping Test

A four-hour stepped rate pumping test was undertaken on bore 72_10873 (refer to Section 3 above) and the results indicate that the aquifer is confined by small silt layers unit between 43.45 m and 53.11 m below ground level. The water and drawdown levels of the step test are in **Table 14** below.

Step	Pump Rate (L/s)	Water Level (m)	Drawdown (m)
1	16	44.57	1.72
2	22	45.43	2.58
3	29	46.19	3.34
4	33	46.89	4.04
Recovery	0	42.87	0.02

TABLE 14: Results Test Bore Step Test (Table 4 of Groundwater Take Assessment)

The results of the test have been analysed by using the AQTESOLV Pro v4 software package from HydroSolve Inc. and the measured drawdown curves were matched against type curves for a confined aquifer using the Theis method. The analysis indicates that the aquifer has a transmissivity of 4,000 m²/day.

At a flow rate of 33 L/s, the efficiency of the bore is approximately 77%. However, lower flow rates normally increase the efficiency of bores. Most of the drawdown generated by pumping from the bore is due to the performance of the aquifer, rather than the performance of the bore itself.

Constant Rate Pumping Test

The bore was pumped at a rate of 29 L/s for 1,440 minutes and monitored using a water level logger recording at one-minute intervals along with manual monitoring. The recovery was monitored for a further 1,450 minutes. An observation bore was also installed 4.7 m from bore 72_10873 and monitored with a transducer logging at minute intervals.

The maximum water level in bore 72_10873 was 46.88 m below ground level at 1,440 minutes, equating to a maximum drawdown of 4.03 m. The bore recovered to 42.93 m below ground level 1,450 minutes after the end of pumping, a

recovery of 98 % of the total drawdown. While the test results indicates that the drawdown would be approximately 6 m after 300 days of continuous pumping at 29 L/s, water for dust suppression will not be required continuously and the pump will not be operated continuously. Therefore, the long-term drawdown is not expected to exceed 50 m below ground level, which provides a buffer for seasonal fluctuations, or if the efficiency of the bore were to reduce.

The observation bore is screened at the same interval as bore 72_10873 and is therefore expected to have the same initial standing water level as bore 72_10873. The maximum drawdown of 0.93 m was record on the observation bore at 1,429 minutes. The results from the pumping test analysis are in **Table 15** below.

Bore	Analysis Method	Transmissivity (m ² /day)	Storativity
72_10873	Theis (Drawdown and recovery)	1,250	-
	Theis (Recovery – early time)	2,350	-
	Theis (Recovery – late time)	4,950	-
	Cooper Jacob (Drawdown – early time)	2,750	-
	Copper Jacob (Drawdown – late time)	485	-
Observation	Theis (Drawdown and recovery)	2,850	0.0007
	Theis (Recovery – early time)	2,650	-
	Theis (Recovery – late time)	4,950	-
	Copper Jacob (Drawdown – late time)	1,650	3 x 10 ⁻⁶

TABLE 15: Results from Pumping Test Analysis (Table 5 of Groundwater Take Assessment)

WGA consider that bore 72_10873 is drawing water from a high hydraulic conductivity zone (potentially a paleochannel) that has a transmissivity 485 m²/day and the storativity value of 0.0007 (indicative of a confined aquifer).

Effects on Neighbouring Bores

The closest known bore to the proposed take is approximately 450 m to the east (70_577 on the WRC database) and has an unknown depth. If the bore is drawing from the same aquifer, the drawdown would be approximately 1.34 m and result in an interference of between 2 % and 3 % of the bore depth. If the bore is drawing from the perched aquifer, the hydraulic boundary for the eastern gully separates it from the proposed take. The calculated interference for other bores in the area drawing from the same aquifer also ranges between 2 % and 3 % of bore depths. Given the projected drawdowns and the distances, WGA consider that if neighbouring bores are drawing from the same aquifer, the interference and drawdown effects on other users would be less than minor.

Effects on Consented Takes

The following groundwater takes are consented within one kilometre of the Site:

- AUTH122320.01.01 – In association with the Expressway.
- AUTH126930.01.01 – Agricultural farming – Dairy.
- AUTH126762.01.01 – To take water from a spring.

As the construction of the Expressway has been completed, the projected drawdown on the AUTH126930.01.01 take is expected to be approximately 1 m, and AUTH126762.01.01 take is drawing water from the perched aquifer, WGA consider that the effects will be less than minor.

Stream Depletion

WGA undertook a conservative stream depletion analysis using the Hunt (2003) method. The Karapiro Stream depletion after 220 days of continuous pumping is calculated to be 0.12 L/s (10 m³/day), which is less than the permitted take rate of 15 m³/day. WGA consider that the actual effect will be lower and less than minor as the bore will be operated in response to climate conditions to provide dust suppression rather than for 220 days continuously.

Aquifer Sustainability

The proposed groundwater take is from the Hamilton Basin - South Aquifer, which is not currently fully allocated. As the nearby consented abstractions are for small quantities, WGA considers that the proposed take will not cause any long-term sustainability issues.

8.8.3 Conclusion

Groundwater

The Site contains an interpreted perched aquifer at approximately 65 m RL and two regional aquifers below approximately 33 m RL. The effect of the Proposal on groundwater will be limited to drawdown of the perched aquifer in the immediate vicinity of the excavated pit. The gullies to the north, east and south of the Site will limit the extent of any drawdown effects in these directions.

Nearby registered bores and springs are not considered to be potentially affected due to the limiting effect of the gullies on quarry-induced drawdown or their proximity to other discharge locations such as the Waikato River. If the neighbour to the west of the Site has an unregistered bore, it could be materially affected.

Groundwater level monitoring in both the perched and regional aquifers is recommended for the southern boundary of the property in at least six piezometers in four locations.

Groundwater Take

The results of the stepped and continuous rate pumping tests identify a drawdown of 4.0 m was observed in bore 72_10873 and 0.93 m in the observation bore. Analysis of the results has enabled WGM to derive transmissivity values of 485 to 4,950 m²/day and a storativity value of 0.0007.

The closest nearby bore (70_577) is located approximately 450 m to the east of the proposed take and has an unknown depth. WGM consider that the drawdown interference effects on the bore would be less than minor, as the projected drawdown would be 1.34 m (2-3 % based on bore depth) if it is drawing from the same aquifer or the hydraulic boundary for the eastern gully separates it from the proposed take if it is drawing from the perched aquifer.

As the Karapiro Stream depletion analysis indicates that the potential depletion would be less than 0.12 L/s (10 m³/day), WGM considers that the proposed take will have less than minor effects on flows in the Karapiro Stream.

There is sufficient groundwater allocation available within the Hamilton Basin – South aquifer to accommodate the proposed take of up to 290,000 m³/year.

8.9 Erosion and Sediment Effects

Southern Skies Environmental Limited (Southern Skies) has prepared a draft Erosion and Sediment Control Plan (ESCP) for the proposal, refer to **Appendix O**. Below is a summary of the draft ESCP.

The ESCP has been prepared in accordance with WRCs Technical Report No. 2009/02 Erosion and Sediment Control Guidelines for Soil Disturbing Activities, January 2009 (ESC Guidelines).

Appendix A of the ESCP includes draft drawings Stages 1 and 2, as well as the processing area.

8.9.1 Design and Principles

The design of the ESCP provides operational flexibility for the proposed quarry to meet the possible fluctuations in demand for sand. It is expected that conditions of consent will require updated ESCPs will be prepared and submitted to the WRC for certification prior to works.

The ESC's methodology is based the high soakage rates and on the use of Sediment Retention Ponds (SRPs), supported by progressive stabilisation as areas are completed. Existing vegetation will also be retained wherever possible.

Catchment areas (both clean and dirty) will be adjusted during the life of the quarry and regular audits and as-built revisions will be undertaken. Areas will be stabilised as soon as practical and in a progressive manner.

The general principles to be adopted during the quarry activities, and which will be incorporated in the ESCP, are as follows.

- Minimise the necessary area of disturbance as far as practicable.
- Stage the quarry and progressively stabilise exposed areas following completion.



- Divert clean water runoff away from the quarry works site to reduce contributing to the catchment of exposed working areas.
- Intercept, divert and impound any sediment laden runoff from exposed working areas to either prevent discharges (via soakage) or as a minimum, provide treatment via sediment control devices.
- Regularly inspect the ESC measures and undertake any maintenance necessary to maximise the sediment retention efficiency.
- Undertake ongoing assessment of the ESC methodology and, if required, adjust as the work progresses.
- Ensure staff are aware of the requirements of the ESCP and the relevant resource consent conditions.

8.9.2 Processing Area

To enable construction of the processing area, an SRP (SRP-1) will be constructed within the future water processing pond location and will be sized for a catchment of 5ha and a length to width ratio of 5:1 to fit in the processing pond footprint.

Topsoil will then be stripped from the processing area and stockpiled around the perimeter of the area to form the bunds. The bunds will be progressively stabilised with grass seed and hay mulch.

On completion of the processing area and internal road earthworks, the areas will be stabilised with aggregate.

Refer to Sheet 1 in Appendix A of the ESCP for more details of the draft measures.

8.9.3 Stage 1

To reach the bottom of the proposed pit area (RL40), a series of benches will be from the top to the bottom of Stage 1. Each bench will be bunded and will be sloped back into the bank and any runoff (not expected due to soakage rates) will be contained within the bench cut.

Once there is sufficient room at the bottom of Stage 1, an SRP (SRP-2) will be constructed to treat stormwater. Although high soakage rates are expected, the SRP will be sized for a catchment area of 5ha to enable the transition between Stages 1 and 2. Given the above, Southern Skies considers that discharges from the SRP will be limited to heavy rain events, if at all.

Overburden from Stage 1 will be placed along the northern boundary of Stage 2 up to 5m high and re-grassed for screening and storage for the future reinstatement of Stage 1.

At the completion of each stage or portion of stage, the floor of the pit area and any final batters will be rehabilitated back to grass using topsoil stockpiled during stripping operations and re-grassed, fenced and water reticulation installed.

Refer to Sheets 2-4 in Appendix A of the ESCP for more details of the draft measures.

8.9.4 Stages 2 to 5

The erosion and sediment control measures for Stages 2 to 5 will be a continuation of Stage 1, the SRP built during Stage 1 will continue to be used by the later stages.

As the final RL's are achieved through the completion of Stage 1, areas will be covered in topsoil, grassed, separated from the work areas and any runoff diverted away from the SRP.

Refer to Sheet 5 in Appendix A of the ESCP for the draft measures for Stage 2.

8.9.5 Erosion and Sediment Control Details

The draft ESCP includes the following measures to avoid, remedy and mitigate the potential erosion and sediment effects of the Proposal:

- On-site soakage.
- Clean water diversions (away from work areas).
- Dirty water diversions (to SRPs).



- Sediment retention ponds.
- Chemical treatment (to improve sediment removal efficiency of SRPs).
- Silt fences.
- Stockpiles.
- Dust management.
- Stabilisation.

Refer to Section 4 of the ESCP for details of the above measures.

8.9.6 Conclusion

As the design and principals of the ESCP have been prepared in accordance with WRCs ESC, Southern Skies consider that any adverse erosion and sediment effects of the Proposal will be acceptably minimised.

8.10 Geotechnical Effects

Appendix P of this report contains a Preliminary Geotechnical Assessment of the proposal by HD Geo Limited (HD Geo). Below is a summary of the findings of the assessment.

8.10.1 Geological Setting

The Site is underlain by soils of the Hinuera Formation, which is described as “cross-bedded pumice sand, silt and gravel with interbedded peat”. In this area, the Hinuera Formation is over 35 m deep and sandy soils generally increase in density with depth due to confinement.

8.10.2 New Zealand Geotechnical Database

Two Cone Penetration Tests (CPTs) recorded on the New Zealand Geotechnical Database (NZGD) near the Site identify alternating sand and silt layers with low to moderate cone resistances (<1 to 8 MPa) within 8 m of the surface. Cone resistance increased to moderate to high values (5 to >30 MPa) in the deeper soils. HD Geo consider that these results are characteristic of the Hinuera Formation.

Four bore holes recorded on the NZGD identifies interbedding of silt and sand with Standard Penetration Test Number (SPT N) values generally between 0 and 12 in the upper 8 to 15 m. An insitu shear vane was completed in a thick silt layer at 7.5 m and record 12/1 kPa. N values increase at 9 m bgl to more than N = 19 for the remainder of the bore hole. The sand was also more consistent with the absence of interbedded silt from RL 46.

8.10.3 Site Investigations

Cone Penetration Tests

The Site ground conditions consist of:

- Topsoil assumed to be up to 0.4 m below ground level.
- Interbedded layers of moderately dense silt and sand to at least 17 m depth
- Consistently dense to very dense sand soils to at least 35 m below ground level.
- CPT refusal (>30 MPa cone tip) occurred at between 30 and 35 m due to the dense sands.

Soakage Tests

HD Geo undertook 4 falling head permeability tests on the Site and the following near surface ground conditions are consistent with the Hinuera Formation:

- 0.2 to 0.4 m of topsoil overlying.
- Alternating layers of silt, silty sand and sand to at least 4.0 m below ground level.
- Perched ground water at a depth of 1.9, 2.7 and 1.6 m respectively.



Groundwater

Ground water was encountered at between 2.1 and 10.5 m below ground level in the recent CPTs and 1.6 to >4.0 m in the soakage tests. The CPT and soakage tests confirm that the groundwater is perching within the upper silty sand and silt layers across the Site, and naturally drains towards Karapiro Stream.

HD Geo assessed that the underlying regional ground water table is at approximately 35 to 40 m below the existing ground level and generally trend towards the Karapiro Stream.

8.10.4 Geotechnical Assessment

Natural Hazards

Given the Site subsoil class is D 'Deep or soft soils', HD Geo calculated the design peak ground acceleration for the 1 in 500-year average recurrence interval earthquake event to be 0.25 g for liquefaction and 0.2 g for stability. HD Geo consider that earthquake induced liquefaction and lateral spreading are low risk.

There are no know tsunami, volcanic, geothermal, or sedimentation risks.

HD Geo has assessed the risk from landslips to be low and consideration of the proximity of the final batter in relation to surrounding properties and assets will be required.

No indications of erosion were observed during HD Geo's site investigations, and they consider the Site to be at low risk of damage due to erosion.

The general subsidence/settlement risk on the Site is low.

Liquefaction

Given the regional groundwater table is approximately 40 m below current ground level and CPT data only extend to a maximum depth of 35 m below ground level, HD Geo undertook a qualitative assessment of the risk from liquefaction.

HD Geo used a worst-case scenario where a 10 m thick profile of the very dense sands below the water table can liquefy and assumed an undrained shear strength from the CPT testing.

Liquefaction is unlikely to occur in the sand soils above 40 m due to the absence of a regional ground water table, and the CPT and bore hole testing also indicate that the deeper, older sand soils (>30m depth) are of a density that is unlikely to liquefy. The risk of liquefaction is expected to be low due to the geometry of the proposed pit area and the Proposal should not significantly impact the liquefaction risk of the neighbouring properties.

Slope Stability

HD Geo undertook a quantitative slope stability assessment using the proprietary software 'SLIDE'. The Factor of Safety (FoS) requirements for the final geometry are:

- No less than 1.5 for long term, normal, static conditions.
- No less than 1.2 for short term, seismic, and high groundwater conditions.
- No less than 1.0 for liquefied (lateral spreading) conditions.
- >1.0 assumes no deformation has occurred.

While the slopes adjacent to the Site appear relatively stable with no signs of recent instability, near surface soil creep is present and aerial images indicate an area of historical instability to the west of CPT01. The circular type of scarp and longer, shallower angles at the base of the slope indicated failures have occurred more than 80 years ago. The vegetation that is now present may indicate localised groundwater that has been seeping and causing the slope to regress further compared to the surrounding slopes.

Although aerial imagery and geomorphology also show that slopes are marginally stable and may experience failures during higher ground water conditions or due to undermining of the slopes, HD Geo were able to iterate the model until representative FoS values were achieved. The results of HD Geo's assessment indicate that the final batters will have FoS values above those required in all scenarios.



A worst-case liquefaction scenario of soil parameters for 10 m below and assumed groundwater level at 40 m was used by HD Geo to assess the risk of lateral spreading. They consider that the Site has a low risk of lateral spreading as the liquefied model indicates a FoS of 1 is achieved.

HD Geo consider that the final batters of the proposed pit area have FoS values above those required in all scenarios, and therefore the risk from instability is low and the Proposal is not likely to affect any of the neighbouring properties or infrastructure. HD Geo recommend that a Building Restriction Zone (BRZ) of 10 m should still be applied to the top of final quarry batter, and apply to bunds, power poles and other infrastructure. Any future development or earthworks proposed within this 10 m BRZ should be assessed by a geotechnical engineer.

They also recommend that the soils used for the bunds are well compacted and re-vegetated to mitigate erosion. Small scale slumping may occur but can be remediated with an excavator when required.

In relation to the processing area, the proposed bund must be set back from the top of the slope so it does not have a negative effect on the stability of the existing slope and the water storage pond must have an impermeable membrane to stop any water decreasing the stability of the surrounding slopes.

As no modifications are proposed to the slopes surrounding the Transpower pylon HAM-KPO-A0013 (refer to Figure 4 above) HD Geo consider that the Proposal will not have a negative effect on the pylon.

Settlement

During the establishment and operation of the proposed sand quarry, de-watering of the perched water table may occur, HD Geo consider that a worst-case scenario could draw water down 2 to 3 m and result in between 20 to 30 mm of settlement in the silt layer at between 7 to 9 m below the current ground level.

Due to the current geometry of the area with gullies and tributaries present, HD Geo anticipate that if any settlement does occur, it will be localised to within the Site.

8.10.5 Conclusion

HD Geo considers that the Proposal is unlikely to cause any adverse geotechnical effects on the adjacent properties subject to the following recommendations:

- The final batters are constructed at 3H:1V.
- Further assessment occurs for any change in geometry.
- The slope geometry around the power pylon will remain unchanged and therefore current stability will be unaffected.
- The bund should be well compacted and vegetated to mitigate erosion.
- Groundwater seepage must be controlled appropriately to avoid erosion.
- The water storage pond in the processing area must be fully lined.
- The processing plant bunds will need specific assessment to determine how close they can be constructed to the surrounding slopes.

8.11 Cultural Effects

Te Hira Consultant Limited (Te Hira) has undertaken a CIA of the Site and Proposal for both the resource consents and an archaeological authority from Heritage New Zealand Pouhere Taonga (HNZPT), refer to **Appendix Q**. This CIA outlines the position of Ngaati Korokii-Kahukura and Ngaati Hauaa, and is endorsed by Waikato Tainui. Below is a summary of the assessment.

8.11.1 Tāngata Whenua

The following three iwi have confirmed rights and interests within the area of the Proposal.

Waikato-Tainui

The rohe (tribal region) of Waikato-Tainui encompasses Auckland in the north, Te Rohe Potae (King Country) in the south, the west coast, and the mountain ranges of Hapuakohe and Kaimai in the east. The iwi of Waikato-Tainui



comprises 33 hapu, 68 marae and 80,000 registered tribal members, and are tāngata whenua and exercise mana whakahaere within their rohe.

Waikato-Tainui have an intrinsic relationship with the natural environment, are kaitiaki of their environment and consider the holistic integrated management of all elements of the environment to be of utmost importance. Landmarks of significance to Waikato-Tainui in proximity to the Site include the Waikato River and the sacred mountain of Maungatautari.

The iwi of Ngaati Korokii-Kahukura descends from the high chief Korokii and are 16 generations removed from Hoturoa, the captain of the Tainui canoe. The rohe of Ngāti Korokī Kahukura stretches south of Hamilton City, along the Waikato River to the northern end of Lake Arapuni, to the western side of Te Awamutu and back to the southern portion of Hamilton City. Ngaati Korokii-Kahukura comprises of several hapū (Ngaati Waihoru, Ngaati Ueroa, Ngaati Huakatoa, Ngaati Houruamua, Ngaati Werewere and Ngaati Poorangi) that lived around the base of Mount Maungatautari and the Waikato River. Ngaati Korokii-Kahukura exercised tikanga to manage, defend and develop their tribal area for the benefit of all its members.

Mount Maungatautari is the tuupuna maunga, a living taonga and a symbol of mana to the people of NKK. The forests offered shelter to the people in hard times and provided foods such as birdlife and native flora and fauna. The Waikato River is the tuupuna awa and also a living taonga to Ngaati Korokii-Kahukura, its waters had traditional healing powers and was a source of aquatic foods. The Waikato River was the principal highway of trade and transport for Ngaati Korokii-Kahukura wheat, flax and potatoes to Auckland.

Ngaati Hauaa

The iwi of Ngaati Hauaa descends from Hauaa, son of Korokii and Tumataura. Ngaati Hauaa's area of interest is generally associated with the maunga of Taupiri, Maungatautari and Te Aroha. The area encompasses lands and waters east and north of Mount Maungatautari, Tauwhare, parts of Hamilton City, Morrinsville up to Te Aroha, and across the kaimai ranges into Matamata and Hinuera.

8.11.2 Matters of Significance

Ngaati Korokii-Kahukura and Ngaati Hauaa noted the following matters when considering the Proposal and undertaking the site visits:

1. There could be the potential for archaeological findings. Appendix 2 and Appendix 3 of this report should be implemented if this occurs.
2. The location of wetlands and the Karapiro Stream within and near the site area. Ecological mitigation and compensation developed by RS Sands will help with the restoration and enhancement of the site area.
3. The site visit by the cultural advisor (tohunga) for tāngata whenua revealed that there are no spiritual matters of concern for the Site or Proposal.
4. Much of the activities and its impacts will be managed on site. There is an opportunity for tāngata whenua to be involved in the rehabilitation of the site in the future and the wider vision for the area.
5. Extraction of groundwater will be required to operate the plant.

8.11.3 Known Sites of Significance

The CIA identifies the following known sites of significance to iwi in proximity to the Site:

- Horotiu Paa.
- Paa – Sentry Lookout.
- Te Paa o Taowhakauro.
- Borrow Pits and Archaeological Sites.

Refer to **Figures 19** and **20** from their location in relation to the Site.





FIGURE 19: CIA Paa Extract (paa identified by green houses and Site's property boundaries in yellow)

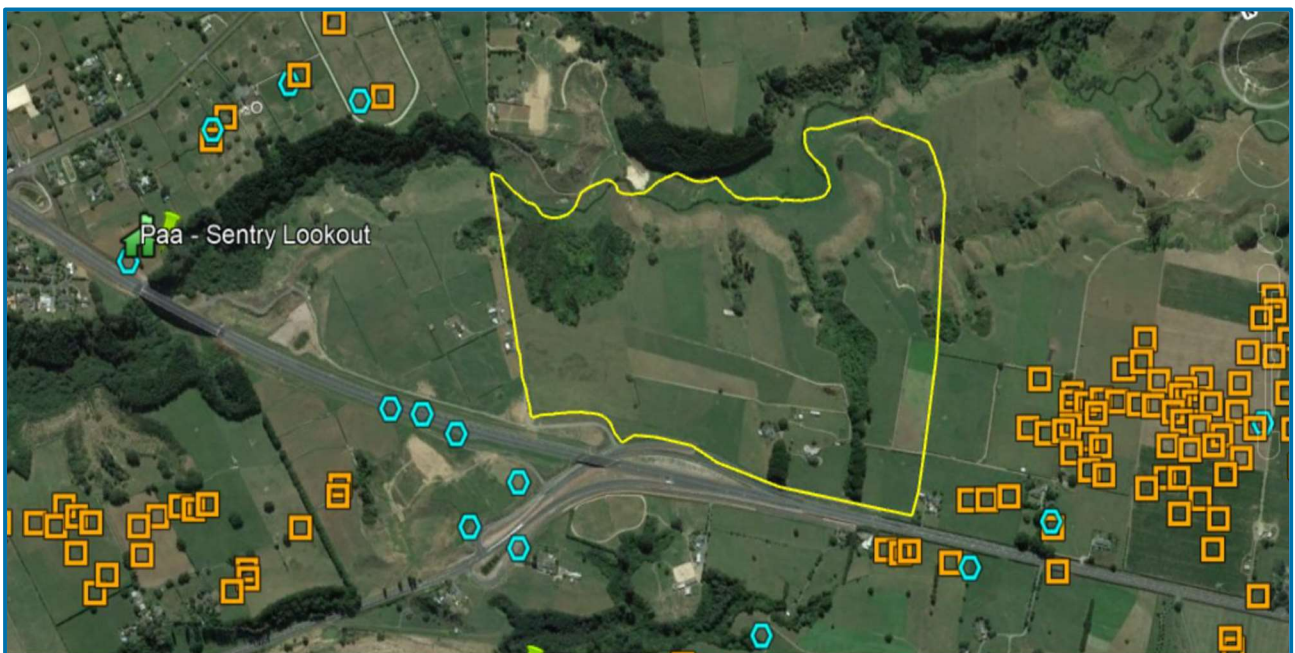


FIGURE 20: CIA Borrow Pit and Archaeological Sites Extract (borrow pits shown as orange squares, archaeological sites are blue hexagons and Site's property boundaries in yellow)

While the Site does not contain any known sites of significance to iwi, given the surrounding borrow pits and archaeological sites, iwi consider that there is a high likelihood that the taonga may be discovered within the Proposal area.

8.11.4 Assessment and Recommendations

Te Hira has assessed the Proposal against the provisions of Te Ture Whaimana o te Awa o Waikato / The Vision and Strategy for the Waikato River and Tai Tumu, Tai Pari, Tai Ao / The Waikato-Tainui Environmental Plan, and below is a summary of the assessment:

- RS Sand has considered opportunities to further the Vision and Strategy for the Waikato River, and ecological mitigation and compensation on adjacent wetlands and Karapiro Stream floodplain is proposed.

- Both Ngaati Korokii-Kahukura and Ngaati Hauaa continue to practice their relationships with the Waikato River and its resources. Taangata whenua should be engaged in all conditions noted in this table to provide for the restoration and protection of their relationship with the whenua and its waterbodies.
- Understanding the history and significance of the area can better improve work practices and care on-site. Tāngata whenua are to lead cultural induction, cultural safety and protocol training to onsite staff to improve awareness of the area and its cultural importance to the Iwi.
- RS Sand have demonstrated a desire to minimise future impacts from the Proposal.
- That restorative planting occurs near water sources and streams to improve stability in surrounding soils and minimise impacts on water courses.
- If taonga or koiwi are found, the protocols attached to the CIA (Appendices 2 and 3) must be applied to the Site, Ngaati Korokii-Kahukura and Ngaati Hauaa are traditional custodians of any newly discovered taonga or artefacts and are to be notified immediately if any koiwi are discovered.
- Ngaati Korokii-Kahukura and Ngaati Hauaa should be included in rehabilitation of the Site to reflect the surrounding environment.
- Recommend that RS Sand grow opportunities for the benefit of the community and tāngata whenua.
- Tāngata whenua have applied tikanga Māori to the Proposal through the site visits and application of protocols to protect cultural values.
- Ngaati Korokii-Kahukura and Ngaati Hauaa consider that a of consent should require the material leaving the site should be sealed, covered, or wet to minimise material escaping the transport.
- RS Sand are discussing directly with tāngata Whenua in relation to a koha (gift) beyond consent conditions that leaves a legacy of 'betterment' and 'gifting' to the taonga that are impacted by the Proposal.

8.11.5 Conclusion

The Site does not contain any known wāhi tapu or sites of significance to iwi. As there are recorded borrow pits and archaeological sites in the surrounding area, iwi consider that there is a high likelihood that taonga may be discovered within Site and recommend that accidental discovery protocols to avoid, remedy and mitigate potential adverse cultural effects. In addition, RS Sand's archaeologist also considers that there is potential for unrecorded sites to be present and recommends that an archaeological authority be sought from HNZPT for works within 40 m of the Karapiro Stream gully edge as a precautionary measure to enable better management of archaeological risk should archaeological material be encountered (refer to Section 8.12 below).

Ngaati Korokii-Kahukura and Ngaati Hauaa have confirmed a neutral position in relation to the Proposal, subject to the conditions and recommendations by RS Sand. Waikato-Tainui endorses the recommendations and position of Ngaati Korokii-Kahukura and Ngaati Hauaa as tāngata whenua of the area where the Site is located.

8.12 Archaeological Effects

Sian Keith Archaeology Limited (SKA) has undertaken an Archaeological Appraisal of the Site and Proposal, refer to **Appendix R**. Below is a summary of the findings of the appraisal.

8.12.1 Recorded New Zealand Archaeological Association Sites

The Archaeological Appraisal area covers north of the true right bank of the Waikato River and is bounded to the north by the Karapiro Stream. **Figure 21** and **Table 16** below show the location and summaries of the archaeological sites recorded on the New Zealand Archaeological Association (NZAA) database in the vicinity of the Site.



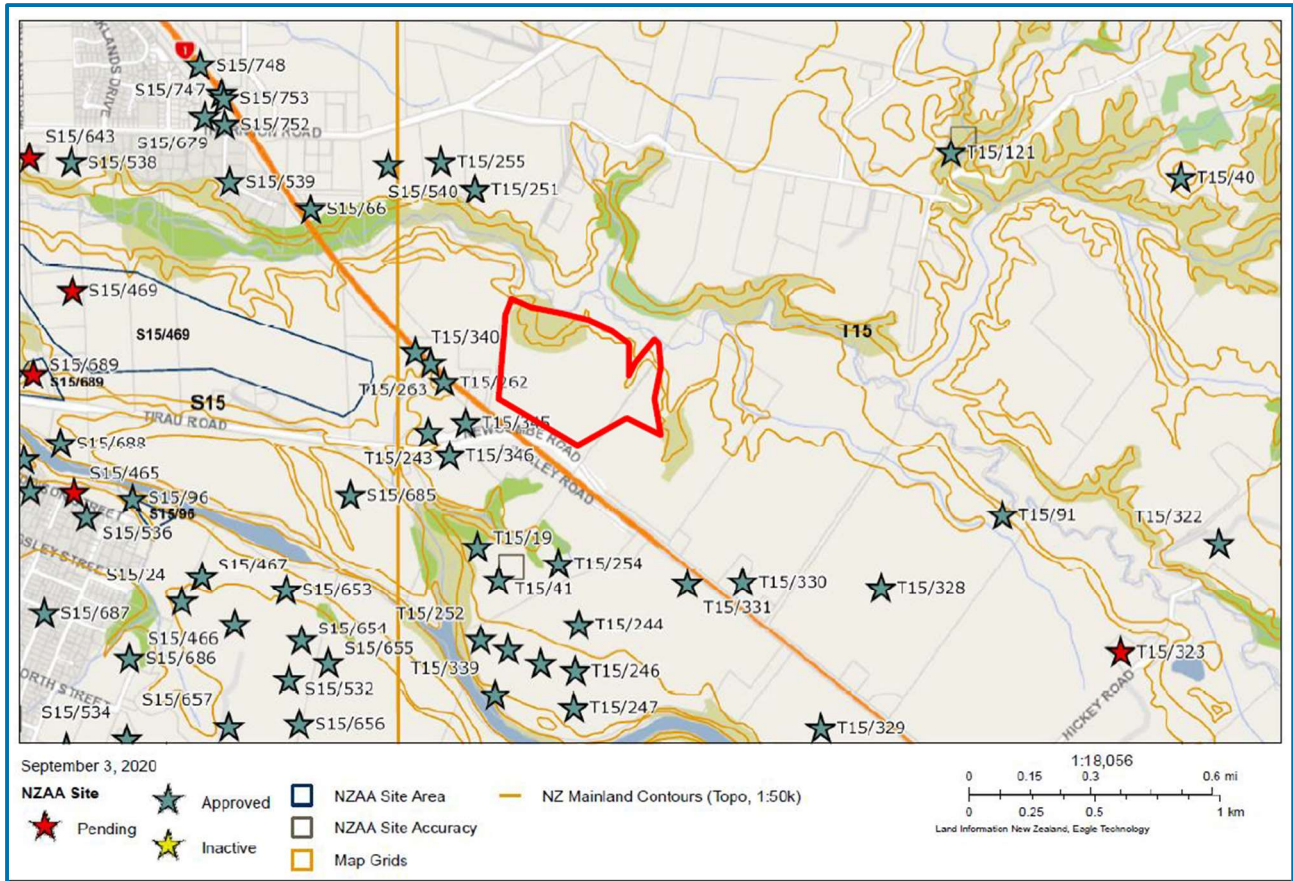


FIGURE 21: NZAA Recorded Archaeological Sites (Figure 1 of the Archaeological Appraisal)

NZAA Site	Type	Distance from Site	Risk (Y/N)
T15/243	Two borrow pits	325 m	N
T15/262	Māori-era ovens and pits	200 m	N
T15/263	Māori-era ovens and pits	265 m	N
T15/340	Historic ditch & bank fence	330 m	N
T15/345	Māori-era ovens and postholes	240 m	N
T15/346	Borrow pits	340 m	N

TABLE 16: Summary of the NZAA Sites (Table 1 of the Archaeological Appraisal)

Given the above, the archaeological landscape is dominated by Māori-era horticultural activity, namely borrow pits, garden soils, fire features and storage pits. The closest recorded paa to the Site is T15/19, which is approximately 510m to the south-west. There are no archaeological sites currently recorded within the Proposal area, but it is likely that the study area has not been surveyed by an archaeologist in the past.

8.12.2 Historic Survey Plans

The earliest survey plan reviewed by SKA dates to around 1866 and likely represents the earliest formal survey of the study area. No annotations of archaeological interest are visible on the plan and there is no evidence that any of the allotted soldiers had immediately occupied these sections.

Survey plan SO2847 is dated 1898 and there are no annotations of archaeological interest visible within the Site.

8.12.3 1940's Aerial Imagery

Aerial imagery of the Site from the 1940s shows open farmland in pasture with development limited to field boundaries, shelterbelts, and small buildings (probably farm sheds) and water troughs. SKA considers that there is no clear evidence for pre-1900 archaeological activity on the images assessed.

8.12.4 LiDAR Imagery

The Site is relatively flat and contains evidence of field drains and ploughing. SKA identified four anomalies which may represent borrow pits within the Site. The anomalies are sub-circular/ oval, are visible as depressions, and three of them are situated along the eastern side of the Site and are focused on a former levee of the underlying Hinuera Surface.

8.12.5 Site Visit

A visual pedestrian survey of the Site on 14 September 2020 and focused on the margin of the gullies and four anomalies on the LiDAR imagery. Minor spade-cut test pitting and hand-auguring was undertaken by SKA to determine the nature of the subsoil, the soils profiles, and to look for evidence for horticultural activity.

SKA excavated 2 test pits along the northern edge of the Karapiro Stream gully. The eastern pit provided a natural soil profile consisting of topsoil formed from organic material and parent subsoil overlying natural tephra. The western pit indicated a possible cut edge with a fill deposit like pit fill, suggestive but not conclusive of archaeological activity.

Tests were also undertaken at the four anomalies on the LiDAR imagery. They did not indicate modified garden soils or suggest that the anomalies are the result of pre-European quarrying. One augur located in the centre of south-eastern most depression has a fill deposit deeper than the length of the augur (<0.8m). While there is no immediate explanation for this, SKA consider the lack of evidence for sand in the surrounding ground does not support that it is a borrow pit and it could be due to more recent activity.

No visible field evidence for archaeological activity was identified across the remainder of the Site.

8.12.6 Archaeological Assessment

Although there is evidence for pre and post European archaeological activity in the surrounding landscape, there are no recorded or identified sites within the Proposal area. The soil profiles tested indicate that the Site is intact and if archaeological activity is present, it has likely survived in good condition beneath the topsoil.

SKA consider that the geographic location of the Site suggests a relatively favourable aspect for pre-European activity. Specifically with access to the Karapiro Stream gully.

8.12.7 Conclusion

Given the general attractiveness of the Karapiro Stream and gully, the proximity of gardens and recorded paa in the wider landscape, and the potential pit features identified in the western test pit, there is potential for archaeological evidence to be encountered during works along the edge of the Karapiro Stream gully.

SKA recommend that an archaeological authority is sought from HNZPT for works within 40 m of the Karapiro Stream gully edge as a precautionary measure, and to enable better management of archaeological risk should archaeological material be encountered. Accordingly, RS Sand will obtain an archaeological authority prior to starting works within the 40m setback.

8.13 Positive Effects

RS Sand will be a positive addition to the Cambridge economy and community. Up to 14 people will be employed or working for subcontractors carrying out annual or two yearly stripping campaigns. Local subcontractors will be used as much as possible for the setup of the site, stripping, planting and pest control, fencing, plant construction including electrical and plumbing, machinery hire etc. A significant proportion of the \$5m plus in annual operating costs will be spent in the local economy and \$5m to \$10m will be generated for mostly local transport operators.

As sand supply in the Waikato is becoming limited and the cost of sand doubles every 30kms that it is transported, having a local supply will make local developments more economic. Similarly, a local supply of sand will reduce transport related CO² emissions.

While the 13.7ha of proposed native mitigation planting and habitat restoration and enhancement are aimed to reduce the potential for adverse ecological effects of the Proposal, they will also have positive effects in the form of creating additional habitat and ecological connectivity for bats and other native forest fauna along 2km of riparian margin, link two SNA's, and provide buffering and ecological connectivity of floodplain and gully seepage wetlands through the native revegetation of associated wetland margins.



Aggregates are fundamental to the lives of everyday New Zealanders. Without an on-going supply of aggregates, the production of concrete and the development of buildings, roads and infrastructure would come to a standstill. New Zealand uses 9-10 tonnes of aggregate every year for each adult and child. To build an average house, approximately 250 tonnes of aggregate are required for concrete, asphalt, mortar and building products. To build 1km of a two-lane highway, around 14,000 tonnes of construction aggregates (500 truck and trailer loads) are required. Quarrying needs to be carried out close to where materials will be used to keep transportation costs low and help minimise building costs and emissions. With sand resources running out locally and regionally, the Proposal will ensure a future supply of sand for construction activities and assist in providing affordable sand for houses and infrastructure.

9 Notification

Section 95A to 95E of the RMA sets out the requirements for notification. The following sub-sections are an assessment of the RMA for the determination of what form of notification is required.

9.1 Section 95A – Public Notification Assessment

Section 95A of the Act provides the ability for a consent authority to publicly notify a resource consent application.

Public notification is not mandatory as the applicant does not request notification. Furthermore, public notification is not required under section 95C, and the application does not include the exchange of recreation reserve land.

Public notification is not precluded as a result of a rule of a national environmental standard. Furthermore, the application is not for a controlled activity, a subdivision, a boundary activity or a prescribed activity.

Public notification is not required as a result of a rule of a national environmental standard. An assessment as per section 95D of the RMA is undertaken in Section 9.2 below and it is not concluded that the effects of the proposal will be more than minor.

There are no special circumstances that would require this application to be publicly notified.

9.2 Section 95D Assessment

Section 95D outlines matters that must or may be disregarded by a consent authority when deciding if adverse effects are likely to be more than minor for the purpose of section 95A(8)(b).

In relation to this proposal, the consent authority is required to disregard the following:

- Effects upon the land over which the activity will occur as well as adjacent to that land, and
- Trade competition effects.

As this application is for a Discretionary Activity under the NES Freshwater, Regional Plan and District Plan, all relevant effects may be considered. As concluded in the assessment of effects in Section 8 above, the adverse effects on the wider rural landscape are not likely to be more than minor. On this basis, the proposal does not require public notification.

9.3 Section 95B – Limited Notification Assessment

If an application is not publicly notified, section 95B of the RMA provides a number of steps for a consent authority to follow to determine whether limited notification is appropriate.

Certain groups and affected persons must be notified if the application affects customary rights, or customary marine title, and/or the land is subject to a statutory acknowledgement. In this case, these matters are not applicable.

Limited notification is not precluded as this application is not:

- Subject to a rule or national environmental standard that precludes limited notification.
- A controlled activity.

The activity does not include a boundary activity and consideration of whether there are any affected parties in accordance with section 95E is undertaken below in Section 9.4 of this report.



There are no special circumstances that would require this application to be limited notified.

9.4 Section 95E – Consent Authority decides if a person is affected

Section 95E provides criteria as to how a consent authority determines whether a person is affected for the purposes of limited notification. The consent authority must decide that a person is an affected person if the activity's adverse effects on the person are minor or more than minor (but not less than minor).

As identified in Section 8 above, most of the potential adverse effects of the Proposal will have or can be remedied or mitigated to less than minor on the adjacent properties. However, Section 8.2 identifies that the adverse landscape character and visual amenity effects may be minor on 41 Newcombe Road and will be more than minor on 42 French Pass Road.

Additionally, if 41 Newcombe Road has an unregistered bore, it could be materially affected by the groundwater drawdown effects of the Proposal (Section 8.8 above).

Accordingly, the owners and occupiers of 41 Newcombe Road and 42 French Pass Road are considered to be potentially affected persons.

10 Regional Policy Statement, Plans and Regulations

Section 104(1)(b) of the RMA outlines the policies and planning matters that a consent authority must have regard to when considering an application for a resource consent, subject to Part 2. The below sections contain the relevant matters and discussion of how the proposal reflects them.

10.1 Waikato Regional Policy Statement

The Waikato Regional Policy Statement (RPS) became operative on 20 May 2016 and sets out the objectives and policies to achieve the purpose of the RMA and address the significant resource management issues of the Region. The RPS was updated on 19 December 2018 to meet the requirements of the NPS on Urban Development Capacity 2016

A full assessment of the relevant provisions RPS can be found below.

Waikato Regional Policy Statement
Objective 3.1 – Integrated Management
<i>Natural and physical resources are managed in a way that recognises:</i> <ul style="list-style-type: none">a) <i>the inter-relationships within and values of water body catchments, riparian areas and wetlands, the coastal environment, the Hauraki Gulf and the Waikato River;</i>b) <i>natural processes that inherently occur without human management or interference;</i>c) <i>the complex interactions between air, water, land and all living things;</i>d) <i>the needs of current and future generations;</i>e) <i>the relationships between environmental, social, economic and cultural wellbeing;</i>f) <i>the need to work with agencies, landowners, resource users and communities; and</i>g) <i>the interrelationship of natural resources with the built environment.</i>
Objective 3.2 – Resource Use and Development
<i>Recognise and provide for the role of sustainable resource use and development and its benefits in enabling people and communities to provide for their economic, social and cultural wellbeing, including by maintaining and where appropriate enhancing:</i> <ul style="list-style-type: none">a) <i>access to natural and physical resources to provide for regionally significant industry and primary production activities that support such industry;</i>b) <i>the life supporting capacity of soils, water and ecosystems to support primary production activities;</i>c) <i>the availability of energy resources for electricity generation and for electricity generation activities to locate where the energy resource exists;</i>d) <i>access to the significant mineral resources of the region; and</i>e) <i>the availability of water for municipal and domestic supply to people and communities.</i>



Waikato Regional Policy Statement
Objective 3.4 – Health and Wellbeing of the Waikato River
<i>The health and wellbeing of the Waikato River is restored and protected and Te Ture Whaimana o Te Awa o Waikato (the Vision and Strategy for the Waikato River) is achieved.</i>
Objective 3.8 – Ecosystem services
<i>The range of ecosystem services associated with natural resources are recognised and maintained or enhanced to enable their ongoing contribution to regional wellbeing.</i>
Objective 3.9 – Relationship of Tāngata Whenua with the Environment
<i>The relationship of tāngata whenua with the environment is recognised and provided for, including:</i>
<ul style="list-style-type: none"> <i>a) the use and enjoyment of natural and physical resources in accordance with tikanga Māori, including mātauranga Māori; and</i> <i>b) the role of tāngata whenua as kaitiaki.</i>
Objective 3.11 – Air Quality
<i>Air quality is managed in a way that:</i>
<ul style="list-style-type: none"> <i>a) ensures that where air quality is better than national environmental standards and guidelines for ambient air, any degradation is as low as reasonably achievable;</i> <i>b) avoids unacceptable risks to human health and ecosystems, with high priority placed on achieving compliance with national environmental standards and guidelines for ambient air; and</i> <i>c) avoids, where practicable, adverse effects on local amenity values and people’s wellbeing including from discharges of particulate matter, smoke, odour, dust and agrichemicals, recognising that it is appropriate that some areas will have a different amenity level to others.</i>
Objective 3.14 – Mauri and Values of Fresh Water Bodies
<i>Maintain or enhance the mauri and identified values of fresh water bodies including by:</i>
<ul style="list-style-type: none"> <i>a) maintaining or enhancing the overall quality of freshwater within the region;</i> <i>b) safeguarding ecosystem processes and indigenous species habitats;</i> <i>c) safeguarding the outstanding values of identified outstanding freshwater bodies and the significant values of wetlands;</i> <i>d) safeguarding and improving the life supporting capacity of freshwater bodies where they have been degraded as a result of human activities, with demonstrable progress made by 2030;</i> <i>e) establishing objectives, limits and targets, for freshwater bodies that will determine how they will be managed;</i> <i>f) enabling people to provide for their social, economic and cultural wellbeing and for their health and safety;</i> <i>g) recognising that there will be variable management responses required for different catchments of the region.</i>
Objective 3.15 – Allocation and Use of Fresh Water
<i>The allocation and use of fresh water is managed to achieve freshwater objectives (derived from identified values) by:</i>
<ul style="list-style-type: none"> <i>a) avoiding any new over-allocation of ground and surface waters;</i> <i>b) seeking to phase out any existing over-allocation of ground and surface water bodies by 31 December 2030;</i> <i>c) increasing efficiency in the allocation and use of water; and</i> <i>d) recognising the social, economic and cultural benefits of water takes and uses.</i>
Objective 3.16 – Riparian Areas and Wetlands
<i>Riparian areas (including coastal dunes) and wetlands are managed to:</i>
<ul style="list-style-type: none"> <i>a) maintain and enhance:</i> <ul style="list-style-type: none"> <i>i) public access; and</i> <i>ii) amenity values.</i> <i>b) maintain or enhance:</i> <ul style="list-style-type: none"> <i>i) water quality;</i> <i>ii) indigenous biodiversity;</i> <i>iii) natural hazard risk reduction;</i> <i>iv) cultural values;</i> <i>v) riparian habitat quality and extent; and</i> <i>vi) wetland quality and extent.</i>



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Objective 3.18 – Historic and Cultural Heritage
<i>Sites, structures, landscapes, areas or places of historic and cultural heritage are protected, maintained or enhanced in order to retain the identity and integrity of the Waikato region's and New Zealand's history and culture.</i>
Objective 3.19 – Ecological Integrity and Indigenous Biodiversity
<i>The full range of ecosystem types, their extent and the indigenous biodiversity that those ecosystems can support exist in a healthy and functional state.</i>
Objective 3.21 – Amenity
<i>The qualities and characteristics of areas and features, valued for their contribution to amenity, are maintained or enhanced.</i>
Objective 3.22 – Natural Character
<i>The natural character of the coastal environment, wetlands, and lakes and rivers and their margins are protected from the adverse effects of inappropriate subdivision, use and development.</i>
Objective 3.24 – Natural Hazards
<i>The effects of natural hazards on people, property and the environment are managed by:</i> <i>a) increasing community resilience to hazard risks;</i> <i>b) reducing the risks from hazards to acceptable or tolerable levels; and</i> <i>c) enabling the effective and efficient response and recovery from natural hazard events.</i>
Objective 3.25 – Values of Soil
<i>The soil resource is managed to safeguard its life supporting capacity, for the existing and foreseeable range of uses.</i>
Objective 3.26 – High class soils
<i>The value of high class soils for primary production is recognised and high class soils are protected from inappropriate subdivision, use or development.</i>
Policy 4.1 – Integrated Approach
<i>An integrated approach to resource management will be adopted that:</i> <i>a) recognises the inter-connected nature of natural and physical resources (including spatially and temporally) and the benefits of aligning the decisions of relevant management agencies across boundaries;</i> <i>b) maximises the benefits and efficiencies of working together ;</i> <i>c) recognises the multiple values of natural and physical resources including ecosystem services;</i> <i>d) responds to the nature and values of the resource and the diversity of effects (including cumulative effects) that can occur;</i> <i>e) maximises opportunities to achieve multiple objectives;</i> <i>f) takes a long-term strategic approach which recognises the changing environment and changing resource use pressures and trends;</i> <i>g) applies consistent and best practice standards and processes to decision making; and</i> <i>h) establishes, where appropriate, a planning framework which sets clear limits and thresholds for resource use.</i>
Policy 4.3 – Tāngata Whenua
<i>Tāngata whenua are provided appropriate opportunities to express, maintain and enhance the relationship with their rohe through resource management and other local authority processes.</i>
Policy 4.4 – Regionally Significant Industry and Primary Production
<i>The management of natural and physical resources provides for the continued operation and development of regionally significant industry and primary production activities by:</i> <i>a) recognising the value and long term benefits of regionally significant industry to economic, social and cultural wellbeing;</i> <i>b) recognising the value and long term benefits of primary production activities which support regionally significant industry;</i> <i>c) ensuring the adverse effects of regionally significant industry and primary production are avoided, remedied or mitigated;</i> <i>d) co-ordinating infrastructure and service provision at a scale appropriate to the activities likely to be undertaken;</i> <i>e) maintaining and where appropriate enhancing access to natural and physical resources, while balancing the competing demand for these resources;</i> <i>f) avoiding or minimising the potential for reverse sensitivity; and</i>



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g) promoting positive environmental outcomes.

Policy 5.1 – Improve degraded Air Quality

Reduce the adverse effects on air quality caused by cumulative, diffuse, broad scale or multiple discharges from home heating appliances and transport, with particular emphasis on:

- a) discharges of fine particulate matter; and*
- b) areas where there are unacceptable risks to human health and ecosystems.*

Policy 5.2 – Manage Discharges to Air

Manage discharges to air (other than from home heating or transport) to ensure any resulting degradation avoids unacceptable risks to human health, and is as low as reasonably achievable. In determining whether any degradation is as low as reasonably achievable, the following will be taken into account:

- a) existing air quality;*
- b) the age of and ability to upgrade existing infrastructure;*
- c) any alternative modes/methods of discharge;*
- d) applicable emission control techniques;*
- e) the extent to which it is possible to apply the best practicable option;*
- f) the relative effects on the environment of the options;*
- g) economic and social factors;*
- h) managing discharges to air where there is high or good air quality;*
- i) national environmental standards and guidelines for ambient air; and*
- j) the duration of the discharge and whether the discharge is temporary or short-term.*

Policy 5.3 – Manage Adverse Effects on Amenity

Ensure discharges to air are managed so as to avoid, remedy or mitigate objectionable effects beyond the property boundary.

Policy 6.3 – Co-ordinating Growth and Infrastructure

Management of the built environment ensures:

- a) the nature, timing and sequencing of new development is co-ordinated with the development, funding, implementation and operation of transport and other infrastructure, in order to:
 - i) optimise the efficient and affordable provision of both the development and the infrastructure;*
 - ii) maintain or enhance the operational effectiveness, viability and safety of existing and planned infrastructure;*
 - iii) protect investment in existing infrastructure; and*
 - iv) ensure new development does not occur until provision for appropriate infrastructure necessary to service the development is in place;**
- b) the spatial pattern of land use development, as it is likely to develop over at least a 30-year period, is understood sufficiently to inform reviews of the Regional Land Transport Plan. As a minimum, this will require the development and maintenance of growth strategies where strong population growth is anticipated;*
- c) the efficient and effective functioning of infrastructure, including transport corridors, is maintained, and the ability to maintain and upgrade that infrastructure is retained; and*
- d) a co-ordinated and integrated approach across regional and district boundaries and between agencies; and*
- e) that where new infrastructure is provided by the private sector, it does not compromise the function of existing, or the planned provision of, infrastructure provided by central, regional and local government agencies.*

Policy 6.8 – Access to Minerals

Management of development of the built environment appropriately recognises:

- a) the potential for impacts of subdivision, use and development on access to mineral resources;*
- b) the need for mineral resources to be available for infrastructure and building developments;*
- c) the potential benefits of further development of the region's minerals and providing for the continued operation of existing lawfully established mineral extraction activities;*
- d) the need to manage the adverse effects of extraction, which may include avoiding mineral extraction, or certain types of mineral extraction, in some areas;*
- e) the potential for land use development that is inconsistent with nearby mineral extraction activities; and*
- f) that some mineral resources are considered taonga or traditional resources by tāngata whenua.*



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Policy 8.2 – Outstanding Fresh Water Bodies and Significant Values of Wetlands

Ensure that the outstanding values of a fresh water body that result in that water body being identified as an outstanding fresh water body, and the significant values of wetlands, are protected and where appropriate enhanced.

Policy 8.3 – All Fresh Water Bodies

Manage the effects of activities to maintain or enhance the identified values of fresh water bodies and coastal water including by:

- a) *reducing:*
 - i) *sediment in fresh water bodies and coastal water (including bank instability) that is derived from human based activities;*
 - ii) *accelerated sedimentation of estuaries;*
 - iii) *microbial and nutrient contamination;*
 - iv) *other identified contaminants; and*
- b) *Where appropriate, protection and enhancement of:*
 - i) *riparian and wetland habitat;*
 - ii) *instream habitat diversity;*
 - iii) *indigenous biodiversity; and*
- c) *providing for migratory patterns of indigenous freshwater species up and down rivers and streams and to the coastal marine area where practicable; and*
- d) *avoiding:*
 - i) *physical modification of fresh water bodies where practicable; and*
 - ii) *inappropriate development in flood plains; and*
- e) *managing:*
 - i) *groundwater and surface water flow/level regimes, including flow regime variability;*
 - ii) *linkages between groundwater and surface water; and*
 - iii) *pest and weed species where they contribute to fresh water body and coastal water degradation.*

Policy 8.5 – Waikato River Catchment

Recognise Te Ture Whaimana o Te Awa o Waikato – the Vision and Strategy for the Waikato River – as the primary direction-setting document for the Waikato River and develop an integrated, holistic and co-ordinated approach to implementation.

Policy 8.6 – Allocating Fresh Water

Manage the increasing demand and competition for water through the setting of allocation limits, efficient allocation within those limits, and other regional plan mechanisms which achieve identified freshwater objectives and:

- a) *maintain and enhance the mauri of fresh water bodies;*
- b) *retain sufficient water in water bodies to safeguard their life-supporting capacity and avoid any further degradation of water quality;*
- c) *enable the existing and reasonably justified foreseeable domestic or municipal needs of people and communities and an individual's reasonable animal drinking water requirements to be met (with discretion to consider additional allocations for those particular uses in fully and over-allocated catchments);*
- d) *avoid any reduction in the generation of electricity from renewable electricity generation activities, including the Waikato Hydro Scheme; and*
- e) *recognise that lawfully existing water takes (including those for regionally significant industry and primary production activities supporting that industry) contribute to social, economic and cultural wellbeing and that significant investment relies on the continuation of those takes.*

Policy 8.7 – Efficient Use of Fresh Water

Ensure that the allocated water resource is used efficiently.

Policy 10.1 – Managing Historic and Cultural Heritage

Provide for the collaborative, consistent and integrated management of historic and cultural heritage resources. Improve understanding, information sharing and cooperative planning to manage or protect heritage resources across the region.

Policy 10.2 – Relationship of Māori to Taonga

Recognise and provide for the relationship of Tāngata whenua and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga.



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Policy 10.3 – Effects of Development on Historic and Cultural Heritage

The value of high class soils for primary production is recognised and high class soils are protected from inappropriate subdivision, use or development.

Policy 11.1 – Maintain or Enhance Indigenous Biodiversity

Promote positive indigenous biodiversity outcomes to maintain the full range of ecosystem types and maintain or enhance their spatial extent as necessary to achieve healthy ecological functioning of ecosystems, with a particular focus on:

- a) working towards achieving no net loss of indigenous biodiversity at a regional scale;*
- b) the continued functioning of ecological processes;*
- c) the re-creation and restoration of habitats and connectivity between habitats;*
- d) supporting (buffering and/or linking) ecosystems, habitats and areas identified as significant indigenous vegetation and significant habitats of indigenous fauna;*
- e) providing ecosystem services;*
- f) the health and wellbeing of the Waikato River and its catchment;*
- g) contribution to natural character and amenity values;*
- h) tāngata whenua relationships with indigenous biodiversity including their holistic view of ecosystems and the environment;*
- i) managing the density, range and viability of indigenous flora and fauna; and*
- j) the consideration and application of biodiversity offsets.*

Policy 11.2 – Protect Significant Indigenous Vegetation and Significant Habitats of Indigenous Fauna

Significant indigenous vegetation and the significant habitats of indigenous fauna shall be protected by ensuring the characteristics that contribute to its significance are not adversely affected to the extent that the significance of the vegetation or habitat is reduced.

Policy 11.3 – Collaborative Management

Maintaining and enhancing indigenous biodiversity shall be promoted in an integrated and efficient manner including by working collaboratively with landowners, resource managers, tāngata whenua and other stakeholders.

Policy 12.2 – Preserve Natural Character

Ensure that activities within the coastal environment, wetlands, and lakes and rivers and their margins are appropriate in relation to the level of natural character and:

- a) where natural character is pristine or outstanding, activities should avoid adverse effects on natural character;*
- b) where natural elements/influences are dominant, activities should avoid significant adverse effects and avoid, remedy or mitigate other adverse effects on natural character;*
- c) where man-made elements/influences are dominant, it may be appropriate that activities result in further adverse effects on natural character, though opportunities to remedy or mitigate adverse effects should still be considered;*
- d) promote the enhancement, restoration, and rehabilitation of the natural character of the coastal environment, wetlands and lakes and rivers and their margins; and*
- e) regard is given to the functional necessity of activities being located in or near the coastal environment, wetlands, lakes, or rivers and their margins where no reasonably practicable alternative locations exist.*

Policy 12.3 – Maintain and Enhance Areas of Amenity Value

Areas of amenity value are identified, and those values are maintained and enhanced. These may include:

- a) areas within the coastal environment and along inland water bodies;*
- b) scenic, scientific, recreational or historic areas;*
- c) areas of spiritual or cultural significance;*
- d) other landscapes or seascapes or natural features; and*
- e) areas adjacent to outstanding natural landscapes and features that are visible from a road or other public place.*

Policy 12.5 – Appropriate Restrictions on Public Access

Public access to and along the coastal marine area, lakes, and rivers will only be restricted where necessary:

- a) to protect areas of significant indigenous vegetation and/or significant habitats of indigenous fauna;*
- b) to protect tāngata whenua values;*
- c) to protect public health or safety;*
- d) to ensure a level of security consistent with the purpose of a resource consent;*
- e) to avoid conflicts with activities of landowners or occupiers;*



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<ul style="list-style-type: none"> f) to protect the stability of banks or dunes; g) to protect historic heritage; h) for temporary activities or special events; i) for defence purposes in accordance with the Defence Act 1990; or j) in other exceptional circumstances sufficient to justify the restriction, notwithstanding the national importance of maintaining that access.
<p>Policy 13.1 – Natural Hazard Risk Management Approach</p> <p>Natural hazard risks are managed using an integrated and holistic approach that:</p> <ul style="list-style-type: none"> a) ensures the risk from natural hazards does not exceed an acceptable level; b) protects health and safety; c) avoids the creation of new intolerable risk; d) Reduces intolerable risk to tolerable or acceptable levels; e) enhances community resilience; f) is aligned with civil defence approaches; g) prefers the use of natural features over man-made structures as defences against natural hazards; h) recognises natural systems and takes a ‘whole of system’ approach; and i) seeks to use the best available information/best practice.
<p>Policy 14.1 – Maintain or Enhance the Life Supporting Capacity of the Soil Resource</p> <p>Manage the soil resource to:</p> <ul style="list-style-type: none"> a) minimise sedimentation and erosion; b) maintain or enhance biological, chemical and physical soil properties; and c) retain soil versatility to protect the existing and foreseeable range of uses of the soil resource.
<p>Policy 14.2 – High Class Soils</p> <p>Avoid a decline in the availability of high class soils for primary production due to inappropriate subdivision, use or development.</p>

TABLE 17: Regional Policy Statement Objectives and Policies

The Proposal will achieve integrated management of natural and resources physical resources by avoiding, remedying, mitigating and compensating the potential effects on the values of water body catchments, riparian areas, wetlands and natural processes, while providing sand for future generations to provide for their social and economic wellbeing, and built environment.

A range of ecosystem types have been identified on the Site and measures are proposed to avoid, remedy, mitigate and compensate the effects of the Proposal so the contribution to regional wellbeing is maintained and ecosystems are healthy and functional.

There is a low likelihood of off-site dusts effects on nearby sensitive receptors and the Proposal will not pose additional significant risk to people in the surrounding area developing silicosis. The proposed mitigation measures will control suspended and deposited particles to avoid adverse effects on human health, ecosystems local amenity values and people’s wellbeing.

As identified above, sand resources are running out both locally and regionally. Therefore, the proposed sand quarry will provide a much needed mineral resource for infrastructure and building developments within the Waikato region. Subject to appropriate conditions of consent, the potential adverse effects of the Proposal will be managed.

There is sufficient groundwater allocation available within the Hamilton Basin – South aquifer to accommodate the proposed groundwater take. As part of the proposed take will enable sand to be processed into different grades for future developments, the take will provide social and economic benefits to the region.

To understand and manage or protect cultural heritage areas across the Site, RS Sand have consulted with Ngaati Korokii-Kahukura and Ngaati Hauaa and commissioned a CIA and Archaeological Assessment. As identified in Section 7.1.1 above, representatives from Ngaati Korokii-Kahukura and Ngaati Hauaa have visited the Site on two occasions and shared the history and cultural connections of the area.



While there are no archaeological sites currently recorded within the Proposal area, an archaeological authority will be obtained from HNZPT for works with 40m of the Karapiro Stream gully to ensure unrecorded sites, wāhi tapu or other taonga are protected.

Although the Proposal will change the appearance of the Site and Stages 1 to 3 will have more than minor effects on private views to the north, it will not affect the wider rural landscape, the effects on views from the north will reduce to minor for Stages 4 and 5, and then less than minor following rehabilitation of the Site. Therefore, the long-term character and amenity of the surrounding area, wetlands and margins of the Karapiro Stream will be maintained.

HD Geo consider the risk of natural hazards are low and the Proposal manages the potential effects of natural hazards by avoiding works within the flood level of the Karapiro Stream. The proposed floor of the pit area is at least 5 m above the 100 year flood level of the stream.

The Proposal safeguards the life supporting capacity of soil for existing and future uses and protects high class soils. The Site's topsoil will be stored in the bunds around the processing and pit areas and will be reinstated and re-grassed at completion of quarrying activities. Therefore, the existing dairy farming activity or another farming activity will be able to use the Site after the quarry activity has finished.

Overall, the Proposal is consistent with the objectives and policies of the RPS. The proposed sand quarry will achieve integrated management of natural and resources physical resources, while avoiding, remedying, mitigating and compensating potential adverse effects on ecosystems, air quality, fresh water, historic and cultural heritage, natural character and amenity values, natural hazards and soil resource.

10.2 Te Ture Whaimana o Te Awa o Waikato / Vision and Strategy for the Waikato River

The Vision and Strategy for the Waikato River / Te Ture Whaimana o Te Awa o Waikato (Vision and Strategy) was published in 2008 and is the primary direction-setting document for the Waikato River and its catchments. The vision “is for a future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come.”

Under Section 11 of the Waikato Raupatu Claims (Waikato River) Settlement Act 2010, the Vision and Strategy is deemed in its entirety to be part of the RPS, which the Regional and District Plans must give effect to. **Table 18** below contains the objectives and strategies of the Vision and Strategy.

Te Ture Whaimana o Te Awa o Waikato / Vision and Strategy for the Waikato River
Objectives for the Waikato River
<p><i>In order to realise the Vision, the following Objectives will be pursued:</i></p> <ol style="list-style-type: none"> <i>a. The restoration and protection of the health and wellbeing of the Waikato River.</i> <i>b. The restoration and protection of the relationship of Waikato-Tainui with the Waikato River, including their economic, social, cultural, and spiritual relationships.</i> <i>c. The restoration and protection of the relationship of Waikato River iwi according to their tikanga and kawa, with the Waikato River, including their economic, social, cultural and spiritual relationships.</i> <i>d. The restoration and protection of the relationship of the Waikato region's communities with the Waikato River including their economic, social, cultural and spiritual relationships.</i> <i>e. The integrated, holistic and coordinated approach to management of the natural, physical, cultural and historic resources of the Waikato River.</i> <i>f. The adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, and in particular those effects that threaten serious or irreversible damage to the Waikato River.</i> <i>g. The recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within its catchments on the health and wellbeing of the Waikato River.</i> <i>h. The recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities.</i> <i>i. The protection and enhancement of significant sites, fisheries, flora and fauna.</i> <i>j. The recognition that the strategic importance of the Waikato River to New Zealand's social, cultural, environmental and economic wellbeing is subject to the restoration and protection of the health and wellbeing of the Waikato River.</i> <i>k. The restoration of water quality within the Waikato River so that it is safe for people to swim in and take food from over its entire length.</i>



Te Ture Whaimana o Te Awa o Waikato / Vision and Strategy for the Waikato River
<p><i>l. The promotion of improved access to the Waikato River to better enable sporting, recreational, and cultural opportunities.</i></p> <p><i>m. The application to the above of both maatauranga Maaori and latest available scientific methods.</i></p>
Strategies for the Waikato River
<p><i>To achieve the Objectives, the following Strategies will be implemented:</i></p> <ol style="list-style-type: none"> <i>1. Ensure that the highest level of recognition is given to the restoration and protection of the Waikato River.</i> <i>2. Establish what the current health status of the Waikato River is by utilising maatauranga Maaori and latest available scientific methods.</i> <i>3. Develop targets for improving the health and wellbeing of the Waikato River by utilising maatauranga Maaori and latest available scientific methods.</i> <i>4. Develop and implement a programme of action to achieve the targets for improving the health and wellbeing of the Waikato River.</i> <i>5. Develop and share local, national and international expertise, including indigenous expertise, on rivers and activities within their catchments that may be applied to the restoration and protection of the health and wellbeing of the Waikato River.</i> <i>6. Recognise and protect waahi tapu and sites of significance to Waikato-Tainui and other Waikato River iwi (where they so decide) to promote their cultural, spiritual and historic relationship with the Waikato River.</i> <i>7. Recognise and protect appropriate sites associated with the Waikato River that are of significance to the Waikato regional community.</i> <i>8. Actively promote and foster public knowledge and understanding of the health and wellbeing of the Waikato River among all sectors of the Waikato regional community.</i> <i>9. Encourage and foster a 'whole of river' approach to the restoration and protection of the Waikato River, including the development, recognition and promotion of best practice methods for restoring and protecting the health and wellbeing of the Waikato River.</i> <i>10. Establish new, and enhance existing, relationships between Waikato-Tainui, other Waikato River iwi (where they so decide), and stakeholders with an interest in advancing, restoring and protecting the health and wellbeing of the Waikato River.</i> <i>11. Ensure that cumulative adverse effects on the Waikato River of activities are appropriately managed in statutory planning documents at the time of their review.</i> <i>12. Ensure appropriate public access to the Waikato River while protecting and enhancing the health and wellbeing of the Waikato River.</i>

TABLE 18: Vision and Strategy for the Waikato River Objectives and Strategies

As identified under the RPS, the Proposal is consistent with the objectives and strategies of the Vision and Strategy.

The Proposal will help restore the health of the Waikato River for generations to come. The proposed ecological compensation will reduce the potential for contaminants and sediment from the existing farming activity on the Site entering a section of the Karapiro Stream and then the Waikato River by removing stock grazing immediately next to the stream. Erosion and sediment control measures in accordance with WRC's ESC Guidelines are proposed to reduce the potential for sediment from the Proposal entering the Karapiro Stream and the Waikato River.

RS Sand, Ngaati Korokii-Kahukura and Ngaati Hauaa have formed a relationship since 2020, and iwi representative have visited the Site on two occasions and shared the history and cultural connections of the area. While there are no archaeological sites currently recorded within the Proposal area, an archaeological authority will be obtained from HNZPT for works with 40m of the Karapiro Stream gully to ensure unrecorded waahi tapu and sites of significance are protected.

10.3 Waikato Regional Plan

The Regional Plan contains specific policies and implementation methods to achieve the purpose of the RMA and address the resource management issues and objectives for the region. The following objectives and policies are considered relevant to this proposal.

Regional Plan – Chapter 2 – Matters of Significance to Maori
Objective 2.3.2 – Tangata Whenua Relationship with Natural and Physical Resources
<p><i>a) Uncertainty for all parties regarding the relationship between tangata whenua and resources for which they are Kaitiaki minimised.</i></p> <p><i>b) Tangata whenua able to give effect to kaitiakitanga</i></p>



Policy 2.3.3.1 – Processes for Defining Relationship
<i>Define the processes to determine the relationship of tangata whenua with natural and physical resources for which they are Kaitiaki.</i>

TABLE 19: Relevant Regional Plan Objectives and Policies – Matters of Significance to Maori

RS Sand, Ngaati Korokii-Kahukura and Ngaati Hauaa have formed a relationship during consultation on the Proposal, which started from Waipā DC’s NITOW group and minimised uncertainty for all parties by sharing the history and cultural connections of the area, as well as details and assessments on the proposed quarry. Ngaati Korokii-Kahukura and Ngaati Hauaa have been able to give effect to kaitiakitanga during consultation.

Ngaati Korokii-Kahukura and Ngaati Hauaa have defined the processes to determine the relationship with natural and physical resources during and after mana whenua and representative site visits. Overall, the Proposal is consistent with the objectives and policy of Chapter 2 of the Regional Plan.

Regional Plan – Chapter 3 – Water Module
Objective 3.1.2 – Water Resources
<p><i>The management of water bodies in a way which ensures:</i></p> <ul style="list-style-type: none"> <i>a) that people are able to take and use water for their social, economic and cultural wellbeing</i> <i>b) net improvement of water quality across the Region</i> <i>c) the avoidance of significant adverse effects on aquatic ecosystems</i> <i>d) the characteristics of flow regimes are enhanced where practicable and justified by the ecological benefits</i> <i>e) the range of uses of water reliant on the characteristics of flow regimes are maintained or enhanced</i> <i>f) the range of reasonably foreseeable uses of ground water and surface water are protected</i> <i>g) inefficient use of the available ground surface water resources is minimised</i> <i>h) an increase in the extent and quality of the Region’s wetlands</i> <i>i) that significant adverse effects on the relationship tangata whenua as Kaitiaki have with water and their identified taonga such as waahi tapu, and native flora and fauna that have customary and traditional uses in or on the margins of water bodies, are remedied or mitigated</i> <i>j) the cumulative adverse effects on the relationship tangata whenua as Kaitiaki have with water their identified taonga such as waahi tapu, and native flora and fauna that have customary and traditional uses that are in or on the margins of water bodies are remedied or mitigated</i> <i>k) the management of non-point source discharges of nutrients, faecal coliforms and sediment to levels that are consistent with the identified purpose and values for which the water body is being managed</i> <i>l) the natural character of the coastal environment, wetlands and lakes and rivers and their margins (including caves), is preserved and protected from inappropriate use and development</i> <i>m) ground water quality is maintained or enhanced and ground water takes managed to ensure sustainable yield</i> <i>n) shallow ground water takes do not adversely affect values for which any potentially affected surface water body is managed</i> <i>o) concentrations of contaminants leaching from land use activities and non-point source discharges to shallow ground water and surface waters do not reach levels that present significant risks to human health or aquatic ecosystems</i>
Objective 3.2.2 – Management of Water Resources
<i>Refer to Objective 3.1.2 and Objective 3.A.1.</i>
Policy 3.2.3.1 – Management of Water Bodies
<p><i>Manage all water bodies to enable a range of water use activities, whilst ensuring that a net improvement in water quality across the Region is achieved over time through:</i></p> <ul style="list-style-type: none"> <i>a) Classifying and mapping water bodies based on the characteristics for which they are valued and implementing the classification through a mixture of regulatory and non-regulatory methods.</i> <i>b) Maintaining overall water quality in areas where it is high, and in other water bodies, avoiding, remedying or mitigating cumulative degradation of water quality from the effects of resource use activities.</i> <i>c) Enhancing the quality of degraded waterbodies.</i> <i>d) Providing for the mitigation and remediation of adverse effects in accordance with Section 1.3.3 of the Waikato Regional Policy Statement.</i> <i>e) Recognising the positive benefits to people and communities arising from use or development of water resources and by taking account of existing uses of water and the associated lawfully established infrastructure.</i>

Regional Plan – Chapter 3 – Water Module

Policy 3.2.3.3 – Natural Character

Recognise, and where relevant provide for, the following characteristics when considering the preservation of the natural character of lakes and rivers and their margins and the protection of them from inappropriate use and development:

- a) Diversity and composition of aquatic and riparian habitat.
- b) Topography and physical composition of river and lake beds and the course of the river.
- c) The natural flow characteristics and hydraulic processes (such as sediment transport) of rivers and streams or the pattern and range of water level fluctuations that occur naturally in rivers and lakes.
- d) Any significant natural features of the lakes and rivers and their margins.

Policy 3.2.3.4 – Waikato Region Surface Water Class

Enable the use of all surface water bodies in the Region, provided that:

- a) Any significant adverse effects on existing aquatic ecosystems are avoided, remedied or mitigated.
- b) Intake structures are designed to minimise fish entrapment.
- c) Any conspicuous change in visual colour or clarity is avoided, remedied or mitigated.
- d) The water body is not tainted or contaminated to the extent that it is unpalatable or unsuitable for consumption by humans after treatment (equivalent to coagulation, filtration and disinfection).
- e) The water body is not tainted or contaminated to the extent that it is unsuitable for irrigation or stock watering.

Policy 3.2.3.7 – Fisher Class

The purpose of the fishery class is to maintain or enhance existing water quality and aquatic habitat in water bodies that currently support a diverse range of fish species and fish habitats with significant conservation values¹⁰, or which support significant recreational, traditional or commercial fisheries so that for these fisheries, trout or indigenous fish can complete their life cycles and/or maintain self-sustaining populations and managed trout and indigenous fisheries can be sustained.

This will include consideration of the need to:

- a) Minimise fish entrapment at water intake structures.
- b) Minimise adverse effects on fish spawning patterns in areas where spawning occurs
- c) Minimise adverse effects of sediment loads and other contaminants on fish or their habitat.
- d) Maintain water temperatures and dissolved oxygen levels that are suitable for aquatic habitat and spawning.
- e) Ensure that fish living in these waters are not rendered unsuitable for human consumption by the presence of contaminants.
- f) Minimise structural or temperature barriers and changes in flow regimes that would otherwise prevent fish from completing their life cycle and/or maintaining self-sustaining populations, including migration and spawning.
- g) Minimise the adverse effects of physical disturbance to aquatic habitat.

Objective 3.3.2 – Water Takes

In addition to Objective 3.1.2, the management of water allocation and use in a way which ensures:

- a) Giving effect to the overarching purpose of the Vision and Strategy to restore and protect the health and wellbeing of the Waikato River for present and future generations.
- b) The availability of water to meet the existing and the reasonably justified and foreseeable future domestic or municipal supply requirements of individuals and communities and the reasonable needs for an individual's animal drinking water requirements.
- c) The recognition of the significant community benefits that derive from domestic or municipal supply takes.
- d) The efficient allocation and the efficient use of water.
- e) No further allocation of water that exceeds the primary allocation in Table 3-5 that reduces the generation of electricity from renewable energy sources.
- f) The recognition that existing water takes contribute to social and economic wellbeing and in some cases significant investment relies on the continuation of those takes, including rural-based activities such as agriculture, perishable food processing and industry.
- g) The continued availability of water for cooling of the Huntly Power Station.
- h) Sufficient water is retained instream to safeguard the life supporting capacity of freshwater, including its ecosystem processes and indigenous species and their associated ecosystems.
- i) That decisions regarding the allocation and use of water take account of the need to avoid the further degradation of water quality, having regard to the contaminant assimilative capacity of water bodies.
- j) Subject to Objectives a) to h) above, the availability of water to meet other future social, economic and cultural needs of individuals and communities (including rural-based activities such as agriculture, perishable food processing and industry).



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k) Refer to Objective 3.A.1.

Policy 3.3.3.4 – Establish Sustainable Yields from Groundwater

Establish, set and review sustainable yields from groundwater resources which are to be used when assessing authorised water takes and resource consent applications from aquifers while having particular regard to the following matters:

- a) Giving effect to the overarching purpose of the Vision and Strategy to restore and protect the health and wellbeing of the Waikato River for present and future generations.
- b) The recognition of the relationship between tangata whenua with groundwater resources and providing for tangata whenua input in determining their values and interests, and reviewing the sustainable yields for those groundwater resources.
- c) The protection of groundwater resource from salt intrusion
- d) The need to ensure that any groundwater discharges into surface waters are not reduced such that there is a resultant significant adverse effect on in-stream uses and values (including wetlands and karst systems) and on other allocated use
- e) The need to ensure groundwater depletion or dewatering of aquifers does not result in significant adverse effects on resource availability
- f) The maintenance of groundwater quality in accordance with the policies in Chapter 3.2 of this Plan
- g) The benefits derived from the take and consumptive use of groundwater for people's social, economic and cultural wellbeing
- h) The loss of benefits derived from the generation of electricity that can result from groundwater takes above Karapiro
- i) The benefits to be derived from the efficient take and use of groundwater for reasonably foreseeable future consumptive uses, and in particular for domestic or municipal supply and the reasonable needs for an individual's animals drinking water
- j) The maintenance of security of existing, efficient take and use of water and the associated lawfully established infrastructure
- k) Maintenance of tangata whenua uses and values
- l) The effects of climate change on groundwater resources
- m) The avoidance of a reduction in recharge groundwater flows to Geothermal Systems.

Policy 3.3.3.5 – Determining Sustainable Yields

Sustainable Yields shall be determined having particular regard to Policy 4 following detailed investigation of aquifers. In the absence of a Sustainable Yield being determined, a management level will be set on a conservative basis having particular regard to Policy 4 using a water balance methodology that takes account of:

- a) Average annual recharge over the aquifer
- b) Area of land above the aquifer
- c) Distribution of groundwater users

The management level represents a portion of an aquifer's likely recharge and will be used as a trigger point for the setting of a sustainable yield.

Objective 3.4.2 – Efficient Use of Water

Refer to Objectives 3.1.2 & 3.3.2

Policy 3.4.3.1 – Manage the Use of Water

Manage, through permitted activities and resource consents, the use of water, any associated discharge of water onto or into land in a manner that ensures that:

- a) The overarching purpose of the Vision and Strategy to restore and protect the health and wellbeing of the Waikato River for present and future generations is given effect to
- b) The further degradation of water quality is avoided
- c) Any adverse changes to natural flow regimes are avoided as far as practicable and otherwise mitigated
- d) Adverse effects on the relationship tangata whenua as Kaitiaki have with water are avoided, remedied or mitigated
- e) Adverse effects on in-stream ecological values are avoided, remedied or mitigated
- f) Adverse effects on wetlands that are habitats for significant indigenous vegetation and significant habitats for indigenous fauna are avoided, remedied, or mitigated
- g) Adverse effects on groundwater quality are avoided as far as practicable and otherwise mitigated
- h) Does not result in an adverse effect relating to the objectives in Chapter 5.2 of this plan
- i) The benefits to be derived from the efficient take and use of water for reasonably foreseeable future uses, and in particular for domestic or municipal supply, are maintained and/ or enhanced.



Regional Plan – Chapter 3 – Water Module

Policy 3.4.3.2 – Efficient Use of Water

Ensure the efficient use of water by:

- a) Requiring the amount of water taken and used to be reasonable and justifiable with regard to the intended use and where appropriate:
 - i) For domestic or municipal supplies is justified by way of a water management plan.
 - ii) For industry, implementation of industry good practice, in respect of the efficient use of water for that particular activity/industry.
 - iii) For irrigation, the following measures in relation to the maximum daily rate of abstraction, the irrigation return period and the seasonal or annual volume of the proposed take:
 - A maximum seasonal allocation reliability of up to 9 out of 10 years
 - A minimum application efficiency of 80 percent (even if the actual system being used has a lower application efficiency), or on the basis of a higher efficiency where an application is for an irrigation system with a higher efficiency
- b) Requiring consideration of water conservation and minimisation methods, such as leak detection and loss monitoring as integral parts of water take and use consent applications to ensure no significant wastage of water resources
- c) Raising awareness amongst the regional community about water efficiency issues and techniques
- d) Facilitating the transfer of water take permits, provided the transfer does not result in effects that are inconsistent with the purpose of the relevant Water Management Class, as identified by the policies in section 3.2.3 and the water classes in section 3.2.4
- e) Promoting investigation of alternatives to the water take, alternative water sources, water harvesting (excluding the Waikato River catchment above Karapiro Dam) and seasonal storage, as an integral part of water take and use consent applications.
- f) Promoting shared use and management of water through water user groups or other arrangements where there is increased efficiency in the use and allocation of water.

Objective 3.5.2 – Discharges

Discharges of contaminants to water undertaken in a manner that:

- a) does not have adverse effects that are inconsistent with the water management objectives in Section 3.1.2
- b) does not have adverse effects that are inconsistent with the discharges onto or into land objectives in Section 5.2.2
- c) Ensures that decisions regarding the discharge of contaminants to water do not reduce the contaminant assimilative capacity of the water body to the extent that allocable flows as provided for in Chapter 3.3 are unable to be utilised for out of stream uses.

Policy 3.5.3.3 – Discharges to Land

Ensure that the discharge of contaminants onto or into land maximises the reuse of nutrients and water contained in the discharge

Policy 3.5.3.5 – Ground Water

Minimise the adverse effects of discharges onto or into land on ground water quality by ensuring that they:

- a) do not compromise existing or reasonably foreseeable uses of ground water
- b) avoid adverse effects on surface water bodies that are inconsistent with the policies in Section 3.2.3 of this Plan as far as practicable and otherwise, remedy or mitigate those effects
- c) are not inconsistent with the policies in Section 3.8.3 that manage the effects of drilling and discharges associated with drilling on ground water quality.

Policy 3.5.3.6 – Tangata Whenua Uses and Values

Ensure that the relationship of tangata whenua as Kaitiaki with water is recognised and provided for to avoid significant adverse effects and remedy or mitigate cumulative adverse effects on:

- a) the mauri of water
- b) waahi tapu sites
- c) other identified taonga.

Objective 3.6.2 – Damming and Diverting

Damming and/or diverting of water undertaken in a manner that:

- a) Does not have adverse effects that are inconsistent with the water management objectives in Section 3.1.2.
- b) Does not have adverse effects that are inconsistent with the river and lake bed structures objectives in Section 4.2.2.



Regional Plan – Chapter 3 – Water Module
<ul style="list-style-type: none"> c) <i>Does not obstruct fish passage where it would otherwise occur in the absence of unnatural barriers, so that trout or indigenous fish can complete their lifecycle.</i> d) <i>Results in no increase in the adverse effects of flooding or land instability hazards.</i> e) <i>Results in no loss of existing aquatic habitats as a consequence of channelisation of rivers.</i> f) <i>Increases the use of off-stream dams for water supply purposes as an alternative to dams in perennial streams.</i> g) <i>Ensures that decisions regarding the damming and diverting of water take account of the consequent loss of water quality and any associated reduction in contaminant assimilative capacity, minimum flows and allocable flows for out of stream uses as provided by Section 3.3.3 Policy 1 and Table 3-5 of Chapter 3.3.</i> h) <i>Refer to Objective 3.A.1.</i>
Policy 3.6.3.3 – Tangata Whenua Uses and Values
<p><i>Ensure that the relationship of tangata whenua as Kaitiaki with water is recognised and provided for, to avoid significant adverse effects and remedy or mitigate cumulative adverse effects on:</i></p> <ul style="list-style-type: none"> a) <i>the mauri of water,</i> b) <i>waahi tapu sites,</i> c) <i>other identified taonga.</i>
Objective 3.7.2 – Wetlands
<p><i>Refer to Objective 3.1.2 and Objective 3.A.1.</i></p>
Policy 3.7.7.1 – Control Land Drainage in Areas Adjacent to Identified Wetlands and Within Wetlands
<p><i>Ensure that land drainage activities within wetlands that are areas of significant indigenous vegetation and/or significant habitats of indigenous fauna³⁴, or immediately adjacent to wetlands identified in Section 3.7.7, are undertaken in a manner that avoids changes in water level that lead to:</i></p> <ul style="list-style-type: none"> a) <i>shrinking or loss of the wetland, or</i> b) <i>accelerated dewatering and oxidation, or</i> c) <i>significant adverse effects on tangata whenua values of the wetland, or</i> d) <i>adverse effects of flooding on neighbouring properties, or</i> e) <i>significant adverse effects on the relationship tangata whenua as Kaitiaki have with the wetland, or</i> f) <i>adverse effects on the natural character of wetlands or</i> g) <i>adverse effects on the ability to use the wetlands for recreational purposes</i> <p><i>and remedy or mitigate otherwise.</i></p>

TABLE 20: Relevant Regional Plan Objectives and Policies – Water Module

The potential adverse effects on Karapiro Stream will be managed through the proposed erosion and sediment control measures in accordance with WRC Guidelines, and the effects on the wetlands on the Site will be appropriately mitigated by the proposed wetland restoration along the southern bank of the Karapiro Stream between gullies A and F. Therefore, the Proposal will manage the effects on water bodies while enabling people to meet their social and economic wellbeing, while avoiding significant effects on aquatic ecosystems.

As there is sufficient groundwater allocation available within the Hamilton Basin – South aquifer, the proposed groundwater take will maintain a sustainable yield from the aquifer and meet the existing and the reasonably justified and foreseeable future domestic supply.

As identified under the Waikato RPS, the Proposal is consistent with the objectives and strategies of Te Ture Whaimana o Te Awa o Waikato.

The proposed groundwater take is an efficient use of water as the proposed processing plant reuses approximately 75 % of the water required to grade sand. While 1.5 m³ of water is normally required to process a tonne of sand, the Proposal only requires 0.4 m³ of water per tonne.

The diversion and discharge of water to and from the proposed SRPs will not have adverse effects on the Karapiro Stream as the erosion and sediment control measures will be designed and constructed in accordance with WRC's ESC Guideline. Additionally, given the soakage on-site, Southern Skies considers that discharges from the SRPs will be limited to heavy rain events, if at all.

The risk of natural hazards on the Site are low and the proposed floor of the pit area is at least 5 m above the 100 year flood level of the Karapiro Stream.

As identified above, Ngaati Korokii-Kahukura and Ngaati Hauaa as kaitiaki have visited the Site on two occasions and shared the history and cultural connections with the Karapiro Stream and Waikato River. The proposed ecological compensation will reduce the potential for contaminants and sediment from the existing farming activity on the Site entering a section of the Karapiro Stream and then the Waikato River by remove stock grazing immediately next to the stream. An archaeological authority for works with 40m of the Karapiro Stream gully will ensure adverse effects on unrecorded waahi tapu or taonga are appropriately avoided, remedied or mitigated.

Given the above, the Proposal is generally consistent with the objectives and policies of the Water Module of the Regional Plan.

Regional Plan – Land and Soil Module
Objective 5.1.2 – Accelerated Erosion
<p><i>A net reduction of accelerated erosion across the Region so that:</i></p> <ul style="list-style-type: none"> <i>a) soil productivity, versatility and capability is maintained</i> <i>b) there are no adverse effects on water quality, aquatic ecosystems and wetlands that are inconsistent with Water Management Objective 3.1.2</i> <i>c) there is no increase in the adverse effects of flooding or land instability hazards</i> <i>d) accelerated infilling of lakes, estuaries, rivers, wetlands and cave systems is avoided and the rate of infilling of artificial watercourses, excluding structures designed to trap sediment, is minimised</i> <i>e) significant adverse effects on the relationship tangata whenua as Kaitiaki have with their identified ancestral taonga such as ancestral lands, water and waahi tapu are avoided</i>
Policy 5.1.3.1 – Managing Activities that Cause or Have the Potential to Cause Accelerated Erosion and Encouraging Appropriate Land Management Practices
<p><i>Through permitted activities and non-regulatory methods manage activities that cause or have the potential to cause accelerated erosion, with particular regard to:</i></p> <ul style="list-style-type: none"> <i>a) the potential for the activity to adversely affect the purpose of the water management classes as identified in the policies in Section 3.2.2, and the coastal marine area</i> <i>b) the risk of downstream sedimentation leading to accelerated infilling of lakes, estuaries, artificial watercourses, rivers, wetlands and caves</i> <i>c) the erosion potential of soil when it is disturbed or vegetation is cleared</i> <i>d) the potential to increase the adverse effects of flooding</i> <i>e) the potential to adversely affect waahi tapu and archaeological sites or other identified sites of importance to tangata whenua as Kaitiaki</i> <i>f) the potential to adversely affect natural character of the coastal environment and the margins of rivers, lakes and wetlands and areas of significant indigenous vegetation and significant habitats of indigenous fauna²⁸</i> <i>g) the potential to compromise air quality objectives as identified in Module 6 Air</i> <i>h) the potential to damage property and infrastructure.</i>
Policy 5.1.3.2 – Use of Regulatory and Non-Regulatory Approaches of Management for Soil Disturbance/Vegetation Clearance Activities in High Risk Erosion Areas
<p><i>Waikato Regional Council will use a mixture of regulatory and non-regulatory approaches to:</i></p> <ul style="list-style-type: none"> <i>a) minimise the adverse effects of soil disturbance and vegetation clearance in high risk erosion areas</i> <i>b) minimise the accelerated infilling of Coromandel estuaries that are listed as areas of significant conservation value in the Regional Coastal Plan</i> <i>c) minimise adverse effects of soil disturbance activities in karst environments on cave ecosystems.</i>
Objective 5.2.2 – Discharges Onto or Into Land
<p><i>Discharges of wastes and hazardous substances onto or into land undertaken in a manner that:</i></p> <ul style="list-style-type: none"> <i>a) does not contaminate soil to levels that present significant risks to human health or the wider environment</i> <i>b) does not have adverse effects on aquatic habitats, surface water quality or ground water quality that are inconsistent with the Water Management objectives in Section 3.1.2</i> <i>c) does not have adverse effects related to particulate matter, odour or hazardous substances that are inconsistent with the Air Quality objectives in Section 6.1.2</i> <i>d) is not inconsistent with the objectives in Section 5.1.2</i> <i>e) avoids significant adverse effects on the relationship that tangata whenua as Kaitiaki have with their taonga such as ancestral lands, water and waahi tapu</i> <i>f) remedies or mitigates cumulative adverse effects on the relationship that tangata whenua as Kaitiaki have with their identified taonga such as ancestral lands, water and waahi tapu.</i>



Regional Plan – Land and Soil Module
Policy 5.2.3.1 – Low Risk Discharges Onto or Into Land
<i>Enable, through permitted activity rules and non-regulatory methods, the discharge of contaminants onto or into land where:</i>
<ul style="list-style-type: none"> a) <i>hazardous substances present in the discharge, or produced as a consequence of the breakdown of the contaminants from the discharge:</i> <ul style="list-style-type: none"> i) <i>are not environmentally persistent</i> ii) <i>will not bioaccumulate to a level that has acute or chronic toxic (carcinogenic, teratogenic or mutagenic) effects on humans or other non-target species</i> b) <i>the discharge of these contaminants onto or into land will not result in pathogens accumulating in soil or pasture to levels that would render the soil unsafe for agricultural or domestic use</i> c) <i>the discharge is not inconsistent with policies in Section 5.1.3</i> d) <i>the discharge will not result in any effect on water quality or aquatic ecosystems that is inconsistent with the purpose of the Water Management Classes as identified by the policies in Section 3.2.3</i> e) <i>the discharge will not result in any effect on air quality that is inconsistent with policies in Section 6.1.3</i> f) <i>the discharge will not damage archaeological sites, waahi tapu or other identified sites of importance to tangata whenua as Kaitiaki.</i>
Policy 5.2.3.2 – Other Discharges Onto or Into Land
<i>Manage discharges of contaminants onto or into land not enabled by Policy 1, in a manner that avoids, where practicable, the following adverse effects and remedies or mitigates those effects that cannot be avoided:</i>
<ul style="list-style-type: none"> a) <i>contamination of soils with hazardous substances or pathogens to levels that present a significant risk to human health or the wider environment</i> b) <i>the discharge is not inconsistent with policies in Section 5.1.3</i> c) <i>any effect on water quality or aquatic ecosystems that is inconsistent with the purpose of the Water Management Classes as identified by the policies in Section 3.2.3</i> d) <i>the adverse effects outlined in the policies and rules for air quality in Chapters 6.1 and 6.2, particularly for odour and particulate deposition</i> e) <i>damage to archaeological sites, waahi tapu or other identified sites of importance to tangata whenua as Kaitiaki.</i>

TABLE 21: Relevant Regional Plan Objectives and Policies – Land and Soil

The Proposal will maintain the Site’s soil productivity, versatility and capability as the topsoil will be stored in bunds during establishment and operation and spread back over the Site and re-grassed at completion of works for future farming activities.

The proposed erosion and sediment control measures in accordance with WRC’s ESC Guidance will ensure that the water quality and aquatic ecosystems of the Karapiro Stream are not adversely affected. Additionally, the effects on the wetlands on the Site will be appropriately mitigated by the proposed wetland restoration along the southern bank of the Karapiro Stream between gullies A and F.

As the proposed floor of the pit area is at least 5 m above the 100 year flood level of the Karapiro Stream and the risk of natural hazards on the Site are low, the Proposal will not increase in the adverse effects of flooding or land instability hazards.

The Proposal will avoid, remedy and mitigate significant adverse effects on the relationship that tangata whenua as kaitiaki have with their taonga through RS Sand’s ongoing relationship with Ngaati Korokii-Kahukura and Ngaati Hauaa, and an archaeological authority for works with 40m of the Karapiro Stream gully. Overall, the Proposal is consistent with the objectives and policies of the Land and Soil Module of the Regional Plan

Regional Plan – Air Module
Objective 6.1.2.1 – Regional and Local Air Management
<i>Significant characteristics of air quality as identified in Table 6-1 are:</i>
<ul style="list-style-type: none"> a) <i>protected where they are high</i> b) <i>enhanced where they are degraded</i> c) <i>otherwise maintained.</i>
Objective 6.1.2.2 – Regional and Local Air Management
<i>No significant adverse effects from individual site sources on the characteristics of air quality beyond property boundary.</i>

Regional Plan – Air Module
Objective 6.1.2.3 – Regional and Local Air Management
<p><i>Cumulative effects of discharges on ambient air quality do not:</i></p> <ul style="list-style-type: none"> <i>a) present more than a minor threat to the health of humans, flora and fauna</i> <i>b) cause odour that is objectionable to the extent that it causes an adverse effect</i> <i>c) result in levels of suspended or deposited particulate matter that are objectionable to the extent that they cause adverse effects</i> <i>d) have a significant adverse effect on visibility</i> <i>e) cause accelerated corrosion of structures</i> <i>f) cause significant adverse effects on the relationship tangata whenua as Kaitiaki have with their identified taonga such as air, ancestral lands, water and waahi tapu.</i>
Policy 6.1.3.1 – Low Risk Discharges to Air Enabled
<p><i>Enable the discharge of contaminants into air through permitted and controlled activity rules where:</i></p> <ul style="list-style-type: none"> <i>a) there are no significant adverse effects on human health and the health of flora and fauna from discharges of hazardous air pollutants,</i> <i>b) there is no odour that is objectionable to the extent that it causes an adverse effect beyond the property boundary,</i> <i>c) suspended or deposited particulate matter are not objectionable to the extent that they cause adverse effects beyond the property boundary,</i> <i>d) significant adverse effects on, or changes to, visibility beyond the property boundary are avoided or remedied,</i> <i>e) air quality beyond the property boundary does not cause accelerated corrosion or accelerated deterioration.</i>
Policy 6.1.3.2 – Managing Effects of Other Discharges
<p><i>Manage other discharges of contaminants to air through controlled and discretionary activity rules having particular regard to the effects of the discharge on:</i></p> <ul style="list-style-type: none"> <i>a) ambient air quality compared to the Regional Ambient Air Quality Guidelines (RAAQG) levels provided in Chapter 6.3,</i> <i>b) ambient air quality compared to internationally accepted air quality guidelines or standards for managing and understanding the effects of contaminants on human health, the health of flora and fauna and amenity values,</i> <i>c) ambient odour and particulate matter levels compared to the guidelines for assessment provided in Chapter 6.4 of the Plan for odour and particulate matter</i> <i>d) adverse effects from contaminants that are hazardous in ambient air, particularly with respect to human health,</i> <i>e) the significant characteristics of air quality within an area,</i> <i>f) significant adverse effects of the discharge on the identified values of tangata whenua as Kaitiaki,</i> <i>g) the sensitivity of the receiving environment,</i> <i>h) existing ambient air quality and any cumulative effects as a result of the discharge on the receiving environment,</i> <i>i) nationally accepted codes of practice for the relevant activity.</i>
Policy 6.1.3.3 – Air Shed Management
<p><i>Adopt an air shed management approach that takes into account the relative contributions of all contaminant sources in the area in accordance with the Ministry for the Environment’s Ambient Air Quality Guidelines (May 2002). Priority for development of air quality management plans is to be given to areas where air quality is degraded as defined in Table 6-2 or where such a plan is necessary to prevent air quality becoming further degraded.</i></p>
Policy 6.1.3.5 – Positive Benefits of Resource Use
<p><i>Recognise the positive benefits to people and communities arising from activities that affect air quality by enabling a range of activities to use the air (including existing activities) whilst ensuring that:</i></p> <ul style="list-style-type: none"> <i>a) high quality air resources are protected,</i> <i>b) degraded air quality is enhanced,</i> <i>c) adverse effects on air quality are avoided, remedied or mitigated.</i>

TABLE 22: Relevant Regional Plan Objectives and Policies – Air Module

The Proposal will maintain the significant characteristics of air quality in the surrounding environment as areas used for rural activities likely experience an existing higher level of dust and the dust from the Proposal may not be considered unusual. Additionally, there is a low likelihood of off-site dusts effects on nearby sensitive receptors as dust producing activities need to occur at the same time as winds above 5 m/s for dust nuisance to occur and mitigation measures are proposed. Accordingly, PDP considers that dust emissions are unlikely to result in any off-site offensive or objectionable effects.

Given the silica level recorded on the Site and proposed dust mitigation measures, the Proposal will not pose significant additional risk to people in the surrounding area developing silicosis or result in significant adverse effects on the health of flora and fauna.

The proposed sand quarry will provide jobs for the local community and sand for regional development while avoiding, remedying, and mitigating the potential adverse effects on air quality.

Accordingly, the Proposal is considered to be generally consistent with the objectives and policies of the Air Module of the Regional Plan.

10.4 Waipā District Plan

The District Plan contains specific policies and implementation methods to achieve the purpose of the RMA and address the resource management issues and objectives for the district. The following objectives and policies are considered relevant to this proposal.

District Plan – Rural Zone
Objective 4.3.1 – Rural Resources
<i>To maintain or enhance the inherent life supporting capacity, health and well-being of rural land, ecosystems, soil and water resources.</i>
Policy 4.3.1.1 – Health and Well-being of the Waikato and Waipā Rivers
<i>To give effect to the directions and outcomes in the Waikato River Vision and Strategy and the Waipā Accord through District Plan provisions relating to building setbacks, earthworks, farming activities, non-farming activities, intensive farming, rural based industries and solid and liquid waste.</i>
Policy 4.3.1.3 – Avoid Adverse Effects on Aquatic and Riparian Ecosystems
<i>To avoid, remedy or mitigate adverse effects of development, subdivision and activities on the quality of the District's ground and surface water resource, and promote the enhancement of their ecological and cultural values by:</i> <i>(a) Maintaining or enhancing the life supporting capacity of water bodies; and</i> <i>(b) Maintaining or enhancing the ability to use aquatic ecosystems as mahinga kai (a food source); and</i> <i>(c) Where appropriate, maintaining or enhancing the availability of water bodies for recreation; and</i> <i>(d) Enhancing ecological corridors and riparian margins.</i>
Policy 4.3.1.4 – Protect the Rural Soil Resource
<i>The versatility and life supporting capacity of the District's rural land and soil resource, particularly high class soils and peat soils, are protected from development, subdivision or activities that would prevent its future use for primary production, or its ability to maintain the District's ecological/biodiversity values.</i>
Policy 4.3.1.6 – Earthworks
<i>To ensure that earthworks are carried out in a manner that avoids adverse effects on infrastructure, between properties and on water bodies.</i>
Objective 4.3.3 – Rural Activity: Shelterbelts, Woodlots, and Commercial Forestry
<i>To ensure commercial and/or woodlot forestry and shelterbelts do not have an adverse effect on the environment, the amenity of adjacent properties, or on infrastructure such as roads, railway lines, electricity transmission and distribution lines, and boundary fence lines.</i>
Policy 4.3.3.4 – Shelterbelts
<i>To manage the location and height of shelterbelts to avoid adverse effects of shading on adjacent sites and adverse effects on infrastructure including electricity lines.</i>
Objective 4.3.5 – Rural Activity: Mineral and Aggregate Prospecting, Exploration and Extraction
<i>To meet the District's and Region's mineral and aggregate needs from predominantly local sources and ensure that the location, use and development of the District's mineral and aggregate resources is provided for, subject to the management of the adverse effects associated with such activities.</i>
Policy 4.3.5.3 – Mineral Extraction
<i>Mineral extraction activities are managed so that the adverse effects of the activities are internalised, or avoided, remedied or mitigated as far as practicable through methods such as management, mitigation and rehabilitation plans that address matters such as:</i> <i>(a) Managing dust, noise, vibration, access and illumination to maintain amenity values, particularly during the night time; and</i>



District Plan – Rural Zone
<p>(b) Ensuring buildings and structures are appropriately located in relation to boundaries, and of an appropriate scale; and</p> <p>(c) Undertaking remedial measures during extraction operations; and</p> <p>(d) Requiring sites to be rehabilitated and ensuring appropriate materials are used for this purpose.</p>
Policy 4.3.5.4 – Mineral Extraction
<p>The scale and location of mineral extraction shall:</p> <p>(a) Be consistent with the capacity, design and function of the roading hierarchy; and</p> <p>(b) Not adversely affect rural character.</p>
Policy 4.3.5.5 – Mineral Extraction
<p>To recognise:</p> <p>(a) That mineral extraction is constrained by the location of the resource; and</p> <p>(b) The importance of maintaining a supply of extracted minerals; and</p> <p>(c) The need to identify other significant mineral resources as required, in conjunction with the Regional Council, and to provide for their future extraction and use. (b) Ensuring buildings and structures are appropriately located in relation to boundaries, and of an appropriate scale; and</p> <p>(c) Undertaking remedial measures during extraction operations; and</p> <p>(d) Requiring sites to be rehabilitated and ensuring appropriate materials are used for this purpose.</p>
Objective 4.3.7 – Rural Character
<p>Rural character and amenity is maintained.</p>
Policy 4.3.7.1 – Rural Character
<p>Land use activities should be at a density, scale, intensity and location to maintain rural character.</p>
Policy 4.3.7.2 – Rural Character
<p>Rural character and associated amenity values shall be maintained by ensuring rural land uses predominate in the Rural Zone, and buildings are of an appropriate scale and location.</p>
Objective 4.3.9 – Rural Amenity: Signs
<p>To ensure that signs do not have an adverse impact on the amenity values of the Rural Zone, landscape values, heritage values, or public safety.</p>
Policy 4.3.9.1 – Signs to Reflect Local Character and Transport Environment
<p>Ensure that signs reflect the rural character and amenity values of the surrounding environment, including any identified landscapes, significant natural areas, viewshafts, and the nature of the adjacent transport environment, by restricting the location, size, number, and content of signs.</p>
Policy 4.3.9.2 – Location of Signs
<p>Avoid the establishment of signs in the Rural Zone which are not related to the site on which they are located.</p>
Policy 4.3.9.3 – Signs to Avoid Adverse Effects
<p>Avoid signs that are illuminated, moving, or flashing, or which are likely to create a visual hazard or interfere with the safe and efficient use of roads, railways, airports, or water bodies.</p>
Policy 4.3.9.5 – Traffic Safety
<p>The design, location and content of signs shall not adversely affect the safe functioning of roads.</p>
Objective 4.3.12 – Non-farming Activities
<p>Only non-farming activities that have a functional and compelling requirement to locate in the Rural Zone should be enabled to locate in the Rural Zone.</p>
Policy 4.3.12.1 – Non-farming Activities
<p>To limit non-farming activities in rural areas except for activities that:</p> <p>(a) Have a functional and compelling reason to establish in a rural area; and</p> <p>(b) Do not result in any further loss of land from primary production purposes; and</p> <p>(c) Maintain rural character.</p> <p>Activities that do not meet these criteria should be accommodated in urban areas.</p>
Policy 4.3.12.2 – Non-farming Activities
<p>The introduction of non-farming activities in rural areas shall not prevent or constrain intensive farming activities from operating.</p>



District Plan – Rural Zone
Policy 4.3.12.3 – Reverse Sensitivity
<i>Non-farming activities in rural areas shall internalise adverse effects and should not cause adverse effects that would result in farming activities being prevented or constrained from operating.</i>

TABLE 23: Relevant District Plan Objectives and Policies – Rural Zone

The inherent life supporting capacity, health and well-being of rural land and soil will be maintained by the Proposal as the topsoil on the Site will be stored in bunds and respread and grassed at the completion of quarrying activities. The proposed mitigation and compensation measures will also ensure that the capacity, health and well-being of ecosystems water resources are maintained.

The proposed bunds and vegetation around the perimeters of the processing and pit areas will not have an adverse effect on the surrounding environment as their height will be below the 6m permitted baseline for shelterbelts under the District Plan.

The Proposal will provide a local source of sand for development within the district as approximately 58% of sand from the proposed quarry is anticipated to be required for the future development of Cambridge North, Cambridge South and Te Awamutu.

Overall, the rural character and amenity of the wide landscape will be maintained. Although Stages 1 to 3 will have more than minor effects on private view to the north, the effects will reduce to minor for Stages 4 and 5, and then less than minor following rehabilitation of the Site. Additionally, any signs on the Site will only relate to the proposed quarry activity and avoid creating a hazard to roads users.

Quarries have a functional need to be in the Rural Zone as the mineral resources are located where they are, they are less likely to be covered by existing development, and neighbouring property boundaries and sensitive receptors are normally further away from quarry activities.

Given the above assessment, the Proposal is in accordance with the objectives and policies of the Rural Zone.

District Plan – Transportation
Objective 16.3.1 – Ensuring Sustainable, Integrated, Safe, Efficient and Affordable Multi-modal Land Transport Systems
<i>All new development, subdivision and transport infrastructure shall be designed and developed to contribute to a sustainable, safe, integrated, efficient (including energy efficient network design) and affordable multi-modal land transport system.</i>
Policy 16.3.1.1 – Design Elements
<i>Development, subdivision and transport infrastructure shall be designed and located to:</i> <ul style="list-style-type: none"> (a) Minimise energy consumption in construction, maintenance and operation of the network; and (b) Accommodate and encourage alternative modes of transport; and (c) Give effect to the road hierarchy; and (d) Contribute to: <ul style="list-style-type: none"> (i) Integrated transport and land use planning and a safe road system approach; and (ii) Reducing deaths and serious injuries on roads; and (iii) An effective and efficient road network; and (iv) Efficient movement of freight.
Policy 16.3.1.2 – Ensuring Future Connections
<i>Development, subdivision and transport infrastructure shall be designed and located to:</i> <ul style="list-style-type: none"> (a) Link to existing transport networks, including roads, walking, cycling and passenger transport; and (b) Accommodate future transport network connections and walking, cycling and passenger transport options to Deferred Zones and future growth areas.
Objective 16.3.3 – Maintaining Transport Network Efficiency
<i>To maintain the ability of the transport network to distribute people and goods safely, efficiently and effectively.</i>
Policy 16.3.3.1 – Effects of Development or Subdivision on the Transport Network
<i>Avoid, remedy or mitigate the adverse effects of development or subdivision on the operation and maintenance of the transport network, including from:</i>

District Plan – Transportation
<p>(a) Traffic generation, load type, or vehicle characteristics; and</p> <p>(b) The collection and disposal of stormwater; and</p> <p>(c) Reverse sensitivity effects where development or subdivision adjoins existing and planned roads.</p>
Objective 16.3.4 – Provision of Vehicle Entrances, Parking, Loading and Manoeuvring Areas
<p><i>The provision of adequate and well located vehicle entrances and parking, loading and manoeuvring areas that contribute to both the efficient functioning of the site and the adjacent transport network.</i></p>
Policy 16.3.4.1 – Location of Vehicle Entrances
<p><i>To maintain the safe and efficient functioning of adjoining roads and railways, vehicle entrances to all activities shall be located and formed to achieve safe sight lines and entry and egress from the site. In some locations, adjoining rail lines, State Highways, and the District’s Commercial Zones; vehicle entrances will be limited and will require assessment due to the complexity of the roading environment, or the importance of provision for pedestrians.</i></p>
Policy 16.3.4.2 – Ensuring Adequate Parking, Loading and Manoeuvring Areas on Site
<p><i>To maintain the efficient functioning of adjoining roads, all activities shall provide sufficient area on site to accommodate the parking, loading and manoeuvring area requirements of the activity, except in the Residential Zone where the provision of on-site manoeuvring for dwellings is enabled within the setbacks.</i></p>

TABLE 24: Relevant District Plan Objectives and Policies – Transportation

The Proposal and proposed mitigation measures seek to maintain a safe and efficient land transport system. The sight distances of the proposed new vehicle crossing comply with Waka Kotahi’s RTS6 for roads with operating speeds of 110km/h. CKL consider that the crossing’s reduced separation to the east will result in less than minor effects. Additionally, subject to the vegetation on the western side of the Newcombe Road-Tirau Road intersection being trim back and maintain, and the maintenance and reconstruction of Newcombe Road pavement, CKL consider that the Proposal is likely to result in less than minor effects on the wider road network.

Given the above, the Proposal will maintain the ability of the transport network to distribute people and goods safely, efficiently and effectively.

Overall, the proposed sand quarry is consistent with the objectives and policies of the Transportation Section of the District Plan.

District Plan – Lakes and Water Bodies
Objective 26.3.1 – Protecting the Natural Character of Lakes and Water Bodies and their Margins, from Inappropriate Use, and Development
<p><i>Ensure that activities that occur on and adjacent to lakes and water bodies are managed to avoid, and where possible enhance, natural character and water quality.</i></p>
Policy 26.3.1.6 – Enhancing Natural Character
<p><i>Promote the restoration and enhancement of the natural character of lakes, water bodies and their margins.</i></p>
Policy 26.3.1.7 – Good Practice: Lakes, Water Bodies and Wetlands
<p><i>To promote good land use practice adjoining lakes, water bodies and wetlands; including promoting the value of wetlands for both their biodiversity importance and the ecological services they provide (e.g. controlling sediment and nutrients runoff from intensively managed land).</i></p>

TABLE 25: Relevant District Plan Objectives and Policies – Lakes and Water Bodies

As identified above, the proposed erosions and sediment controls will avoid inappropriate use and development effects on the margins of the Karapiro Stream. The proposed ecological measures will also compensate the effects of the wetlands on the edge of the gully and enhance the natural character of the margins of the Karapiro Stream. The Proposal is therefore consistent with the objectives and policies of the Lakes and Water Bodies Section of the District Plan.

10.5 Tai Tumu, Tai Pari, Tai Ao / Waikato Tainui Environmental Plan

The Waikato-Tainui Environmental Plan / Tai Tumu, Tai Pari, Tai Ao (WTEP) was published in 2013 and developed out of Whakatapuranga 2050, being the long-term development approach of Waikato-Tainui to building the capacity of their marae, hapuu, and iwi as a whole. The key strategic objectives include tribal identity and integrity, including “to grow our tribal estate and manage our natural resources.” The WTEP is designed to enhance Waikato-Tainui participation in resource and environmental management.



The parts of the WTEP considered the most relevant to this application are as follows:

- Chapter 16 re valuable historical items and sites of significance, and how these matters are protected when undertaking works (through appropriate site management, efficient communications and protocols in respect of accidental findings, and agreed consultation and engagement processes to identify and protect sites of significance).
- Chapter 20 re land uses and protection of the land against adverse environmental effects (through controls on soil erosion, nutrient loss, water quality and land contamination).
- Chapter 21 re air discharges created by industrial and transport users and measures to reduce the same (through methods aimed at minimising discharges and managing effects insofar as the discharges are objectionable beyond the property boundary).

Tai Tumu, Tai Pari, Tai Ao / Waikato Tainui Environmental Plan
Objective 11.4 – Objectives for the Waikato River
<p><i>To realise the vision, the following objectives will be pursued:</i></p> <p><i>A. The restoration and protection of the health and wellbeing of the Waikato River.</i></p> <p><i>B. The restoration and protection of the relationship of Waikato-Tainui with the Waikato River, including their economic, social, cultural, and spiritual relationships.</i></p> <p><i>C. The restoration and protection of the relationship of Waikato River Iwi according to their tikanga and kawa, with the Waikato River, including their economic, social, cultural and spiritual relationships.</i></p> <p><i>D. The restoration and protection of the relationship of the Waikato Region’s communities with the Waikato River including their economic, social, cultural and spiritual relationships.</i></p> <p><i>E. The integrated, holistic and coordinated approach to management of the natural, physical, cultural and historic resources of the Waikato River.</i></p> <p><i>F. Adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, and in particular those effects that threaten serious or irreversible damage to the Waikato River.</i></p> <p><i>G. Recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within its catchments on the health and wellbeing of the Waikato River.</i></p> <p><i>H. The recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities.</i></p> <p><i>I. The protection and enhancement of significant sites, fisheries, flora and fauna.</i></p> <p><i>J. The recognition that the strategic importance of the Waikato River to New Zealand’s social, cultural, environmental and economic wellbeing is subject to the restoration and protection of the health and wellbeing of the Waikato River.</i></p> <p><i>K. The restoration of water quality within the Waikato River so that it is safe for people to swim in and take food from over its entire length.</i></p> <p><i>L. The promotion of improved access to the Waikato River to better enable sporting, recreational, and cultural opportunities.</i></p> <p><i>M. The application to the above of both maatauranga Maaori and latest available scientific methods.</i></p>

TABLE 26: Relevant Waikato Tainui Environmental Plan Objectives and Policies

The Proposal will help restore and protect the health, wellbeing and values of the Waikato River. By remove stock grazing immediately next to the Karapiro Stream, the proposed ecological compensation will reduce the potential for contaminants and sediment from the existing farming activity on the Site entering a section of the stream and then the Waikato River. The proposed erosion and sediment control measures in accordance with WRC’s ESC Guidelines will further reduce the potential for sediment from the Proposal entering the Karapiro Stream and the Waikato River.

RS Sand have consulted and formed ongoing relationships with Ngaati Korokii-Kahukura and Ngaati Hauaa in relation to the Proposal. Accordingly, the Proposal provides these iwi groups the opportunity to restore their relationships with the Waikato River according to their tikanga and kawa. Additionally, the archaeological authority for works with 40m of the Karapiro Stream gully will provide further opportunity for Ngaati Korokii-Kahukura and Ngaati Hauaa to restore their relationships with and confirm procedures for any unrecorded cultural sites.

Given the above, the Proposal is generally consistent with the objectives and policies of the Waikato Tainui Environmental Plan.

10.6 Te Rautaki Tāmata Ao Turoa a Hauaa / Ngaati Hauaa Environmental Management Plan

The Ngaati Hauaa Environmental Management Plan / Te Rautaki Tāmata Ao Turoa a Hauaa (NHEMP) expresses and articulates Ngaati Hauaa's values, frustrations, aspirations and position statements in relation to their taiao (environment).

The NHEMP is an intergenerational 'living' document that outlines ways to support and enhance their role as tangata whenua and kaitiaki, and covers:

- The health and wellbeing of their lands, air, water, wetlands and fisheries.
- Urban development within their rohe.
- Cultural heritage.
- Use and development of Māori land.

Te Rautaki Tāmata Ao Turoa a Hauaa / Ngāti Hauaa Environmental Management Plan
Objectives 9.2 – Sustainable Land Use and Development
<p>1. <i>A more integrated, holistic and collective approach to sustainable land use, development and management within our rohe</i></p> <p>2. <i>The mauri of land and soils with our rohe to be restored and enhanced. This means that:</i></p> <ul style="list-style-type: none"> • <i>Rural land use and development occurs in a manner that is sustainable and consistent with the natural limits of our lands and waters</i> • <i>Urban development occurs in a manner that provides for population growth without compromising the productive capacity of our soils or like supporting capacity of our environment.</i> <i>Plants, animals and our indigenous biodiversity within our rohe are adversely affected.</i> <i>Our indigenous flora and fauna is diverse and abundant. We can hear birdsong in our ngahere.</i> <p>3. <i>Recognition of Ngāti Hauā values, interests and Mātauranga in relation to the sustainable management and development of land, particularly underutilised Maori Land, within our rohe. This means that:</i></p> <ul style="list-style-type: none"> • <i>Our aspirations for developing our lands are not unfairly disadvantaged by water allocation, water quality and any potential restriction on land use.</i> • <i>Our intergenerational knowledge and experience is valued.</i> • <i>Our role and a Treaty partner and post settlement governance entity is recognised.</i> • <i>We are actively involved in land catchment, planning and decision making.</i>
Policies 9A – Integrated Approach
<i>Work collaboratively to ensure a holistic and integrated approach is taken to the sustainable use, development and management of land within our rohe</i>
Policies 9B – Land Use and Development Effects
<i>Manage the potential effects of rural and urban land use and development with our rohe.</i>
Policies 9C – Revitalisation of our Mātauranga
<i>Build traditional and contemporary knowledge about our lands</i>
Objectives 11.2 – Water
<p>1. <i>The mauri of freshwater within our rohe is restored and protected. This means that:</i></p> <ul style="list-style-type: none"> • <i>Water is plentiful and clean enough for drinking, swimming and sustaining plentiful mahinga kai.</i> • <i>Water allocation occurs in a manner that is sustainable and consistent with the natural limit of our rivers, streams and aquifers.</i> • <i>Water is allocated fairly and used efficiently and responsibly.</i> • <i>Waterways are accessible for customary use e.g. gather mahinga kai.</i> <p>2. <i>Recognition of Ngāti Hauā values, interests and Mātauranga in relation to freshwater planning and management without our rohe. This means that:</i></p> <ul style="list-style-type: none"> • <i>Aspirations for marae, papakāinga and Māori land development is not unfairly disadvantaged by freshwater allocation and quality.</i> • <i>Our intergenerational knowledge and experience is valued.</i> • <i>Our role as a Treaty partner and post settlement governance entity is recognised.</i> <p>3. <i>Protection and revitalisation of our traditional knowledge and practices, regarding our rivers, streams and aquifers (puna).</i></p>



Te Rautaki Tāmata Ao Turoa a Hauaa / Ngāti Hauaa Environmental Management Plan
Policies 11A – Freshwater Sustainability
<i>Work collaboratively to ensure a holistic and integrated approach is taken to restoring the mauri of freshwater within our rohe.</i>
Policies 11B – Water Quantity
<i>Ensure that water allocation and use is equitable and efficient.</i>
Policies 11C – Water Quality
<i>Avoid further degradation of water quality within our rohe.</i>
Policies 11D – Revitalisation of our Mātauranga
<i>Build traditional and contemporary knowledge about our wai.</i>
Objectives 12.2 – Wetlands
<p>1. <i>Protect, restore and enhance the mauri of all wetlands and associated ecosystems within our rohe. This means that:</i></p> <ul style="list-style-type: none"> • <i>Wetland ecosystems are diverse, providing healthy habitats for flora and fauna.</i> • <i>The area of wetlands within our rohe increases overtime.</i> • <i>Our traditional knowledge and practices associated with wetlands are restored and revitalised.</i>
Policies 12A – Wetland Protection
<i>Ensure that no further degradation or loss of remaining wetlands within our rohe.</i>
Policies 12B – Wetland Restoration and Enhancement
<i>Work collaboratively to increase the extent of wetlands within our rohe by at least 10 hectares by 2028.</i>
Policies 12C – Revitalisation of Our Mātauranga
<i>Enable the revitalisation of our traditional knowledge and practices associated with wetlands.</i>
Objectives 14.2 – Air
<p>1. <i>Protection and enhance the mauri of air within our rohe. This means that:</i></p> <ul style="list-style-type: none"> • <i>There is no further degradation in the quality of air within our rohe.</i> • <i>The air we breathe is clean and our health, wellbeing and way of life is not impacted by poor air quality.</i> • <i>We3 have unimpeded views of our celestial landmarks to give effect to our Mātauranga and associated cultural practices.</i>
Policies 14A – Air Quality
<i>Manage activities that contribute to poor air quality within our rohe.</i>
Policies 14B – Celestial Landmarks
<i>Manage activities within our rohe so that celestial landmarks can be seen.</i>
Objectives 15.2 – Cultural Heritage
<p>1. <i>Our sites and areas of cultural significance to be identified, mapped, protected and where possible restored.</i></p> <p>2. <i>Our knowledge and history associated with our cultural heritage (including sites, area, landscapes and practices) is collated, protected and passed onto the next generation.</i></p>
Policies 15A – Land Disturbance Activities
<i>Manage the potential effects of land disturbance activities (e.g. earthworks) on our cultural heritage.</i>
Policies 15B – Strategic Approach
<i>Work collaboratively and strategically to protect, manage and/or restore wāhi tapu within our rohe.</i>

TABLE 27: Relevant Ngāti Hauaa Environmental Management Plan Objectives and Policies

The Proposal is a sustainable land use as the Site will be restored to support land-based primary production by removing all buildings associated with the quarry and re-spreading and grassing the bund material over the processing area, pit floor, final batter slopes.

The mauri of freshwater and wetlands will be restored and enhanced by the proposed ecological compensation to achieve No Net Loss and Net Gain outcomes for long-tailed bats, the native forest fauna assemblage, and wetlands.

Given the likely higher level of dust in rural areas, frequency winds above 5 m/s, proposed mitigation measures and distance, receptors surrounding the Site are unlikely likely to be affected by dust. Additionally, The Proposal will not pose

significant additional risk to people in the surrounding area developing silicosis. Therefore the Proposal will not contribute to poor air quality.

RS Sand has consulted with Ngaati Korokii-Kahukura and Ngaati Hauaa since 2020, and iwi representatives have visited the Site on two occasions and shared the history and cultural connections of the area. While there are no archaeological sites currently recorded within the Site, an archaeological authority will be obtained from HNZPT for works with 40m of the Karapiro Stream gully to ensure unrecorded waahi tapu and sites of significance are protected. Overall, the Proposal is considered to be consistent with the objectives and policies of the Ngaati Hauaa Environmental Management Plan.

11 Statutory Considerations

11.1 National Policy Statement for Freshwater Management 2020 (Amended December 2022)

The National Policy Statement (NPS) for Freshwater Management (NPS-FM) came into force in September 2020 and provides local authorities with direction on how to manage freshwater under the RMA. The NPS-FM includes a range of requirements and obligations on local authorities, such as managing freshwater in way that gives effect to Te Mana o Te Wai by involving tangata whenua in discussions and decisions. Some other key changes in the NPS include (not exhaustive list):

- A requirement to improve degraded waterbodies and maintain or improve all others using bottom lines defined in the Freshwater NES.
- An expanded national objectives framework with two additional values.
- A need to encourage avoidance of any further loss or degradation of wetlands and streams, map existing wetlands and encourage their restoration.

The framework of the NPS-FM (Te Mana o Te Wai) encompasses six guiding principles relating to the roles of tangata whenua in the management of freshwater. In short, these principles are centred around tangata whenua inclusion in decisions, obligations of tangata whenua to look after our freshwater resource, caring for our freshwater, obligations of decision-makers and New Zealanders in general to prioritise the health and wellbeing of freshwater and to care for freshwater into the future.

The objective of the NPS-FM is to:

Ensure that natural and physical resources are managed in a way that prioritises:

- first, the health and well-being of water bodies and freshwater ecosystems*
- second, the health needs of people (such as drinking water)*
- third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.*

The following NPS-FM policies are relevant to the Proposal:

1. Freshwater is managed in a way that gives effect to Te Mana o te Wai.
2. Tangata whenua are actively involved in freshwater management (including decision making processes), and Māori freshwater values are identified and provide.
3. Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments.
6. There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted.
11. Freshwater is allocated and used efficiently, all existing over-allocation is phased out, and future over-allocation is avoided.

As described throughout this report, RS Sand has taken great care to include tangata whenua in this process, seeking input not only into the particular proposal but also seeking to strengthen their ongoing and future relationship with local iwi. In doing so, the applicant not only has catered for the underlying, fundamental principles of the NPS-FM, but has also been able to tailor this proposal in a way that recognises the importance of freshwater not only for the quarry's operations but for the surrounding landowners and tangata whenua as a whole.



The Proposal and application have considered the management of freshwater in an integrated and whole-of-catchment basis. The groundwater take is proposed from the Hamilton Basin – South aquifer, which is not currently fully allocated, and the take is not considered to cause long-term stability issues on nearby consented abstractions.

As the wetland effects on the Site will be appropriately mitigated by the proposed wetland restoration along the southern bank of the Karapiro Stream between gullies A and F, overall, the Proposal will not result in the further loss of natural inland wetlands and their restoration will be promoted.

Given the above, the Proposal is consistent with and adheres to the NPS-FW.

11.2 National Policy Statement for Highly Productive Land 2022

The NPS for Highly Productive Land (NPS-HPL) came into force in October 2022 and seeks to ensure the availability of New Zealand's most favourable soils for food and fibre production, now and for future generations. The NPS-HPL provides direction to improve the way highly productive land is managed under the RMA through guidance to councils on how to map and zone highly productive land, and manage the subdivision, use and development of this non-renewable resource.

Land is considered highly productive under the NPS-HPL if it is zoned General Rural or Rural Production and it contains Land Use Capability (LUC) 1, 2 or 3 soils.

The objective of the NPS-HPL is that *“highly productive land is protected for use in land-based primary production, both now and for future generations”*. The following NPS-HPL policies are relevant to the Proposal:

1. Highly productive land is recognised as a resource with finite characteristics and long-term values for land-based primary production.
2. The identification and management of highly productive land is undertaken in an integrated way that considers the interactions with freshwater management and urban development.
4. The use of highly productive land for land-based primary production is prioritised and supported.
8. Highly productive land is protected from inappropriate use and development.
9. Reverse sensitivity effects are managed so as not to constrain land-based primary production activities on highly productive land.

Clause 3.9 of the NPS-HPL requires that *“territorial authorities must avoid the inappropriate use or development of highly productive land that is not land-based primary production”*, except where at least one of the situations/activities in subclause (2) applies and the measures in subclause (3) are applied.

11.2.1 Inappropriate Use and Development Exceptions

Clause 3.9(2)(j)(iv) aggregate extraction activities that have a functional or operational need to use highly productive land.

Table 2 of the NPS-HPL Guide to Implementation (NPS-HPL Guide) provides examples of activities that may be appropriate under Clause 3.9(2). Example (j)(iv) includes aggregate extraction activities that have a functional or operational need to use highly productive land, and identifies the following two tests for determining whether such activities can occur:

1. There must be a significant national or regional benefit for aggregate extraction; and
2. It must also be proven that the same benefit could not be achieved elsewhere in Aotearoa New Zealand on non-highly productive land.

Example (j)(iv) in Table 2 of the NPS-HPL Guide also confirms that the degree to which land is able to be restored to support land-based primary production is a relevant consideration.

Functional or Operational Need

The Proposal has functional and operational need to be located on the Site as the significant sand resource is located where it is. Sand extraction within New Zealand and particularly in the Waikato is often removed from river terraces as they contain layers of sediment that can be rich in sand and other materials.



Significant National or Regional Benefit

High quality sand resources are an important part of how New Zealand functions as a society, providing an essential building material that is widely used in infrastructure and housing. It is a key ingredient in concrete, which is one of the most commonly used construction materials in the world. Sand is also used in mortar, asphalt, and other building materials that we rely on.

Sand from this site will be used all over the Waikato region and exported to the Bay of Plenty and Auckland to be used in concrete manufacturing plants. The age old reasoning that aggregate quarrying needed to be carried out close to where materials would be used, keeping transportation costs low and helping to minimise building costs and emissions in local communities has somewhat gone by the wayside. This is due to both rock and sand quarrying operations having to go further and further distances from their markets due to increasing urbanisation and finding quality resources in sufficient quantity to make the venture economically viable. This makes this high quality sand resource regionally significant to the Waikato and its neighbouring regions.

Same Benefit Could Not be Achieved Elsewhere on Non-Highly Productive Land

The national test is intentionally high, as the activity of extracting minerals or aggregate from land permanently removes that land from ever being able to be used for land-based primary production.

In the case of sand extraction, rather than rock extraction, the land is only temporarily removed from being able to be used for land based primary production. In most stages of this particular proposal, the land is unavailable for no more than five years and is then re-topsoiled and made available back to the dairy farm operation for primary production. Based on anticipated demand, the Site will operate for approximately 25 years over multiple stages. Once the resource has been removed, it will be rehabilitated with all plant and buildings associated with the sand extraction operation being removed, and the bund material will be re-spread over the processing area, pit floor, final batter slopes and re-grassed to support land-based primary production (currently dairy).

As identified above, sand extraction is often removed from river terraces as they contain layers of sediment that can be rich in sand and other materials. The same richness in sediment often means they are considered high quality soil for land based primary production; this is especially true of the Waikato region. The layered nature of these terraces also quite often means they are flat which is also an ingredient in the high quality soils classification.

The sand found in river terraces is usually of high quality and quantity making it suitable and cost effective to be used within construction industries. The sand is also typically well-sorted and free from impurities, which makes it ideal for concrete and other building materials.

A search of five other existing quarries within the relatively local area and a review of those sites against the Manaaki Whenua Landcare Research Land Use Classification database shows all five are located within Class 1 or 2 soils.

The sand extraction operations are as follows:

- Winstone Tamahere – Class 1s1.
- IH Wedding, Te Kowhai – Class 1s1.
- Wilson Quarry, Hinera Road, Matamata – Class 2s3.
- Revital Sand Quarry, Leamington – Class 2s3.
- Shaws Property Holdings – Class 2s3.

Class 1s1 in this area is defined as - Flat to undulating terraces and floodplains developed on water-sorted tephra over lying gravelly sands and sandy gravels of the Hinuera Formation, below 60m asl with deep well drained Allophanic (yellow-brown loam) soils in moderate (>800<1600 mm) rainfall areas.

Class 2s3 in this area is defined as - Flat to gently undulating floodplains and low terraces of pumiceous alluvium below 400 m asl with a mosaic of well drained and imperfectly drained Allophanic (yellow-brown loams) soils in moderate (1200-1400 mm) rainfall areas. The composition and complexity of the soil pattern imposes slight limitations to management.



11.2.2 Cumulative Loss Effects

Clause 3.9(3)(a) sets out that territorial authorities must ensure that any use or development on highly productive land “*minimises or mitigates any actual loss or potential cumulative loss of the availability and productive capacity of highly productive land in their district*”.

The NPS-HPL Guide confirms that when territorial authorities consider if a use or development “minimises” or “mitigates” a loss of productive capacity, they should consider:

- The location of the activity.
- The footprint of the activity.
- Clustering of activities.
- Co-existing with land-based primary production.

While the entire area of the RTs in Section 4 was considered for excavation, areas of lower quality soils do not provide the high quality and quantity of well layered sand deposits, as these have been eroded or weathered slopes. The Site has been designed as small as possible for the constraints on-site and to access the sand resource. The pit, processing area and buildings are proposed near one another, which will minimise the footprint, haul road and loss of highly productive land. The Site’s RTs are currently used for dairy farming, which will continue around the Proposal and will be able to use the area once it is restored at the completion of the quarry.

11.2.3 Reverse Sensitivity Effects

Under Clause 3.9(3)(b) territorial authorities must ensure that any use or development on highly productive land “*avoids if possible, or otherwise mitigates, any actual or potential reverse sensitivity effects on land-based primary production activities from the use or development.*”

The NPS-HPL Guide identifies that compliance with existing district plan provisions to manage reverse sensitivity effects may be sufficient to give effect to Clause 3.9(3)(b). The relevant reverse sensitivity provisions of the District Plan are identified in Section 10.4 above.

The Proposal avoids or mitigates any actual or potential reverse sensitivity effects on surrounding land-based primary production activities. The proposed bunds will ensure that noise levels will be well within the limits of NZS6803 and the permitted activity standards of the District Plan. Any potential dust effects from the Proposal will be well contained on the Site by the proposed dust mitigation measures and will not pose significant additional risk to people in the surrounding area. Finally, the height of proposed bunds and vegetation around the perimeters of the processing and pit areas will not have an adverse effect on the surrounding environment beyond the District Plan shelterbelt permitted baseline.

11.2.4 Conclusion

The Proposal is an appropriate use or development of highly productive land, as it is an aggregate extraction activity that has a functional and operational need to use highly productive land and passes the two tests for determining whether such activities can occur (Clause 3.9(2)(j)(iv)). High quality sand from the Site will have significant benefits for the region’s infrastructure and housing construction, and the same benefit could not be achieved elsewhere on non-highly productive land. Additionally, the Proposal minimises or mitigates any actual loss or potential cumulative loss highly productive land, avoids or mitigates potential reverse sensitivity effects on land-based primary production activities (Clause 3.9(3)) and will be returned to support land-based primary production at the completion of quarrying activities.

11.3 Resource Management Act 1991

11.3.1 Part 2 Considerations

Section 5 – Purpose

Section 5(1) of the RMA states the purpose of the RMA is to promote the sustainable management of natural and physical resources. Sustainable management is defined in section 5 (2) of the RMA as “*managing the use, development, and protection of natural and physical resources in a way or at a rate, which enables people and their communities to provide for their social, economic, and cultural well-being and for their health and safety*”.



Having regard to the definition of "sustainable management" in section 5(2), the increased extraction activity will enable the quarry to provide for the social and economic wellbeing and health and safety of the community by ensuring that enough aggregate is supplied to both its existing clients and to large, local projects in the future. Aggregate products are vital for the building, construction, landscaping and infrastructure and development industries and are a key base material in many (if not most) construction and infrastructure projects. In addition, if properly designed and managed, quarrying activities are important for the operation of society yet do not cause inappropriate or major adverse environmental effects. The proposed increased rock extraction activity will therefore promote the sustainable management of the relevant natural and physical resources in accordance with section 5 of the RMA.

Section 6 – Matters of National Importance

The relevant matters in Section 6 of the RMA are commented on as follows:

- (d) *The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.*

Ngaati Korokii-Kahukura and Ngaati Hauaa have been involved in discussions regarding cultural and environmental effects of this proposal.

As such, it is considered that section 6 of the RMA is complied with.

Section 7 – Other Matters

Section 7 sets out other matters that all persons exercising functions and powers under it shall have particular regard to. The matters that are of particular interest to this proposal are:

- (a) *Kaitiakitanga.*
- (aa) *The ethic of stewardship.*
- (b) *The efficient use and development of natural and physical resources.*
- (c) *The maintenance and enhancement of amenity values.*
- (d) *Intrinsic values of ecosystems.*
- (f) *Maintenance and enhancement of the quality of the environment.*
- (g) *Any finite characteristics of natural and physical resources.*

Ngaati Korokii-Kahukura and Ngaati Hauaa have had the opportunity to exercise kaitiakitanga and the ethic of stewardship since RS Sand started consultation in 2020. Iwi representatives have visited the Site on two occasions and shared the history and cultural connections of the area. The relationship between RS Sand, Ngaati Korokii-Kahukura and Ngaati Hauaa is ongoing and the archaeological authority for works with 40m of the Karapiro Stream gully ensure unrecorded waahi tapu and sites of significance are appropriately protected.

Sand is defined as minerals under the RMA and the rate of extraction of minerals is not a matter for consideration under the RMA. The sand will be extracted at a rate to meet demand but within extraction limits determined by the consent authority (whatever those may be). A higher rate of extraction will not affect the resource itself yet will allow the same amount of resource to be extracted over a shorter period of time. This has some long-term benefits to the surrounding environment, as it ensures that the quarry is closed and rehabilitated sooner while still managing all potential and actual adverse environmental effects while in operation. In summary, section 7 is adhered to.

Section 8 – Treaty of Waitangi

Section 8 of the RMA reads as follows:

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

As noted above, RS Sand has an on-going relationship with Ngaati Korokii-Kahukura and Ngaati Hauaa, has engaged extensively with the representatives from the hapū over the last 2-3 years and plan to continue working with them. Both Ngaati Korokii-Kahukura and Ngaati Hauaa continue to practice their relationships with the Waikato River and its resources, and will lead cultural induction, cultural safety and protocol training. Accordingly, it is considered that this will ensure that appropriate account is taken of the principles of the Treaty of Waitangi, including the principle of active protection of



rangatiratanga, the principle of partnership and the principle of mutual benefit. As such, section 8 of the RMA is adhered to.

11.4 Summary

In taking a balanced view, and in reaching a broad overall judgement, which taking into account the need to provide for the well-being of people and communities, the degree of adverse effects likely to be associated with this proposal, and the nature of the receiving environment where odours of a rural nature are expected, it is concluded that the proposal meets the purpose and principles of the RMA.

12 Conclusion

This report has outlined how the effects from the Proposal will provide positive effects on the environment (additional habitat and ecological connectivity for bats and other native forest fauna along 2km of riparian margin, linking two SNA's, provide buffering and ecological connectivity) and surrounding community (employment, and local and regional supply of sand for construction). This conclusion is reached on the basis that the effects will be managed through the use of a suite of management plans and procedures, including a Quarry Management, Dust Management, Erosion and Sediment Control, and Traffic Management plans will be used to avoid, remedy, and mitigate the operational effects of the quarry.

This report has considered the proposal in terms of the relevant planning documents, particularly the NES, RPS, the Regional Plan, the District Plan and the Resource Management Act 1991. As identified in Section 6.4 of this report, the proposal is to be assessed as **Discretionary Activity** under the NES Freshwater, Regional Plan and District Plan. It is requested that the proposal be assessed on a limited-notified basis.



Appendix A Application Forms



Appendix B Records of Title



Appendix C Site and Staging Plans



Appendix D Draft Quarry Management Plan



Appendix E Draft Erosion and Sediment Control Plan



Appendix F Rules Assessment



Appendix G Transpower Written Approval



Appendix H Landscape and Visual Assessment



Appendix I Acoustic Assessment



Appendix J Air Quality Assessment



Appendix K Integrated Transportation Assessment



Appendix L Ecological Assessment



Appendix M Hydrology Assessment



Appendix N Groundwater Assessments



Appendix O Erosion and Sediment Assessment



Appendix P Geotechnical Assessment



Appendix Q Cultural Impact Assessment



Appendix R Archaeological Assessment



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