Boffa Miskell

Burnham 2020 Limited

Burnham Quarry | Application for Resource Consent and Assessment of Environmental Effects

Prepared for Fletcher Concrete and infrastructure Limited (Trading as Winstone Aggregates)

19 April 2024

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Prepared by:	Claire Kelly Planner / Principal Boffa Miskell Limited	
Reviewed by:	Catherine Clarke Planner / Partner Boffa Miskell Limited	
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Completed application forms are enclosed as **Appendix 1**. The summary details relating to the applicant and subject Site are as follows:

To:	Selwyn District Council ('SDC') Canterbury Regional Council ('ECan')
Applicant's Name:	Burnham 2020 Limited (refer to **Section 1**)
Address for Service:	Boffa Miskell Ltd PO Box 91250, Auckland 1142 Attn: Catherine Clarke Phone: 09 359 5306 Email: catherine.clarke@boffamiskell.co.nz Fletcher Concrete and Infrastructure Limited PO Box 17-195 Greenlane Auckland 1546 Attn: Dan McGregor – Senior Project & Resource Advisor Phone: +64 (21) 405 040 Email: Dan.McGregor@winstoneaggregates.co.nz
Address for Fees:	As above.
Site Address:	Grange Road and Aylesbury Road, Burnham
Legal Description:	Rural Section 19387 and Rural Section 25412 Rural Section 27776 and Rural Section 27777 Rural Section 27724 (refer Records of Title in **Appendix 2**).
Owner/Occupier Name and Address:	Burnham 2020 Limited PO Box 17 195 Greenlane Auckland.
Site Area:	361.9 hectares
Operative Selwyn District Plan	Rural: Outer Plains There is a fault line that runs across the northern portion of the Site. The Site is not subject to any overlays or designations.
Proposed Selwyn District Plan	General Rural Zone. Greendale Fault Overlay and Fault Awareness Overlay. Plains Flood Management Overlay.
Canterbury Regional Land and water Plan	Aquifer: Semi confined or unconfined aquifer. Selwyn-Waimakariri Groundwater and Surface Allocation Zone. Selwyn-Waihora Nutrient Allocation Zones.

Executive Summary

This application by Burnham 2020 Limited (a wholly owned subsidiary of Fletcher Concrete and Infrastructure Ltd, who will operate the Burnham Quarry through one of its divisions, Winstone Aggregates) seeks to establish and operate an aggregate quarry within a Site located at the junction of Aylesbury Road and Grange Road, Burnham. Please refer to the Site Plan in **Appendix 3**.

Burnham 2020 Limited (hereafter referred to as Burnham 2020) seeks:

- a land use consent in perpetuity from Selwyn District Council.
- a 35-year term on the regional council consents sought from ECan.

The Site and its surroundings

The Site was chosen because:

- it is of sufficient size to contain all quarrying activities, largely internalises adverse effects and provide a secure aggregate resource over a long period of time, minimising the need to develop additional sites in the future; and
- it is located in proximity to markets for the resource and State Highway 1 and Aylesbury Road (an arterial road) which means less carbon emissions from transporting product and no need to utilise local roads; and
- of its distance from large-scale residential populations such as Rolleston, Templeton and Christchurch City.

The Site is located on the Canterbury Plains and lies approximately 8.4km from Rolleston town centre and approximately 18.4km from the outskirts of Christchurch. It is generally accessed from State Highway 1 via Aylesbury Road. It is approximately 362 hectares in area and triangular in shape with a generally flat topography that slopes gently to the south-east. The Site is currently operated as a dairy finishing farm with some cropping and is irrigated by three centre pivot irrigators. The irrigation water has been supplied from the Central Plains Water Scheme (CPWS) stage 2 scheme since October 2018, with groundwater also available. Its exotic pastures but may be used as a breeding site by South Island pied oystercatcher (an At Risk species) and for forging by Black-fronted tern, black-billed gull and red-billed gull, paradise shelduck and mallard duck. Spur-winged plover chicks (indigenous but not threatened) have also been seen at the Site.

The Site is surrounded by primary production activities including equestrian facilities, scattered residential dwellings with a cluster located at the junction of Aylesbury and Two Chain Roads to the southeast. To the south is Burnham Camp, a New Zealand Defence Force base which supports a diverse range of activities. Approximately 3.5km to the east lies the Road Metals Quarry on Wards Road, and Rolleston Prison and Youth Justice (Te Puna Wai o Tuhinapo) are located between State Highway 1 and Two Chain Road.

The closest sensitive activities/receptors (defined in the Canterbury Regional Air Plan as a location where people or surroundings may be particularly sensitive to the effects of air pollution) are 168 Aylesbury Road, 159 and 273 Grange Road, 176 Kivers Road and 535 and 716 Wards Road.

Zoning

The rules in the Partially Operative Selwyn District Plan (POSDP) had legal effect from 19th August 2023 and are therefore considered in full in this application. The Site is zoned as General Rural, which provides for primary production activities (including quarrying and the processing of aggregate) and other compatible activities. The Zone recognises that many activities including rural production may have associated effects such as noise, dust and odour.

Although the application is governed by the rules in the POSDP, it is noted that the Site is located within the Outer Plains Zone in the Selwyn District Plan (SDP), which is a rural zone that supports a range of activities. It is also identified as an appropriate location for rural-based industrial activities such as the processing of aggregate, due to the availability of larger allotment sizes and lower population densities.

The Proposal

It is proposed to extract aggregate from the Site alongside undertaking primary production on the land prior to quarrying and post rehabilitation. The active quarry area will be a maximum of 40 hectares and will comprise three zones:

Zone	Hectares
Fixed processing plant, other processing, stockpiling, unsealed customer loadout.	18
Silt processing and storage.	7
Excavation and active rehabilitation (excluding rehabilitated areas), including conveyance and unsealed accessways.	15

The majority of quarrying activities will be undertaken during the hours of 7am to 8pm (Monday to Saturday excluding public holidays) with rehabilitation and site pre-startup including operational warmup of on-site plant occurring from 6am to 7pm on the same days. On up to 30 days (Monday to Saturday) per annum and 15 Sundays (excluding public holidays) between 5am and 7am, it is proposed to load trucks with aggregate in the stockyard and to despatch that material to concrete batching facilities.

The Site will be accessed from Aylesbury Road via a vehicle crossing that will enable trucks to enter and leave the Site without cutting up the edge of the carriageway. Aylesbury Road between the site access and Two Chain Road will be widened to 8 metres. The boundary with Aylesbury Road (from the site site) will be bunded to 3 metres in height, except in proximity to the properties along Two Chain Road where quarrying activities will be setback 100 metres into the Site. Likewise in proximity to residential properties on Grange Road, quarrying activities will be setback 100 metres into the Site. These setbacks will be planted with indigenous vegetation as will the permanent bund along Aylesbury Road.

A mobile crushing plant will be installed in the initial stockpile/extraction area near the site entrance during the first part of the Construction Phase (when the stockyard, plant processing areas and the

site administration facility are established) and will then be moved to the stockyard. However, most of the aggregate processing will be undertaken towards the centre of the Site, at least 500 metres from any site boundary.

Quarrying will be undertaken in phases circulating around the Site as shown on the Quarry Staging plan in **Appendix 5**. The removal of overburden will generally only occur during the earthwork season (typically October to April) and will be stored in temporary stockpiles along site boundaries as shown on the Edge Treatment Plan in **Appendix 5**. These temporary stockpiles will be located within the 17.5 metre setback from site boundaries, will be 3 metres in height with a 1:1 batter slope that will be grassed. They will be constructed prior to extraction occurring within 250 metres of the site boundary and extend along the length of the area to be extracted and will remain in place until the area within 250 metres of the boundary has been rehabilitated (except for the final batter). The final act of rehabilitation will be to regrade the batter slope and use the overburden within the stockpile to cover the final batter with a minimum of 200 millimetres of subsoil and 200 millimetres of topsoil ready for planting.

Any excess overburden will be stockpiled in windrows along the western boundary of the first extraction area. The internal stockpiles will be used for rehabilitation as extraction moves from the long-term processing and stockpile areas into the general extraction.

Dust will be managed by monitoring weather forecasts and weather conditions, and mitigation measures such as watering surfaces, processing aggregate when wet, minimising the amount of vegetation, overburden and soil removed, controlling vehicle speeds to 30 km/h on unconsolidated surfaces, and mulching, grassing and / or planting bare areas and bunds.

Most of the water used at the quarry will be for processing aggregate, which will either fall on the ground, or drain to silt settlement ponds, before discharging back to the aquifer. The silts within the ponds may need to be cleaned out on occasion, and this will be spread out within the Site. Stormwater from the roofs of buildings will discharge directly to ground as it will essentially be clean.

Other water such as from cleaning trucks will discharge to a sump and an oil-water interceptor, with the discharge water directed to a vegetated swale and then a soak pit. All water from sumps and soak pits will discharge to the underlying aquifer. Office wastewater will pass through an on-site wastewater treatment system prior to discharge to a subsurface dripline system placed in the landscaped and bunded areas at original ground level.

The quarry will not generate more than 250 heavy vehicle movements per day (on any one day) until the intersection of Aylesbury Road and State Highway 1 has been upgraded to a roundabout or equivalent. After that has occurred, the quarry may generate a maximum of 750 truck movements per day. Early morning truck movements between 5am and 7am will be limited to 10 truck movements per hour on up to 30 days (Monday to Saturday) and 15 Sundays per annum (excluding public holidays). It is unlikely that any trucks will return to the Site during these hours given the distance to markets.

Activity status

The Proposal requires resource consent as follows:

- Under the POSDP as overall a **Discretionary Activity** for:
    - mineral extraction,

- quarrying activity that will generate more than 40 vehicle movements per day,
- more than 60 equivalent vehicle movements per day averaged over any, one-week period,
- a quarry that will generate 50 vehicles per peak hour (at its busiest) at Year 2030 and 112 at Year 2035, and therefore will exceed the basic ITA threshold, and
- two signs at the site access that will not be set back 20m from the road.

- Under the NES-CS as overall a **Discretionary Activity** as a Detailed Site Investigation has not been prepared.

- Under the CLWRP as overall a **Discretionary Activity** for:
  - the discharge of liquid waste and sludge waste that will exceed 10m^3 per day and the rate of discharge may exceed 5mm per day,
  - The discharge of any wastewater from an industrial or trade process, into or onto land, within the Selwyn Te Waihora sub-region;
  - the discharge of stormwater from buildings, car parks, internal roads, quarried areas, processing areas and stockpiles into or onto contaminated land that will be partly associated with rural activities and partly an industrial activity;
  - the uncontrolled discharge of water through cleanfill, and
  - the deposition of more than 50m^3 of material in any consecutive 12-month period onto land which will have been excavated to a depth in excess of 5m below the natural land surface.

- Under the CARP as overall a **Discretionary Activity** for:
  - the discharge of contaminants into air from the handling of bulk solid materials,
  - The discharge of contaminants into air from the disposal of cleanfill.

Environmental Effects

Burnham 2020 commissioned a series of expert assessments to inform the design of the Proposal and assist in understanding the potential adverse effects of the Proposal including any potential mitigation measures as follows:

- Landscape Effects Assessment (LEA), prepared by Boffa Miskell for Burnham 2020 Limited, 6 September 2023.
- Burnham Quarry Landscape and Visual Assessment Graphic Supplement (LVEA) Graphics), prepared by Boffa Miskell for Burnham 2020 Limited, 21 August 2023.

- The economic significance of the proposed new quarry at Burnham in Canterbury, prepared for Burnham 2020 Limited, by New Zealand Institute Economic Research (NZIER) NZIER, 24 July 2023.
- An Archaeological Assessment, prepared by Underground Overground Archaeology (Underground-Overground) for Burnham 2020 Limited, July 2023.
- Preliminary Site Investigation, prepared by Pattle Delamore Partners (PDP) for Burnham 2020 Limited, July 2023.
- Land Contamination – Additional Clarification of Risk, prepared by PDP for Burnham 2020 Ltd, 24 July 2023.
- Burnham Quarry Assessment of Noise Effects, Rp 001 20211322, prepared by Marshall Day Acoustics (Marshall Day) for Burnham 2020 Limited, 28 August 2023.
- Burnham Quarry Transport Assessment Report, prepared by Stantec for Burnham 2020 Limited, August 2023.
- Burnham Quarry Ecological Impact Assessment (EcIA), prepared by Boffa Miskell for Burnham 2020 Limited, 2 August 2023.
- Assessment of Soil Related Effects for Burnham Quarry (Soil Assessment), prepared by PDP for Burnham 2020 Limited, July 2023.
- Hydrology Assessment for Proposed Burnham Quarry (Hydro Assessment), prepared by PDP for Burnham 2020 Limited, July 2023.
- Proposed Burnham Quarry – Air Quality (Air Quality Assessment), prepared by PDP for Burnham 2020 Limited, August 2023.

The potential and actual adverse effects are summarised below:

Landscape - The Site will remain well integrated into the broader landscape, recognising the existing and proposed planting and that most activity will occur up to 10 metres below the existing ground level. Effects on landscape character will be more than minor during the operation of the quarry, gradually reducing through successive phases of aggregate extraction and rehabilitation, resulting in less than minor effects on landscape values at completion.

Visual amenity (public viewpoints) - The greatest visual effect will be at the Site entrance along Aylesbury Road at the commencement of the project, albeit becoming increasingly screened by planting and the relocation of processing areas to the floor of the quarry. Furthermore, the existing shelterbelt, proposed long-term bund, temporary stockpiles, and proposed areas of planting will ensure that visual effects from public viewpoints will remain effectively mitigated, and will be less than minor.

Visual amenity (private viewpoints) – Views from private properties will largely remain unchanged as they will be truncated or entirely curtailed by the existing shelterbelt planting, long-term bund and intervening areas of planting including proposed native vegetation along the tops of rehabilitated slopes of the quarry, resulting in less than minor adverse effects.

Noise from activities within the Site - Noise related to the operation of the quarry will be contained within the boundaries of the Site and will meet the noise standards in the POSDP.

Noise from truck movements - whilst excluded from consideration under the noise standards, it is recognised that the truck movements to and from the quarry will increase noise relative to the status quo, most noticeably on the limited number of occasions per year that trucks are operating between 5am and 7am. This is a potential effect on amenity values. However, with the agreement of the two closest residential properties, being 168 and 146 Aylesbury Road, it would be practicable to install acoustic mitigation measures to reduce any adverse noise effects arising from truck movements.

Transport - The Site is well located on an arterial road that provides connections to State Highway1, Main South Road and State Highway 73 West Coast Road. This enables most travel to and from the quarry to occur on the state highway and arterial road network. Therefore, with local modifications proposed at the site access and to the route connecting the Site to State Highway 1 and the planned modifications to the State Highway 1 / Aylesbury Road intersection, it has been assessed that additional quarry traffic can be safely and efficiently accommodated within the transport network, and effects on the network will be less than minor.

Contaminated land – HAIL activities have been identified on the Site, but broader sampling of soil surfaces outside of HAIL activity areas shows that likely indicator contaminants (i.e. heavy metals and organochlorine pesticides (OCPs)) are at background levels. However, recognising that farming will continue across most of the Site with further potential risk for contamination from the storage of farm equipment and materials, it is proposed that identified HAIL areas are subject to targeted detailed site investigations (DSI's) as quarrying progresses across the Site. As such, potential adverse effects will be managed through an on-going process.

Ecology - There is the potential for works to damage or disturb a small number of indigenous bird nests, if construction or extraction occurs during the breeding season, which could lead to nest failure. However, due to the small number of nests potentially affected (if any) effects on local populations are unlikely and the magnitude of this effect, at worst, will be less than minor. That said, most indigenous bird species (excluding spur-winged plover) are either absolutely or partially protected under the Wildlife Act (1953), therefore pre-construction nesting bird surveys will be undertaken.

The removal, management and replacement of soils – Activities relating to soil will be undertaken in accordance with a Soil Management Plan, which includes measures designed to ensure appropriate soil rehabilitation will be implemented at each phase of quarry extraction. This means that the Site will be rehabilitated, so it can be used for agricultural activities, ensure completed areas have adequate drainage and water infiltration for irrigated pasture farming, and minimise disturbance to farming operations including irrigation of pasture.

Water quality - The major use of water at the quarry is for processing aggregate, which drains back to the aquifer when it falls on the ground, or discharges to settling ponds, where this water then generally also returns to the underlying aquifer. As this water has primarily only been in contact with uncontaminated natural strata, it is not expected to cause any adverse effects on the existing water quality in the underlying groundwater.

The annual loss of nitrate into the groundwater from continued farming use will reduce slightly while quarrying occurs on the Site, although the nitrate will reach the water table sooner in the post-quarry farming activity.

Discharges to air –It is proposed to apply a number of mitigation measures that will minimise dust emissions to within 100 metres of the source and therefore within the Site. Effects relating to discharges to air will be less than minor.

Archaeology - It is considered unlikely that pre-1900 archaeological material will be uncovered during quarrying activities. However, it is proposed to avoid damage to any archaeological site discovered during quarrying activities by applying an Archaeological Discovery Protocol. The result will be no adverse effects on archaeological values.

Cultural values - There are no known waahi tapu sites or other known sites of significance on the Site. However, through consultation with Mahaanui Kurataiao Ltd (MKT), a key cultural concern is managing potential adverse effects on groundwater quality. It has been determined that any potential adverse effects on groundwater quality will be minimised with no excavation to take place within 1 metre of the lowest recorded high ground water levels at the Site. Burnham 2020 will seek to continue engagement with MKT and Taumutu Rūnanga and Ngāi Tūāhuriri Rūnanga following lodgement of the application, as requested by MKT.

Signage - The proposed signs will not adversely affect the safety of motorists, pedestrians or cyclists using Aylesbury Road and neither will the signs affect traffic speeds, manoeuvring or the general flow of traffic by becoming a visual obstruction or distraction. They will be viewed in the context of the formed site access to a quarry and therefore, adverse effects on visual amenity will be less than minor and the rural character of the Site will largely be retained.

Positive effects - The quarry will have a positive effect on the economy of the district by ensuring a steady supply of aggregate in proximity to demand, which will assist in maintaining the price of aggregate and thereby the cost and timeliness of new infrastructure. It will also provide employment opportunities, especially for those working on quarries that have ceased or are about to cease extractive activities.

Objectives and Policies

The objectives and policies of the CRPS, CARP, CLAWRP, SDP and the POSDP have been grouped by subject in the assessment of the Proposal against the relevant objectives and policies in the plans. This approach has been adopted as the CARP, CLAWRP, SDP and POSDP must give effect to the CRPS. It is noted that little weight should be given to the objectives and policies of the SDP.

The following national policy statements of relevance to this Proposal have also been addressed:

- National Policy Statement for Freshwater Management 2021 (NPS-FM).
- National Policy Statement for Highly Productive Land 2022 (NPS-HPL).
- National Policy Statement for Indigenous Biodiversity 2022 (NPS-IB).

The proposal has been also assessed against the provisions in the Mahaanui Iwi Management Plan 2013 (MIMP).

The objective and policies in Part 2 of the NPS-FM have been assessed, and overall, it is considered that the Proposal is not contrary to the objective and relevant policies of the NPS-FM and is therefore generally consistent with the concept of Te Mana o te Wai.

The NPS-HPL is not applicable as the Site is LUC 4s7 and therefore not highly productive.

The NPS-IB is only applicable in that South Island pied oystercatcher have been observed foraging in pasture and recently cultivated loamfield within the Site, and black-fronted tern, black-billed gull and

red-billed gull may use the Site infrequently and irregularly for foraging. The Site may also be used by a small number of indigenous birds such as the South Island pied oystercatcher and pied stilt for nesting. However, any risk to nesting bird species will be managed by undertaking pre-construction nesting bird surveys during the breeding season (August to February).

It is also proposed to undertake extensive areas of indigenous planting around the Grange Road access and in the southeast corner of the Site, and along the rehabilitated batters adjacent to the site boundaries resulting in approximately 30 hectares of indigenous planting. This could provide new habitats for indigenous species and form part of a future ecological corridor across the Canterbury Plains.

Overall, the Proposal will not be contrary to the objectives and policies in the NPS-FM, CRPS, CLAWRP, CARP, SDP, POSDP and the MIMP because:

- The Site will be managed to minimise effects on the physical and natural environment.
- The quarrying activities will be undertaken in manner to minimise impacts on people's health and wellbeing.
- It will enable the extraction of a valuable natural resource that is vital to the economy of the Selwyn District and Christchurch City.
- The Site will be rehabilitated, and topsoil will be removed, stored, and replaced to enable the land to be used for primary production.
- By the time of closure, there will be approximately 30 hectares of indigenous vegetation established within the Site.

Notification

Burnham 2020 requests that these applications be publicly notified by Selwyn District Council and Environment Canterbury, in accordance with section 95A(3)(a).

1.0 Burnham 2020 Limited

The applicant for this consent and the existing application CRC222635 to renew the take and use consents for groundwater is Burnham 2020 Limited (Burnham 2020). Burnham 2020 is a wholly owned subsidiary of Fletcher Concrete and Infrastructure Ltd. This parent company will operate the Burnham Quarry through one of its operating businesses, Winstone Aggregates (Winstone Aggregates is a trading name of Fletcher Concrete and Infrastructure Limited and is one of the businesses in Fletcher Building's Concrete Division). Fletcher Concrete and Infrastructure Limited is a wholly owned subsidiary of Fletcher Building (a NZX listed entity).

Winstone Aggregates extracts hard-rock, sand and gravel from around 12 sites across the country. This resource produces aggregate and sand that is used as roading aggregate, for erosion control and drainage as well as cement based basecourse, and in cement and asphalt manufacture across NZ.

Winstone Aggregates strives to manage operations to achieve sustainable economic development while effectively avoiding or managing adverse effects on the environment. The company has:

- A robust Environmental Management System (EMS). This flexible EMS ensures accountability for environmental performance, providing a management framework that encourages openness and environmental improvement at all operational sites.
- A comprehensive Environment Policy gives direction to the EMS and includes commitments by senior management to continual improvement and pollution prevention to effect enhanced core business operations and improved environmental performance.
- A commitment to achieving a 30% reduction in Scope 1 (direct) and Scope 2 (indirect) carbon emissions by 2030.
- As part of the wider Fletcher Building Concrete Division a commitment to achieving positive biodiversity outcomes by 2023
- A database and consent management system that facilitates the allocation of responsibilities, compliance analysis and mandatory reporting as well as regular audits and assessments to ensure regulations are met or exceeded.
- A quarry/site management plan for each quarry that is tailored to the specific requirements and environmental concerns at each site.
- Employees that are trained and expected to consider how their work impacts their surroundings and how they can do better, such as calling in the water truck when roads get dusty or slowing down when driving around homes – simple, common-sense ideas that make a big difference.
- Regular inspections and environmental monitoring to verify the impacts and success of mitigation measures.

Winstone Aggregates understands the need to quarry, and process aggregate in a responsible and sustainable manner, recognising that it is also important that aggregates are extracted, processed, and transported as efficiently, economically and unobtrusively as possible. Winstone Aggregates also acknowledges that quarrying is a temporary activity and that the land will either be restored to its former use or converted to support some other activity which best meets the needs of the local

community. Winstone Aggregates has put thought and investment into ensuring that this restoration will be carried out to the highest possible standards.

2.0 Description of the Site and the Surrounding Environment

2.1 The Site

The Site is located on the Canterbury Plains and lies approximately 8.4km from Rolleston town centre and approximately 18.4km from the outskirts of Christchurch. It is generally accessed from State Highway 1 via Aylesbury Road. Refer to the Site Plan contained in **Appendix 3**.

It is owned by Burnham 2020 Limited and borders Aylesbury Road and Grange Road, at Burnham in the Selwyn District. It comprises 5 parcels of land: RS27724, RS25412, RS19387, RS27776 and RS27777.

RS25412 and RS19387 are held together in one record of title and RS27776 and RS27777 are held together in one record of title.

Figure 1: the Site taken from Google Earth

The Site is approximately 362 hectares in area and triangular in shape. Currently access to the Site is from Grange Road via a wide gravel access track. It has a generally flat topography with a gentle slope to the south-east, reflective of the ancient, braided river channels which created the broader Canterbury Plains.

The Site was converted from forestry to grazing in 2005 – 2006.

Currently the Site is operated as a dairy finishing farm with some cropping. The Site is fully irrigated by three centre pivot irrigators. There are three 515m centre pivots (270 ha), four single span towable pivots (65 ha) and set sprinklers. Irrigation water has been provided by groundwater abstraction since 2007 and the Site has also used water from the Central Plains Water Scheme (CPWS) stage 2 scheme for irrigation use since October 2018. The farm undertakes monitoring of soil moisture and adopts good management practices for irrigation.

The character of the Site is representative of the surrounding area, supporting primary production within an enclosure of linear exotic shelterbelts. It also contains infrastructure associated with the irrigation of pasture and crops with buildings (portacom office, large storage shed, shipping containers, and silos) located towards the centre of the block and a pump station on the eastern boundary. The infrastructure including the irrigation systems represent a significant financial investment in the Site. Enabling future use of the Site for primary production will ensure the efficient use of this existing investment.

The property has a Farm Environment Plan (FEP) and is regularly audited. For the year ending 2020, nutrient loss was 31 kg N/ha/yr (Overseer v 6.4.3).

Depth to groundwater fluctuates over a depth range of around 8 – 20m below ground level in the south-east of the Site and 15 – 32m in the north-west of the Site. There are at least four deep irrigation bores within the Site (>140m): M36/7710, M36/7711, M36/7712 and M36/7713.

The boundaries of the Site with Aylesbury Road and Grange Road have been planted with evergreen pine trees that are approximately 5-6 metres in height. The western boundary has also been planted in evergreen trees that provide substantial screening of the Site. The Landscape Effects Assessment in **Appendix 8** provides detailed description of the existing vegetation on the Site.

The Site has been assessed as having low ecological values with no evidence of indigenous vegetation as described in the Ecological Effects Assessment in **Appendix 12**.

2.2 Zoning

2.2.1 Operative Selwyn District Plan

The Site is located within the Outer Plains Zone in the Selwyn District Plan (SDP). The SDP recognises that the Rural zone is principally a business area that supports a range of activities that need to be able to operate efficiently and with few restrictions as practical. The Zone is characterised by a predominance of vegetation cover over buildings, with a low overall density of built development.

Residential activities occur in the Rural zone, both ancillary to farming and other business activities, and as the principal use of a site. The Plan provisions combine to maintain a pleasant living environment. However, residents should expect to tolerate mild effects associated with ‘day-to-day’ farming activities and temporary effects associated with seasonal activities such as harvesting or topdressing. Longer-lasting noise effects should be managed to not disturb residents on adjoining properties when they are indoors.

With regard to rural-based industrial activities such as the processing of aggregate, the Plan specifically states if potential adverse effects related to those activities are of a size and scale beyond that permitted by the District Plan, they should locate within a Business 2 Zone or in the Rural (Outer Plains) Zone. The latter zone has larger allotment sizes and lower population densities providing

greater opportunity for internalising adverse effects. Accordingly, the quarry and associated processing of aggregate is proposed to be located in the Outer Plains Zone.

2.2.2 Partially Operative Selwyn District Plan

The Site is located within the General Rural zone in the Partially Operative Selwyn District Plan (POSDP). It is noted that the majority of the Selwyn District is zoned as General Rural Zone, with its primary purpose being to provide for primary production activities (which includes quarrying and the processing of aggregate) and other compatible activities.

The character and amenity of the zone is one of a landscape dominated by openness and vegetation, with significant visual separation between neighbouring residential buildings. The POSDP also recognises that many activities including rural production may have associated levels of noise, dust and odour.

Residential activities are provided for but should not compromise the ability of the Zone to be used for primary production (reverse sensitivity). To control residential density, the Zone has been separated into areas. The Site is located in the East Plains/ Te Waihora ki Waimakariri[1] overlay and has a residential density of 20 hectares per residential unit.

The proposed quarry and associated activities including the processing of aggregate will therefore be appropriately located within the General Rural Zone.

2.3 Surrounding Land Uses

The activities in the area surrounding the Site reflects its rural zoning. Refer to the Map of Surrounding Land Uses in **Appendix 4.**

Immediately to the south of the Site is Grange Road are at least two equestrian facilities:

- Brugs Nicholls Dressage at 646 Grange Road.
- Mark Jones Harness Racing Stables at Overport Lodge, 259 Grange Road.

Further south, Burnham Camp, a New Zealand Defence Force base occupies a large area of land that supports a diverse range of activities. The main base is located between SH1/the railway line and Burdons Road and is defined by tree lined boundaries and security fencing. It supports activities including housing, educational facilities, shops, petrol station, military accommodation, offices and facilities. To the north of Burdons Road, and on the opposite side of Aylesbury Road are exercise facilities and shooting ranges. The Aylesbury Range is located to the west of the main camp at Burnham. The Burnham Golf Course is located around the Aylesbury Range.

The land to the west of the Site, between its northern boundary and Kivers Road, is characterised by primary production activities, with approximately 7 residential dwellings.

To the east, the land is characterised by primary production and scattered dwellings, which is indicative of the land uses in the wider area to the north and west of the Site. Further to the east (approximately 3.5km), lies the Road Metals Quarry on Wards Road. Along Two Chain Road there are a significant number of rural lifestyle blocks with the majority containing a dwelling. Rolleston Prison and Youth Justice (Te Puna Wai o Tuhinapo) are located between SH1 and Two Chain Road.

[1] Te Reo Meaning: Refers to Lake Ellesmere and surrounds, heading towards the Waimakariri River.

The location of these activities aligns with the current urban edge of Rolleston on the opposite side of State Highway 1 (SH1). The remaining area to the west of Rolleston is characterised by primary production, scattered dwellings and the Pines Wastewater Treatment Plant lies to the west.

Further to the east extending to the boundary of Christchurch and north to West Melton, land use is dominated by rural lifestyle blocks.

To the southwest of the Site are South Pacific Meats on Two Chain Road and Owens Farm at 908 Two Chain Road (a poultry breeder farm for Tegel). approximately 6.5 km north of the Selwyn / Waikirikiri River and 12.5 km south of the Waimakariri River.

2.4 Sensitive Activities

The term 'sensitive activities' is defined in the Canterbury Regional Air Plan as a location where people or surroundings may be particularly sensitive to the effects of air pollution, and includes:

- Residential properties;
- Hospitals;
- Schools;
- Libraries; and
- Public outdoor locations (e.g. parks, reserves, beaches, sport fields).

The nearest sensitive receptors are summarised in **Table 1** below and **Figure 4** (taken from the Air Quality Assessment in **Appendix 15**) shows these graphically. It is noted that that not all sensitive receptors have been identified but a discrete selection based on wind direction, i.e. they would be representative of other more distant dwellings along the same wind direction, but still in proximity to the proposed quarry.

Table 1: Location of receptors close to the proposed quarry.

Receptor Name	**Address**	**Closest Distance to Quarry Activity (m)**	**Direction Relative to the Quarry**
R1	168 Aylesbury Road	120	East northeast
R2	159 Grange Road	170	South
R3	273 Grange Road	350	South
R4	176 Kivers Road	330	Northwest
R5	535 Wards Road	1,100	North northwest
R6	716 Wards Road	1,450	East northeast
Notes: Distance is measured from the closest proposed quarrying activity.			

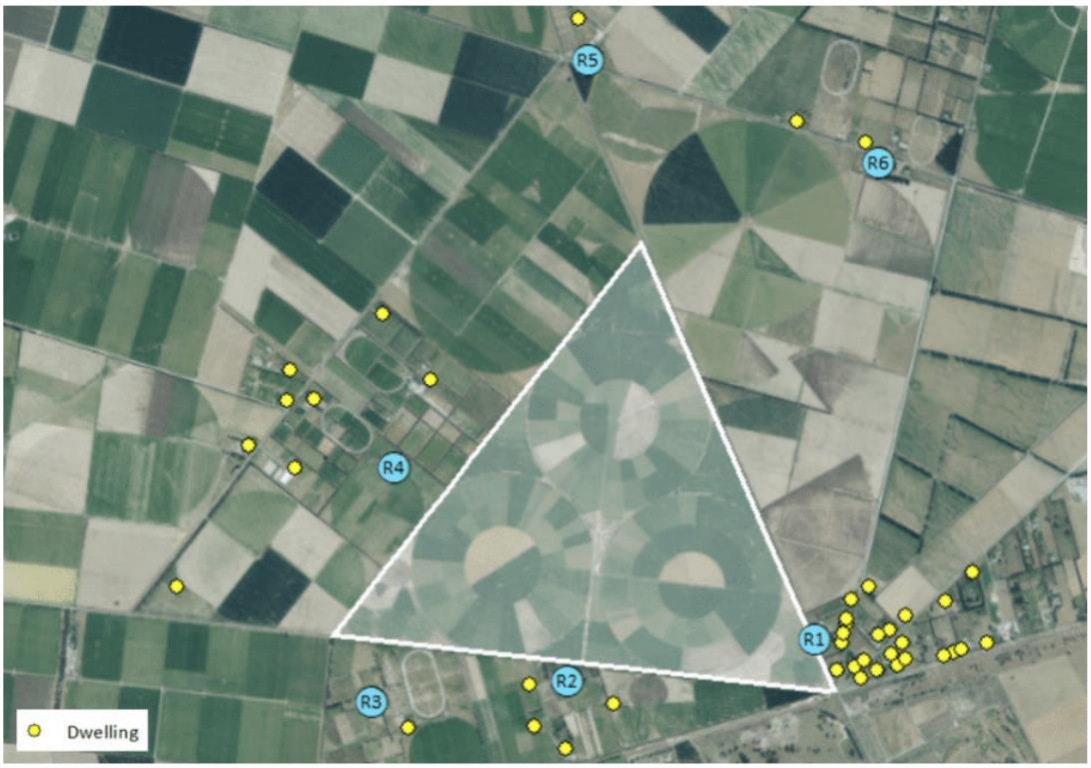

Figure 2: Location of Sensitive Receptors

The closest dwelling relative to the Site is approximately 25 metres to the east northeast of the site boundary, however it is not proposed to undertake gravel extraction within 100 metres of a dwelling. Other than residential dwellings, the only other locations that might be sensitive to air quality impacts in the vicinity of the proposed quarry are Coronation Park and the Golf Club which are 250 metres and 700 metres respectively to the southwest.

2.5 Meteorological Conditions

2.5.1 Rainfall

The percentage of dry days by month has been calculated based on the nearby Lincoln monitoring site for the years 2020 to 2022 and is presented in the figure below. The driest months of the year are generally January and April. Over the three-year period, the number of days where evaporation rates exceed rainfall in a 24-hour period (or 'dry days') was 888 days, which corresponds to 81 percent of the time.

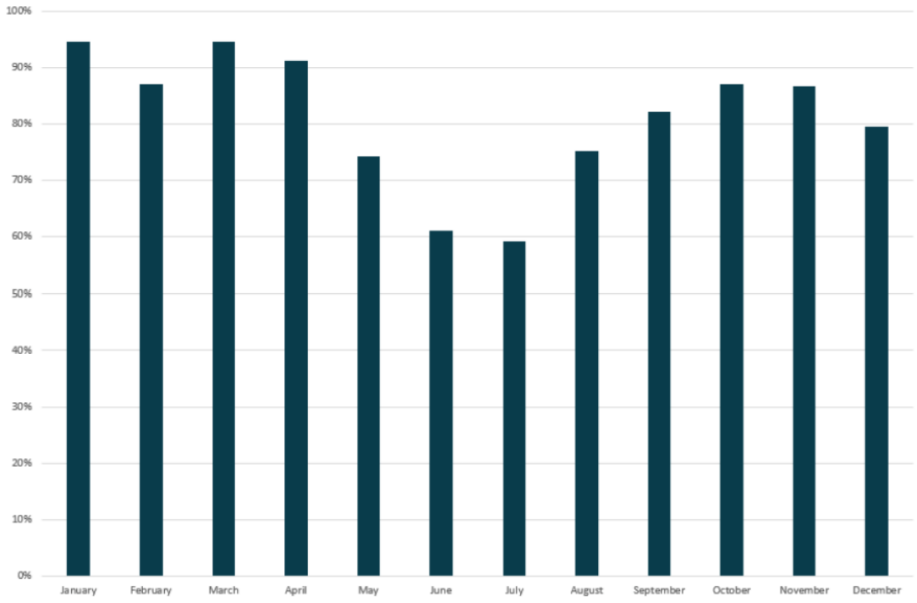

Figure 4: Percentage of dry days by month Source – Figure 6 in the Air Quality Report (Appendix 15)

2.5.2 Climate

The long-term average rainfall for the Site is 681 mm/year, with an average temperature of 11.8^{o}C and annual potential evapotranspiration of 916mm/year. Climate data for the Site has been sourced from OverseerFM's climate station tool (Overseer version 6.4.3) for the nitrogen losses.

2.5.3 Wind

The Site has its own Automatic Weather Station (AWS); however, this has only been in operation since 16th August 2022 and therefore does not cover a full range of meteorological conditions. The nearest publicly available meteorological weather stations relative to the Site are at Christchurch Airport approximately 21 km to the northeast, Darfield approximately 15 km to the northwest and Lincoln approximately 13 km to the east. However, the data from these sites would not represent the likely wind conditions at the Site.

Given the lack of suitable meteorological data, PDP has used a three-dimensional meteorological dataset developed using the Weather Research and Forecasting model (WRF[2]). The WRF dataset covered the area of the Site at 1km resolution for the years 2019-2020. Both the data collected at the Site and the WRF meteorological dataset for the same months (September to December) show dominant winds from both the northeast and northwest. However, the WRF dataset appears to be overpredicting north-westerly winds and overall predicts stronger winds but using the WRF dataset will add conservatism to the air quality assessment.

Table 2 from the Air Quality report in **Appendix 15** (page 13) below presents the predicted distribution frequency of wind speed, which shows the predominant higher speed winds (greater than 5 metres per second (m/s)) originate from the northwest.

[2] https://www.mmm.ucar.edu/weather-research-and-forecasting-model

Table 2: Wind Speed Frequency Distribution for the Site

Direction	Wind Speed (m/s)		Total (%)
	0-5	>5	
North	5.2	0.8	6.0
North Northeast	7.4	0.8	8.1
Northeast	12.2	5.2	17.5
East Northeast	3.8	3.6	7.4
East	1.0	0.0	1.0
East Southeast	0.8	0.0	0.8
Southeast	1.9	0.1	2.0
South Southeast	2.6	0.9	3.5
South	2.6	1.1	3.7
South Southwest	2.9	1.5	4.4
Southwest	3.4	1.8	5.2
West Southwest	4.5	1.7	6.2
West	5.4	0.8	6.2
West Northwest	5.1	2.8	7.8
Northwest	5.0	7.1	12.1
North Northwest	3.9	3.3	7.1
Calms			0.8

When wind speeds at the ground level reach 5 m/s they have the highest potential to transport dust off-site. In the case of the Site, winds from the north northwest to the south have the potential to transport dust to the closest receptors along the southern boundary and southeast corner of the Site, and these winds have speeds in excess of 5 m/s between 0 and 5.2 percent of the time. These predicted wind speeds are based on winds at 10 metres high and therefore will overpredict strong winds at ground level.

2.6 Cultural Context

The Site is located within the rohe of Te Taumutu Rūnanga: one of the 18 papatipu rūnanga of Ngāi Tahu. It does not contain any sites of significance to Te Taumutu Rūnanga as far as the Applicant is aware.

It is recognised that whilst some distance away, any potential risk to water quality in Te Waihora should be considered. This Lake is a treasured source of mahinga kai and subject to on-going restoration of its values.

3.0 The Proposal

3.1 Overview

Burnham 2020 proposes to develop an aggregate quarry within a Site located at the junction of Aylesbury Road and Grange Road, Burnham. Please refer to the Site Plan in **Appendix 3**.

Quarrying activities will be undertaken whilst enabling on-going use of the majority of the Site for primary production. Simultaneous on-going rehabilitation of the quarried land will also occur as quarrying of each portion ceases.

3.1.1 Guiding Principles

Burnham 2020 has developed guiding principles that have driven the design of this Proposal. These are, in no particular order:

- Internalisation of potential adverse effects arising from proposed quarry activities to the extent practicable.
- Retention of the existing rural outlook and character when viewed from surrounding sites and public roads. This will be done by ensuring all boundaries retain planted screening as well as by the construction of a permanent boundary bund alongside Aylesbury Road and temporary overburden stockpiles prior to extraction occurring. Both the permanent bund and overburden stockpiles will be 3 metres in height and be located inside the screening vegetation. Furthermore, substantial additional planting is proposed within the southeast corner of the Site, providing a 100m buffer between extraction areas and Aylesbury Road in proximity to adjoining residential properties. It is intended that plants will be eco-sourced and representative of the original Canterbury Plains species, where feasible.
- Minimisation of the volume of water used by recycling water and maximise the return of any non-recycled water cleanly to the aquifer.
- Achievement of a goal of a 30% reduction in direct and indirect carbon emissions by 2030. This requires flexibility in the type of machinery and plant that is used on the Site, with a general move away from diesel powered to electric or green hydrogen, and potentially the use of conveyors. It is noted that:
    - whilst the activity of depositing cleanfill (as defined in the Canterbury Land and Water Plan) forms part of this application, it will **only** use virgin and processed materials that have been extracted from within the Site and is essentially earthworks.
    - the take and use of groundwater do **not** form part of this application. An application to renew CRC222536 and CRC221642 – water permits to take and use water (CRC222635) was lodged with ECan under s124 of the RMA on 26th November 2021. This application is on-hold under s91 of the RMA pending receipt of applications to undertake quarrying i.e. discharges to land and air, extraction and cleanfilling.

3.1.2 Duration of the proposed activity

The quarry will have a life expectancy of at least 60 years based on current demand.

The application for resource consent seeks to provide as much certainty about the Proposal over the anticipated life expectancy of the quarry, as is practicable and feasible at this time. Land use consent is sought without the restriction of any term to allow for the extraction of aggregate to respond to market needs over time.

3.1.3 Reason for the Proposal

Aggregate is a vital material that is essential in the development of buildings, roads and infrastructure. New Zealand uses 9-10 tonnes of aggregate every year for each adult and child. (Aggregate & Quarrying Association - https://aqa.org.nz/fact-files/).

In Canterbury, this demand may be slightly higher due to population growth, Christchurch is still rebuilding after the earthquakes of 2010 and 2011, and the proposed stadium is under construction. Selwyn is also the fastest growing district in New Zealand with Rolleston being the main area of growth for both residential and commercial development.

Existing quarries in Canterbury are vertically constrained to an approximate depth of 10 metres due to underlying aquifer systems, so tend to expand horizontally. In turn, the expansion of existing quarries is often constrained by surrounding activities and land uses, and issues of reverse sensitivity.

It is also understood that (at this time) all the braided rivers, where gravel can be extracted, (for example the Waimakariri and the Rakaia) are overallocated in terms of consented gravel extraction volumes.

Fletcher Concrete and Infrastructure Limited is actively investigating alternative aggregate sources such as recycled concrete to meet New Zealand's aggregate demand. Currently there are barriers in place to wide-scale use of alternative aggregate sources. The barriers are complex and encompass existing policy frameworks, customer perception, technical constraints and economic factors. As a consequence, these alternative products will likely only form a small percentage of the market for the foreseeable future.[3]

Fletcher Concrete and Infrastructure Limited (trading as Winstone Aggregates) currently owns and operates the Wheatsheaf Quarry in Broadfield and previously owned and operated the Yaldhurst Quarry on West Coast Road.

Extraction activities have ceased at Yaldhurst Quarry as there is no adjoining land onto which it can readily expand, and the depth of extraction cannot be increased due to the sensitivity of the underlying Christchurch West Melton Aquifer. Only cleanfilling and rehabilitation activities are occurring at the former quarry, which is now owned by another company.

Wheatsheaf Quarry has a projected lifespan of approximately 6 years. Land use and discharge consents granted on 28th June 2022 provide for an expansion of 6.8 hectares for quarrying activities. Any further expansion of Wheatsheaf Quarry is constrained by setbacks required from adjoining residential properties for amenity and rural character. Therefore, this quarry could only currently

[3] WSP/ Opus Recycled aggregates on New Zealand Roads: Barriers to update and drivers for change.2018.www/.nzta.govt.nz/assets/Highways-Information-Portal/Technical-disciplines/Resource-efficiency/Research-projects/FINAL-Recycled-aggregates-on-NZ-roads.pdf.https??:

expand into a small area of available land to the southeast that is constrained by setbacks that would be required from Robinsons Road.

Given these constraints to expansion of existing quarries and current barriers to the use of alternative aggregate sources, Burnham 2020 seeks to develop a new quarry to meet projected demand and provide a long term, secure supply of aggregate to the Canterbury region.

The projected demand is detailed in the New Zealand Institute of Economic Research report in **Appendix 17.** The report describes the importance of quarrying, and the projected demand for aggregate resource in the Canterbury region. In summary, aggregate extraction is a regionally significant industry due to its underpinning role in the development and maintenance of infrastructure. Without continuing secure access to aggregate sources close to demand, infrastructure costs would rise, and its affordability would decrease. This would have impacts for all the region's industries that rely on that infrastructure, both directly (infrastructure providers) and indirectly (infrastructure users, such as transport operators).

3.2 Site selection

Burnham 2020 undertook a detailed process of site selection. In summary the factors which influenced the site selection process were:

- Size is sufficient to contain all quarrying activities, internalise adverse effects to the extent practicable and provide a secure aggregate resource over a long period of time in order to minimise the need to develop additional sites in the future.
- Proximity to markets for the resource and State Highway 1. Aggregate is expensive to transport. This dictates the distance that the site can be located from identified markets and key transport networks. Locating near markets also ensures that any reduction in carbon emissions achieved by the quarry operations is not offset by high (carbon) emissions from trucks travelling long distances.
- Distance from large-scale residential populations such as Rolleston, Templeton or Christchurch City. The Site is in a rural area, recognising rural residential properties either adjoin or are near the Site. There are approximately 70 rural lifestyle properties located to the southeast along Two Chain Road heading back towards Rolleston. The Burnham Military Camp is also located to the south.

3.3 Design of the Proposal

Burnham 2020 commissioned a series of expert assessments to assist in understanding the potential adverse effects of the proposal and inform the design of the proposal including any potential mitigation measures.

These expert assessments are listed below, including how they are referenced in this AEE.

- Landscape Effects Assessment (LEA), prepared by Boffa Miskell for Burnham 2020 Limited, 6 September 2023.
- Burnham Quarry Landscape and Visual Assessment Graphic Supplement (LVEA) Graphics), prepared by Boffa Miskell for Burnham 2020 Limited, 21 August 2023.

- The economic significance of the proposed new quarry at Burnham in Canterbury, prepared for Burnham 2020 Limited, by New Zealand Institute Economic Research (NZIER) NZIER, 24 July 2023.
- An Archaeological Assessment, prepared by Underground Overground Archaeology (Underground-Overground) for Burnham 2020 Limited, July 2023.
- Preliminary Site Investigation, prepared by Pattle Delamore Partners (PDP) for Burnham 2020 Limited, July 2023.
- Land Contamination – Additional Clarification of Risk, prepared by PDP for Burnham 2020 Ltd, 24 July 2023.
- Burnham Quarry Assessment of Noise Effects, Rp 001 20211322, prepared by Marshall Day Acoustics (Marshall Day) for Burnham 2020 Limited, 28 August 2023.
- Burnham Quarry Transport Assessment Report, prepared by Stantec for Burnham 2020 Limited, August 2023.
- Burnham Quarry Ecological Impact Assessment (EcIA), prepared by Boffa Miskell for Burnham 2020 Limited, 2 August 2023.
- Assessment of Soil Related Effects for Burnham Quarry (Soil Assessment), prepared by PDP for Burnham 2020 Limited, July 2023.
- Hydrology Assessment for Proposed Burnham Quarry (Hydro Assessment), prepared by PDP for Burnham 2020 Limited, July 2023.
- Proposed Burnham Quarry – Air Quality (Air Quality Assessment), prepared by PDP for Burnham 2020 Limited, August 2023.

3.4 Proposed activities

This section describes the quarrying activities including site preparation, aggregate extraction, processing of aggregate and rehabilitation, proposed by Burnham 2020 at the Site.

The proposed quarrying activities will be undertaken in a series of phases as set out in the Quarry Staging plan in **Appendix 5.** These phases and the indicative timings are the Construction Phase being 0 to 5 years when works such as constructing the vehicle crossing and access, the buildings, the permanent bund along Aylesbury Road and the stockpile are undertaken, Extraction Phase being 6 to (approximately) 60 years and Completion and Final Rehabilitation at year 60. The timing is only approximate, having been developed based on current demand projections for the quarry.

3.4.1 General matters

3.4.1.1 Layout of the site

The proposed quarrying activities will be located on the Site in accordance with the Plans in **Appendix 5**.

3.4.1.2 Active Quarry Area

The active quarry area will be a maximum of 40 hectares and comprises a number of zones.

The area of each zone will generally be as listed below (although some flexibility is required). However, the total active area will not exceed 40 hectares.

Purpose of the Active Quarry Zone	Area of the Zone (hectares)
Fixed processing plant, other processing, stockpiling, unsealed customer loadout.	18
Silt processing and storage.	7
Excavation and active rehabilitation (excluding rehabilitated areas), including conveyance and unsealed accessways.	15
Total	**40**

3.4.1.3 Hours of Operation

The proposed hours of operation will be as follows:

Hours of Operation			Activities
AT ALL TIMES			Environmental mitigations (including dust control), light vehicle movements into and on site, operation of site office, site security and light maintenance.
MORNING	Monday - Sat (excluding public holidays)	6am to 7am	Rehabilitation and movement of vehicles within site associated with that activity. Site pre-startup including operational warmup of on-site plant.
DAYTIME	Monday - Sat (excluding public holidays)	7am to 8pm	Full range of production activities within current operational area and/or primary and secondary stockyard.
EARLY MORNING	Monday to Saturday on up to a maximum of 30 days per annum (excluding public holidays)	5am to 7am	Loadout and access / egress of trucks operated by the quarry operator.
	Sundays on up to a maximum of 15 days per annum (excluding public holidays)	5am to 7am	

3.4.1.4 Staff numbers

The Site will employ approximately 15 full time people.

3.4.1.5 Lighting

Lighting is proposed as the Site will need to be accessed at times of darkness, particularly in winter. A "flag light" will be located at the Site entrance to highlight the location and position of access features. Internal lighting is also proposed and will be directed downwards, away from site boundaries so that light spill will not exceed 3-lux spill onto any part of an adjoining property or road.

3.4.1.6 Signage

Signage displaying the name of the quarry will be located at the vehicle entrance on Aylesbury Road. There will be one sign on either side of the entrance. The signage will be located within the Site, setback from the road boundary and may be lit as the Site will be accessed at night.

3.4.2 Construction Phases

3.4.2.1 Construction and design of vehicle crossing.

Development of the Site will commence with the construction of the vehicle crossing for both light and heavy vehicles from Aylesbury Road. The vehicle crossing will be formed to the Waka Kotahi commercial vehicle access standard including widening the eastern side of the road and entry side of the access. This exceeds the design standard for vehicle crossings for commercial and heavy vehicles for all roads in the Selwyn District Plan. The vehicle crossing will be constructed to a high pavement and drainage standard to ensure that the pavement achieves a long service life without cracking or potential water damage.

The internal access road will be approximately 9 metres in width (7m wide sealed asphalt surface with 1m unsealed shoulder either side) and sealed for 150 metres into the Site to the weighbridge/initial stockyard area. There will also be a 1.5 metre bund constructed on either side of the access road.

After the Construction Phase (refer to Phasing Plan in **Appendix 5**), the access road will be sealed for a further 150 metres from the weighbridge to the permanent stockyard. This will result in a total of 300 metres of sealed road with a 6.7% gradient from the unsealed stockyard to Aylesbury Road.

The Aylesbury Road accessway will curve into the Site with bunding to prevent direct line-of-sight to quarry activities from the road frontage. The bunding and screening of the operational area will remain in place for the life of the quarry.

Works are also proposed to widen Aylesbury Road between the site access and Two Chain Road to form an 8-metre-wide sealed carriageway to provide for the volume of trucks that will result from the quarrying activity and turn into and from the Site. These works will require approximately 1 metre of widening on each side of the road over a length of approximately 1.5 kilometres. These works will be carried out to satisfy the 7.5 metre width required by Table E10.5 in the Selwyn District Plan. However, it is acknowledged that the agreement of SDC will be required to undertake these works. It is also understood that SDC already has plans to upgrade this road in its Long-Term Plan (2021 to 2031) as part of its Safe Network Programme Safety Improvement under the Ministry of Transport's Road to Zero strategy, and it may be that Burnham 2020 can work with SDC to expediate this work.

The existing vehicle crossing off Grange Road will remain as access for farm vehicles only, keeping the farming and quarrying activities separate and avoiding possible conflict between stock and quarry trucks. However, an internal road with a grade of 6.7% will need to be constructed from Grange Road to access rehabilitated land used for primary production. It will have planting on its batters that reflects the wider quarry internal batter planting.

3.4.2.2 Site facilities

The site office, staff amenities, parking and weighbridge areas will be established in proximity to Aylesbury Road. The buildings will be no more than 5 metres in height and will be set back at least 30 metres from Aylesbury Road.

The weighbridge installation and sealing of 150 metres of access road between site boundary and the weighbridge will be completed as part of the construction phases to establish the quarry and prior to any extraction activities.

A wheel wash will be established at the base of the exit ramp. All road going vehicles leaving the Site will be required to pass through the wheel wash, which will be over 150 metres from the exit onto Aylesbury Road.

The Site will be fully fenced with an appropriate farm fence and gated, and the gates will be locked when the quarry is not operating. Areas of the Site which are actively farmed, or otherwise used for an alternative use will also be fully fenced and have an independent access way, providing clear delineation between quarrying and other activities. There will be signage advising access is prohibited, cameras and buildings and plant will be alarmed/monitored.

3.4.2.2.1 Services

Services including potable water, power, electricity, and telecommunications will be installed.

An upgrade is proposed to the transmission infrastructure. These works will be carried out by Orion and do not form part of this application.

3.4.2.2.2 Mobile plant

A mobile crushing plant will be installed in the initial stockpile/extraction area near the site entrance in the first part of the Construction Phase and then moved to the stockyard.

3.4.2.3 Stripping of overburden

Overburden is the topsoil and subsoil layers that lie above the aggregate that must be stripped and removed prior to aggregate extraction. It is estimated the overburden is generally 0.35 metres in depth at the Site.

Site preparation works will require the stripping of overburden within the part of the Site where the stockyard, plant processing areas and the site administration facility are proposed to be located.

The overburden will be used to create a permanent bund along Aylesbury Road, which will remain in place for the life of the Quarry. The material will also be used for the rehabilitation of the stockyard area. Where practicable, subsoil and topsoil layers used to form bunds will be kept separate to enhance utilisation of this material for future rehabilitation works.

3.4.2.4 Bunds

During the Construction Phase, a permanent bund will be established from the site access for 1 kilometre south along Aylesbury Road. This permanent bund will be constructed entirely from overburden stripped from the processing and stockyard areas and will remain in place throughout the life of the quarry. The bund will be 3 metres in height, with a 1:2 batter slope with a 1 metre wide crest along the top to ensure stability and to facilitate maintenance access. The permanent bund will be planted and grassed.

3.4.2.5 Landscaping

The site boundaries along Aylesbury Road, Grange Road, and the boundaries of properties adjacent to Kivers Road are generally fully screened by an established evergreen shelterbelt approximately 5 metre in height by 3.5 metre in width. Where there are gaps in this existing shelter belt, these will be planted with the same species of tree. This shelter belt will be retained for the operational life of the quarry except where it is required to construct the new vehicle access crossing to the Site off Aylesbury Road. Any trees in the shelter belt that are lost due to weather events or disease will be replaced to ensure the Site remains effectively screened.

In the southeast corner of the Site, planting of native species will be completed within the 100 metre set back from the road boundary at the time Phase 3 is commenced. When Phase 5 extraction commences, additional indigenous planting will also be undertaken within the 100 metre set back from Grange Road as shown on the Landscape Strategy in **Appendix 5**. This will result in a combined total of 8 hectares of native planting.

3.4.3 Extraction Phases

It is estimated that the Site contains 26 to 36 million banked cubic metres (BCM) of aggregate that equates to approximately 60 years supply of resource based on the current projected demand for aggregate. However, the length of time required to extract the aggregate resource on Site will depend primarily on demand. Total resource extracted each month will be on average 500,000 BCM but will fluctuate with market demand and economic conditions.

3.4.3.1 Removal of overburden

The removal of overburden will generally only occur during the earthwork season (typically October to April).

Overburden will be stripped by machinery, loaded directly into trucks and transported to the Site boundary and formed into temporary stockpiles around the Site as shown on the Edge Treatment Plan in **Appendix 5** or immediately used to rehabilitate already quarried areas. Any excess overburden will be stockpiled in windrows along the western boundary of the first extraction area in the southeast centre-pivot area.

3.4.3.2 Stockpiles

At the time of constructing stockpiles, extraction activities will be occurring at least 8-10 metres below ground level, as extraction will push out from within the quarry towards the site boundaries.

The stockpiles will be 3 metres in height, with a 1:1 batter slope that will be grassed. The temporary stockpiles will be located within the 17.5 metre setback from site boundaries and will be constructed

prior to extraction occurring within 250 metres of the site boundary. The stockpiles will extend along the length of the area to be extracted and will remain in place until the area within 250 metres of the boundary has been rehabilitated (except for the final batter). The final act of rehabilitation will be to regrade the batter slope and use the overburden within the stockpile to cover the final batter with a minimum of 200 millimetres of subsoil and 200 millimetres of topsoil ready for planting.

3.4.3.3 Plant Processing and Stockyard Area

The first area of extraction will create the plant processing and stockyard areas towards the centre of the Site, approximately 500 metres from Aylesbury Road. Extraction will use a top-down method using excavators, wheel loaders, and trucks. The material will either be processed immediately with mobile crushing equipment into saleable material or stockpiled in a future extraction area (once overburden has been removed) for later processing. Any stockpile of material will be less than 4 metres in height (when measured above the original ground level of the quarry).

Once the plant processing and stockyard areas have been extracted to full depth, the extraction methodology will change to extraction from the pit floor, which is expected to be approximately 10 metres below the original ground level. The extraction area will advance by removing material from the toe of the active quarry face. It is estimated that it will take approximately 5-6 years to extract and process the plant processing and stockyard areas.

3.4.3.4 Remaining extraction area

It is proposed to undertake extraction with minimal disturbance to existing farm infrastructure (water lines, irrigators, power, buildings), and retain a separation distance of at least 500 metres from adjoining residential properties for as long as possible.

Extraction will progress in phases focusing within one specific centre pivot irrigated area at a time starting with Southeast, then Southwest and finally the Northern centre-pivot area. Each centre pivot irrigation area will be divided into wedges for extraction to minimise disruption to the existing irrigated farmland. From Phase 3, the quarry is projected to extract approximately 500,000 BCM of resource per year. After approximately 10 years, the extraction and rehabilitation will be in equilibrium with 25 hectares of active quarrying area equivalent to approximately a 5-year cycle from extraction to rehabilitation.

The 5-year cycle of extraction to rehabilitation includes:

- Year 1 - Active Extraction.
- Year 2 - Use for access to working area.
- Year 3 - Deposit silt and aggregate.
- Year 4 - Allow silts to dry and consolidate.
- Year 5 – Level silts, add topsoil and seed/plant = End of ‘Active Quarry’ zone.

The maximum depth of extraction will vary across the Site but is estimated to be an approximately 10 metre depth to ensure that extractive activities occur 1 metre above the highest level of groundwater recorded for the Site. Extraction machinery will be fitted with telemetered grade control to ensure that machinery cannot extract below the designed floor level and provide a record of actual extraction machinery activity.

It is proposed that the extraction of aggregate will be undertaken in increments of 25 hectares, commencing in proximity to the Site entrance and facilities area.

It is proposed that the areas of extraction will generally be set back approximately:

- 24.5 metres from Aylesbury Road, extending to 100 metres along approximately 0.6km of the southwestern corner of the Site in proximity to the adjoining residential properties, and
- 17.5 metres from Grange Road, adjoining rural zoned land and residential properties to the west extending to 100 metres in proximity to the Site entrance and adjoining residential properties on Grange Road.

3.4.3.5 Method of extraction

Extraction of the aggregate resource will start with the use of standard quarrying machinery such as excavators, wheel loaders, dump trucks, and bucket wheel excavators. It is not proposed to undertake any blasting.

As the expected life of the quarry is approximately 60 years, it is likely the equipment used for extraction will change as technology advances in terms of energy efficiencies and reductions in carbon dioxide emissions. As new technologies develop, Burnham 2020 will seek to utilise more sustainable equipment and plant in accordance with the overall sustainability objectives of Fletcher Concrete and Infrastructure Limited.

Once the aggregate resource has been extracted, material will be transported to the processing plant by truck along the haul road.

In the future, material may be transported to the processing plant by way of covered overland conveyors. Overland conveyors provide an efficient, cost-effective way of moving material using renewable energy sources. Overland conveyors will minimise dust generation, especially when compared to typical load and cart operations using dump trucks and haul roads. A temporary access road would be required to maintain the overland conveyor and provide access to the active extraction area for equipment and transportation of rehabilitation materials.

Stockpiles of extracted aggregate will be located on the floor of the extraction areas and will be no greater in height than the height of the closest earth bund, fencing or landscaping. Therefore, stockpiles of aggregate will be fully screened from any public views.

3.4.4 Stockyard

Extracted and processed material will be stockpiled in the stockyard. Activities in the stockyard will include:

- Final sizing into various products.
- Blending and combining product.
- Road truck access and movements.
- Loading road trucks with wheel loaders, overhead bins, and conveyors.

3.4.5 Processing of aggregate

The quarry will use a combination of fixed and mobile processing plants. However, most processing will occur inside the main processing plant, towards of the centre of the Site identified on the Quarry Staging Plan (Figure 4b) in **Appendix 5**. The boundaries of the processing area will be at least 500 metres from any site boundary.

3.4.5.1 Mobile processing plant

Mobile processing plants will also be used in the early establishment of the processing and stockyard areas and, as and when required to supplement the fixed plant production capacity in meeting peak demand. The mobile processing plants will be located at least 250 metres from site boundaries.

3.4.5.2 Fixed processing plant

Fixed processing plant will be located in the plant processing area and will include fixed plant of 5 to 8 crushers. There will be a mix of dry and wet processing, as aggregate will be crushed, screened and washed. Wash water will be captured and cleaned, which will possibly include the use of clarifying silos and filter presses, or otherwise will involve pumping wash water to settling ponds.

3.4.6 Dust

3.4.6.1 Generation of dust

The extraction and processing of aggregate and the movement of vehicles within the quarry site will generate dust. This aspect of the proposal is described in detail in the Air Quality Assessment in **Appendix 15**. In summary, the most significant source of dust will be from the movement of vehicles along unpaved roads, stripping of overburden and the creation of bunds during dry weather.

3.4.6.2 Dust suppression activities

3.4.6.2.1 Overburden Placement

During overburden removal and placement, the following mitigation measures will be implemented to mitigate the potential dust effects:

- watering the surface prior to disturbing it during dry weather conditions, if required;
- minimising the amount of vegetation, overburden and soil removal to a practicable level;
- controlling vehicle speeds to 30 km/h on unconsolidated surfaces;
- dampening of haul roads; and,
- mulching, grassing and / or planting of bare areas and bunds shall be undertaken as soon as reasonably practicable.

When it is impracticable to avoid overburden disposal during particularly dry weather, watercarts or fixed sprinklers will be used to ensure that adequate dust suppression occurs to avoid generating off-site dust effects.

3.4.6.2.2 Aggregate Extraction and Truck Loading

For the majority of the time the rock extraction and truck loading will take place below existing ground level which will greatly reduce off-Site dust emissions. In addition, or when extraction and works are undertaken around or at the current ground level such as enabling works, there are three possible techniques that are commonly used at quarries to control dust from excavation and truck loading activities. These include wetting the material on the ground prior to the commencement of loading, the use of a fine water spray whilst loading is occurring, and / or the use of windbreaks to reduce wind velocities in the vicinity of the quarry.

3.4.6.2.3 Aggregate Processing

The majority of the aggregates will be processed wet, which will result in little potential for dust emissions from the processing plant. Additionally, it is proposed to undertake the following mitigation:

- All dry screens will have either fixed line fogging installed or will be enclosed.
- All crushers will have fixed line fogging installed around the infeed and outfeed, with additional fogging on the first few metres on the discharge conveyor.
- All transfer points for unwashed or dry material will have fixed line foggers installed.
- Conveyors transferring unwashed dry products less than 5 mm will be covered.
- Fogging canons will be available to control residual emissions as required.
- Locate the processing plant near the centre of the site (over 1,000 metres from the closest dwelling) and approximately 10 metres below the existing ground level.

3.4.6.2.4 Stockpiles and Exposed Areas, Truck Loading and Transportation

The following mitigation measures will be the main techniques to control dust emissions from stockpiles, exposed areas, truck loading and transportation:

- Minimise, at all times, the area from which dust particles can be eroded.
- Vegetate the surface. However, ground cover can take some time to establish, particularly if required during a slow growing period. Therefore, other measures, such as polymer stabilisation, are often required whilst vegetation is becoming established.
- Periodic irrigation of exposed land and unpaved roads by water carts to control dust emissions. In more permanent unsealed sections of road that are regularly used, Burnham 2020 will consider using fixed sprinklers to apply water.
- During truck load out the most practical dust mitigation for this activity will be limited to the drop height of the material. Additional measures can be adopted such as applying water if the material is particularly dry and installing wind break screens if load-out activities are undertaken in exposed areas.
- Apply a speed restriction of 30 km/h on all internal roads.
- Replacing road metal prior to it becoming a potential dust source on internal roads.
- Installing sealed road surfaces in high-risk areas such as from the site entrance to the weighbridge. However, as with unsealed roads, applying water will control dust from these

surfaces and sweeping will be undertaken. Additionally, a wheel wash and a flood wash will be installed to remove dirt from trucks leaving the Site.

3.4.6.2.5 Silt Management

The following mitigation measures will be the main techniques to control dust emissions from silt management:

- No specific dust controls will be required on the ponds themselves, if the silt ponds remain slurried or have a top surface with a high moisture content.
- If a protective 'crust' forms and is not subject to vehicle tracking, then no specific dust controls will be required.
- If the protective crust does produce emissions, then controls such as wetting the surface or applying polymer or other approved suppressants will be used.
- Silt stockpiles will be treated with a polymer or other approved suppressant or vegetated.

3.4.6.2.6 Monitoring

The following visual monitoring programme as set out in the Air Quality Assessment (**Appendix 15**) will be undertaken to ensure that dust is being managed at the Site.

Monitoring Activity	**Frequency**
Inspect land adjacent to the site where possible, site exits and adjoining roads for the presence of dust deposition.	Twice daily
Check weather forecasts for strong winds and rainfall to plan appropriate work schedule and dust management response.	Daily
Observe weather conditions including wind and rain via observations and data outputs from weather stations.	Daily and as conditions change
Inspect all exposed surfaces for dampness and to ensure that the exposed un-stabilised area is minimised.	Daily and as conditions change
Inspect any stockpiles to ensure that they are not subject to wind erosions. Minimise as far as practical the height of stockpiles containing unprocessed or unwashed material.	Daily and as conditions change
Inspect dust generating activities to ensure dust emissions are effectively controlled.	Daily and as new activities are commenced

Inspect watering systems (sprays and water carts) to ensure equipment is maintained and functioning to effectively dampen exposed areas.	Weekly

In addition, continuous dust monitoring with telemetry will be undertaken at three locations around the Burnham Quarry as identified on **Figure 3** below.

Figure 3: Location of Proposed Dust Monitors (Air Quality Assessment, Refer Appendix 15)

Dust will be controlled using the following triggers and these triggers will be incorporated into site management plans.

- Trigger Level 1 - (120 µg/m³ as a 1-hour average) - To identify that dust concentrations have reached a point where dust nuisance is likely to occur if action is not taken to implement mitigation measures. It would not be expected that dust concentrations would reach this level unless there are adverse weather conditions in conjunction with a failure of mitigation.
- Trigger Level 2 – (150 µg/m³ as a 1-hour average) - If this trigger is exceeded it indicates that dust concentrations have reached a level which is unacceptable, and dust nuisance will occur. All activities that have the potential to generate dust on site, apart from dust mitigation, must cease until such time as dust concentrations drop below Trigger Level 1.

If an investigation identifies that activities on the Site are not responsible for the high dust concentrations, the activities may resume prior to concentrations dropping to below Trigger Level 1.

Wind monitoring will also be undertaken with real-time meteorological data, which will be used to alert of potential dust generating winds. Alerts will be sent out to quarry staff when wind speeds exceed 5 m/s and 10 m/s (during two consecutive 10-minute periods) so appropriate dust management and mitigation measures can be put in place.

3.4.7 Water management

Most of the water used at the quarry will be for processing aggregate. However, most of this water will either fall on the ground, or drain to silt settlement ponds, before discharging back to the aquifer. The silt settlement ponds also will take water and suspended silt derived from the natural strata. The water will be discharged through the base and sides of the ponds, and the sediments and silts will remain in the ponds. It may be necessary to clean out the ponds as silt and sediment builds up, and these materials will be spread out within the site. Given that the water and suspended sediment are derived from the natural strata within and beneath the Site, this activity is not expected to cause any adverse effects.

Truck washing will occur within fully bunded concrete pads. Truck decks will be cleaned using clean water with no detergents, therefore resulting wash water will primarily only contain fine sediment which will discharge to a sump, with overflow occurring to a soak pit. Body cleaning may involve biodegradable detergents and degreasers and could potentially pick up hydrocarbons. Therefore, this wash water will discharge to a sump and an oil-water interceptor, with the discharge water directed to a vegetated swale and then a soak pit. All water from sumps and soak pits will discharge to the underlying aquifer.

Water used for dust suppression will be sprayed at a rate to help bind surface sediments, and as it is used during dry, windy weather, it will primarily evaporate. It is not expected that this water will drain back to the underlying aquifer.

Stormwater from the roofs of buildings will discharge directly to ground as it will essentially be clean. Water from the internal sealed road will flow to roadside swales where it will be subject to first flush treatment prior to discharging to ground.

Office wastewater will pass through an on-site wastewater treatment system prior to discharge to a subsurface dripline system placed in the landscaped and bunded areas at original ground level. The discharge will occur in close vicinity of the office buildings.

Potable water for staff facilities will be supplied from groundwater as the application lodged to renew the consents for the take and use of groundwater from Environment Canterbury in November 2021 sought to enable the use of water for quarrying activities. This application relied on the definition of Quarrying activities as defined in the National Planning Standards[4] being: ‘the extraction, processing (including crushing, screening, washing, and blending), transport, storage, sale and recycling of aggregates (clay, silt, rock, sand), the deposition of overburden material, rehabilitation, landscaping and cleanfilling of the quarry, and the use of land and accessory buildings for offices, workshops and car parking areas associated with the operation of the quarry.’

3.4.8 Storage of hazardous substances

The storage of hazardous substance on the Site will be limited to plant and machinery fuel (diesel, unleaded petrol, bio-ethanol mix, hydrogen, ad-blue etc.), lubrication (oils and greases), and small quantities of laboratory chemicals for use in aggregates compliance testing.

Fuel will be kept in double skinned tanks of up to 30,000 litres and up to 1,000kgs of oil and greases will be stored in specially designed areas within the workshop.

[4] National Planning Standards, Ministry for the Environment, November 2019.

A hazardous substance risk register, and management plan will be developed for the Site and will comply with all relevant legislation for the use and storage of hazardous substances.

3.4.9 Traffic

Trucks will enter and leave the Site by way of the vehicle entrance on Aylesbury Road. The majority will head south towards State Highway 1. The maximum number of trucks entering and exiting the Site will be 750 per day. It is not expected that the quarry will achieve this maximum quantity of movements until the latter phases of its life. The maximum number of truck movements has been calculated based on the combination of the existing Yaldhurst and Wheatsheaf quarry weighbridge data. However, until the intersection of Aylesbury Road and State Highway 1 has been upgraded to a roundabout, the quarry will not generate more than 250 heavy vehicle movements per day (on any one day).

Early morning truck movements between 5am and 7am will be limited to 10 truck movements per hour:

- Monday to Saturday (excluding public holidays) on up to 30 days per annum and,
- Sundays excluding public holidays) on up to 15 days per annum.

It is unlikely that any trucks will return to the Site during these hours given the distance to markets.

3.4.10 Rehabilitation

3.4.10.1 Rehabilitation Management Plans

The quarry has a long-projected lifetime of 60+ years. It is therefore difficult to determine what future productive uses will look like. Consequently, a detailed landscape rehabilitation management plan will be prepared for each phase of extraction activity and prior to commencing each subsequent quarrying phase in accordance with an overall landscape strategy (refer Landscape Effects Assessment, **Appendix 8**). These landscape rehabilitation management plans shall ensure on-going extraction activities facilitate a progressive staged rehabilitation of the Site.

Each landscape rehabilitation management plan will identify:

- The final form of batters proposed to accommodate revegetation (average 1:2 slope), to assimilate changes in level within the Site through revegetation and ensure proposed revegetation will thrive;
- The final volumes of subsoil and topsoil required to rehabilitate batters and facilitate ongoing rural land use;
- Plant establishment and maintenance, including the following specifications:
    i. Establish a minimum 400mm depth of subsoil and topsoil supporting successful establishment of all planted areas;
    ii. The specifications and schedules of planting;
    iii. Means to ensure plants will be irrigated for at least two years after planting until established; and

iv. Pest protection to include the installation of combi-guards and/or predator proof fencing around areas of new planting for two years after establishment and ongoing means of monitoring plant success including pest eradication as necessary.

3.4.10.2 Soils Rehabilitation

Rehabilitation of the Site will require the reinstatement of at least 200mm depth of subsoil and 200mm of topsoil, comprising fine matrix soil materials, free of stones over 150mm and other coarse materials. The topsoil will contain up to 10% organic matter, nutrients, and fine matrix soil materials, being relatively free of large rocks to minimise barriers to plant roots. The placement of the soil on the shaped land surface is important and will be undertaken using light track-driven machinery or lighter quarry machines to achieve an approximately uniform stable thickness. If there is insufficient soil, then extracted/processed aggregate will be used.

The reinstated soils will be low in carbon and fertiliser will be required before and during pasture establishment, as well as dampening immediately after placement to minimise the risk of wind erosion. In addition, permanent or temporary irrigation will be reinstated on the rehabilitated areas and pasture established as soon as possible. The fine roots of pasture create soil structure by growing into new subsoil and coating cracks and pores. It is considered that after three years, with careful stock management, the soil will be suitable for a range of agricultural uses.

3.4.11 Farming activities whilst the quarry is active

As described in the Assessment of Soil Related Effects report (**Appendix 13**), the current farming operation grazes 1650 heifer calves from 1st Dec to 31st April, and 1650 yearling heifers from 1st May to 1st May. The farm also grazes 80 Jersey bull calves from 1st Dec through to heifer mating the following spring. The total stocking rate in the year end 2020 was 12,044 SU and 32.11 SU per productive hectare.

Each year between 2018/19 and 2020/21 35 ha of kale and 22 ha of annual forage ryegrass was grown for intensive winter feed and grazed between 1 May and 30 September. Between 2013 and 2017 fodder beet was also grown and the total area of forage crops was the same. Under the National Environmental Standards for Freshwater (NES-F) controls on the expansion of the area of land used for intensive winter grazing came into force from 1 May 2021. The maximum area of intensive winter grazing (kale and annual ryegrass) was 57 ha or 14.7% of the total farm area in the reference period of 1 July 2014 to 30 June 2019.

The current farming operation is not part of this proposal, but forms part of the existing environment within which the application will occur if approved. In the short term, the farm will continue to operate a similar stocking policy and stocking rate per grazed hectare. When the gravel extraction is underway, total stock numbers will be adjusted to allow for the loss of productive land, but the maximum area of intensive winter grazing will not increase.

3.4.12 Management plans

The following draft management plans are provided with this application and will be finalised and provided to the relevant council for certification, in accordance with the proposed conditions of consent:

- Draft Quarry Management Plan, August 2023 (refer **Appendix 6)**.
- Draft Dust Management Plan prepared by PDP, August 2023 (refer **Appendix 7**).
- Draft Soil Management Plan prepared by PDP, July 2023 (refer **Appendix 13a**).

4.0 Resource Consents Held and Utilised by Burnham 2020 Limited

Burnham 2020 Limited previously held the following regional consents from Environment Canterbury.

Consent Number	Authorised Activity	
CRC222536 (Consent 1)	To take and use groundwater.	Expired 28 February 2022
CRC084252	Discharge of domestic sewage to ground.	Certificate of Compliance
CRC221642 (Consent 2)	To use groundwater (for quarrying activities)	Expired 28 February 2022

Consent 1(CRC222536)

In summary, Water Consent CRC222536 enables groundwater abstraction not exceeding 1,937,000 cubic metres between 1 July and the following 30 June in any year, to be taken at a rate of 210 litres per second from:

(a) Bore M36/7710, 300 millimetres diameter and a proposed depth of 100 metres, at or about map reference NZMS 260 M36:5204-3406; and

(b) Bore M36/7711, 300 millimetres diameter and a proposed depth of 100 metres, at or about map reference NZMS 260 M36:5268-3507; and

(c) Bore M36/7712, 300 millimetres diameter and a proposed depth of 100 metres, at or about map reference NZMS 260 M36:5272-3455; and

(d) Bore M36/7713, 300 millimetres diameter and 154 metres deep, at or about map reference NZMS 260 M36:5368-3410.

Water Consent CRC222536 permits any water taken to be used to irrigate the Site.

Consent 2 (CRC221642)

In summary, Water Consent CRC221642 enables groundwater abstracted under CRC222536 (or any subsequent replacement consent) to be used for quarrying activities. Quarrying activities are defined in Consent 2 as including (but not limited to): washing of aggregate, dust suppression (including high pressure water sprays and fogs fitted to processing plant); truck washing and site mitigation, rehabilitation and restoration (including irrigation of native tree and shrub plantings established for amenity screening).

The Applicant is required to keep records of water taken as follows:

i. the permit holder must keep records that provide a measurement of the water used under the permit

ii. the records must specify if the water was used for consumptive or non- consumptive (e.g. taken and discharged back to ground) purposes

iii. the records must comprise measurements in cubic metres of the volume of water used on each day.

Due to the expiry of Consent Numbers CRC222536 and CRC221642, Burnham 2020 Limited has lodged applications with Environment Canterbury to renew the following consents in accordance with s124 of the RMA.

Consent Number	Activity for which consent has been sought	
CRC222635	To renew CRC222536 and CRC221642 – water permits to take and use water.	Application is on-hold under section 91, RMA pending receipt of applications to undertake quarrying i.e. discharges to land and air, extraction and cleanfilling.

Burnham 2020 Limited utilises the following consents:

Consent Number	Authorised Activity	Expiry Date
CRC165686 held by Central Plains Water Trust, which licences the Applicant to use that consent consistent with conditions 1,2,3,4,7,8,9, 10,11 and 12.	To discharge nitrogen to ground.	25 July 2047.
CRC165680 held by Central Plains Water Limited, which licences the Applicant to use water in a manner that is consistent with the conditions of consent.	To take and use surface water from the Rakaia River and Waimakariri River.	25 July 2047.

5.0 Statutory Matters

5.1 Resource Management Act 1991 (RMA)

The following section sets out the relevant matters under the RMA that apply to this application.

5.1.1 Consideration of applications under the RMA

In considering an application for a resource consent, consent authorities must have regard to the following sections of the Act:

- s104 Consideration of applications; and
- s104B Determination of applications for discretionary or non-complying activities; and
- s107 Restriction on grant of certain discharge permits; and
- s108 Conditions of resource consents; and
- s15 Discharge of contaminants into environment.

5.2 National Environmental Standards for Freshwater

The Freshwater NES (NES-F) set requirements for carrying out certain activities that pose risks to freshwater and freshwater ecosystems. Anyone carrying out these activities will need to comply with the standards. The standards are designed, amongst other matters, to set minimum requirements for feedlots and other stockholding areas, improve the practice of intensive winter grazing of forage crops and restrict further agricultural intensification until the end of 2024.

This application will reduce stock numbers on the property, and the maximum area of intensive winter grazing will not increase, therefore no additional consent is needed under the temporary intensification provisions in the NES-F.

5.3 National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES-CS)

The National environmental standard for assessing and managing contaminants in soil to protect human health (NES-CS) is a nationally consistent set of planning controls and soil contaminant values. It ensures that land affected by contaminants in soil is appropriately identified and assessed before it is developed - and if necessary, the land is remediated, or the contaminants contained to make the land safe for human use.

A Preliminary Site Investigation has been undertaken by PDP (**Appendix 11**), which identified a number of potentially contaminating activities occurring or that have occurred within the Site. PDP has also prepared an addendum report clarifying risk associated with potential contaminated areas within the Site (**Appendix 11a**), which included identification of the following HAIL activities: an above ground diesel tank in the yard of the former forestry block (anecdotal), two above ground fuel storage

tanks, storage of bulk fertilisers and other materials such as fence posts, tyres and waste pits/infill pits.

It is proposed that potentially contaminated land is managed by undertaking targeted detailed site investigations of each HAIL area as the quarrying activity progresses to ensure that any contamination sources associated with the on-going use of the Site for primary production are captured in the assessments. Any remedial works will be identified in a Site Management Plan prepared for the Site.

Consequently, consent is required as a **Discretionary Activity** under Clause 11 of the NES-CS as no DSI has been prepared. A full statutory assessment can be found in **Section 5a**.

5.4 Operative Selwyn District Plan

No longer applicable: RMA, s 86F.

5.5 Partially Operative Selwyn District Plan

Decisions on submissions to the Partially Operative Selwyn District Plan (POSDP) were notified on 19th August 2023 and the appeal period closed on 6th October 2023. Consequently, all rules in the POSDP have legal effect and those of relevance to this Proposal are addressed below. Furthermore, no appeals were lodged on the rules that apply to this Proposal except that Horticulture New Zealand (ENV-2023-CHC-102) has appealed the definition of shelterbelt to enable small, well managed shelterbelts that would not be subject to the rules or amendments to GRUZ-R25 to exclude small scale shelterbelts. However, there are no appeals to delete or change the wording of the rule as it applies to this Proposal.

The POSDP controls the use of land and physical resources across the Selwyn District and manages the adverse effects of activities on the environment and people.

5.5.1 Zoning and Overlays

The Site is zoned as General Rural and there is a fault line that runs across the northern portion of the Site, which is mapped as Greendale Fault Overlay and Fault Awareness Overlay. It is not within an Outstanding Natural Landscape or a Visual Amenity Landscape. However, the Site lies within the Plains Flood Management Overlay (refer to map in the **Appendix 5**).

Aylesbury Road is an arterial road and Grange Road is a local road.

5.5.2 Definitions

It is necessary to determine how quarrying and aggregate processing are defined in the POSDP.

Part 1 – Introduction and General Provisions / Interpretation / Definitions of the POSDP sets out the following definitions:

Definition	Discussion

Primary Production means: a. any aquaculture, agricultural, pastoral, horticultural, mining, quarrying or forestry activities; and b. includes initial processing, as an ancillary activity, of commodities that result from the listed activities in a); c. includes any land and buildings used for the production of the commodities from a) and used for the initial processing of the commodities in b); but d. excludes further processing of those commodities into a different product.	Quarrying is defined as Primary Production and therefore is anticipated to occur in the General Rural Zone. It also includes the processing of aggregate by way of reference to 'initial processing' of a quarried product as well as the use of buildings and land for extraction and the processing of aggregate.
Mineral Extraction - Any mining or quarrying activity.	Quarrying activities are specifically defined and provided for within the POSDP and cover a broad spectrum of activities. Therefore, there is no requirement to consider separate rules for earthworks (extraction), processing of aggregate, buildings and cleanfilling. The temporary bunds are included in the definition as they are essentially storage areas.
Quarry - means a location or area used for the permanent removal and extraction of aggregates (clay, silt, rock or sand). It includes the area of aggregate resource and surrounding land associated with the operation of a quarry and which is used for quarrying activities.	
Quarrying Activities - means the extraction, processing (including crushing, screening, washing, and blending), transport, storage, sale and recycling of aggregates (clay, silt, rock, sand), the deposition of overburden material, rehabilitation, landscaping and cleanfilling of the quarry, and the use of land and accessory buildings for offices, workshops and car parking areas associated with the operation of the quarry.	
Principal Building - Any building or buildings which is/are used as part of the primary activity or activities on the site. Principal buildings include residential units, but do not include: a. accessory buildings; b. containers in the PORTZ.	This definition is relevant to the Natural Hazard provisions. Principal Building includes the site office, laboratory and workshops.

Quarrying is defined as Primary Production activity in the POSDP, recognising the fact that it relies on a resource that is mostly extracted within the rural zone. However, the activity of quarrying is specifically defined as a broad range of activities that enables it to be considered holistically.

Therefore, for the purposes of this application, the extraction and process of aggregate, transport, storage, the deposition of overburden material, rehabilitation, landscaping and cleanfilling of the quarry, and the use of land and accessory buildings for offices, workshops and car parking areas associated with the operation of the quarry are defined as Quarrying Activities.

5.5.3 Rules

General Rural, Transport, Natural Hazards, Hazardous Substances, Light, Noise and Signs are of relevance to this application.

A full assessment against the relevant rules in the POSDP is contained in **Section 5c.** In summary, consent is required for the following activities:

Matter	Reason	Activity status
GRUZ-R21-3: Mineral Extraction.	The excavation of aggregate will not be setback 200m from the notional boundaries of lawfully established residential activities.	Discretionary.
Rule TRAN-R4.2: Vehicle Crossings.	The vehicle crossing will be a quarrying activity that will generate more than 40 vehicle movements per day.	Restricted Discretionary.
TRAN-R7-2: Rural Vehicle Movements and Associated parking.	The number of vehicle movements generated by the proposal will exceed 60 equivalent vehicle movements per day averaged over any, one-week period.	Restricted Discretionary.
TRAN-R8-3 High Trip Generating Activities.	The quarry will generate 50 vehicles per peak hour (at its busiest) at Year 2030 and 112 at Year 2035, and therefore will exceed the basic ITA threshold.	Restricted Discretionary.
SIGN-R4.2. Signs Adjacent to State Highways or Arterial Roads.	The two signs at the site access will not be setback 20m from the road (the setback required for a building from the road boundary).	Restricted Discretionary.

5.5.4 Activity Status - Land use consent

The proposed quarry will require land use consent in accordance with the following rules of the POSDP:

- GRUZ-R21 (Mineral Extraction).

- TRAN-R4 (Vehicle Crossings).
- TRAN-R7 (Rural Vehicle Movements and Associated parking).
- TRAN-R8 (High Trip Generating Activities).
- SIGN-R2 (Signs Adjacent to State Highways or Arterial Roads).

It is overall a **Discretionary Activity**.

5.6 Weighting of the SDP and the POSDP

As s 86F only applies to rules, the non-rule provisions of the SDP such as its objectives and policies will continue to be operative until the POSDP's operative date.

There is no statutory guidance as to the weight to be accorded to operative and proposed plan provisions during the transition time when both plans have legal effect. However, the High Court has endorsed the following guidance:

a) The weight to attach to a proposed plan is a factual enquiry to be considered on its own merits and particular facts.

b) The importance of the proposed plan will depend on the extent to which it has proceeded through the objection and appeal process. "The closer the proposed plan comes to its final content the more regard is had to it". The likelihood of success of any appeal is also relevant consideration, with some bearing on the likelihood of the proposed provision becoming operative.

c) Where there has been a significant shift in Council policy and the new provisions are in accordance with Part II of the RMA, the proposed plan may be accorded more weight.

d) The extent to which the provisions of a proposed plan are relevant should be considered on a case by case basis and might include:

   i) the extent (if any) to which the proposed measure might have been exposed to testing and independent decision-making;

   ii) circumstances of injustice;

   iii) the extent to which a new measure, or the absence of one, might implement a coherent pattern of objectives and policies in a plan.

As all of the relevant rules in the POSDP are beyond challenge, the objectives and policies that drive those rules should be given the most weight. Little weight should be placed upon the objectives and policies in the SDP.

5.7 Canterbury Land and Water Regional Plan (CLAWRP)

The CLAWRP was made operative in 2018. It identifies the resource management outcomes or goals (objectives) for sustainably managing land and water resources in Canterbury and the policies and rules needed to achieve the objectives.

The Site is located in the Selwyn-Waimakariri Combined Surface and Groundwater Allocation Zone. The taking and use of water is addressed in application CRC222635 that seeks to renew CRC222536

and CRC221642 – Water permits for the taking and using of water, so those activities are not covered by this application.

The CLAWRP activities for which consent is sought under this application are set out below.

5.7.1 Definitions

Definition	Discussion
Cleanfill: means material that, when buried, will have no adverse effects on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of: 1. combustible, putrescible, degradable or leachable components; 2. hazardous substances; 3. products or materials derived from hazardous waste treatment, hazardous waste stabilisation, or hazardous waste disposal practices; 4. materials that may present a risk to human or animal health, such as medical and veterinary waste, asbestos, or radioactive substances; or 5. liquid waste.	There is clearly an overlap between the definitions of 'cleanfill and 'earthworks' in terms of filling a site with soil and rock. However, the rules in the CLWRP apply to the "excavation" and the "deposition" of material. The rules do not assign a particular status to earthworks or cleanfill. Any deposition must be limited to cleanfill material in order for it to enjoy controlled activity status. Therefore, the filling of the quarry with material is defined as deposition, using cleanfill material.
Earthworks: means the excavation of, and/or filling with topsoil, subsoil, sediments, rock and/or other underlying materials on which the soil is formed. Earthworks include, but are not limited to, the construction and maintenance of roads, tracks, firebreaks and landings, and ground shaping (recontouring), root raking and blading. Earthworks excludes: (a) cultivation of the soil for the establishment of, or harvesting of, crops or pasture; or (b) digging of postholes for the construction of fences;	

(c) works for research and monitoring such as coring, water bores and the use of piezometers; (d) ripping in of water pipes or cables; (e) establishment, maintenance and/or enhancement of wetlands, domestic gardens or amenity planting; (f) harvesting of horticultural crops.	

5.7.2 Rules

On-Site wastewater, greywater, dust suppressants, industrial and trade wastes, stormwater, earthworks over aquifers and hazardous substances are of relevance to this application.

A full assessment against the relevant rules in the District Plan is contained in **Section 5d**. In summary, consent is required for the following activities:

Rule	Assessment	Activity Status
5.92	The discharge of liquid waste and sludge waste will exceed 10m^3 per day and the rate of discharge may exceed 5mm per day.	Discretionary.
11.5.28	The discharge of any wastewater from an industrial or trade process, into or onto land, within the Selwyn Te Waihora sub-region that meets the conditions under Rule 11.5.28.	Discretionary.
5.97	The discharge of stormwater from buildings, car parks, internal roads, quarried areas, processing areas and stockpiles into or onto contaminated land that will be partly associated with rural activities and partly an industrial activity.	Discretionary.
5.100	The discharge of water through cleanfill is not controlled and therefore cannot meet Condition 1 (volume and rate of application) and Condition 6 (does not occur when the soil moisture exceeds field capacity) of Rule 5.98.	Discretionary.
5.177	It is proposed to deposit more than 50m^3 of material in any consecutive 12-month period onto land which will have been excavated to a depth in excess of 5m below the natural land surface, and discharge contaminants onto or into land where it	Controlled.

Rule	Assessment	Activity Status
	may enter water, that meets the conditions of Rule 5.177.	

5.7.3 Activity Status

The proposed quarry will require consent to discharge to land in accordance with Rules:

- 5.6 (discharge of water through cleanfill).
- Rules 5.92 and 11.5.28 (discharge of any liquid waste or sludge waste from an industrial or trade process).
- Rule 5.97 (discharge of stormwater).
- Rule 5.100 (discharge of water from the silt ponds).
- Rule 5.177 (deposition of, and discharge of water through cleanfill).

of the CLAWRP and is overall a **Discretionary Activity**.

5.8 Canterbury Air Regional Plan ('CARP')

The CARP was made operative in 2017 and manages activities that could adversely affect air quality across the Canterbury region. The Site is not located in a Clean Air Zone as mapped in Section 9 of the CARP.

5.8.1 Definitions

Definition	Discussion
Bulk solid materials: means materials consisting of, or including, fragments that could be discharged as dust or particulate. These materials include but are not limited to: gravel, quarried rock, fertiliser, coal, cement, flour, rock aggregate, grains, compost and woodchip.	The aggregate to be extracted, processed, stockpiled and conveyed within and transported off the Site will consist of fragments that could be discharged as dust or particulate. The definition also specifically refers to gravel, quarried rock and rock aggregate and so applies to this proposal. It is noted that this definition is used within the rules that manage stockpiling.
Cleanfill: means material that, when buried, will have no adverse effects on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:	Cleanfill under the CARP includes virgin natural materials such as soil and clay, and presumably silt would also be included within this term. The definition also includes inert materials such as concrete, and presumably crushed glass.

a. combustible, putrescible, degradable or leachable components; b. hazardous substances; c. products or materials derived from hazardous waste treatment, hazardous waste stabilisation, or hazardous waste disposal practices; d. materials that may present a risk to human or animal health, such as medical and veterinary waste, asbestos, or radioactive substances; or e. liquid waste.	Unlike the CLAWRP, there is no definition or reference to earthworks in the CARP, therefore the soil and silt to be deposited on the Site is defined as cleanfill.
Handling: means extraction, quarrying, mining, processing, screening, conveying, blasting, or crushing of any material.	Rules in the CARP refer to the 'handling' of material, rather than the specific activities of extraction, processing or conveying etc of aggregate.
Industrial or trade process (RMA): includes every part of a process from the receipt of raw material to the dispatch or use in another process or disposal of any product or waste material, and any intervening storage of the raw material, partly processed matter, or product. **Industrial or trade premises (RMA)**: means: a. any premises used for any industrial or trade purposes; or b. any premises used for the storage, transfer, treatment, or disposal of waste materials or for other waste-management purposes, or used for composting organic materials; or c. any other premises from which a contaminant is discharged in connection with any industrial or trade process; but does not include any production land.	The proposal includes receipt of aggregate (raw material) within the Site, processing of the aggregate, storage and dispatch. This is defined as an industrial or trade premise under the CARP and makes the Site an industrial or trade premises. We also understand from previous applications, that this is the approach taken by ECan.
Sensitive activity: means an activity undertaken in:	A sensitive activity is defined as 'the area within 20m of the façade of an occupied dwelling' rather than the dwelling itself. This equates to the concept of 'notional boundary'

a. the area within 20m of the façade of an occupied dwelling; or b. a residential area or zone as defined in a district plan; or c. a public amenity area, including those parts of any building and associated outdoor areas normally available for use by the general public, excluding any areas used for services or access areas; or d. a place, outside of the Coastal Marine Area, of public assembly for recreation, education, worship, culture or deliberation purposes.	which is often used in district plans in relation to noise. It is intended to protect the amenity anticipated within residential properties but outside dwellings and protects the level of amenity anticipated in outdoor living areas. There are a number of residential properties in the vicinity of the Site and applicable rules that trigger a setback from sensitive activities, making this definition relevant to this proposal.

Therefore, for the purposes of this application, the Site is defined as an Industrial and Trade premise as aggregate is processed and stored within its boundaries.

The extraction and processing of aggregate is defined as handling and extracted material (when stockpiled) is defined as bulk solid material. Soil and silt (to be deposited within the Site) is defined as cleanfill.

5.8.2 Rules

Rules applying to all activities and industrial, trade or commercial premises are relevant to this application.

A full assessment against the relevant rules in the CARP is contained in **Section 5e**. In summary, consent is required for the following activities:

Rule	Assessment	Activity Status
7.64	The discharge of contaminants into air from the handling of bulk solid materials.	Discretionary.
7.63	The discharge of contaminants into air from the disposal of cleanfill.	Discretionary.

5.8.3 Activity Status

The proposed quarry will require air discharge permits in accordance with Rules:

- 7.64 (discharge of contaminants into air from the handling of bulk solid materials).
- 7.63 (discharge of contaminants into air from the disposal of cleanfill).

of the CARP and is overall a **Discretionary Activity**.

5.9 Summary

In summary, the following consents are being sought:

Plan	Activity Status	Activity
POSDP	Restricted Discretionary	Vehicle Crossings.
		Rural Vehicle Movements and Associated parking.
		High Trip Generating Activities.
		Signs Adjacent to State Highways or Arterial Roads.
	Discretionary.	Mineral Extraction.
CLWRP	Controlled.	Deposition of cleanfill.
	Discretionary.	The discharge of liquid waste from an industrial or trade process. The discharge of any wastewater from an industrial or trade process, into or onto land, within the Selwyn Te Waihora sub-region that meets the conditions under Rule 11.5.28. The discharge of stormwater. The discharge of water through cleanfill to ground.
CARP	Discretionary.	The discharge of contaminants into air from the handling of bulk solid materials. The discharge of contaminants into air from the disposal of cleanfill.

Overall, the proposal requires under the:

- POSDP as a **Discretionary Activity**;
- CLWRP as a **Discretionary Activity**;
- CARP as a **Discretionary Activity**; and
- NES-CS as a **Discretionary Activity**.

5a NES-CS Statutory Assessment

The National Environment Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) states that the NES applies when a person wants to sample the soil on a piece of land, disturb the soil of the piece of land, or change the use of the piece of land, which means changing it to a use that is reasonably likely to harm human health, if the piece of land (Clause 5(7)):

- has an activity or industry described in the Hazardous Activities and Industries List (HAIL) being undertaken on it, or
- an activity or industry described in the HAIL has been undertaken on it, or
- it is more likely than not that an activity or industry described in the HAIL is being or has been undertaken on it.

The following activities, of relevance, are listed in HAIL:

A Chemical manufacture, application and bulk storage

1. Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application.
6. Fertiliser manufacture or bulk storage.
8. Livestock dip or spray race operations.
10. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds
17. Storage tanks or drums for fuel, chemicals or liquid waste.

Firstly, it needs to be determined if a HAIL activity is occurring, has or is likely to have, occurred within the Site.

A Preliminary Site Investigation has been undertaken by PDP (**Appendix 11**), which identified a number of potentially contaminating activities occurring or that have occurred within the Site. Preliminary soil sampling was undertaken under Clause 5(3), but this was confined to the areas away from the farm's known operational areas to provide a general characterisation of any past broad-acre contamination. No indicators of contamination were identified in the surface soils with concentrations similar to background levels for the area. No soil sampling was undertaken in the current operational yard area or known pit locations as these areas will continue to be used for primary production for some time.

Clause 5(8) states that if a piece of land described in Clause 5(7) is production land, these regulations apply if the person wants to—

Activity	Comment
(a)remove a fuel storage system from the piece of land or replace a fuel storage system in or on the piece of land:	It is not proposed to remove a fuel storage system.
(b)sample or disturb— (i)soil under existing residential buildings on the piece of land: (ii)soil used for the farmhouse garden or other residential purposes in the immediate vicinity of existing residential	There was previously a residential building in the southeast corner of the Site but there are no existing residential or proposed residential units.

buildings: (iii)soil that would be under proposed residential buildings on the piece of land: (iv)soil that would be used for the farmhouse garden or other residential purposes in the immediate vicinity of proposed residential buildings:	
(c)subdivide land in a way that causes the piece of land to stop being production land:	It is not proposed to subdivide the Site.
(d)change the use of the piece of land in a way that causes the piece of land to **stop** being production land.	The land will stop being production land for a period of time whilst quarrying is undertaken.

Clause 8 (4) provides for subdividing or changing the use of a piece of land as a permitted activity while the following requirements are met:

Requirement	Comment
(a)a preliminary site investigation of the land or piece of land must exist.	A Preliminary Site Investigation has been undertaken by PDP (**Appendix 11**).
(b)the report on the preliminary site investigation must state that it is highly unlikely that there will be a risk to human health if the activity is done to the piece of land.	The PSI identified several areas where activities listed in the Hazardous Activities and Industries List (HAIL) are likely to have been undertaken. The PSI also involved broad sampling of soil surfaces outside of HAIL activity areas. The sampling results showed that likely indicator contaminants (i.e. heavy metals and organochlorine pesticides (OCPs)) are at background levels. PDP also prepared an addendum report clarifying risk associated with potential contaminated areas within the Site (**Appendix 11a**), which included identification of the following HAIL activities: • an above ground diesel tank in the yard of the former forestry block (anecdotal); • two above ground fuel storage tanks; • storage of bulk fertilisers; and • other materials such as fence posts and tyres and waste pits/infill pits.
(c)the report must be accompanied by a relevant site plan to which the report is referenced.	The full PSI can be found in **Appendix 11** and is provided as part this application.
(d)the consent authority must have the report and the plan.	

However, the PSI recognises that farming will continue across most of the Site with further potential risk for contamination from the storage of farm equipment and materials. As such, it is proposed that identified HAIL areas will be subject to targeted detailed site investigations (DSI's) as quarrying progresses across the Site. This will ensure that any ongoing activities are captured by the assessments, and any remedial actions applied accordingly.

Remedial actions will vary according to the nature and extent of contamination found during any DSI, but waste material is likely to require sorting and/or offsite disposal. In other areas, the contamination from normal farming operations is not expected to result in the need for large scale remedial works. However, these matters will be addressed in any Site Management Plan prepared following the DSI phase.

Consequently, consent is required as a **Discretionary Activity** under Clause 11 of the NES-CS as no DSI has been prepared.

5b SDC Statutory Assessment

No longer applicable: RMA, s 86F.

5c POSDC Statutory Assessment

GRUZ-R21 MINERAL EXTRACTION

Activity Status: RDIS

1. The establishment or expansion of any mining or quarrying activity; or

A. The establishment or expansion of a farm quarry that exceeds an area of extraction of 1,500m^2.

B. Associated activities to the principal use as a mining or quarrying activity that involve the recovery of aggregate products.

Where:

a. The activity is set back from the notional boundary of any lawfully established residential activity or visitor accommodation, or the site boundary of any lawfully established community or educational facility, except where those sensitive activities are located on the same site by:
   i. 200m for any excavation associated with mining, or extracting or winning aggregate; and
   ii. 500m for any activity involving blasting; and
   iii. 500m for any processing or aggregate recovery.
b. The activity is set back from the boundary of any residential zone by 500m.

Activity status when compliance not achieved:

3. Activity status when compliance with any of GRUZ-R21.1 is not achieved: DIS

ASSESSMENT

All processing of aggregate will be set back 500m from the notional boundary of any lawfully established residential activity in the surrounding area.

However, the excavation of aggregate will not be setback 200m from the notional boundary of the lawfully established residential activity at 186 Aylesbury Road, 146 Aylesbury Road, 159 Grange Road and 181 Grange Road.

Therefore, the extraction of aggregate requires consent as a **Discretionary Activity** under Rule GRUZ-R21-3.

GRUZ-R25 SHELTERBELT

Activity Status: PER

1. The establishment of a new, or expansion of an existing shelterbelt.

Where this activity complies with the following rule requirements:

GRUZ-REQ16 Springfield Airfield Height Restriction.

EI-REQ23 West Melton Aerodrome Height Restriction.

EI-REQ24 Planting Setbacks Restriction near Significant Electricity Distribution Line.

NH-REQ7 Wildfire Setbacks.

Activity status when compliance not achieved:

2. When compliance with any rule requirement listed in this rule is not achieved: Refer to relevant

rule requirements.

NH-REQ7 Wildfire Setbacks

1. Any new woodlot or shelterbelt shall comply with the following separation distances, measured from the outside extent of the canopy:
   a. 30m from any residential unit or other principal building on an adjoining property; and
   b. 30m from any zone that is not a rural zone; and
   c. 5m from any adjoining legally established accessway to a residential unit or other principal building.

Activity status when compliance not achieved:

2. When compliance with any of NH-REQ7.1. is not achieved: RDIS

Matters for discretion:

3. The exercise of discretion in relation to NH-REQ7.2. is restricted to the following matters:
   a. NH-MAT5.A Wildfire

Notification:

4. Any application arising from NH-REQ7.2. shall not be subject to public notification.

ASSESSMENT

It is proposed to plant gaps in an existing shelterbelt, so in effect the length of the shelterbelt will increase. The shelterbelt will not be new, so the wildfire setback does not apply.

Therefore, the proposed shelterbelt planting is a **Permitted Activity** under Rule GRUZ-R25

TRAN-R4 VEHICLE CROSSINGS

Activity status: PER

1. The establishment of a vehicle crossing

Where:
   a. The vehicle crossing is located no closer to an intersection with a State Highway or arterial road than:
      i. 60m to the departure side of any intersection; and
      ii. 30m to the approach side of any intersection; and
   b. The vehicle crossing does not service any:
      i. Service station; or
      ii. Truck stop; or
      iii. Activity that generates more than 40vm/d or, in PREC11 - Rural Services Precinct, 250vm/d.

And this activity complies with the following rule requirements:

TRAN-REQ2 Access restrictions

TRAN-REQ3 Number of vehicle crossings

TRAN-REQ4 Siting of vehicle crossings

TRAN-REQ5 Vehicle crossing design and construction

TRAN-REQ6 Vehicle crossing surface

Activity status when compliance not achieved:

2. When compliance with any of TRAN-R4.1 is not achieved: RDIS

3. When compliance with any rule requirement listed in this rule is not achieved: Refer to TRAN-Rule Requirements

Matters for discretion:

4. The exercise of discretion in relation to TRAN-R4.2 is restricted to the following matters:
   a. TRAN-MAT2 Vehicle crossings

ASSESSMENT

The vehicle crossing cannot meet TRAN4.1b.iii as it will service an activity that will generate more than 40 vehicle movements per day.

Therefore, the vehicle crossing is a **Restricted Discretionary Activity** under Rule TRAN-R4.2.

TRAN-MAT2 Vehicle crossings and accessways

1. Any effects on the ease and safety of vehicle manoeuvring.

2. Whether the boundaries of a site support the formation of the vehicle crossing or accessway.

3. Whether the site can gain access from another road that is not a State Highway or Arterial Road listed in APP2 – State Highway, Arterial and Collector Road Classifications List.

4. The design and location of the vehicle crossing or accessway.

5. The anticipated number and type of vehicles, cycles, pedestrians or stock movements.

6. Any visual effects on road design and amenity values from not forming the vehicle crossing or accessway to the specified standards.

TRAN-R6 PARKING, MANOEUVRING AND LOADING AREAS

Activity Status: PER

3. Any parking, manoeuvring and loading areas associated with any activity that is not a residential activity.

Where the activity complies with the following rule requirements:

TRAN-REQ8 Location of parking spaces

TRAN-REQ9 On-site parking – Does not apply to the GRUZ Zone.

TRAN-REQ10 Mobility parks.

TRAN-REQ11 Cycle parks and facilities - Does not apply to the GRUZ Zone.

TRAN-REQ12 Vehicle loading areas - Does not apply to the GRUZ Zone.

TRAN-REQ13 Parking and loading gradients.

TRAN-REQ14 Access gradients.

TRAN-REQ15 Queuing spaces - Does not apply to the GRUZ Zone.

TRAN-REQ16 Vehicle manoeuvring.

TRAN-REQ17 Surface of parking and loading areas.

TRAN-REQ28 Landscape Strip for Parking Areas - Does not apply to the GRUZ Zone.

Activity status when compliance not achieved:

4. When compliance with any rule requirement listed in this rule is not achieved: Refer to TRAN-Rule Requirements.

TRAN-REQ8 Location of parking spaces

7. All car parking associated with any activity shall be wholly on the same site where the activity operates, or on an adjoining site.

Activity status where compliance is not achieved:

8. When compliance with any of TRAN-REQ9.7 is not achieved: RDIS

TRAN-REQ10 Mobility parks

1. All activities shall provide the following number of mobility parking spaces:
   a. One mobility parking space is provided with the first 20 vehicle parking spaces;
   b. Not less than two mobility parking spaces is provided for up to 49 vehicle parking spaces; and
   c. One additional mobility park space for every additional 50 parking spaces is provided.

2. All mobility parks shall comply with the design requirements listed in TRAN-TABLE10 - Minimum parking area dimensions and illustrated in (DIAGRAM13) - Parking area formation dimensions.

Activity status where compliance is not achieved:

3. When compliance with any of TRAN-REQ10.1 or TRAN-REQ10.2 are not achieved: RDIS

TRAN-REQ13 Parking and loading gradients

1. The gradient for any on-site parking or loading area surface for any non-residential activity is no more than:
   a. 1:16 (6.25%) at 90º to the angle of the vehicle park; and
   b. 1:20 (5%) when parallel to the angle of the vehicle park.

Activity status where compliance is not achieved:
2. When compliance with any of TRAN-REQ13.1 is not achieved: RDIS

TRAN-REQ14 Access gradients

1. The maximum gradient for any access to a parking area is no more than:
   a. 1:4 (25%) on any straight section up to 20m in length;
   b. 1:5 (20%) where longer than 20m in length; and
   c. 1:6 (16.7%) around curves when measured on the inside line of the curve.

2. The maximum change in gradient without a transition is no greater than 1:8 (12.5%).

3. Changes of grade of more than 1:8 (12.5%) are separated by a minimum transition length of 2m.

Activity status where compliance is not achieved:
4. When compliance with any of TRAN-REQ14.1, TRAN-REQ14.2 or TRAN-REQ14.3 are not achieved: RDIS

TRAN-REQ16 Vehicle manoeuvring

1. All activities shall provide sufficient on-site manoeuvring to ensure that vehicles do not reverse either onto or off a site which has access:
   a. To a State Highway or arterial road; or
   b. To a collector road where three or more vehicle parking spaces are provided; or
   c. To an accessway that serves a site with six or more vehicle parking spaces.

2. Parking and loading areas are formed so that vehicle operators do not need to undertake more than one reverse manoeuvre to exit the parking space or loading area.

Note: Two vehicle parking spaces may be provided in tandem where on-site manoeuvring is provided to ensure that vehicles do not reverse either onto or off the site.

Activity status when compliance is not achieved:

3. When compliance with TRAN-REQ16.1.a is not achieved: NC

3A When compliance with TRAN-REQ16.1.b or TRAN-REQ16.1.c is not achieved: RDIS

4. When compliance with TRAN-REQ16.2 is not achieved: RDIS

TRAN-REQ17 Surface of parking and loading areas

6. Any vehicle parking or loading areas expected to be used by vehicles accessing the educational facility or activity involving the retailing of goods and services to the public shall be either metalled or sealed.

ASSESSMENT

All car parking required for quarry staff and visitors and trucks waiting be loaded or doing paperwork will be located within the Site.

There will be 30 car parks within the Site, therefore two mobility parking spaces will be provided and will be designed in accordance with the design requirements listed in TRAN-TABLE10 - Minimum parking area dimensions, having a stall width of 3.6m and a stall depth of 6.1m.

The area where the on-site parking will be located will be relatively flat and will therefore meet the required gradients of:
a. 1:16 (6.25%) at 90o to the angle of the vehicle park; and
b. 1:20 (5%) when parallel to the angle of the vehicle park.

The access to the parking area will be more than 20m in length, curved but with little gradient. It will not exceed 1:5 (20%) or 1:6 (16.7%) around curves.

There is sufficient space for private vehicles to manoeuvre within the Site and not reverse onto Aylesbury Road. Likewise heavy trucks will either turn round within the quarry itself or within the turning circle provided close to the access. Given the space available within the Site, no vehicle will need to undertake more than one reverse manoeuvre to exit a parking space or loading area. The

Site will not support an educational facility or retail to the public; therefore TRAN-REQ-17 is not relevant.

Therefore, the parking, manoeuvring and loading areas are a **Permitted Activity** under Rule TRAN-R6.

TRAN-R8 HIGH TRIP GENERATING ACTIVITIES

Activity Status: PER

1. The establishment of a new, or expansion of an existing activity listed in (TRAN-TABLE2) - HTGA thresholds and ITA requirements.

TRAN-TABLE2 HGTA thresholds and ITA requirements

Activity	Basic ITA	Full ITA
Mixed or other activities not otherwise listed in this Table	50 vehicles per peak hour	120 vehicles per peak hour

Where:

a. The activity does not exceed the basic ITA threshold in (TRAN-TABLE2) - HTGA thresholds and ITA requirements; or
b. The activity does exceed the basic ITA threshold in (TRAN-TABLE2) - HTGA thresholds and ITA requirements but an ITA has already been approved for the site as part of a granted resource consent and the activity is within the scope of that ITA and in accordance with the resource consent, unless the resource consent has lapsed.

Advisory Note: Further guidance is available from New Zealand Transport Agency Research Report No.422 'Integrated Transport Assessment Guidelines', Abley et al, November 2010

Activity status when compliance not achieved:

2. When compliance with any of TRAN-R8.1 is not achieved: RDIS

Matters for discretion:

3. Where the Basic ITA (but not Full ITA) threshold in (TRAN-TABLE2) - HTGA thresholds and ITA requirements is exceeded, the exercise of discretion in relation to TRAN-R8.2 is restricted to the following matters:

a. TRAN-MAT8 High Trip Generating Activities – Basic

4. Where the Full ITA threshold in (TRAN-TABLE2) - HTGA thresholds and ITA requirements is exceeded, the exercise of discretion in relation to TRAN-R8.2 is restricted to the following matters:

a. TRAN-MAT8A High Trip Generating Activities - Full

ASSESSMENT

As set out in Table 10-2 Heavy Vehicle Generation for Intersection assessment in the Stantec Transport Assessment (**Appendix 10**), the quarry will generate 50 vehicles per peak hour (at its busiest) at Year 2030 and 112 at Year 2035. As such, the quarry will exceed the basic ITA threshold, but not the full ITA threshold.

Therefore, consent is required as **Restricted Discretionary Activity** under Rule TRAN-R8.3.

However, a full ITA has been prepared by Stantec (**Appendix 10**) that addresses safety and efficiency, design and layout, network effects and heavy vehicles.

Matters of discretion

TRAN-MAT8 High Trip Generating Activities - Basic

1. Whether the provision of access and on-site manoeuvring areas associated with the activity, including vehicle loading and servicing deliveries. affects the safety, efficiency, accessibility (including for people whose mobility is restricted) of the site, and the land transport network (including considering the network classification of the frontage road).

2. Whether the design and layout of the proposed activity promotes opportunities for travel other than private cars, including by providing safe and convenient access for travel using more active modes.

3. Whether the ITA has been prepared by a suitably qualified and experienced transport specialist.

4. Need for an ITA - Any characteristics of a proposed activity or site that are out of scope of an existing ITA but where expected traffic generation and access to existing multi modal connections mean requiring an ITA, in a manner set out in this rule, is unnecessary.

NH-R2 NEW BUILDINGS AND STRUCTURES IN NATURAL HAZARD OVERLAYS

Activity Status: PER

3. The establishment of any new residential unit or other principal building.

Where:

a. The building is not located in a high hazard area; and
b. The building is not located between any surface water body and any stopbank designed to contain floodwater from that surface water body; and
c. The building finished floor level is equal to or higher than the minimum floor level stated in a Flood Assessment Certificate issued in accordance with NH-SCHED1 Flood Assessment Certificates.

Activity status when compliance not achieved:

4. When compliance with any of NH-R2.3.a. or NH-R2.3.b. is not achieved: NC
5. When compliance with any of NH-R2.3.c. is not achieved: RDIS

Matters for discretion:

6. The exercise of discretion in relation to NH-R2.5. is restricted to the following matters:
   a. NH-MAT1 Natural Hazards Generally

ASSESSMENT

The principal buildings on the Site are the site office, laboratory and workshops.

The buildings will not be located in a high hazard area.

The buildings will be not located between any surface water body and any stopbank designed to contain floodwater from that surface water body; and

The buildings will have a finished floor level equal to or higher than the minimum floor level stated in a Flood Assessment Certificate issued in accordance with NH-SCHED1 Flood Assessment Certificates.

Therefore, the principal buildings on the Site will be **Permitted Activities** under Rule NH-R2.3

NH-SCHED1 Flood Assessment Certificates.

A Flood Assessment Certificate will be issued by the Selwyn District Council (that is valid for 2 years from the date of issues) which specifies:

1. whether or not the site or activity is located on land that is within a High Hazard Area; and
2. whether or not the site or activity is likely to be subject to inundation in a 200-year Average Recurrence Interval (ARI) flood event and;
3. where the site or activity is not located on land that is within a High Hazard Area but is likely to be subject to inundation in a 200-year ARI flood event, a minimum finished floor level for any new building or structure (or part thereof) that is 300mm above the 200-year ARI flood level.

The minimum finished floor level will be determined with reference to:

a. the most up to date models and maps held by Selwyn District Council or Canterbury Regional Council;
b. any relevant field information; and
c. any site-specific flood assessment prepared by a suitably and experienced person

Advice Note:

Information showing the modelled flood characteristics within specific parts of the district is publicly available online via Canterbury Maps. This information is indicative only and will be updated to reflect the best information as it becomes available. A party may provide the Council with a site-specific flood assessment prepared by a suitably qualified and experienced person, to support the identification of minimum finished floor levels.

HAZS-R1 USE AND/OR STORAGE OF HAZARDOUS SUBSTANCES, EXCLUDNG A MAJOR HAZARD FACILITY

Activity Status: PER

1. Use and/or storage of hazardous substances, excluding a major hazard facility.

ASSESSMENT

The quarry will not be a major hazard facility and is therefore a **Permitted Activity** under Rule HAZS-R1.

LIGHT-R1 ARTIFICAL OUTDOOR LIGHTING

Activity Status: PER

1. Artificial outdoor lighting for any activity not otherwise provided for in LIGHT-R2, LIGHT-R3, LIGHT-R4 and LIGHT-R5

Where this activity complies with the following rule requirements:

LIGHT-REQ1 Light Spill

LIGHT-REQ2 Glare

LIGHT-REQ3 Sky Glow

Activity status when compliance not achieved:

2. When compliance with any rule requirement listed in this rule is not achieved: Refer to LIGHT-Rule Requirements.

LIGHT-REQ1 Light Spill

1. The maximum level of light spill from artificial outdoor lighting shall not exceed the horizontal or vertical illuminance levels outlined in LIGHT-TABLE1 below on an adjoining site, including roads.

Advisory notes:

1. *LIGHT-REQ1 shall not apply to light spill from road lighting within roads.*
2. *Measurement of light spill is to be undertaken in accordance with AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting.*

2200 to 0600: 1 lux

Hours of darkness from 0600 to 2200: 5 lux

Activity status when compliance not achieved:

2. When compliance with any of LIGHT-REQ1.1. is not achieved: RDIS

LIGHT-REQ2 Glare

1. Artificial outdoor lighting is directed away from and/or screened from adjoining properties and roads.

Activity status when compliance not achieved:

2. When compliance with any of LIGHT-REQ2.1. is not achieved: RDIS

LIGHT-REQ3 Sky Glow

1. All artificial outdoor lighting shall be directed downward and shielded from above to ensure that all light shines below the horizontal.

Activity status when compliance not achieved:

2. When compliance with any of LIGHT- REQ3.1. is not achieved: RDIS

ASSESSMENT

The quarry will have a maximum light spill (if any) not exceeding 3-lux spill onto any adjoining property or any road reserve during hours of darkness.

Lighting will be designed to shine into the Site and if related to the extraction of aggregate will generally be located below existing ground level.

All outdoor lighting will be directed downward and shielded from above to ensure that all light shines below the horizontal, retaining views of the night sky.

Therefore, the lighting required within the quarry is a **Permitted Activity** under Rule LIGHT R1.1

NOISE-RI ACTIVITIES NOT OTHERWISE SPECIFIED

Activity Status: PER
1. Any land use activity not listed elsewhere in NOISE-R1 that generates noise, unless any of NOISE-R2 - NOISE-R16 applies.

Where this activity complies with the following rule requirements:
NOISE-REQ1 Zone Noise Limits

Activity Status when compliance not achieved:
2. When compliance with any rule requirement listed in this rule is not achieved: Refer to NOISE – Rule requirements

Activity status: PER

3. Traffic and rail noise generated within a land transport corridor. This does not apply to the testing (when stationary), maintenance, loading, or unloading of trains.

NOISE REQ1 Zone Noise Limits

1. Any activity that generates noise shall meet the noise limits of the zone of the site receiving noise from an activity, as set out in NOISE-TABLE5 - Zone Noise Limits.

Zone Noise Limits			
Zone of site generating noise	**Zone of the site receiving noise**	**Assessment Location**	**Hours and Limits**
GRUZ	GRUZ	At the notional boundary of any noise sensitive activity within any site receiving noise.	0700 to 2200: 55 dB L_{Aeq} (15min) 2200 to 0700: 45 dB L_{Aeq} (15min) / 70 L_{AFmax}

Activity status when compliance not achieved:

2. When compliance with any of NOISE-REQ1 is not achieved: RDIS

3. The exercise of discretion is restricted to the following matters:
   a. NOISE-MAT1

Advisory note:
1. The noise limits do not apply to assessment locations within the same site as the activity.
2. Where the noise limits are assessed at any point within any site receiving noise, if the site boundary is a boundary with a road or railway network the noise standards shall apply at the furthest boundary of the road or railway network.
3. Where a site is divided by a zone boundary then each part of the site divided by the zone boundary shall be treated as a separate site.

ASSESSMENT

Marshall Day has undertaken an acoustic assessment of the Proposal (**Appendix 9**) and concludes that the activities within the Site will comply with the noise standards in NOISE-TABLE5 including noise arising from load out activities occurring during the hours of 5am to 7am. As shown on Figure 16 of the Acoustic Assessment, the night-time noise limit at the notional boundaries of 168 and 146 Aylesbury Road being the closest residential dwellings will be met. This is due to the distance of the activity from the dwellings, the proposed bunding along Aylesbury Road and the stockyard's location below existing ground level.

Noise generated by the trucks within the land transport corridor is specifically provided for as a permitted activity.

Therefore, the generation of noise is a **Permitted Activity** under NOISE-R1 and R1.3.

NOISE-R2 CONSTRUCTION ACTIVITIES

Activity Status: PER

1. Any construction activity

Where:

a. Any noise created by the use of explosives for construction activity does not exceed a peak sound pressure level of 120 dB Lzpeak measured 1m from the façade of any building containing a habitable room.

And this activity complies with the following rule requirements:

NOISE-REQ2 Construction Noise Limits

Activity status when compliance not achieved:

2. When compliance with any rule NOISE-R2.1 is not achieved: DIS

3. When compliance with any rule requirement listed in this rule is not achieved: Refer to NOISE – Rule requirements.

NOISE-REQ2 Construction Noise Limits

1. Any activity that generates construction noise and any temporary military training activity where there is a mobile noise source shall meet the construction noise limits in NOISE-TABLE6 - Construction Noise Limits.

NOISE-TABLE6 Construction Noise Limits

Zone	Time of week	Time period	Duration of work		
			Typical duration (Dba)	**Short-term duration (Dba)**	**Long-term duration (Dba)**
GRUZ	Weekdays	0630-0730	60 L_{eq} / 75 L_{max}	65 L_{eq} / 75 L_{max}	55 L_{eq} / 75 L_{max}
		0730-1800	75 L_{eq} / 90 L_{max}	80 L_{eq} / 95 L_{max}	70 L_{eq} / 85 L_{max}
		1800-2000	70 L_{eq} / 85 L_{max}	75 L_{eq} / 90L_{max}	65 L_{eq} / 80 L_{max}
		2000-0630	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}
	Saturdays	0630-0730	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}
		0730-1800	75 L_{eq} / 90 L_{max}	80 L_{eq} / 95 L_{max}	70 L_{eq} / 85L_{max}
		1800-2000	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}
		2000-0630	45 L_{eq} / 75	45 L_{eq} / 75	45 L_{eq} / 75

			L_{max}	L_{max}	L_{max}
	Sundays and public holidays	0630-0730	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}
		0730-1800	55 L_{eq} / 85 L_{max}	55 L_{eq} / 85 L_{max}	55 L_{eq} / 85 L_{max}
		1800-2000	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}
		2000-0630	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}	45 L_{eq} / 75 L_{max}

ASSESSMENT

It is expected that the 'construction works' will meet the long-term duration limits.

Therefore, the generation of construction noise is a **Permitted Activity** under Rules NOISE-R2.

SIGN-R1 GENERAL SIGNS

Activity Status: PER

1. Any sign:

c. That is an official sign;

Official sign means all signs required or provided for under any statute or regulation or are otherwise related to aspects of public safety.

Activity status when compliance not achieved:

N/A

ASSESSMENT

All signage related to health and safety on the Site is a **Permitted Activity** under Rule SIGN-R1.

SIGN-R4 SIGNS ADJACENT TO STATE HIGHWAYS OR ARTERIAL ROADS

Activity Status: PER

1. Other than a sign listed in SIGN-R1.1 or SIGN-R3 any sign located on a site adjacent to a State Highway or Arterial Road listed in APP2 – Roading Hierarchy which has a speed limit of more than 60km per hour.

Where:

a. The road boundary setback rules for a building in the zone in which the sign is located are met; and
b. Is located more than 100m in front of any official traffic sign or signal (excluding street naming signs and NZTA brown tourist signs) in all zones other than in the General Rural Zone, or more than 200m in front of such signs in the General Rural Zone.

And this activity complies with the following rule requirements:

SIGN-REQ1 Free standing signs.

SIGN-REQ2 Built form - signs attached to buildings.

SIGN-REQ3 Built form - signs mounted and affixed to verandahs or overhanging road reserve.

SIGN-REQ4 Built form - signs projecting from the face of a building.

SIGN-REQ6 Distracting features.

SIGN-REQ7 Traffic safety

Activity status when compliance not achieved:

2. When compliance with any of SIGN-R4.1 is not achieved: RDIS

3. When compliance with any rule requirement listed in this rule is not achieved: Refer to SIGN-Rule requirements

ASSESSMENT

The two signs that will display the name of the quarry at the site entrance will not be setback 20m from the road (the setback required for a building from the road boundary).

Therefore, the proposed signs are a **Restricted Discretionary Activity** under Rule SIGN-R4.2.

Matters for discretion:

3. The exercise of discretion in relation to SIGN-R4.2 is restricted to the following matters:
   a. SIGN-MAT1 All Signs and Support Structures.

The scale, design, colour, and location of the sign, accounting for:
   a. impacts on the architectural integrity, amenity values, character values, or visual coherence of:
      i. The building or site on which the sign is displayed and its ability to accommodate the sign;
      ii. The surrounding area (including anticipated changes in the area);
      iii. Heritage buildings or settings, open spaces, protected trees, or areas possessing significant natural or landscape values.
   b. The amount and nature of existing signs on the building and/or site, and whether the proposed sign will result in visual clutter;
   c. The level of visibility of the sign;
   d. The provision of landscaping or other mitigating features;
   e. The length of the road frontage;
   f. The extent to which the sign adds visual interest or screens unsightly activities.
   g. Whether there are any special circumstances or functional needs relating to the activity, building, site or surroundings, which affect the signs requirements including operational, safety, directional, and functional requirements, and
   h. The potential of the sign to cause distraction, or confusion to motorists and/or adversely affect traffic safety due to its location, visibility, and/or content including size of lettering, symbols, or other graphics.

5d CLAWRP Statutory Assessment

5.8

The discharge of wastewater from a new, modified or upgraded on-site wastewater treatment system onto or into land in circumstances where a contaminant may enter water is a permitted activity, provided the following conditions are met:

1. The discharge volume does not exceed $2m^3$ per day; and
2. The discharge is onto or into a site that is equal to or greater than 4 hectares in area; and

2a. The discharge is not located within an area where residential density exceeds 1.5 dwellings per hectare and the total population is greater than 1000 persons; and

3. The discharge is not onto or into land:

   (a) where there is an available sewerage network; or

   (b) that is contaminated or potentially contaminated; or

   (c) that is listed as an archaeological site; or

   (d) in circumstances where the discharge would enter any surface waterbody; or

   (e) within 20 m of any surface waterbody or the Coastal Marine Area; or (f) within 50 m of a bore used for water abstraction; or (g) within a Community Drinking-water Protection Zone as set out in Schedule 1; or (h) where there is, at any time, less than 1 m of vertical separation between the discharge point and groundwater; and

4. The treatment and disposal system is designed and installed in accordance with Sections 5 and 6 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and
5. The treatment and disposal system is operated and maintained in accordance with the system's design specification for maintenance or, if there is no design specification for maintenance, Section 6.3 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and
6. The discharge does not result in wastewater being visible on the ground surface; and
7. The discharge does not contain any hazardous substance.

5.9 The discharge of wastewater from:

(a) an existing on-site wastewater treatment system onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions of Rule 5.7; or

(b) a new, modified or upgraded on-site wastewater treatment system onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions of Rule 5.8; is a restricted discretionary activity.

The exercise of discretion is restricted to the following matters:

1. The actual and potential environmental effects of not meeting the condition or conditions of Rule 5.7 for an existing system; and

2. The actual and potential direct and cumulative environmental effects of not meeting the

condition or conditions of Rule 5.8 for a new, modified or upgraded system; and

3. The actual and potential environmental effects of the discharge on the quality and safety of human and animal drinking-water; and

4. The effect of on-site wastewater treatment system density in the local area including known on-site wastewater treatment system failures, the material health status of the community, groundwater quality, the nature of effects of current sewage disposal methods, treatment options available and affordability.

ASSESSMENT

Wastewater includes sewage and water from the staff kitchen and bathrooms.

The discharge of wastewater will be from a new on-site wastewater treatment system onto or into land in circumstances where a contaminant may enter water. The discharge volume will exceed not $2m^3$ per day and will be onto a Site that is greater than 4 hectares in area.

The discharge will not be located within an area where residential density exceeds 1.5 dwellings per hectare and the total population is greater than 1000 persons.

The discharge will not be onto or into land:

- where there is an available sewerage network; or
- that is listed as an archaeological site; or
- within 20 m of any surface waterbody or the Coastal Marine Area; or
- within 50 m of a bore used for water abstraction; or
- within a Community Drinking-water Protection Zone as set out in Schedule 1;
- where there is, at any time, less than 1m of vertical separation between the discharge point and groundwater.

The area where it is proposed to discharge wastewater has not been identified as contaminated in the Preliminary Site Investigation (PSI) or addendum prepared by PDP (**Appendices 11 and 11a**). Broad sampling of soil surfaces outside of HAIL activity areas showed that likely indicator contaminants (i.e. heavy metals and organochlorine pesticides (OCPs)) are at background levels. Therefore, the discharge of wastewater will not be onto land that is contaminated or potentially contaminated.

The treatment and disposal system will be designed and installed in accordance with Sections 5 and 6 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and

The treatment and disposal system will be operated and maintained in accordance with the system's design specification for maintenance or, if there is no design specification for maintenance, Section 6.3 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and

The discharge will not result in wastewater being visible on the ground surface.

The discharge will not contain any hazardous substance as it will be from staff facilities.

Therefore, the discharge of wastewater is a **Permitted Activity** under Rule 5.9.

5.18

The discharge of a dust suppressant onto or into land in circumstances where a contaminant may enter water is a permitted activity, provided either of the following conditions is met:

1. The discharge is only of vegetable oil, or of new light fuel or lubricating oil and is:

(a) applied in a manner that does not result in pooling or runoff, with a maximum application rate not exceeding 2 litres/m^2 per day and 4 litres/m^2 per annum; and

(b) not within 20 m of a surface water body, the Coastal Marine Area, a bore or soakhole; or

2. The dust suppressant is approved under the Hazardous Substances and New Organisms Act 1996 and the use and discharge of the dust suppressant is in accordance with all conditions of the approval.

ASSESSMENT

Any dust suppressant used on the Site will be approved under the Hazardous Substances and New Organisms Act 1996 and the use and discharge will be in accordance with all conditions of the approval. As such, the use of dust suppressants is a **Permitted Activity** under Rule 5.18.

5.91

The discharge of any liquid waste or sludge waste from an industrial or trade process, including livestock processing, excluding wastewater, into or onto land, or into or onto land in circumstances where a contaminant may enter water is a permitted activity, provided the following conditions are met:

1. The volume of the discharge does not exceed 10m^3 per day; and

2. The discharge is at a rate not exceeding 5mm per day; and

3. The discharge does not contain any hazardous substance; and

4. The discharge is not:

(a) directly to a surface water body, or within 50m of a surface water body, a bore used for water abstraction, a dwelling house, school, community facility or the Coastal Marine Area; and

(b) within a Community Drinking-water Protection Zone as set out in Schedule 1; and

(c) within the Christchurch Groundwater Protection Zone as shown on the Planning Maps; and

(d) onto or into land over an unconfined or semi-confined aquifer, where the land has less than 0.3 m depth of soil; and

(e) within any area or zone identified in a proposed or operative district plan for residential or commercial purposes; and

(f) within a Nutrient Allocation Zone identified as “At Risk” (Orange) or “Water Outcomes Not Met” (Red) on the Planning Maps, unless the discharge contains no nitrogen or phosphorus, or otherwise causes a limit in Schedule 8 to be exceeded; and

(g) onto or into contaminated or potentially contaminated land.

5.92

The discharge of any liquid waste or sludge waste from an industrial or trade process, including

livestock processing, excluding wastewater, into or onto land, or into or onto land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 5.91 is a discretionary activity.

ASSESSMENT

Industrial or trade process is not defined in the CLAWRP, however in the CRPS the term 'industrial' in Greater Christchurch is defined as 'the manufacturing, assembly, packaging, wholesaling or storage of products or the processing of raw materials and other ancillary activities.'

It is proposed to process 'raw' aggregate and stockpile raw and processed aggregate on the Site, which falls within the definition of 'industrial'. This will result in the discharge of 'liquid waste', generally being water that may contain silts from the silt ponds and the silt (sludge waste) from the ponds being used as cleanfill.

The volume of discharge will exceed $10m^3$ per day and the rate of discharge may exceed 5mm per day. The discharge will not contain any hazardous substance; and will not be:

- directly to a surface water body, or
- within 50m of a surface water body, a bore used for water abstraction, a dwelling house, school, community facility or the Coastal Marine Area; or
- within a Community Drinking-water Protection Zone as set out in Schedule 1; or
- within the Christchurch Groundwater Protection Zone as shown on the Planning Maps; or
- within any area or zone identified in a proposed or operative district plan for residential or commercial purposes.

Whilst the discharge will be within a within a Nutrient Allocation Zone identified as "Water Outcomes Not Met" (Red) on the Planning Maps, the discharge will not contain nitrogen or phosphorus, or otherwise cause a limit in Schedule 8 to be exceeded.

The area where it is proposed to discharge liquid waste from an industrial process has not been identified as contaminated in the Preliminary Site Investigation (PSI) or addendum prepared by PDP (**Appendices 11 and 11a**). Broad sampling of soil surfaces outside of HAIL activity areas showed that likely indicator contaminants (i.e. heavy metals and organochlorine pesticides (OCPs)) are at background levels.

The discharge of waste sludge will not be into or onto contaminated land - whilst there are areas of contaminated land across the Site, these will be remediated prior to any discharge occurring. However, the discharge of sludge will be onto land over an unconfined or semi-confined aquifer, where the land has less than 0.3 m depth of soil (soil is defined as loose material on the earth's surface in which terrestrial plants grow and includes sand, silts, clays and any intermixed organic material).

The discharge of liquid waste and sludge waste is a **Discretionary Activity** under Rule 5.92 because the volume will exceed $10m^3$ per day, the rate of discharge may exceed 5mm per day and will be onto land that has less than 0.3 m depth of soil.

11.5.28

Despite Rules 11.5.6 to 11.5.17, within the Selwyn Te Waihora sub-region the discharge of any wastewater, liquid waste or sludge waste from an industrial or trade process, including livestock processing, excluding sewage, into or onto land, or into or onto land in circumstances where a contaminant may enter water is a discretionary activity where the following conditions are met:

1. The discharge, in combination with all lawfully established existing discharges, does not exceed the nitrogen load limit in Table 11(i) for industrial or trade processes; or

2. The nitrogen loss from the discharge, in combination with any other activity, including farming, occurring on the land, is less than any authorised nitrogen loss from the activity that is being replaced; and

3. For all discharges, the best practicable option is used for the treatment and discharge.

11.5.29

Within the Selwyn Te Waihora sub-region, the discharge of any wastewater, liquid waste or sludge waste from an industrial or trade process, including livestock processing, excluding sewage, into or onto land, or into or onto land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 11.5.28 is a non-complying activity.

ASSESSMENT

The quarry is an industrial process because raw materials will be processed on the Site (Industrial or trade process as defined in the CRPS). The discharge of water potentially containing silt (liquid waste) from the quarry will not contain nitrogen, therefore the discharge will not exceed the nitrogen load limit in Table 11(i) for industrial or trade processes.

The nitrogen loss from the discharge, in combination with any other activity, including farming, occurring on the land, will be less than any authorised nitrogen loss from the activity that is being replaced (farming).

The best practicable option is used for the treatment and discharge.

The discharge of water potentially containing silt (liquid waste) is a **Discretionary Activity** under Rule 11.5.28 as it will meet the conditions set out in the rule.

5.96

The discharge of stormwater, other than into or from a reticulated stormwater system, onto or into land where contaminants may enter groundwater is a permitted activity, provided the following conditions are met:

1. The discharge is not from, into or onto contaminated or potentially contaminated land; and

2. The discharge:

   (a) does not cause stormwater from up to and including a 24 hour duration 10% Annual Exceedance Probability rainfall event to enter any other property; and

   (b) does not result in the ponding of stormwater on the ground for more than 48 hours, unless the pond is part of the stormwater treatment system; and

   (c) is located at least 1 m above the highest groundwater level at the time the discharge system is constructed; and

   (d) is only from land used for residential, educational or rural activities; and

   (e) does not occur where there is an available reticulated stormwater system, except where incidental to a discharge to that system; and

   (f) is not from a system that collects and discharges stormwater from more than five sites.

5.97

The discharge of stormwater, other than from a reticulated stormwater system, into a river, lake, wetland or artificial watercourse or onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions of Rule 5.95 or Rule 5.96; and the discharge of stormwater or construction-phase stormwater into a reticulated stormwater system that does not meet the condition of Rule 5.93A; is a discretionary activity except that within the boundaries of Christchurch City it is a non-complying activity.

ASSESSMENT

Stormwater means runoff water and entrained contaminants arising from precipitation on the external surface of any structure or any land modified by human action, and that has been channelled, diverted, intensified or accelerated by human intervention. It excludes construction-phase stormwater, sediment-laden water and drainage water which are separately defined.

Stormwater within the Site will be runoff water from the buildings, car parks, internal roads, quarried areas, processing areas and stockpiles.

The discharge of stormwater will not be into or onto contaminated land - whilst there are areas of contaminated land across the Site, these will be remediated prior to any discharge and works occurring. The discharge will not cause stormwater from up to and including a 24 hour duration 10% Annual Exceedance Probability rainfall event to enter any other property.

There will be no ponding of stormwater on the ground for more than 48 hours, and the discharge will be at least 1m above the highest groundwater level.

The discharge will not only be from a rural activity as it will be from the part of the Site used for an industrial activity. This is a breach of standard 5.96(e).

There is not an available reticulated stormwater system, nor will there be a system servicing more than 5 sites.

Because of the breach of standard 5.96(e) the discharge of stormwater is a **Discretionary Activity** under Rule 5.97.

5.98

Any discharge of water or contaminants onto or into land in circumstances where a contaminant may enter groundwater that is not classified by any of the above rules, is a permitted activity, provided the following conditions are met:

1. The volume of the discharge does not exceed 10m^3 per day and the application rate does not exceed 10mm per day; and
2. The discharge is not directly into groundwater; and
3. The discharge does not result in any overflow or runoff into any surface water body or onto neighbouring site; an
4. The discharge does not, in groundwater, render fresh water unsuitable or unpalatable for consumption by animals or humans; and
5. The discharge does not contain any hazardous substance, hazardous waste or added radioactive isotope; and
6. The discharge does not occur when the soil moisture exceeds field capacity; and
7. The discharge is not from or into contaminated or potentially contaminated land; and

8. The discharge is not within

   (a) 50 m of a bore used for water abstraction; or

   (b) within a Community Drinking-water Protection Zone as set out in Schedule 1; and

9. Where the discharge is from the use of live ammunition associated with military training under the Defence Act 1990, conditions 1 to 8 do not apply.

5.100

Any discharge that is not permitted by either Rule 5.98 or 5.99 and is not classified by any other rule in this Plan is a discretionary activity.

ASSESSMENT

The discharge of water though cleanfill is uncontrolled and may exceed $10m^3$ per day. There will be no direct discharge into groundwater, but the water will reach groundwater eventually, thus triggering rule 5.98.

The discharge will not result in any overflow or runoff into any surface water body or onto neighbouring site.

The discharge will be filtered through at least 1m of undisturbed gravel prior to discharging to groundwater. The report prepared by PDP states that the effects on groundwater quality will be low and not render fresh water unsuitable or unpalatable for consumption by animals or humans. The discharge will not contain any hazardous substance, hazardous waste or added radioactive isotope.

The discharge is not controlled and may naturally occur when the soil moisture exceeds field capacity. The discharge will not be from or into contaminated or potentially contaminated land - whilst there are areas of contaminated land across the Site, these will be remediated prior to any discharge occurring.

The discharge will not be within 50m of a bore used for water abstraction; nor within a Community Drinking-water Protection Zone as set out in Schedule 1. Condition 9 is not relevant.

The non-compliances with conditions 1 and 6 trigger a consent requirement for a **Discretionary Activity** under Rule 5.100.

5.175

The use of land to excavate material is a permitted activity, provided the following conditions are met:

….

Over an unconfined or semi-confined aquifer:

a. the volume of material excavated is less than $100m^3$; or

b. the volume of material excavated is more than $100m^3$ and:

i. there is more than 1m of undisturbed material between the deepest part of the excavation and the highest groundwater level; and

ii. the excavation does not occur within 50m of any surface waterbody.

5.176

The use of land to excavate material that does not comply with one or more of the conditions of Rule 5.175 is a restricted discretionary activity.

The exercise of discretion is restricted to the following matters:

1. The actual and potential adverse environmental effects on the quality of water in aquifers, rivers, lakes, wetlands; and
2. Any need for remediation or long-term treatment of the excavation; and
3. The protection of the confining layer and maintaining levels and groundwater pressures in any confined aquifer, including any alternative methods or locations for the excavation; and
4. The management of any exposed groundwater; and
5. Any adverse effects on Ngāi Tahu values or on sites of significance to Ngāi Tahu, including wāhi tapu and wāhi taonga.

ASSESSMENT

It is proposed to extract more than 100m^3 of material but there will be more than 1m of undisturbed material between the deepest part of the excavation and the highest groundwater level recorded for the Site.

The excavation is therefore a **Permitted Activity**.

5.177

The use of land for the deposition of more than 50m^3 of material in any consecutive 12 month period onto land which is excavated to a depth in excess of 5m below the natural land surface and is located over an unconfined or semi-confined aquifer, where the highest groundwater level is less than 5m below the deepest point in the excavation, and the associated discharge of contaminants onto or into land where it may enter water, is a controlled activity, provided the following conditions are met:

1. The material is only cleanfill; and
2. The volume of vegetative matter in any cubic metre of material deposited does not exceed 3%; and
3. The material is not deposited into groundwater placed in the land at least 1 m above the highest groundwater level at the site; and
4. The material is not concrete slurry, coal tar or hydro-excavated waste; and
5. The material is not deposited onto or into land that is listed as an archaeological site; and
6. A management plan has been prepared in accordance with Section 8.1 and Appendix B of "A Guide to the Management of Cleanfills", Ministry for the Environment, January 2002; and
7. A site rehabilitation plan has been prepared for the site and is submitted with the application for resource consent.

The CRC reserves control over the following matters:

1. The potential for adverse effects on the quality of water in aquifers, rivers, lakes, wetlands and mitigation measures; and

2. The content and adequacy of the management plan prepared in accordance with Section 8.1 and Appendix B of "A Guide to the Management of Cleanfills", Ministry for the Environment, January 2002; and

3. The content and adequacy of the site rehabilitation plan to address any adverse effects after the deposition of material is completed.

ASSESSMENT

It is proposed to deposit more than 50m^3 of material in any consecutive 12-month period onto land which will have been excavated to a depth in excess of 5m below the natural land surface. The land is located over an unconfined or semi-confined aquifer and the highest groundwater level is less than 5m below the deepest point of the excavation.

The material will only be cleanfill (virgin materials (unprocessed and processed) extracted from the Site) and will not contain any vegetative matter, concrete slurry, coal tar or hydro-excavated waste. All material will be deposited at least 1m above the highest level of groundwater and no material will be deposited onto or into land that is listed as an archaeological site. A management plan has been prepared in accordance with Section 8.1 and Appendix B of "A Guide to the Management of Cleanfills", Ministry for the Environment, January 2002, and a site rehabilitation plan has been prepared for the Site, which can be found in **Appendix 8** and is described in the Proposal section of this application.

Therefore, the deposition of cleanfill is a **Controlled Activity**.

5.179

The use of land for the storage in a portable container and use of a hazardous substance listed in Part A of Schedule 4 is a permitted activity, provided the following conditions are met:

1. The substance is approved under the Hazardous Substances and New Organisms Act 1996 and the storage and use of the substance is in accordance with all conditions of the approval; and

2. The container(s) are not located within:

(a) 20 m of a surface water body or a bore; or

(b) a Community Drinking-water Protection Zone as set out in Schedule 1.

5.180

The use of land for the storage in a portable container and use of a hazardous substance listed in Part A of Schedule 4 that does not meet one or more of the conditions in Rule 5.179 is a restricted discretionary activity.

The exercise of discretion is restricted to the following matters:

1. Measures to avoid:

(a) the entry of the substances or associated contaminants into groundwater, surface water, supplies of drinking-water and aquatic ecosystems; and

(b) any actual or potential adverse environmental effects on the current or future use of the water resource, as a result of leakage or spillage of the substance, or a release of the substance as a result of a natural event; and

2. Measures to prevent or contain spills or leaks, including site layout and drainage, waste management, emergency management and leak detection; and

3. Maintenance and monitoring of the storage or use system including containment measures.

ASSESSMENT

It is proposed to store and use up to 1,000kg of greases in special designed areas within the workshop. The substances will be approved under the Hazardous Substances and New Organisms Act 1996, and the storage and use of the substance will be in accordance with all conditions of the approval. The container(s) will not be located within 20m of a surface water body or a bore; or a Community Drinking-water Protection Zone as set out in Schedule 1.

The use of land for the storage in a portable container and use of a hazardous substance is a **Permitted Activity** under Rule 5.179.

5.181

The use of land for the storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 is a permitted activity, provided the following conditions are met:

1. The substance is approved under the Hazardous Substances and New Organisms Act 1996, and the storage and use of the substance is in accordance with all conditions of the approval; and

2. A current inventory of all hazardous substances on the site is maintained, and a copy of the inventory shall be made available to the CRC or emergency services on request; and

3. For hazardous substances stored or held on or over land, all areas or installations used to store or hold hazardous substances are inspected at least once per month or annually if the site is outside of any area or zone identified in a proposed or operative district plan for residential, commercial or industrial purposes and is unstaffed, and repaired or maintained if any defects are found that may compromise the containment of the hazardous substance; and

4. For hazardous substances stored or held in a container located in or under land:

   (a) if there has been any physical loss of product, then the Canterbury Regional Council shall be notified within 24 hours of confirmation of the loss; and

   (b) records of stock reconciliations over the past 12 months shall be made available to the CRC upon request. If requested, a copy of the stock reconciliation and the most recent certification of the container shall be provided to the CRC within five working days; and

5. For substances stored within a Community Drinking-water Protection Zone as set out in Schedule 1:

   (a) all hazardous substances on a site are stored under cover in a facility which is designed, constructed and managed to contain a leak or spill and allow the leaked or spilled substance to either be collected or lawfully disposed of; and

   (b) spill kits to contain or absorb a spilled substance are located with the storage facility and use areas at all times and

6. Except where the storage was lawfully established before 4 July 2004 and the maximum quantity stored has not increased since that date, or the storage relates to transformers and other equipment associated with electricity infrastructure, the substances shall not be stored

within:

(a) 20 m of a surface waterbody or a bore used for water abstraction; or

(b) 250m of a known active fault that has a recurrence period of less than 10,000 years, and the land is:

(i) over an unconfined or semi-confined aquifer; or

(ii) within 50 m of a permanently or intermittently flowing river or a lake.

5.182

The use of land for the storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 that does not meet one or more of the conditions in Rule 5.181 is a discretionary activity.

ASSESSMENT

It is proposed to store and use 30,000 litres of oil in double-skinned containers on the Site. Oil is a substance that is approved under the Hazardous Substances and New Organisms Act 1996, and the storage and use of the substance will be in accordance with all conditions of the approval.

A current inventory of all hazardous substances on the Site will be maintained, and a copy of the inventory shall be made available to the CRC or emergency services on request.

The storage area will be inspected at least once per month and will be repaired or maintained if any defects are found that may compromise the containment of the hazardous substance.

If there has been any physical loss of product, then the Canterbury Regional Council shall be notified within 24 hours of confirmation of the loss; and records of stock reconciliations over the past 12 months shall be made available to the CRC upon request. If requested, a copy of the stock reconciliation and the most recent certification of the container will be provided to the CRC within five working days.

No substances will be stored within:

- a Community Drinking-water Protection Zone as set out in Schedule 1,
- 20m of a surface waterbody or a bore used for water abstraction; or
- within 50 m of a permanently or intermittently flowing river or a lake;or
- within 250m of the fault that runs across the western part of the Site.

The use of land for the storage (other than in a portable container) and use of a hazardous substance is a **Permitted Activity** under Rule 5.181.

5e CARP Statutory Assessment

7.32 The discharge of dust to air beyond the boundary of the property of origin from the construction of buildings, land development activities, unsealed surfaces or unconsolidated land, is a permitted activity provided the following conditions, where applicable, are met: 1. The building to be constructed is less than 3 stories in height, or where the building is greater than 3 stories in height, a dust management plan is prepared in accordance with Schedule 2 and implemented by the person responsible for the discharge into air; and 2. The area of unsealed surface or unconsolidated land is less than 1000m^2, or where the area of unsealed surface or unconsolidated land is greater than 1000m^2 a dust management plan is prepared in accordance with Schedule 2 and implemented by the person responsible for the discharge into air; and 3. The discharge does not cause an offensive or objectionable effect beyond the boundary of the property of origin, when assessed in accordance with Schedule 2.
7.33 The discharge of dust, beyond the boundary of the property of origin, from the construction of buildings, land development activities, unsealed surfaces or unconsolidated land that does not meet condition 1 or 2 of Rule 7.32 is a restricted discretionary activity. The exercise of discretion is restricted to the following matters: 1. The content of the management plan to be implemented; and 2. The frequency of the effects of the discharge; and 3. The intensity of the effects of the discharge; and 4. The duration of the effects of the discharge; and 5. The offensiveness of the discharge; and 6. The location of the effects of the discharge; and 7. The matters set out in Rule 7.2; and 8. Any effect on the environment of not meeting the condition or conditions of the particular rule contravened; and 9. Whether the conditions of the rule, when considered as a package, remain effective; and 10. Mitigation methods available to minimise any actual or potential environmental effects on the efficacy of the package of conditions.
7.34 The discharge of dust into air beyond the boundary of the property of origin, from the construction of buildings, land development activities, unsealed land or unconsolidated surfaces that does not meet condition 3 of Rule 7.32 is a non-complying activity.
ASSESSMENT The area of unsealed surface or unconsolidated land will be more than 1000m^{2,} but any discharge will not cause an offensive or objectionable effect beyond the boundary of the Site, as confirmed in

the Air Quality Assessment prepared by PDP (**Appendix 15**) section 6.2.6. Furthermore, a dust management plan will be prepared in accordance with Schedule 2. Therefore, the Proposal is a **Permitted Activity** as it will meet the conditions of Rule 7.32.

7.35 The discharge of contaminants into air from the handling of bulk solid materials is a permitted activity provided the following conditions are met: 1. The discharge of dust does not cause an offensive or objectionable effect beyond the boundary of the property of origin, when assessed in accordance with Schedule 2; and 2. The handling occurs indoors, or where the handling occurs outdoors the rate of handling does not exceed 100t per hour; or 3. Where handling occurs outdoors on less than 21 days per calendar year, the rate of handling does not exceed 250t per hour; and 4. Where the handling occurs outdoors and the rate of handling exceeds 20t per hour, a dust management plan is prepared in accordance with Schedule 2 and implemented by the person responsible for the discharge into air; and 5. The dust management plan is supplied to the CRC on request; and 6. The discharge does not occur within 200m of a sensitive activity, wāhi tapu, wāhi taonga or place of significance to Ngāi Tahu that is identified in an Iwi Management Plan; and 7. Notwithstanding condition 6, where the discharge is from production blasting at a quarry site the discharge does not occur within 500m of a sensitive activity wāhi tapu, wāhi taonga or a place of significance to Ngāi Tahu that is identified in an Iwi Management Plan.
7.63 The discharge of contaminants into air: 1. that does not comply with one or more of the conditions of Rules 7.47 to 7.62, excluding condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62; or 2. that is from an industrial or trade premise and is not managed by Rules 7.47-7.62; and is not a prohibited activity, is a discretionary activity.
ASSESSMENT The handling of bulk solid materials refers to the processing and loading of aggregate onto trucks, and the removal and replacement of overburden within the Site. 1. The discharge of dust will not cause an offensive or objectionable effect beyond the boundary of the Site, as confirmed in the Air Quality Assessment prepared by PDP (**Appendix 15**) section 6.2.6. 2. The handling will not occur indoors. The handling will occur outdoors, but the rate of handling will not exceed 100t per hour, so Rule 7.35.2 is not applicable. 3. The handling will occur outdoors on more than 21 days per calendar year, so Rule 7.35.3 is not applicable. 4. The rate of handling will likely exceed 20 tonnes per hour, therefore a dust management plan

will be prepared in accordance with Schedule 2 and will be implemented by Burnham 2020.

5. The dust management plan will be supplied to the CRC on request.
6. The discharge of dust will occur within 200m of a sensitive activity but not any wāhi tapu, wāhi taonga or place of significance to Ngāi Tahu that is identified in an Iwi Management Plan.
7. There will be no production blasting at the Site.

The Proposal is therefore a **Discretionary Activity** under Rule 7.63 as a quarry where aggregate is processed is defined as an industrial or trade premise and it is not managed by the specified rules.

7.36

The discharge of contaminants into air from the outdoor storage of bulk solid materials is a permitted activity provided the following conditions are met:

1. The discharge of dust does not cause an offensive or objectionable effect beyond the boundary of the property of origin, when assessed in accordance with Schedule 2; and
2. The amount of material stored does not exceed 1000t when it has an average particle size of less than 3.5mm; and
3. Where the storage exceeds 200t, a dust management plan is prepared in accordance with Schedule and implemented by the person responsible for the discharge into air; and
4. The dust management plan is supplied to the CRC on request; and
5. The discharge does not occur within 100m of a sensitive activity, wāhi tapu, wāhi taonga or place of significance to Ngāi Tahu that is identified in an Iwi Management Plan.

7.63

The discharge of contaminants into air:

1. that does not comply with one or more of the conditions of Rules 7.47 to 7.62, excluding condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62; or
2. that is from an industrial or trade premise and is not managed by Rules 7.47 -7.62; and is not

a prohibited activity, is a discretionary activity.

7.64

The discharge of contaminants into air that does not comply with condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62 is a non-complying activity.

ASSESSMENT

The outdoor storage of bulk solid materials includes the stockpiling of aggregate and overburden.

1. The discharge of dust will not cause an offensive or objectionable effect beyond the boundary of the Site, as confirmed in the Air Quality Assessment prepared by PDP (**Appendix 15**) section 6.2.6.
2. The amount of material stored may exceed 1000t and the average particle size will be less than 3.5mm.

3. The storage may exceed 200t, so a dust management plan will be prepared in accordance with Schedule 2 and will be implemented by Burnham 2020.
4. The dust management plan will be supplied to the CRC on request.
5. The discharge to air of dust will not occur within 100m of a sensitive activity, wāhi tapu, wāhi taonga or place of significance to Ngāi Tahu that is identified in an Iwi Management Plan.

The Proposal is therefore a **Permitted Activity** under Rule 7.36.

7.49

The discharge of contaminants into air from the disposal of cleanfill is a permitted activity provided the following conditions are met:

1. The discharge of dust does not cause an offensive or objectionable effect beyond the boundary of the property of origin when assessed in accordance with Schedule 2; and
2. The discharge does not occur within 200m of a sensitive activity on another property, or within 100m of a wāhi tapu, wāhi taonga or place of significance to Ngāi Tahu that is identified in an Iwi Management Plan; and
3. The amount of material stored does not exceed 1000t when it has an average particle size of less than 3.5mm; and
4. If there is a discharge of dust beyond the boundary of the property of origin, a dust management plan is prepared in accordance with Schedule 2 and implemented by the person responsible for the discharge into air; and
5. The dust management plan is supplied to the CRC on request.

7.63

The discharge of contaminants into air:

1. that does not comply with one or more of the conditions of Rules 7.47 to 7.62, excluding condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62; or
2. that is from an industrial or trade premise and is not managed by Rules 7.47-7.62; and is not

a prohibited activity, is a discretionary activity.

7.64

The discharge of contaminants into air that does not comply with condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62 is a non-complying activity.

ASSESSMENT

1. The discharge of dust from cleanfilling will not cause an offensive or objectionable effect beyond the boundary of the Site, as confirmed in the Air Quality Assessment prepared by PDP (**Appendix 15**) section 6.2.6.
2. The discharge of dust will occur within 200m of a sensitive activity on another property, but not within 100m of a wāhi tapu, wāhi taonga or place of significance to Ngāi Tahu that is identified in an Iwi Management Plan.
3. The amount of material stored may exceed 1000t and the average particle size will be less than

3.5mm.

4. A dust management plan will be prepared for the Site and implemented by Burnham 2020.

5. The dust management plan will be supplied to the CRC on request.

The Proposal is therefore a **Discretionary Activity** under Rule 7.63 as a quarry where aggregate is processed is defined as an industrial or trade premise and it is not managed by the specified rules.

7.50

The discharge of contaminants into air from the treatment and disposal of less than $50m^3$ per day of human sewage effluent averaged over a calendar month is a permitted activity provided the following conditions are met:

1. The discharge of odour does not cause an offensive or objectionable effect beyond the boundary of the property of origin, when assessed in accordance with Schedule 2; and

2. If there is a discharge of odour beyond the boundary of the property of origin, an odour management plan is prepared in accordance with Schedule 2 and implemented by the person responsible for the discharge into air; and

3. The odour management plan is supplied to the CRC on request; and

4. Except where the discharge is from a single dwelling or other source discharging less than $2m^3$ per day averaged over a calendar month, the treatment system and any surface irrigation of effluent is at least 20m from the boundary of the property of origin; and

5. There is no uncovered storage of screened solids or uncovered drying and storage of sludge; and

6. Spray irrigation, and storage of effluent in uncovered vessels, including oxidation ponds, occurs at least 50m from the boundary of the property of origin and at least 150m from any sensitive activity or wāhi tapu, wāhi taonga or place of significance to Ngāi Tahu that is identified in an Iwi Management Plan.

7.63

The discharge of contaminants into air:

1. that does not comply with one or more of the conditions of Rules 7.47 to 7.62, excluding condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62; or

2. that is from an industrial or trade premise and is not managed by Rules 7.47-7.62; and is not

a prohibited activity, is a discretionary activity.

7.64

The discharge of contaminants into air that does not comply with condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62 is a non-complying activity.

ASSESSMENT

The Site will not generate more than $50m^3$ per day of human sewage effluent averaged over a calendar month.

1. The discharge of odour will not cause an offensive or objectionable effect beyond the boundary of the property of origin, based on understanding wind direction, strength and the likelihood of

dust discharging onto adjoining properties from the Air Quality Assessment prepared by PDP (**Appendix 15**) section 6.2.6.

2. Therefore, there is no requirement to prepare and implement an odour management plan.
3. Is not relevant as no odour management plan is required.
4. The treatment system and any surface irrigation of effluent will be over 50m from the boundary of the Site, and
5. There will be no uncovered storage of screened solids or uncovered drying and storage of sludge.
6. There will be no spray irrigation or oxidation ponds as wastewater will discharge via a subsurface dripline system placed in the landscaped and bunded areas at original ground level. The discharge will occur in close vicinity of the office buildings.

The Proposal is therefore a **Permitted Activity** under Rule 7.50.

7.53

The discharge of contaminants into air, including vapour ventilation and displacement, from the storage or transfer of petroleum products (including liquefied petroleum gas), is a permitted activity provided the following conditions are met:

1. The total volume of petroleum product stored on the site is less than 1,000l; or
2. The total volume of petroleum product stored on the site is 1,000l or more, and if there is a discharge of odour or dust beyond the boundary of the property of origin, an odour management plan is prepared in accordance with Schedule 2, implemented by the persons responsible for the discharge into air, and supplied to the CRC on request.

7.63

The discharge of contaminants into air:

1. that does not comply with one or more of the conditions of Rules 7.47 to 7.62, excluding condition 1 of Rules 7.47, 7.48, 7.49, 7.50 7.51, 7.55, 7.59 and 7.62; or
2. that is from an industrial or trade premise and is not managed by Rules 7.47 -7.62; and is not

a prohibited activity, is a discretionary activity.

ASSESSMENT

It is proposed to store 30,000 litres of petroleum products on the Site in a double skinned tank at least 500m from any adjoining sensitive activity or public road. As such, it is not anticipated that there will be a discharge of odour beyond the boundary of the Site.

The rule states, '**if** there is a discharge of odour or dust…'and none is anticipated to occur in association with the storage and use of hazardous substances. As such, it is not proposed to prepare an odour management plan and the storage of petroleum products is a **Permitted Activity** under Rule 7.53.

6.0 Assessment of Environmental Effects

This section sets out the receiving environment, the potential and actual effects of the proposal and how these will be managed through mitigation measures.

6.1 Section 104(2) Permitted Baseline

6.1.1 Selwyn District Plan

No longer applicable: RMA, s 86F.

6.1.2 Partially Operative Selwyn District Plan

The Partially Operative Selwyn District Plan (the POSDP) permits, as relevant to this Site:

- Traffic movements generated by the Site onto a road that is formed, sealed and maintained by Council is a maximum of 60 ecm/d[5] per site (averaged over any one-week period).
- The establishment of a vehicle crossing that does not service an activity that generates more than 40 vehicle movements per day.

Given the scale of activity being proposed, this permitted baseline is considered to be of limited relevance and has not been relied upon in the assessment of potential and actual effects of this Proposal.

The Partially Operative Selwyn District Plan also permits, as relevant to this Site:

- Rural Production (Any aquaculture, agricultural, pastoral, horticultural, or forestry activities, including farm quarrying and includes initial processing, as an ancillary activity, of commodities that result from the listed activities above, and includes any land and buildings used for the production of the commodities from a) and used for the initial processing of commodities.
- The establishment of a new, or expansion of an existing shelterbelt, that complies with the Springfield Airfield Height Restriction, the West Melton Aerodrome Height Restriction, the Planting Setbacks Restriction near Significant Electricity Distribution Line and the Wildfire Setbacks.
- The erection of a new, or relocation, or alteration, or expansion of an existing structure not used as either a residential unit or a minor residential unit that meets the following standards:
    - building coverage of a maximum of 35% or 500m^2, whichever is lesser for sites less than 1ha; or 5% for all other sites greater than 1ha.
    - 12 metre height limit, and
    - 20 metre setback from an arterial road and 10m from any other road.
- The establishment of any new principal building that is not located in a high hazard area; not located between any surface water body and any stopbank designed to contain floodwater

[5] Equivalent Car Movements Per Day as defined in the Operative Selwyn District Plan.

from that surface water body; and the finished floor level is equal to or higher than the minimum floor level stated in a Flood Assessment Certificate issued in accordance with NH-SCHED1 Flood Assessment Certificates.

- Car parking for an activity that:
    - is all located within the site,
    - provides sufficient mobility parks that are designed in accordance with the design requirements listed in TRAN-TABLE10 - Minimum parking area dimensions, having a stall width of 3.6m and a stall depth of 6.1m.
    - meets the required gradients of:
        - 1:16 (6.25%) at 90o to the angle of the vehicle park; and
        - 1:20 (5%) when parallel to the angle of the vehicle park.
    - is accessed via a road that meets the gradient requirements.
    - has sufficient space for vehicles to manoeuvre within the Site and not reverse onto an arterial road.
- Use and/or storage of hazardous substances, excluding a major hazard facility.
- Signs located on a site adjacent to an Arterial Road with a speed limit of more than 60km per hour, where the road boundary setback rules for a building in the Rural Zone are met; and the sign is located more than 200m in front of any official traffic sign or signal (excluding street naming signs and NZTA brown tourist signs) in the General Rural Zone.
- Artificial outdoor lighting that complies with the rule requirements for light spill, glare and sky glow.
- Activities that meet the following noise limits at the notional boundary of any noise sensitive activity within any site receiving noise:

Hours	Noise limits
0700 to 2200	55 dB L_{Aeq}
2200 to 0700	45 dB L_{Aeq} 70 L_{AFmax}

- Traffic noise generated within a land transport corridor.

These permitted activities and standards are considered to be of greater relevance to the Proposal as the number or extent of shelterbelts are not limited by the District Plan and only effects on specified airfields, significant electricity distribution lines and the risk of wildfire area sought to be managed.

The permitted activity standards also provide for buildings on the Site (being no more than 5% of the site coverage, a maximum of 12 metres in height and setback 20m from an arterial road). The buildings proposed on the Site will meet the site coverage, maximum height and boundary setbacks for buildings in the POSDP.

The accessway standards, signage limits, lighting and noise standards all set a permitted baseline against which the Proposal has been assessed under ss95D, 95E and 104(1)(a) of the RMA.

6.1.3 Canterbury Land and Water Regional Plan

Under the CLAWRP, the following activities, as relevant to this Proposal, are permitted:

- The discharge of wastewater from a new on-site wastewater treatment system onto or into land where a contaminant may enter water, provided that the discharge volume does not exceed 2m^3 per day, subject to conditions.
- The discharge of a dust suppressant approved under the Hazardous Substances and New Organisms Act 1996, and the use and discharge of the dust suppressant is in accordance with all conditions of the approval onto or into land.
- The discharge of stormwater, other than into or from a reticulated stormwater system, onto or into land in circumstances where contaminants may enter groundwater and subject to conditions including that the discharge is located at least 1 metre above the highest groundwater level at the time the discharge system is constructed.
- The discharge of 10m^3 of water or contaminants where the application rate does not exceed 10 mm per day onto or into land in circumstances where a contaminant may enter groundwater that is not classified by any other rule, subject to conditions.
- The excavation of more than 100m^3 where there is more than 1m of undisturbed material between the deepest part of the excavation and the highest groundwater level, and it does not occur within 50 metres of any surface waterbody.
- The storage in a portable container and use of a hazardous substance listed in Part A of Schedule 4 of the CLAWRP and approved under the Hazardous Substances and New Organisms Act 1996, subject to conditions.
- The storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 and approved under the Hazardous Substances and New Organisms Act 1996, subject to conditions.

The CLAWRP permits a small volume (not exceeding 2m^3 per day) of the discharge of wastewater as a permitted activity, which this Proposal will just exceed.

The discharge of stormwater is not constrained by a volume control and therefore the permitted baseline is considered relevant.

The permitted baseline for the discharge of dust suppressants and the storage of hazardous substances are also considered relevant to this Proposal.

The discharge of water or contaminants onto or into land, not managed under any other rule, is limited by a volume of 10m^3, which is of little relevance to this Proposal.

There is no limit on the volume of earthworks that can be undertaken provided there is more than 1 metre of undisturbed material between the deepest part of the excavation and the highest recorded groundwater level. This permitted baseline for earthworks is directly applicable to the Proposal.

As such, the permitted baseline has been applied to:

- The discharge of a dust suppressant approved under the Hazardous Substances and New Organisms Act 1996.
- The discharge of stormwater.

- Aggregate extraction.
- The storage and use of hazardous substances.

6.1.4 Canterbury Air Regional Plan

The CARP permits the following relevant activities:

- The discharge of dust to air beyond the boundary of the Site from the construction of buildings, unsealed surfaces or unconsolidated land, subject to conditions.
- The discharge of contaminants into air from the handling of bulk solid materials, subject to conditions.
- The discharge of contaminants into air from the outdoor storage of bulk solid materials, subject to conditions.
- The discharge of contaminants into air from the disposal of cleanfill, subject to conditions.
- The discharge of contaminants into air, including vapour ventilation and displacement, from the storage or transfer of petroleum products (including liquefied petroleum gas), subject to conditions.

These permitted activity standards form a permitted baseline for discharges from activities within the Site including dust from aggregate extraction activities, haul roads and processing activities.

6.2 Effects Assessment

The effects assessment addresses actual and potential effects on or from the following matters, arising from the Proposal being establishment of a quarry, the extraction and processing of aggregate and the rehabilitation of the Site:

- Landscape values and visual amenity.
- Noise.
- Transport and the roading network.
- Contaminated land.
- Ecological values.
- Productivity of the soil.
- Groundwater quality.
- Air Quality.
- Archaeology values.
- Economy of the district.

6.2.1 Landscape Values and Visual Amenity

The following section assesses the potential landscape and visual effects of the Proposal and has been informed by the Landscape and Visual Effects Assessment prepared by Boffa Miskell (**Appendix 8**).

6.2.1.1 Landscape, Rural Character and Amenity Values

Landscape

The Site forms part of the lower eastern area of the Canterbury Plains (Kā Pākihi-whakatekateka-a-Waitaha), which extends between the foothills of the Southern Alps and Banks Peninsula and between the Waimakariri River to the north and the Waikirikiri / Selwyn River to the south. The plains are made up of a series of gently sloping fans that contain greywacke gravels produced during successive glaciations of the mountainous regions to the west. These gravels are up to 500 metres deep in some places.

The Site and its surroundings have not been identified as part of any outstanding natural landscape or significant amenity landscape at the regional or district scale.

Rural character

Large-scale land use changes including primary production have led to widespread irrigation with large pivot irrigators being a common structure in wide, open paddocks. Linear roads and fencing with dispersed agricultural sheds and dwellings are also common physical influences encountered throughout this working rural landscape context. The Road Metals Quarry on Wards Road and Burnham Golf Club on Aylesbury Road also typify the types of activities that are found in rural areas and contribute to its character.

Indigenous vegetation present on the plains is less than 0.5% of the total landcover, and has been reduced to small, isolated and scattered remnants.

Visual amenity

The vastness and openness of this landscape allows for uninterrupted views of the Southern Alps to the west and Banks Peninsula to the east. Views of the Site from both public and private viewpoints are restricted by the flat topography coupled with the existing shelter planting around the perimeter of the Site, although there are intermittent views between gaps in the existing shelter planting from Aylesbury Road (a primary collector road), and Grange Road, with long distance views of the western boundary of the Site available from Kivers Road. Views of the Site from neighbouring dwellings are typically restricted due to intervening shelter planting within the Site and reinforced with planting introduced along neighbouring property boundaries.

A detailed description of the visual catchment can be found in section 2.5 of the LVEA and the Graphic Supplement. In brief, views from most public viewpoints on Aylesbury Road, Two Chain Road, Sandy Knolls Road and Grange Road are curtailed by existing vegetation on the boundaries of the Site. There are no restrictions on views into the Site near 159 and 139 Grange Road, but these would generally be experienced only obliquely and for a transient moment as drivers and passengers pass the Site on the open road.

6.2.1.2 Effects on Landscape, Rural Character and Visual Amenity Values

The proposed quarry will result in gradual and progressive modification to the existing landform, and exposure of bare earth during the extraction of aggregate. These effects will gradually move across the Site through successive phases of construction and extraction, however, will be contained within a framework of vegetation with bunding, temporary stockpiles and additional planting along batter slopes following rehabilitation. It is considered that effects on landscape character will be more than minor (moderate adverse) during the operation of the quarry and will gradually reduce through successive phases of aggregate extraction and rehabilitation.

While the landform within the Site will change, it will remain predominantly in productive rural land use prior to, and following, each phase of extraction. Therefore, the Site will remain rural in character albeit in the context of a modified landform rehabilitated with substantial planting. During the life of the Project, a mosaic of patches and corridors of native planting equating to approximately 30 hectares will be established. This will ensure that the Site remains well integrated into the broader landscape, resulting in no more than low (less than minor) adverse effects on landscape values at completion.

6.2.1.3 Effects from Public Viewpoints

Initially, there will be limited to filtered views from Aylesbury Road to the east through the established shelterbelts along the boundary of the Site. However, these views will diminish as the entrance way is planted, the long term bund is constructed, and the stockyards are located below existing ground level. Adverse visual effects from public viewpoints on Aylesbury Road will therefore be low adverse (less than minor).

Views from Grange Road of the southern portion of the Site will be curtailed by the existing pine shelterbelts which extend along the majority of the Site boundary and will be retained throughout the life of the quarry. Some more transient, long-distance views of above ground activity during Phases 1-3 may be obtained through a gap in the boundary planting, however, these will generally be limited by the internal shelterbelt (SB26) (refer to LVEA Graphic Supplement **Appendix 8**) and the temporary stockpiling and planting that will occur within this gap during Phase 5. These views will remain restricted as the proposed farm access is realigned and intervening planting becomes established. Therefore, adverse visual effects from public viewpoints on Grange Road will be very low (less than minor) and reduce to neutral on the implementation and establishment of the planting near the existing farm entry.

Long-distance, glimpsed views of the Site will be available from Kivers Road, through gaps in the existing shelterbelt. However, beyond this, any views into the Site will be curtailed by the intervening shelterbelt on the western boundary of the Site combined with planting on intervening private properties. Accordingly, any visual effects experienced from public viewpoints on Kivers Road are assessed as neutral during extraction and on completion.

Overall, the established shelterbelt, proposed reinforcement planting, rehabilitation planting and bunding will limit views into the Site from the surrounding area. As such, visual effects from public viewpoints will be no greater than low adverse (less than minor) and will further reduce as proposed native vegetation planted along the perimeter of the Site and at the entrance becomes established over time.

6.2.1.4 Effects on Private Properties

There are approximately 51 private properties (identified on Figure 3 of the Landscape and Visual Assessment Graphic Supplement in **Appendix 8**), and additional dwellings within the Burnham Military Camp base, within the vicinity of the Site.

Visual effects on private properties were assessed during a site visit (from the nearest public vantage points as no properties were visited), and a desktop analysis was undertaken to understand proximity to the Site; the apparent orientation of the house (it appears that most are orientated to the north or north-west) and the nature of the view, including any existing or proposed vegetation that might provide full or partial screening of views.

A summary of the assessment is set out below:

Houses	Level of Effect	Summary of Assessment
Houses 1 to 25 – to the east.	Less than minor (No greater than very low adverse).	During Phase 1, there may be glimpsed and transitory views of the construction of the long-term bund and planting in the south-eastern corner of the Site. However, these views will generally be curtailed by the existing shelterbelt along the eastern boundary of the Site. Views of future processing and extraction areas will be concealed by an established pine shelterbelt, the long-term bund to the north and the 100-metre planted setback in the south-eastern corner of the Site.
Houses 26 to 37 - south of the Site and predominantly accessed from Grange Road and Two Chain Road.	Less than minor (No greater than very low adverse).	Views from these dwellings will remain truncated or completely curtailed by intervening vegetation, including the existing shelterbelt along the southern boundary of the Site, proposed internal planting around the Site entrance and along the tops of rehabilitated batters.
Houses 38 to 46	Less than minor (No greater than very low adverse).	Views into the Site will largely be curtailed by the existing boundary vegetation. Even during Phases 7 to 11 (the phases closest to these houses) any glimpsed, transitory views through the existing shelterbelt of machinery operating within the quarry will be curtailed by the construction of a temporary stockpile and final rehabilitation of the battered slope with native vegetation.
North of the Site are Houses 47 to 51 - accessed from	Neutral.	Views from these properties will be curtailed by intervening shelterbelt planting, the orientation of

Wards Road and are closest to the final stages of extraction (Phases 11-14).		the dwellings, and intervening vegetation within the wider landscape.
Burnham Military Camp to the south of the Site	Neutral.	Views towards the Site are already curtailed by intervening vegetation within the wider landscape and the exotic shelterbelt on the Site boundary.

6.2.1.5 Summary of effects

The Site will remain well integrated into the broader landscape, recognising the existing and proposed planting and that most activity will occur up to 10 metres below the existing ground level. Effects on landscape character will be more than minor (moderate adverse) during the operation of the quarry and will gradually reduce through successive phases of aggregate extraction and rehabilitation, resulting in less than minor (no more than low adverse) effects on landscape values at completion.

The greatest visual effect will be from public viewpoints at the Site entrance along Aylesbury Road at the commencement of the project, albeit becoming increasingly screened by planting and the relocation of processing areas to the floor of the quarry. Furthermore, the existing shelterbelt, proposed long-term bund, temporary stockpiles, and areas of planting established prior to extraction and following rehabilitation of each phase, will ensure that visual effects from public viewpoints will remain effectively mitigated, and will be less than minor (no greater than low adverse).

Views from private viewpoints will largely remain unchanged as they will be truncated or entirely curtailed by the existing shelterbelt planting, long-term bund and intervening areas of planting including additional native vegetation introduced along the tops of rehabilitated slopes of the quarry, resulting in less than minor (very low) adverse effects.

The Landscape Effects Assessment recommends that the following landscape mitigation measures are included as conditions of consent:

- A landscape plan is prepared prior to commencing development that addresses:
    - the maintenance of the existing shelterbelts, and
    - infill planting of existing shelterbelts where necessary, and
    - additional planting including on the long-term bunds and in the south-east corner and on the southern boundary of the site, and
    - measures to reduce the risk of fire, and
    - the planting associated with the Aylesbury Road Site entrance.
- A detailed landscape rehabilitation management plan prepared for each stage of extraction activity, and prior to commencing each subsequent phase in accordance with the overall landscape strategy. These plans should provide sufficient flexibility to enable suitable future end uses, once known, whilst facilitating measures to ensure the health and longevity of proposed native vegetation incorporated within the Site. Plant trials and environmental monitoring including ecological input (where necessary) should also form an integral

component of the rehabilitation works so that planting and ongoing management is optimised throughout the life of the quarry.

6.2.2 Noise

The following section assesses the potential noise effects of the Proposal and has been informed by the Assessment of Noise Effects prepared by Marshall Day (**Appendix 9**).

6.2.2.1 Existing Noise Environment

In May 2022, Marshall Day was engaged by Burnham 2020 to measure ambient noise levels at 6 different locations in the vicinity of the Site with the aim of establishing existing noise levels at and near the Site. The locations are described in Figure 5 of the Marshall Day Assessment contained in **Appendix 9**. It is noted that road construction was occurring on Aylesbury Road south of the Grange Road intersection but that the survey positions were not generally significantly affected by this. However, there may have been reduced traffic volumes and therefore lower ambient noise levels overall.

At the long duration logging locations, local traffic movements were the dominant noise source along with natural environment sounds including wind generated leaf rustle and birdsong. Distant traffic on SH1 was also audible.

Short duration noise levels logged at:

- Grange Road are 47 dB L_{Aeq} on average but vary over the course of the day. Passing traffic increases the noise levels by 10 dB between 0500 and 0800 hrs when a noise level of 49 dB L_{Aeq} is achieved before reducing to low 40s dB during the early afternoon. A second traffic noise peak of around 50 dB L_{Aeq} is achieved at 1700 hrs. Noise levels reduce steadily to around 40 dB L_{Aeq} at 2200 hrs.
- Aylesbury Road are 49 dB L_{Aeq} on average but show less variability during the daytime period. Noise levels increase from 0500 to a high of 50 dB L_{Aeq} at 0800 and 1700 hrs. During the early afternoon, noise levels are in the mid to high 40s dB L_{Aeq}.
- Opposite 146 Aylesbury Road, the Aylesbury & Wards Rd intersection and at two locations on Kivers Road are similar to those on Grange and Ayslebury Roads in that passing vehicles dominate the noise environment with ‘natural environment’ sounds audible in the lulls between traffic. However, on Kivers Road wind generated foliage noise was responsible for significant environmental noise levels and was not significantly affected by occasional passing traffic. Noise emissions on Kivers Road included local traffic and farm machinery in adjacent fields.

In relation to the residential properties located on Aylesbury Road, which will be the main transport route from the Site:

- 168 Aylesbury Road: The average daytime noise level at the dwelling is in the low 60s dB $L_{Aeq(1hr)}$. At night the average noise level is approximately 40 dB $L_{Aeq(1hr)}$.
- 146 Aylesbury Road: The average daytime noise level at the dwelling is approximately 50 dB $L_{Aeq(1hr}$. At night the average noise level is approximately 40 dB $L_{Aeq(1hr)}$.

- Burnham Camp: During the day, the average noise level is in the order of 55 dB L_{Aeq} at the Camp. At night, the average noise level is approximately 45 dB L_{Aeq}.

6.2.2.2 Potential Noise Effects

The operation of the quarry including extractive activities, processing of aggregate, the associated use of machinery and vehicle movements both within and to and from the Site, all generate noise, which needs to be managed to minimise impacts on the surrounding environment especially residential properties.

Noise generated by any motor vehicle or any mobile machinery (including farm machinery and stationary equipment not fixed to the ground) is excluded from complying with the Noise Limits under Rule 9.16.1 and the POSDP provides for traffic noise generated within a land transport corridor as a permitted activity under Rule NOISE-R3. However, Marshall Day considers that as a discretionary activity, it is appropriate to assess the potential noise effects from trucks using the surrounding road network. In effect, a precautionary approach has been taken.

Therefore, recognising the relatively low ambient noise environment, Marshall Day has recommended the following noise limits for the Proposal that will apply within the notional boundary of a dwelling:

	Hours	Noise limits
Day	0700 to 2200	55 dB $L_{Aeq(15mins)}$
Night	2200 to 0700	45 dB $L_{Aeq(15\ mins)}$ and 70 dB L_{AFmax}

These noise limits have formed the basis of the noise assessment and Marshall Day concludes that all activities within the Site will always meet these standards. In fact, noise levels are likely to be well within the proposed limits and therefore no adverse noise effects will arise from activities undertaken within the Site.

Some properties could be affected by the noise from trucks travelling to and from the Site along Aylesbury Road to State Highway 1 particularly:

- 168 Aylesbury Road.
- 146 Aylesbury Road.
- Burnham Camp.

6.2.2.2.1 Daytime noise levels

Marshall Day has assessed the likely noise effects on an hourly basis at each of the representative locations for these average and maximum values of 30 and 112 movements per hour and using truck noise source level of 84 dB L_{AE} at a distance of 10 metres.

<u>168 Aylesbury Road</u>

The average daytime noise level at the dwelling is in the low 60s dB $L_{Aeq(1hr)}$, which exceeds the 55dB L_{Aeq} project daytime noise limit and the daytime noise limit in the POSDP. An additional 30 truck

movements (average) per hour along Aylesbury Road will result in noise levels increasing to 61 dB $L_{Aeq(1hr)}$: a barely noticeable change in the noise level experienced at this dwelling. However, 112 truck movements (maximum) per hour will likely result in a 7 to 10dB increase in the noise level to 67 dB $L_{Aeq(1hr)}$ at this dwelling, which will result in a significant effect. However, this level of effect could be mitigated by the construction of an acoustic fence, which would reduce truck noise by 5 to 10dB.

146 Aylesbury Road

The average daytime noise level at the dwelling is approximately 50 dB $L_{Aeq(1hr)}$ and 30 truck movements (average) per hour along Aylesbury Road will result in a noise level of 54 dB $L_{Aeq(1hr)}$: a slight change in the noise level experienced at this dwelling. However, 112 truck movements (maximum) per hour will likely result in a 10dB increase in the noise level at this dwelling to 60 dB $L_{Aeq(1hr)}$: which will result in a significant effect. However, the absolute noise level of 55 dB $L_{Aeq(1hr)}$ for the 'average' number of truck movements, will ensure a level of residential daytime noise amenity anticipated by the residents.

Burnham Camp

During the day, the average noise level is in the order of 55 dB L_{Aeq} at the Camp. Marshall Day's assessment concludes that the proposed average and maximum truck movements along Aylesbury Road will have negligible to moderate noise effects at the closest buildings within Burnham Camp.

Marshall Day's assessment concludes that construction activities, such as the implementation of noise control bunds, will comply with the applicable noise limits from New Zealand Standard NZS 6803: 1999 Acoustics - Construction Noise.

There will also be no significant sources of vibration on site and vibration effects will be negligible.

6.2.2.2.2 Early morning noise levels

5am to 7am is considered to be night-time in the POSDP and the weekly hourly traffic volumes on Aylesbury Road, north of Two Chain Road, on Two Chain Road east of Aylesbury Road and on Aylesbury Road from Burdons Road to State Highway 1 (Figures 19, 20 and 21 in the Acoustic Assessment in **Appendix 9**) show that there are notable traffic movements during these hours.

If Burnham quarry generates 10 vehicle movements per hour during these times, it will result in the following change in noise levels at the closest residential properties:

Location	10 movements per hour Truck noise level, dB L_{Aeq}(1hr)	Relative change, dB
168 Aylesbury Road	56	5 to 10
146 Aylesbury Road	49	3 to 5
Burnham Camp	49	0 to 3

The truck movements will result in the greatest change at 168 Aylesbury Road but if acoustic fencing or other appropriate noise control measures are implemented, as described above for day-time noise, this would reduce truck noise by 5 to 10dB. The level of noise received at this property would then become similar to that anticipated in a rural location adjacent to an arterial road. It is also important to

note that truck movements from 5am to 7am will only occur on Mondays to Saturdays on up to 30 days and on Sundays for up to 15 days of every calendar year (excluding public holidays).

Acoustic attenuation measures would also reduce any impacts on 146 Aylesbury Road. Whereas for Burnham Camp, noise from traffic movements is already elevated in the early morning and therefore, any impact on the Camp will be minimal.

Burnham 2020 proposes to continue discussions with the owners/occupiers of 168 and 146 Aylesbury Road to seek to achieve an acceptable outcome in relation to noise mitigation.

Overall, noise related to the operation of the quarry can be contained within the boundaries of the Site and will comply with the noise standards in the POSDP.

With regard to truck noise on roads, whilst excluded from consideration under the noise standards in the POSDP, it is recognised that it will affect the level of amenity anticipated at two affected dwellings, most noticeably when trucks use Aylesbury Road between 5am and 7am. That said, in this rural area vehicle movements related to primary production are likely to commence early in the morning, as are other activities such as milking, harvesting etc and therefore residents may be less sensitive to noise early in the morning than late at night. Furthermore, the POSDP recognises that there can be periods of noise related to temporary activities such as harvesting. Whilst the movement of trucks does not meet the definition of 'temporary activity' in the POSDP, it will be an infrequent activity that occurs on a limited number of days. It is also practicable to install acoustic mitigation measures, should they be desired, at the two closest residential properties, being 168 and 146 Aylesbury Road, to reduce the adverse effects arising from the movement of trucks to and from the quarry. Overall, the effects on the owners and occupiers of 168 and 146 Aylesbury Road will be more than minor, without mitigation.

6.2.2.3 Recommendations

In addition to the proposed noise and early morning truck movement limits, Marshall Day recommends the following form conditions of consent:

- Construction activities including erection of structures and buildings, formation of site access roads, bund construction and site rehabilitation, shall be conducted in accordance with NZS 6803: 1999 "Acoustics - Construction Noise", and shall comply with the "long term duration" noise limits contained within Table 2 of that Standard.
- Should vehicle reversing alarms be required in vehicles owned by the site operator, only broadband noise alarms are to be used. Tonal reversing alarms are not permitted.

6.2.3 Transport

The following section assesses the potential transport effects of the Proposal and has been informed by the Traffic Assessment Report prepared by Stantec (**Appendix 10**). The Site is located on Aylesbury Road, an arterial road, and Grange Road, a local road. All the surrounding roads have a range of carriageway widths.

Traffic data

Stantec has relied on annual daily traffic volumes recorded by Waka Kotahi to understand the traffic flows along State Highway 1, data from Selwyn District Council and its own traffic counts.

- State Highway 1

Notable weekday evening peaks can be observed at approximately 1,200vph, whereas in the morning there is a lower peak of 1,000vph. Friday peak traffic volume is approximately 1,500vph between 3pm and 4pm as a result of higher than typical volumes both towards and away from Christchurch. A similarly high peak period occurs on a Sunday afternoon associated with travel towards Christchurch.

- Local road traffic data

Aylesbury Road connecting to State Highway 1 is the busiest section of road in the Selwyn District carrying approximately 3,700 vehicles per day on a weekday, reflecting the contribution that the Burnham Military Camp makes to traffic generation in the area. However, where it passes the Site, Aylesbury Road carries low traffic volumes of approximately 500 vehicles per day (vpd) past. Peak hour traffic volumes are not reported but could typically be expected to be approximately 10% of the daily traffic volumes.

The State Highway 1 / Aylesbury Road intersection has some peak period congestion on the side roads, with the northern approach from Aylesbury Road experiencing long queues in the afternoon peak period. There has been a previous history of serious crashes at the intersection leading to implementation of a lower speed limit that is activated by vehicles turning at the intersection.

Overall, there are no capacity related issues on the surrounding District Council road network, while the crash history indicates that there have been some vehicle turning/crossing crashes at intersections, and loss of control and turning crashes at locations between intersections.

Most serious and fatal crashes have been reported on the State Highway, representative of the high traffic volumes.

6.2.3.1 Effects on the Transport Network and Capacity

The operation of a quarry at Burnham will result in the generation of vehicle movements associated with staff (private cars) and the transport of aggregate (heavy vehicle movements). It is the latter that has the greatest potential to generate effects on the safe and efficient operation of the surrounding road network and is the focus of the assessment.

6.2.3.1.1 Heavy vehicle generation

Consent is being sought for a maximum of 750 heavy vehicle movements per day, split into approximately 375 movements into the Site and approximately 375 movements from the Site. However, based on data from the Yaldhurst Quarry (previously operated by Winstone), Stantec expects that day-to-day operations will result in a significantly lower trip generation. That data indicates that when fully operational, average traffic generation is more likely to be approximately 40% of the maximum, which equates to an average of 300 heavy vehicle movements per day.

6.2.3.1.2 Travel patterns

The traffic distribution patterns for the proposed quarry have been assessed by Stantec under two scenarios:

- Scenario 1: Christchurch City focus, is based on projected trip patterns, with the proposed quarry being heavily weighted towards servicing Christchurch.
- Scenario 2: Selwyn District focus, is that the quarry will have a focus on servicing the Selwyn District, recognising other major quarries are located in Christchurch and the eastern edge of

the Selwyn District. Although, it is recognised it is likely that a change in quarry strategy would be required for this to occur.

6.2.3.1.3 Traffic Effects

Changes in traffic volumes

It is anticipated that changes in traffic volume will be most noticeable on the local road network and at the intersection of Aylesbury Road and State Highway 1. The Christchurch City focus scenario will result in much higher traffic volumes on Aylesbury Road south of the Site and utilising the intersection with SH1, whereas the Selwyn District focus scenario will result in higher volumes of traffic on local roads. Stantec has determined the potential range of traffic volumes on an average day between the medium and long term, and also the long-term peak volume (Table 10-1 in **Appendix 10**). The main influences on traffic volumes are where the extracted material is being used (the destination), and the level of production (with long term volumes higher than short/medium term). Under the Christchurch City scenario, Aylesbury Road will carry the bulk of the heavy vehicle movements. Under the Selwyn/local road scenario, Wards Road appears likely to receive a greater volume of heavy truck movements. That said, this may change depending on route choices, time of day and perceptions of the most desirable route.

The effects of potential changes in traffic patterns are:

State Highway 1 and Aylesbury Road intersection

A key issue is the intersection at State Highway 1 / Aylesbury Road, which is already at capacity at peak times and queuing can occur. Therefore, the addition of vehicles associated with the proposed quarry is likely to exacerbate queuing, especially if quarry traffic coincides with the morning and evening peak period of traffic entering and exiting the Burnham Military Camp. Whilst Waka Kotahi has indicated it will be upgrading the intersection to a single lane roundabout as part of their transport network safety improvements, this is not expected to occur until 2024-2027. Stantec therefore recommend a heavy vehicle movement limit for the Site of 250 heavy vehicle movements per day until the intersection has been upgraded. This will ensure that the effects of the Proposal on the safe and efficient operation of this intersection remain acceptable before the upgrade occurs. Burnham 2020 has so limited its application.

Once constructed by Waka Kotahi, the roundabout will perform well with moderate delays possible on side road approaches during peak periods in the 2035 scenario, with typical and peak quarry traffic generation contributing to those delays resulting in a minor effect on the efficiency of the roading network. The level of delay is unlikely to generate safety issues.

Site access and Aylesbury Road

Aylesbury Road is an arterial road, and the location of the purpose-built site entrance will minimise turns at local intersections.

The site access will be designed to the Waka Kotahi Planning Policy Manual “Diagram E” standard for a 100km/h speed limit road. This standard is suitable for a high vehicle generating commercial vehicle access on a lower volume arterial road and exceeds the Selwyn District Plan requirement (Operative District Plan Rural Volume Diagram E10.D and Proposed District Plan TRAN-Diagram 7). It will have concrete kerbing, drainage design, and flag lighting to highlight the access during hours of darkness. It will also easily comply with relevant District Plan standards with respect to proximity to intersections, and there are only two accesses to dwellings in the immediate vicinity.

To ensure debris will not be transferred onto Aylesbury Road, the site access road will have a sealed shoulder 1.0m wide for at least the first 100 metres of the road. There will also be truck waiting areas on entry and exit within the Site, to a minimise the risk of trucks parking on Aylesbury Road and damaging the edge of the carriageway or creating a hazard to other road users.

Aylesbury Road between the site access and Two Chain Road is a narrow road (currently 5.8m wide sealed width) but with excellent sightlines due to its straight alignment. Currently there are low traffic volumes that will allow exiting traffic to select large gaps and accelerate away from the Site with minimal interaction with, or effect on, through traffic.

However, it is considered that an increase in heavy vehicles will result in increased damage to the edge of the road, contributing to an increased rate of pavement deterioration. Therefore, the Applicant proposes to widen Aylesbury Road to 8 metres (based on industry standards) to enable safe two-way heavy vehicle movement that will minimise effects on the road pavement performance. In addition, localised or full route edge line markings on the widened section of road, and markings to highlight the Site access would improve road safety. It is acknowledged that these works will require the agreement of the Selwyn District Council.

The constrained nature of the Aylesbury Road / Wards Road intersection means that, quarry related heavy vehicle turning movements will be limited to one additional heavy vehicle movement per hour until such time as kerb adjustments have been completed. The same will apply until the kerbing between Aylesbury Road (north) and Two Chain Road (east) has been adjusted. These upgrades will also require the agreement of Selwyn District Council. With the agreement of the Council, these works will avoid any adverse effects on the traffic environment of Aylesbury Road.

Overall, the safe and efficient operation of Aylesbury Road can be maintained, subject to the works discussed above.

Local roads

There is expected to be very low use of roads to the north of the Site, or of Two Chain Road, and even in the unlikely scenario of the quarry only servicing Selwyn District, traffic volumes will not be inconsistent with the function of these roads.

It has been assessed that local road intersections, including those servicing Burnham Military Camp, and accesses on Aylesbury Road will continue to operate, in the long term, at a very good level of service even on the busiest operational days at the quarry.

To avoid any potential effects on local roads, Stantec recommends developing and implementing a Transportation Route Management Plan as set out below under 7.2.3.4. This will ensure that any potential adverse effects on local roads are less than minor.

6.2.3.2 Recommendations

Stantec recommends, and Burnham 2020 accepts to undertake the following works and/or adopt the following limitations to ensure that the safe and efficient operation of the surrounding road environment is maintained:

- The quarry will not generate more than 250 heavy vehicle movements per day (on any one day) prior to the SH1 / Aylesbury Road intersection being upgraded to a roundabout.
- After the SH1 / Aylesbury Road intersection has been upgraded, the volume of daily heavy traffic will increase to a maximum of 750 heavy vehicle movements per day, on any one day;

- Implementation of a Transportation Route Management Plan that achieves as far as practicable:
    - Minimisation of additional congestion at the Aylesbury Road and Stage Highway intersection.
    - No use of unsealed sections of Kerrs Road or Sandy Knolls Road between Aylesbury Road/Two Chain Road and Wards Road (as per proposed condition of consent).
    - Use of Aylesbury Road as preferred route to connect to/from SH1.
    - Minimise use of Two Chain Road to no more than 45vpd unless upgraded to a standard expected to accommodate heavy vehicles. A further limitation of no more than 10 heavy vehicle movements per day turning between Aylesbury Road (north) and Two Chain Road (east) until kerb adjustments are made to support the left turn from Aylesbury Road (north).
    - Minimise use of Wards Road / Aylesbury Road intersection to no more than 10 truck and trailer movements per day unless upgraded to support the right turn from Aylesbury Road south into Wards Road east.

6.2.3.3 Summary of effects

Overall, the Site is well located on an arterial road that provides connections to State Highway 1, Main South Road and State Highway 73 (West Coast Road). This enables most travel to and from the quarry to occur on the state highway and arterial road network which will result in changes in traffic volumes mainly being focussed on Aylesbury Road.

With the local modifications proposed at the site access and to the route connecting the Site to SH1, the implementation of the recommendations above, and the planned modifications to the SH1 / Aylesbury Road intersection, it has been assessed that additional quarry traffic can be safely and efficiently accommodated within the transport network, and effects on the existing transport network will be less than minor.

6.2.4 Contaminated Land

A search of the Land Use Register on the ECan website revealed that the Site has not been identified as contaminated.

Nevertheless, PDP prepared a Preliminary Site investigation (PSI) (**Appendix 11**). The PSI identified several areas where activities listed in the Hazardous Activities and Industries List (HAIL) are likely to have been undertaken. PDP also prepared an addendum report clarifying risk associated with potential contaminated areas within the Site (**Appendix 11a**), which included identification of the following HAIL activities: an above ground diesel tank in the yard of the former forestry block (anecdotal), two above ground fuel storage tanks, storage of bulk fertilisers and other materials such as fence posts and tyres and waste pits/infill pits. The PSI also involved broad sampling of soil surfaces outside of HAIL activity areas. The sampling results showed that likely indicator contaminants (i.e. heavy metals and organochlorine pesticides (OCPs)) are at background levels. It is also noted that the HAIL activities will continue on the Site until such time as primary production ceases and is replaced by quarrying activities.

However, the PSI recognises that farming will continue across most of the Site with further potential risk for contamination from the storage of farm equipment and materials. As such, it is proposed that identified HAIL areas are subject to targeted detailed site investigations (DSI's) as quarrying progresses across the Site. This will ensure that any ongoing activities are captured by the assessments, and any remedial actions applied accordingly.

Remedial actions will vary according to the nature and extent of contamination found during any DSI, but waste material is likely to require sorting and/or offsite disposal. In other areas, the contamination from normal farming operations is not expected to result in the need for large scale remedial works. However, these matters will be addressed in any Site Management Plan prepared following the DSI phase.

6.2.5 Ecology

The following section assesses the potential ecological effects of the Proposal and has been informed by the Ecological impact Assessment Report prepared by Boffa Miskell Limited (**Appendix 12**). The Ecological Impact Assessment assesses the potential effects of the Proposal on vegetation and birds, as no wetlands, waterways or waterbodies, or lizard habitat were identified by field investigation within the Site.

6.2.5.1 Ecological values

The proposed quarry is within the Low Plains Ecological District (ED) in the Canterbury Plains Ecological Region (McEwen, 1987). The original vegetation of the Low Plains ED has been substantially depleted by human induced fire and land clearance for agriculture and settlement.

The four main vegetation and habitats within the Site are:

- Exotic grassland (perennial ryegrass grassland);
- Fodder crops;
- Cultivated loamfield; and
- Shelterbelts (radiata pine treeland).

There are no indigenous vegetation communities or habitats within the Site, being intensively managed farmland comprising exotic grassland, loamfield, fodder crops and exotic shelterbelts. The location and extent of exotic grassland, fodder crops and cultivated loamfield changes depending on farm management activities. For example, at times, exotic grassland is ploughed and temporarily left as bare soil (loamfield) until it is replanted in pasture or fodder crops. However, all of the vegetation and habitats on the Site are exotic. There is no naturally occurring indigenous vegetation on the Site. Therefore, the clearance of any vegetation has been assessed as not requiring management or mitigation measures.

The existing exotic shelterbelts within the Site may have a minor role as ecological corridors assisting the movement and dispersal of indigenous fauna, including common indigenous forest bird species (such as South Island fantail, grey warbler and silvereye), across this part of the Canterbury Plains, they are not considered ecologically significant in this context.

There are no wetlands within the Site and there are no waterways or permanent water bodies. The intensively farmed, cultivated, grazed and cropped exotic habitats do not provide suitable habitat for lizards, therefore effects on lizards have not been considered in this application.

Only one At Risk species, South Island pied oystercatcher, was recorded on the Site. This species was observed foraging in pasture and recently cultivated loamfield and is likely to be using similar habitat in the wider area for feeding. No evidence of South Island pied oystercatcher breeding on the Site (breeding behaviour, nests or chicks) was recorded during a site visit in October, but it is possible this species could breed within improved pasture or cultivated loamfield within the Site.

The following species may forage on the Site, but it does not provide suitable habitat including for breeding: Black-fronted tern, black-billed gull and red-billed gull, paradise shelduck and mallard duck. Spur-winged plover chicks (indigenous but not threatened) were observed on the Site, confirming this species breeds within the improved pasture or loamfield on the Site.

Overall, given the modified nature of the Site, it is not ecologically significant under any of the criteria for determining ecological significance in Appendix 3 of the CRPS.

6.2.5.2 Effects on ecological values

The construction and operation of the quarry will result in the loss of existing habitat for birds, although rehabilitation to enable farming activities to occur in the future will mean that the Site will continue to provide the same or similar habitat for birds. The Site does not provide important habitat for Nationally Threatened and At-Risk species, but South Island pied oystercatcher have been observed foraging in pasture and recently cultivated loamfield within the Site, and black-fronted tern, black-billed gull and red-billed gull may use the Site infrequently and irregularly for foraging. Due to similar intensively managed farmland habitats being widespread in the surrounding area, and across the Canterbury Plains, the magnitude of the loss and modification of such habitat on birds is Negligible and the Level of effect is assessed as less than minor (Very Low).

Further, because the proposal is to progressively excavate in stages, disturbance effects will be limited to a relatively small portion of the Site. In this context, the magnitude of the effect of disturbance due to quarry construction noise and activity and the level of effect is assessed as less than minor (Very Low).

It is noted there is a risk to nesting bird species if works for quarry establishment or expansion for extraction occurs during the breeding season (generally September to February). This could arise either through works to clear new ground damaging nests or by disruption of nesting behaviours due to noise and other disturbance. It was confirmed during the October 2022 site visit that Spur-winged plover breed on the Site. However, no evidence of South Island pied oystercatcher breeding (breeding behaviour, nests or chicks) was recorded during that visit, although it is possible this species could nest within improved pasture or cultivated loamfield. There is also no evidence of pied stilt breeding on the Site, but this species could nest in shallow depressions that are subject to rain-derived water pooling or pooling from irrigation.

This means that there is the potential for works to damage or disturb a small number of nests, if construction or extraction is undertaken during the breeding season, which could lead to nest failure. However, due to the small number of nests potentially affected (if any) effects on the local populations of these species are unlikely and the magnitude of this effect, at worst, would be less than minor (Low). That said, most indigenous bird species (excluding spur-winged plover) are either absolutely or

partially protected under the Wildlife Act (1953), therefore it is unlawful to disturb the nesting of these species. Consequently, Burnham 2020 accepts the recommendation of the ecological expert to manage effects on any nesting indigenous bird species during construction and extraction phases, by undertaking pre-construction nesting bird surveys.

6.2.6 Soils

The following section assesses the potential effects relating to soil management by the Proposal and has been informed by the Assessment of Soil Related Effects for Burnham Quarry prepared by Pattle Delamore Partners Limited (PDP) (**Appendix 13**).

6.2.6.1 Description of Underlying Geology and Soils on the Site

The geology of the broader area consists of successive alluvial deposits comprising gravel, sand, silt and clay derived from the Southern Alps and deposited during the Quaternary period. The permeability of the strata is influenced by the age, depth of burial and depositional environment. The aquifers in the region are generally semi-confined.

PDP undertook a site investigation in December 2019 with forty-two test pits, logged and sampled to a target depth of 10m below ground level (bgl) and backfilled back to ground level. These test pits logs have been used to determine the depth of topsoil and subsoil. A test pit location plan is presented in Appendix A, Figure 4 of the Assessment of Soil Related Effects report in Appendix 13.

The average topsoil thickness was between 300mm and 400mm across the three phases of test pits. Shallow soils are 20 – 45 cm deep to gravel or bedrock, therefore these soils are classified as shallow silt soils over gravel for drainage modelling.

The topsoil (A horizon) was identified as a dark brown sandy gravelly silt, dry well graded, rounded to subrounded slightly weathered greywacke with organics, roots, and wood fragments.

The Site is Land Use Classification 4s7 (NZLRI Land Use Capability 2021) and is therefore not defined as highly productive under the National Policy Statement for Highly Productive Land.

6.2.6.2 Soil Management Effects

Quarrying requires the removal of soil to enable the underlying aggregate to be extracted. This will be undertaken in stages to minimise the time and the volume of soil required to be stockpiled. The removal and storage of topsoil will be undertaken with care to minimise effects on its structure, and ability to support vegetation. Any soil disturbance (as part of proposed quarrying activities) is likely to result in disruption to soil properties such as soil compaction, loss of soil structure and degradation of soil aggregates during removal, transport and storage, and compaction of the soil material during placement. This can lead to impeded soil drainage (reducing air and water flow pathways in the soil), reduced soil water storage capacity, and reduced soil pores for biological activity. Therefore, soil removal, management and replacement of soils as well as managing potential adverse effects on the surrounding environment will be undertaken in accordance with a Soil Management Plan (a draft has been prepared by PDP and can be found in **Appendix 13a**).

The replacement of the soil and the use of the Site for primary production may result in effects on water quality, soil productivity and the generation of dust. These effects are discussed below.

<u>Nitrogen loss to groundwater</u>

The Assessment of Soil Related Effects prepared by PDP (**Appendix 13**) states that the thickness of the soils and gravels above the highest water table level (permanently unsaturated zone) will be reduced from the current minimum depth range of 8 – 12 metres across the farm to a minimum depth of 1 metre. Furthermore, whilst the intermittently saturated zone, within which the water table fluctuates, will remain unchanged, the depth of strata will reduce from 8 to 22 metres of strata above the water table to a depth of 1 – 11 metres, depending on the groundwater level at any time.

This assessment of effects is only concerned with the potential effect of soil changes wrought by quarrying on the land's nitrate loss characteristics. Whilst any nitrate discharge associated with future use of the remediated quarry floor would reach the groundwater sooner, this is not expected to change the mass of nitrate reaching the water table as no significant attenuation occurs in this zone. During quarrying activities, the reduction in farmed area will reduce nitrate discharges, relative to the land's existing use. Furthermore, on completion of the quarrying activities and resumption of agricultural land use, annual losses of nitrate to groundwater will be lower than current losses (assuming the same agricultural land use practices continue) due to some of the Site being planted in native vegetation.

Phosphorus loss to water

Phosphate fertiliser will be used to raise the Olsen P levels in replaced topsoil to levels similar to those occurring, prior to the commencement of quarrying activities. The amount applied will be based on individual paddock soil testing and designed to meet pasture demand as determined by the nutrient budgeting software OverseerFM for most macro-nutrients (particularly phosphorus and potassium).

Phosphorus (P) leaching can occur after phosphate fertiliser is applied to pasture and crops and whilst the P leaching vulnerability for Lismore soils is yet to be determined, the following good management practices will be employed to reduce the risk of P loss:

- There will be a soil testing and monitoring programme to ensure phosphate fertiliser is applied at optimal rates to minimise leaching.
- Irrigation will only occur to meet the moisture needs of the plant and avoiding drainage. Varying the depth of irrigation on a daily basis can minimise the quantity of drainage, which is minimised further by adjusting applications according to weather forecasts. Compared to uniform rate irrigation, the use of variable depth has been shown to decrease P losses by up to 80% (McDowell, 2017).
- The timing of fertiliser or effluent P application to soil can influence P loss, mainly because of the effect soil moisture can have on P leaching. P fertiliser will therefore not be applied to soil at, or close to, field capacity or if heavy rain is predicted, or in the months of May to September inclusive.
- Lower water-soluble P fertilisers will be used if higher rates of phosphate fertiliser are required.

The proposed activity will therefore have a less than minor effect on the loss of nutrients as the farming activity will not change and there will be a small reduction in the farmed area.

Pathogen loss to water

The ongoing use of the Site by one and two-year old dairy heifer replacements creates a source of E. coli and other pathogens that can migrate down to the underlying groundwater system, particularly

during heavy rainfall events. However, during this migration from the ground surface through the sub-surface environment, E. coli numbers are reduced by filtration, desiccation, dispersion, dilution, and natural die-off over time. So, while there will be less reduction of the E. coli concentrations through the unsaturated zone between the surface soil profile and the groundwater table in the post-quarry farming activity, modelling assessment of potential flow paths shows that there will still be sufficient removal of E.Coli concentrations to avoid adverse water quality effects in neighbouring bores.

Consequently, stripping the topsoil and placing it over the quarried areas, with an additional silty subsoil layer, will aid in the removal of E.coli in the event that stock are grazed on the remediated land. Furthermore, crops will be planted to help develop the soil structure and it is expected that 1 – 2 years after the completion of quarrying, the topsoil will have the same, or better bacterial removal rates than currently exist.

Nutrient loss to surface water

As the Proposal is located on the Canterbury Plains, approximately 6.5 kilometres from the Selwyn/Waikirikiri River and 12.5 kilometres from the Waimakariri River, it is assessed there will be no overland flow from the farming operation to surface water.

Soil loss to water

There will be no overland flow from the farming operation on this Site to surface water as there no rivers or waterbodies within or in proximity to the Site. Furthermore, the bunds and stockpiles created around the boundary of the Site will be covered or vegetated with grass to reduce soil damage and loss caused by wind and rain.

The depth of topsoil is not expected to change; therefore, it is expected that rainwater will drain through the profile to the groundwater rather than pond. Areas of obviously impeded drainage, which show by way of surface ponding, will be examined to establish if any moisture restricting layer exists and appropriate ripping or subsurface aeration undertaken to shatter such compacted layers.

Soil Productivity

Re-vegetation to pasture will be undertaken as soon as practicable after topsoil placement to minimise possible deterioration of soil structure and development of erosion problems on bare cultivated soils.

As the pasture establishes over the first year, soil properties will improve due to the positive impacts of the pasture cover: these will include development of soil aggregates and soil biological activity. A management system will be enacted that:

- initially limits any grazing of light weight stock such as sheep and calves/1-year cattle.
- prevents any grazing in July and August in the first year after sowing the new pastures.
- promotes grass harvesting (hay and/or silage) over the first two years after rehabilitation.
- manages wet soil to avoid degradation of soil structure, especially managing stock movement when the soil is saturated and susceptible to pugging and compaction.

If carefully managed, in the long term, the land will be capable of supporting at least the same range of land uses as the current soil resource and the life supporting capacity of the soil will be retained.

Dust

The storage and transport of topsoil will be managed by way of a dust management plan (draft provided in **Appendix 7**). With regard to replaced topsoil, irrigation will be re-established to establish pasture, thereby reducing the risk of dust problems.

The existing shelter belts will also be retained, and any gaps will be planted and there will be a 100m setback, planted in native vegetation, from neighbouring dwellings to the southeast that will further mitigate any dust effects.

Soil monitoring

Changes in land use or land management can markedly alter many physical, biological and, to a lesser degree, chemical soil properties of soil, which show up as visual characteristics. A 'miniVisual Soil Assessment' (VSA) has been adapted for New Zealand farmers from the Soil Quality Management Assessment (SQMS) developed by Plant & Food Research, the Visual Soil Assessment produced by the Soil Management Initiative (UK) and Manaaki Whenua - Landcare Research visual soil assessment field guide. It is based on the visual assessment of key soil 'state' and plant 'performance' indicators of soil quality, presented on a score card.

Annual monitoring will be undertaken using miniVSA in the areas rehabilitated within the last three years from the start of Phase 2 (i.e. years 7 -10). A control site on an undisturbed site will be included in ongoing soil monitoring to differentiate between the effects of contemporary land use management and effects associated with the re-establishment of the soil.

If the Soil Quality Assessment in the VSA is ranked as poor three years after rehabilitation, a plan will be developed and implemented to improve the soil quality. Furthermore, additional soil testing to inform farm management and nutrient management will be carried out and this will be included in the Soil Management Plan (draft Soil Management Plan in **Appendix 13a**).

Summary of effects

The removal, management and replacement of soils arising from the proposed quarrying activities will be undertaken in accordance with a Soil Management Plan (draft **Appendix 13a**). The proposed soil management measures to be adopted as part of the Proposal, are designed to ensure appropriate soil rehabilitation will be implemented at each phase of quarry extraction.

This soil management strategy will achieve the progressive rehabilitation of the site, stabilisation of quarry faces and restored extraction areas, areas where works are completed are left stable, the site is rehabilitated to enable agricultural activities such as pastural farming to occur in the future, ensure completed areas have adequate drainage and water infiltration for irrigated pasture farming, and minimise disturbance to farming operations including irrigation of pasture.

Overall, it is assessed that there will be appropriate mitigation of any potential adverse effects arising from soil removal, replacement and management arising from the Proposal.

6.2.7 Groundwater

PDP has prepared a Hydrogeology Assessment for Proposed Burnham Quarry (**Appendix 14**) which describes the hydrogeological setting for the area and assesses the way in which the proposed quarrying activities will interact with the hydrogeology. The findings of the report have informed this assessment and are summarised below.

6.2.7.1 Existing Level and Quality of Groundwater

Level of Groundwater

The driller's logs for the water supply bores on the Site indicate that the strata generally consist of gravels with varying sand and clay content. Near the bottom of the bores, water-bearing sandy gravels were generally encountered.

An assessment of long-term groundwater level records in the area indicates that the level of the water table is expected to fluctuate over a depth range of around 8-19.5m bgl in the south-east of the Site and around 16.5 -28m bgl in the north-west of the Site. Lowest groundwater levels generally occur in late summer and autumn and highest groundwater in spring.

Groundwater Quality

The groundwater quality of the area is typical of the central Canterbury Plains with shallow bores in particular showing the effects of the overlying agricultural land use resulting in elevated concentrations of nitrate-Nitrogen and occasional detections of E. coli.

Groundwater quality data in the vicinity of the Site (obtained from ECan) are largely historical samples collected between 1975 and 1995. However, one pair of bores (M36/4151 and M36/8187)[6] provide a long-term and up-to-date record of nitrate-N concentrations, and data from these bores indicates that concentrations of nitrate-N are steadily increasing over time, with values around the MAV or 11.3 g/m^3 recorded in 2020 and 2021. This pair of bores also record 2 exceedances of the E.coli MAV (<1 MPN/100 mL) from 41 samples taken between January 2006 and November 2022. These exceedances occurred during July 2013 and September 2017 and recorded values of 1 MPN/100mL.

One shallow bore (M36/5785, screened from 24.7 – 27.7 m deep) and one deep bore (M36/7711, screened from 118.4 – 148.4 m deep) were sampled in late May/ early June 2022 to provide an indication of groundwater quality beneath the Site. The results show that the shallow groundwater has generally low concentrations for most parameters although nitrate-N is elevated at 7.5 g/m^3. Total coliforms were detected at 9 MPN/100mL, indicating a pathway for near surface bacteria to reach this shallow groundwater, although none of these were E.coli which is the drinking-water standards indicator of a health risk.

Similar, or slightly lower concentrations were recorded in the deep groundwater (bore M36/7711) with the notable differences being nitrate-N at 4.8 g/m^3 and no detections of total coliforms.

6.2.7.2 Effects on Groundwater Levels and Quality

Aggregate Extraction

The removal of the soil during quarrying activities and the exposure of the underlying gravels will promote the infiltration of both rainwater and water used within the quarry, to the underlying groundwater and will remove the sources of nitrates and E. coli that currently occur from the agricultural land use. These changes will result in a positive change to the underlying shallow groundwater resource.

Flood water entering a quarried area from surrounding agricultural land could be a source of poor quality water containing E.coli and nitrates. However, this is assessed as low risk given the perimeter landscaping, bunds and stockpiles, which will prevent overland flow from other properties unless there

[6] In 2005 bore M36/4151 (35 m deep) was replaced by bore M36/8187, 48 m deep located approximately 25m northeast of where the unused M36/4151 was located.

is an extreme event. Flooding of the Site will also be avoided by constructing diversion bunds around areas being quarried or that are in the process of being rehabilitated.

Quarry Water Use

The major use of water at the quarry is for processing aggregate. This mostly drains back to the aquifer when it falls on the ground, or discharges to settling ponds, where this water then generally returns to the underlying aquifer. As this water has primarily only been in contact with uncontaminated natural strata, it is not expected to cause any adverse effects on the existing water quality in the underlying groundwater.

The washing of truck decks will only use water and will occur within fully bunded concrete pads. The resulting washwater will primarily contain only fine sediment which will discharge to a sump, with overflow occurring to a soakpit.

Body cleaning may involve biodegradable detergents and degreasers and washwater may contain hydrocarbons. Therefore, this washwater will be discharged to a sump and an oil-water interceptor, with the resulting discharge water directed to a vegetated swale and then a soak pit.

Water from the silt settlement basins will be discharged through the base and sides of the basins, and the sediments and silts (derived from the natural strata) will remain in the basins. It may be necessary to clean out any build-up of silt and sediment, which will be spread out within the Site. Water and suspended sediment from the silt settlement basins will be derived from the natural strata within and beneath the Site, so will not cause any adverse effects on water quality.

Water used for dust suppression will be sprayed to help bind surface sediments. This will be undertaken dry, windy weather and therefore will primarily evaporate, so is not expected to drain back to the underlying groundwater.

Office wastewater will pass through an on-site wastewater treatment system prior to discharging to a subsurface dripline system through landscaped and bunded areas located at, or near to, the original ground level in the general vicinity of the office buildings.

Overall, these discharges will promote the return of the water to the underlying groundwater resource in a manner that avoids adverse effects on water quality.

Storage and Use of Hazardous Substances

Storage of hazardous substance on the Site will be limited to plant and machinery fuel (diesel, unleaded petrol, bioethanol mix, hydrogen, ad-blue, etc.), lubrication (oils and greases), and small quantities of laboratory chemical for use in aggregates compliance testing. Fuel will be kept in double skinned tanks of up to 30,000L. Oil and greases will be stored in specially designed areas within the workshop area of up to 1,000kgs.

A hazardous substance risk register, and management plan will be developed for the Site and comply with all relevant legislation. This will ensure that storage and handling of these hazardous substances occurs well above the base of the excavation and in appropriately bunded areas so as to contain any potential spills.

Continuation of farming land use on the rehabilitated quarry land

The rehabilitation of the Site and any recommencement of farming activities will be at a lower elevation i.e. closer to the water table than is currently the case. This has been addressed above and

in the Assessment of Effects on Soil report (**Appendix 13**) in terms of the effects of removing aggregate and replacing the topsoil at a lower level within the Site.

From a hydrogeology perspective, the annual loss of nitrate into the groundwater from continued farming use will remain largely the same as currently occurs, although the nitrate will reach the water table sooner in the post-quarry farming activity.

Conclusion

Overall, quarrying activities within the Site and future use of the land for farming can be effectively managed to maintain the current quality of groundwater.

6.2.8 Air Quality

PDP has prepared an Air Quality Assessment (**Appendix 15**) in accordance with the Ministry for the Environment (MfE) guidance for assessing and managing the environmental effects of dust emissions (MfE GPG Dust) and a qualitative assessment to predict the effects from the proposed quarrying operations using the FIDOL assessment tool (Frequency, Intensity, Duration, Offensiveness and Location).

6.2.8.1 Existing Air Quality

The western and southern dust monitors recorded similar daily average PM_{10} concentrations of 3.5 and 3.6 µg/m³ respectively, whereas the eastern monitor had a higher daily average concentration of 5.8 µg/m³. The eastern dust monitor recorded several days in mid-October where daily average concentrations were elevated and approaching the National Environmental Standard for PM_{10} (being 50 µg/m³). The main source of PM_{10} appears to be northwest of the dust monitor and occurs during very strong windspeeds (>10 m/s). While the source of the dust is not clear, it may have been from activities such as field cultivation that could have been some distance away.

The 1-hour average PM_{10} recorded at the three dust monitoring locations are typically well below the MfE dust nuisance trigger value of 150 µg/m³, however, there have been a few occasions when background concentrations at the eastern dust monitor were elevated and above the guideline value.

Ambient respirable crystalline silica (RCS) monitoring has also been undertaken at the eastern dust monitor site between 15 July 2022 and 3 January 2023. The average RCS concentration was 0.3 µg/m³ and a maximum concentration of 0.44 µg/m³ collected over a two-to-four-week period.

Comparing the six-month average monitored concentration (0.3 µg/m³) to the RCS guideline (3 µg/m³) shows that on average over a year, concentrations are likely to be 10% of the guideline value. Even if the maximum monitored RSC concentration value of 0.44 µg/m³ was assumed to occur every month of the year, this would equate to an annual concentration of 0.44 µg/m³ which is well below (15%) the guideline value of 3 µg/m³.

It can also be seen that 24-hour average PM_{10} concentrations would also be well below the appropriate short-term health assessment criterion of 24 µg/m³.

6.2.8.2 Effects on Air Quality

The potential for air quality effects at the proposed Burnham Quarry relate almost exclusively to the potential for dust emissions. While there is the potential for a number of vehicles operating on the

Site, the combustion emissions from the vehicles are considered to be insignificant and they are unlikely to result in any noticeable changes in air quality.

The proposed quarry has the potential to generate dust from:

- Initial enabling works, including the construction of the haul roads and work platforms, removal of overburden, construction of erosion and sediment controls, and the formation of bunds.
- Extraction of aggregate.
- Operation of vehicles on the haul roads.
- Wind erosion of working areas.
- Rehabilitation of the completed areas.

6.2.8.2.1 FIDOL assessment

The potential for dust generation is affected by the size and density of the particles, wind speed and direction, height of release and the distance between the discharge point and the receptors. PDP has applied a distance of 400 metres to conservatively indicate the distance within which some level of dust effects could be experienced if no form of mitigation were to be applied. Properties to the north (535 and 716 Wards Road) are greater than 400 metres away from the Site therefore effects to these receptors are expected to be minimal with respect to dust nuisance.

Frequency

Typically, nuisance dust has a diameter between 30 and 100 µm and would need winds greater than 5 m/s to travel beyond the site boundary. At Burnham, wind greater than 5 m/s occurs 31.6 percent of the time from all directions, but high wind speeds in the direction of receptors 168 Aylesbury Road and 159 Grange Road are frequent, 273 Grange Road is moderately frequent and 176 Kivers Road is infrequent.

However, for dust nuisance to occur, dust producing activities will need to coincide with the right winds and during dry conditions. Therefore, the chances of dust nuisance occurring are smaller than the predicted wind frequencies in Table 2 on page of 12 of the Air Quality Assessment (**Appendix 15**) and are less likely to occur. This, in combination with the proposed mitigation and monitoring, means that the frequency of any effects associated with the quarrying activities will be low.

Intensity

Dust intensity is a result of a concentration at the source, location of the dust source, windspeed and the pathway between the source and the receiving properties.

The receptors at 168 Aylesbury Road and 159 Grange Road are between 120 and 170 metres, and 273 Grange Road and 176 Kivers Road are over 330 metres, from the closest quarrying activity and consequently, most activities within the quarry will occur at much greater distances from these properties as it moves within the Site. For example, the processing plant will be at least 1 kilometre from any receptor, and at this distance, it is very unlikely dust from this source will have any noticeable effect on intensity at receptor locations.

In addition, the existing 5-6 metre shelterbelts along the road boundaries with Aylesbury Road and Grange Road and the western boundary means the pathway for dust, especially generated by activities at current ground level, is not directly open and the trees will help to reduce dust intensity in

certain metrological conditions. Once the pit is established, extraction will work from the centre outwards and from the toe of the pit, which means there will always be a pit wall between the activity and the receptors. The pit wall will have the same effect on the dust pathway as the shelterbelt, which will result in containing most dust effects.

Therefore, dust intensity effects at nearby receptors will be low.

Duration

Duration relates to the length of time that dust discharges are likely to occur, which in this case relates to the time taken to mitigate dust discharges, should they arise. Based on the visual monitoring programme, if an event were to occur, at worst, the duration will be limited to a period of no more than 2 to 4 hours at any one time. However, with the use of continuous monitoring of dust and wind conditions using the alerts, the duration of dust emissions can possibly be reduced to 30 minutes.

Furthermore, the scale of the Site means that quarrying activities near the receptors will be for a much shorter duration due to the proposed quarrying sequence and the scale of the Site.

Offensiveness

Dust emissions are unlikely to result in any off-site offensive or objectionable effects, based on the activities proposed to be undertaken and the extraction methodology, distance to the sensitive receptor and mitigation measures that will be implemented. Furthermore, any dust from the Burnham Quarry will be of a similar nature to that already generated in the surrounding area, and therefore will be less likely to be considered offensive.

Location

The Site was chosen because it is away from populated areas to avoid any potential effects on a larger number of receptors, but still within a viable distance of its main markets.

It is proposed to establish a 100 metre buffer distance to any dwelling. Likewise, the location of the processing plant in the centre of the Site will minimise noise and dust effects.

In addition, most of the quarrying activities relative to the receptors are either at a sufficient distance or have intervening features such as wind breaks and bunds that will restrict the transportation of dust towards these locations, and therefore the potential for nuisance dust will be low.

Furthermore, the surrounding area experiences a number of rural activities, and it is not unusual to experience a degree of dust from working the land or unsealed roads.

Overall, it is considered that there is a low potential that any sensitive receptors will be affected by activities within the Site. While some quarrying activities will get close to a few nearby sensitive receptors, given the mitigation and monitoring that will be undertaken, the potential for nuisance dust effects will be less than minor.

6.2.8.2.2 Assessment of Health Dust Effects

PM_{10} and $PM_{2.5}$

The potential human health impacts are driven primarily by the smaller size fraction of particulate (PM_{10} and smaller). Given the sources and type of dust which will be discharged from the proposed Burnham Quarry, it is considered that impacts on human health will be low because:

- PM_{10} and particularly $PM_{2.5}$ are not a significant components of the dust generated from quarry activities, and therefore dust emitted is not generally in the inhalable fraction; and
- given low background PM_{10} concentrations of the rural environment, with the small contribution to PM_{10} from quarry activities, total cumulative concentrations of PM_{10} will be maintained well below the NESAQ criteria of 50 µg /m^3 as a 24-hour average and the AAQG criteria of 20 µg/m^3 as an annual average, and;
- suppression of dust also suppresses PM_{10}.

Data from the monitoring commissioned by Environment Canterbury between 22 December 2017 and 21 April 2018 around the Yaldhurst quarry area has been used to inform the potential level of PM_{10} concentrations from quarrying activities. While the data is from a different location, it is of high quality, comprehensive and collected from a site that is larger than the proposed Burnham Quarry. This data set provides robust information to inform a conservative (worst case) health impact assessment for the proposed Burnham Quarry.

6.2.8.2.3 Cumulative Effects

There are a number of potential dust sources already located in the area such as horse training tracks, fields that are cultivated and an army vehicle training facility, but nothing that has the potential to generate significant nuisance dust concentrations other than the Road Metals Quarry 2.5 kilometres to the northeast of the Site.

For a receptor to be affected by cumulative effects from the proposed Burnham Quarry and Road Metals Quarry, both these activities must be generating dust within 400 metres of a receptor at the same time when winds are blowing towards the receptor. Given that the distance between these two quarries is 2.5 kilometres, it is highly unlikely that the proposed Burnham Quarry will result in cumulative nuisance dust effects including for RSC.

6.2.8.2.4 Conclusion

If no mitigation measures were undertaken, there is some potential for air discharges from the proposed Burnham Quarry to cause off-site effects. However, it is proposed to apply a number of mitigation measures that will minimise dust emissions to within 100 metres of the source. Therefore, off-site dust effects at nearby receptor locations will be less than minor based on the following:

- Most receptors are too far away to be affected by dust from the proposed quarry and there are only a small number of receptors that are close enough that could be affected if no mitigation was implemented.
- There is a low probability of high emission rates occurring at the same time as dust transporting wind speeds blowing in the direction of receptors.
- The frequency of dust emissions will be further reduced as Burnham 2020 will be continuously monitoring wind speed and direction and dust concentration to ensure that the appropriate mitigation will be undertaken especially during wind conditions that might impact nearby receptors.
- The existing shelterbelts, bunding and temporary stockpiles on the site boundaries, will assist in managing dust effects on the receptors.

- There is no additional risk for people currently living near to the Site to experience health related effects as a result of dust from quarrying activities.
- The proposed quarry will not result in cumulative effects as the closest source of potential nuisance dust is located approximately 2.5 kilometres away and therefore it is unlikely both sources will interact.

6.2.9 Archaeology

Underground Overground Archaeology has prepared an archaeological assessment (**Appendix 16)** that details the history of the Site including setting its context in the cultural landscape and the later period of settler activity, through to today. The assessment concludes the property is located within a wider area of known Māori occupation and European pastoral pursuits. However, there is no recorded evidence that the Site had any specific use prior to 1900 that would be likely to result in the presence of archaeological remains. In summary, the Site is assessed as unlikely to contain any archaeological material.

As such, it is considered unlikely that pre-1900 archaeological material will be uncovered during quarrying activities.

The Assessment recommends, and Burnham 2020 accepts the following:

1. As a first principle, every practical effort should be made to avoid damage to any archaeological site discovered during quarrying activities.
2. An Archaeological Discovery Protocol should be applied to the Site and this will form a condition on the land use consent. Any archaeological material encountered during the works should be reported to an archaeologist and Heritage New Zealand Pouhere Taonga. Local iwi should be consulted in the first instance if Māori material is encountered.

6.2.10 Positive Effects

Aggregate quarrying is a regionally significant industry that supports a diversity of other industries including construction and the development and maintenance of infrastructure. In fact, it is a fundamental input to these industries, which rely on a reliable source of aggregate that is located within proximity of where it is needed. Otherwise, the high cost of transporting aggregate means that the cost of infrastructure also rises, with consequent effects on affordability and the cost of living. This may only become more relevant as international agreements on curbing climate change aimed at reducing net emissions of greenhouse gases to the atmosphere are also likely to increase the cost of transport that relies on fossil fuelled propulsion.

There are few cost-effective substitutes for the range of uses of aggregate in roading, building and civil construction but the number of appropriate locations to establish new quarries is decreasing. A number of existing quarries are reaching the end of their consented life, and some are unable to expand as residential development has encroached onto the land around them.

The addition of another quarry is vital to the supply of aggregate in this part of Canterbury given the rate of residential development in the Selwyn District and the on-going rebuild of Christchurch. Burnham 2020 will also increase competition between suppliers and choice for consumers, with lower

economic cost of supplies and environmental effects associated with transporting aggregate compared to sourcing aggregates outside the region or at greater distances from the area of demand.

Furthermore, the rural location of the proposed quarry, few close neighbours and lack of restrictive overlays and designations means that the effects arising from the development of the quarry can be managed through mitigations including conditions of consent that will not undermine the economic viability of the quarry. Conversely, neither will it adversely affect the economic wellbeing of an adjoining property owner or activity by limiting its ongoing operation or ability to expand.

Overall, the Proposal will make a positive economic contribution by ensuring a steady supply of much needed aggregate in proximity to demand, which will assist in avoiding costs that would arise if quarried materials were less available, affecting the cost and timeliness of new infrastructure. This could result in:

- Congestion of infrastructure of fixed capacity, such as roads, pipelines, interchanges
- Delay in the alleviation of costs and risks borne by the community, such as protections against natural hazards like flooding and repairs of landslips.
- Delay in treating environmental degradation, which increases the cost of remediation and reduces the well-being for communities waiting for the remedial work.

The Proposal will also provide employment opportunities, especially for those working on quarries that have ceased or are about to cease extractive activities. Overall, it will likely have a positive effect on economy of the Canterbury region.

6.2.11 Effects on Cultural Values

There are no known waahi tapu sites or other known sites of significance on the Site. Furthermore, there is no disturbance of significant indigenous flora and fauna, and no identified areas of ecological significance on the Site. It is recognised through consultation with Mahaanui Kurataiao Ltd (MKT), that a key cultural concern is managing potential adverse effects on groundwater quality. As discussed in Section 7.2.7 above, any potential adverse effects on groundwater quality will be minimised with no excavation to take place within 1 metre of the lowest recorded high ground water levels at the Site. The mitigation measures are also proposed for the storage and use of hazardous substances, and compliance with cleanfill standards. It has been concluded that quarrying activities within the Site and future use of the land for farming can be effectively managed to maintain the current quality of groundwater.

Burnham 2020 will seek to continue engagement with MKT and Taumutu Rūnanga and Ngāi Tūāhuriri Rūnanga following lodgement of the application, as requested by MKT.

6.2.12 Shading of the road

No longer applicable: RMA, s 86F.

6.2.13 Signage

It is proposed to erect two signs at the access to the Site: one on either side of the formed vehicle crossing that will display the name of the quarry.

The signs will only contain two clear words: Burnham Quarry in 0.3 metre high lettering, so they will be easy to read at a distance of 250 metres by vehicles travelling in either direction on Aylesbury Road. The signs may be lit but only during the hours when the quarry is operating. This is intended to emphasise the site access and prevent late braking and vehicles turning around within the road.

The signs will be setback at least 5 to 6 metres from the formed road (carriageway) at the edge of the grassed berm that lies between the site boundary and the carriageway. However, the signs will only be separated by the width of the vehicle crossing as it enters the Site being 8 to 10 metres. Where it crosses the berm, the vehicle crossing is flared, to provide for turning trucks and this will enable the signs to be angled towards the flow of traffic. The location of the signs means that they will not adversely affect the safety of motorists, pedestrians or cyclists using Aylesbury Road and neither will the signs affect traffic speeds, manoeuvring or the general flow of traffic by becoming a visual obstruction or distraction.

The rural location of the Site means that the signs will be simple in design. They will be viewed in the context of the formed site access to a quarry with its gates and proposed indigenous planting either side of the accessway into the Site. As such, adverse effects on visual amenity will be less than minor and the rural character of the Site will largely be retained as described in the Landscape Effects Assessment (**Appendix 8**). There are no heritage buildings or settings, open spaces, or protected trees within the Site and the Site is not within an area possessing significant natural or landscape values.

Furthermore, there are no existing signs on the Site or on any other property in proximity to the site access, therefore, the proposed signs will not result in visual clutter. Given the location, and the length of the subject site boundary, the proposed signs will likely remain the only signs in this location for some time.

Overall, the proposed signs will result in less than minor effects on the visual amenity of the surrounding area and people's health and wellbeing by maintaining the safe and efficient operation of Aylesbury Road.

6.3 Conditions

Section 104B of the RMA states that, where considering an application for a discretionary activity, the consent authority may grant or refuse the application. If the activity is granted, the consent authority may impose conditions pursuant to Section 108.

Suggested conditions of consent have not been provided as part of this application. It is considered more appropriate that suggested conditions be provided to the Councils following receipt of any submissions arising from the public notification of the application.

6.4 Conclusion of Assessment of Environmental Effects

The Site is located on Aylesbury Road (an arterial road) in a relatively unpopulated area with residential properties scattered around the Site and a cluster located to the southwest, with Burnham Camp located to the south.

Aylesbury Road has a straight alignment that will enable trucks to readily access State Highway 1, with limited modifications required to widen the road between the site access and Two Chain Road.

The intersection with State Highway1 has some capacity issues and therefore until it is upgraded by Waka Kotahi, vehicle generation from the quarry will be limited to 250 vehicles per day. Noise from trucks using the local road network will be managed through limitations on the number of early morning truck movements (5am and 7am) and, if agreed to by the owners of the closest properties (146 and 168 Aylesbury Road), the application of mitigation measures such as an acoustic fence along their road boundaries.

The establishment of a formed site access will provide for turning trucks without causing damage to the edge of the road and places for trucks to park will be provided within the Site, preventing vehicles parking on Aylesbury Road and potentially affecting the safety of other road users.

The Site itself is large and has low ecological values having been used for primary production activities, although pre-construction checks will be undertaken for nesting birds. It has established shelterbelts along its site boundaries that form a screen that will assist in maintaining visual amenity values and managing potential dust effects. This will be reinforced by a bund that will be retained for the life of the quarry along most of the boundary with Aylesbury Road and 100m wide planting of indigenous vegetation in the southeast corner of the Site. In effect, views from private viewpoints will largely remain unchanged and from public viewpoints there will be temporary adverse effects until such time as the proposed exotic and native vegetation planted along the perimeter of the Site and at the entrance becomes established.

Furthermore, activities that generate dust and noise can be centrally located within the Site away from site boundaries and therefore residential properties. Temporary stockpiles will provide visual screening and dust and noise mitigation for extraction activities when in proximity to site boundaries. As such, quarry activities will meet the operational noise limits in the POSDP and construction activities, such as the implementation of noise control bunds, will comply with the applicable noise limits from New Zealand Standard NZS 6803: 1999 Acoustics - Construction Noise.

The Site will be progressively rehabilitated using material sourced within the Site, being processed materials, silt and at least 200mm of topsoil. It will then be returned to primary production uses.

Overall, the quarry can be established and operated without adversely affecting amenity values on neighbouring properties, water quality, and the productivity of the soil, and future primary production can also be undertaken without affecting water quality.

The quarry will have a positive effect on the economic contribution to the district by ensuring a steady supply of aggregate in proximity to demand, which will assist in avoiding costs that would arise if quarried materials were less available, affecting the cost and timeliness of new infrastructure. It will also provide employment opportunities, especially for those working on quarries that have ceased or are about to cease extractive activities.

7.0 Assessment of Objectives and Policies

In accordance with Section 104(1) of the Resource Management Act 1991 ('RMA'), this part of the report addresses the statutory documents which are relevant to the assessment of this Proposal.

The objectives and policies of the CRPS, CARP, CLAWRP, SDP and the POSDP have been grouped by subject in the assessment of the Proposal against the relevant objectives and policies in the plans. This approach has been adopted as the CARP, CLAWRP, SDP and POSDP must give effect to the CRPS.

7.1 National Policy Statements

The following national policy statements of relevance to this Proposal have been addressed below:

- National Policy Statement for Freshwater Management 2021.
- National Policy Statement for Highly Productive Land 2022.
- National Policy Statement for Indigenous Biodiversity 2022.

7.1.1 National Policy Statement for Freshwater Management (NPS-FM)

The NPS-FM must be given effect to through ECan's policies and plans. However, as ECan has not yet had the opportunity to review its planning documents to implement the NPS-FM, an assessment of the proposal has been made against the objective and relevant policies of the NPS-FM in accordance with s 104(1)(b)(iii).

2.1 Objective

(1) The objective of this National Policy Statement is to ensure that natural and physical resources are managed in a way that prioritises:

(a) first, the health and well-being of water bodies and freshwater ecosystems.

(b) second, the health needs of people (such as drinking water).

(c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

The proposed quarry is not located near any surface waterbodies, nor are there any located within the Site. The only freshwater that may be affected by the Proposal is groundwater in the aquifer underlying the Site. However, as determined through the Effects on Soil Assessment (**Appendix 13**) and the Hydrogeology Assessment (**Appendix 14**), effects on water quality arising from quarrying activities and primary production can be managed to minimise any adverse effects on water quality. A brief summary of the key matters is set out below.

- All discharges will be to land and not directly to groundwater.
- Water falling on the excavated quarry floor will filter through at least 1 metre of aggregate before discharging to the aquifer. This water will be clean as there will be no contaminants on the floor of the quarry, and the removal of the topsoil also removes a potential source of E.coli.

- All hazardous substances will be stored outside the quarry floor and used according to HSNO requirements and spills managed according to a management plan.
- Wastewater from the staff facilities and processing water will be treated prior to discharging to land outside the quarry floor.
- All cleanfill will be sourced from within the Site and therefore any stormwater discharging through this into the aquifer will result in no different or greater effect than currently occurs. The stormwater will not contain any contaminants due to the careful management of hazardous substances within the Site, and it will be filtered through at least 1 metre of in situ material and 0.3 - 0.4 metres of cleanfill comprising at least 0.2 metres of topsoil.

In essence, the quarry has been designed and will be operated, along with the primary production activities to prioritise the health and wellbeing of the aquifer. The water in the underlying aquifer will therefore be able to be used for drinking and stock water. Furthermore, discharging to land (and indirectly into the aquifer) will enable the community to provide for its direct economic needs through employment at the quarry. In addition, making aggregate available for the construction of infrastructure and construction for the region will provide social benefits. The maintenance of water quality will also ensure that there are no downstream effects on other water bodies such as Te Waihora, which is recognised as having significance to the local rūnanga.

Policy 1: *Freshwater is managed in a way that gives effect to Te Mana o te Wai.*

Based on the assessment of the hierarchy above, it is considered discharges to land that could potentially affect freshwater will be managed in a way that gives effect to Te Mana o te Wai.

Policy 2: *Tangata whenua are actively involved in freshwater management (including decision making processes), and Māori freshwater values are identified and provided for.*

The Proposal has been assessed against the relevant iwi management plan and assessed as consistent with the objectives and policies of that plan as set out in Section 7.3.1 below.

Policy 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.*

Policy 4: *Freshwater is managed as part of New Zealand's integrated response to climate change.*

Policy 5: *Freshwater is managed through a National Objectives Framework to ensure that the health and well-being of degraded water bodies and freshwater ecosystems is improved, and the health and well-being of all other water bodies and freshwater ecosystems is maintained and (if communities choose) improved*.

Policies 3, 4 and 5 relate to integration, whole of catchment management, NZ's integrated climate change response and the National Objectives Framework. These policies are directed at a higher level than is relevant to this proposal and are given effect through the CLAWRP and ECan management. Again, the Proposal is consistent with these policies by ensuring protection of freshwater values and by being in keeping with the approach for the wider catchment established through existing planning documents. As stated above, discharges to land that may enter groundwater will not adversely affect the health and well-being of the aquifer nor its ability to provide for the health needs of people.

Policy 6: *There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted.*

There is no natural inland wetland affected in any way by this Proposal.

Policy 7: *The loss of river extent and values is avoided to the extent practicable.*

This policy is not relevant as no river will be affected by this Proposal.

Policy 8: T*he significant values of outstanding water bodies are protected.*

There are no outstanding water bodies within or adjacent to the Site, so this policy is not relevant.

Policy 9: *The habitats of indigenous freshwater species are protected.*

Policy 10: *The habitat of trout and salmon is protected insofar as this is consistent with Policy 9.*

These policies are not relevant to this Proposal given it is related to an aquifer. Freshwater resources are remote from the Site, and unaffected by proposed discharges to land that may enter groundwater sought in this application.

Policy 11: *Freshwater is allocated and used efficiently, all existing over-allocation is phased out, and future over-allocation is avoided.*

Policy 11 is not relevant as the take and use of groundwater is not sought by this application.

Policy 12: *The national target (as set out in Appendix 3) for water quality improvement is achieved.*

As discussed above, the Proposal will not result in adverse effects on water quality and will not contribute to any decline in water quality or adversely impact on any ability to improve water quality.

Policy 13: *The condition of water bodies and freshwater ecosystems is systematically monitored over time, and action is taken where freshwater is degraded, and to reverse deteriorating trends.*

Policy 14: *Information (including monitoring data) about the state of water bodies and freshwater ecosystems, and the challenges to their health and well-being, is regularly reported on and published.*

Policies 13 and 14 relate to work that is required to be undertaken by ECan. However, it is proposed to undertake on-going monitoring of water quality beneath the Site and of discharges, to ensure that water quality standards are being met. This information will be provided/available to ECan to inform its own monitoring and reporting programmes.

Policy 15: *Communities are enabled to provide for their social, economic, and cultural wellbeing in a way that is consistent with this National Policy Statement.*

Discharges to land are a necessary activity that will enable Burnham Quarry to operate. By enabling the discharges, the quarry will generate employment and economic activity that will benefit the local, regional and national economy. Quarrying is a necessary precursor to construction as aggregate is needed to supply residential development, infrastructure and road building in Christchurch and its surrounds.

The objective and policies in Part 2 of the NPS-FM have been assessed, and overall, it is considered that the proposal achieves the objective and relevant policies of the NPS-FM and is therefore generally consistent with the concept of Te Mana o te Wai.

Part 3 is not considered relevant as it relates to implementation of the NPS-FM by the regional council rather than whether an individual application gives effect to or is aligned with, the intent of the NPS-FM.

7.1.2 National Policy Statement for Highly Productive Land 2022 (NPS-HPL)

The NPS-HPL must be given effect to through ECan's policies and plans. However, as the Council has not yet had the opportunity to review its planning documents to implement the NPS-HPL, an assessment of the Proposal has been made against the objective and relevant policies.

The NPS-HPL seeks to protect highly productive land to enable its use for land-based primary production, both now and for future generations. It recognises the finite characteristics and long-term values of such land, and that its protection may lead to reduced (or least no greater) use of agri-chemicals by reducing the use of marginal land.

In general, the NPS-HPL applies to Land Use Capability Classifications 1, 2 and 3. Regional councils may also map land that is in a general rural zone or a rural production zone that is not LUC 1, 2, or 3 land, as highly productive land if the land is, or has the potential to be (based on current uses of similar land in the region), highly productive for land-based primary production in that region, having regard to the soil type, physical characteristics of the land and soil, and climate of the area. This work has not been undertaken by ECan.

The LUC mapping unit is in three parts:

<u>LUC class</u>

The LUC class is the broadest grouping in the classification, identifying the general degree of limitation to arable use. It comprises eight classes. Classes 1 to 4 are classified on their suitability for cultivation for cropping, with Class 1 being the most versatile with few limitations to use, through to Class 4 which has limitations so it is marginal for cultivation for cropping. The Site is LUC 4 due to the shallow topsoil over gravels which limits cultivation options.

<u>LUC subclass</u>

The LUC class is subdivided into one of four subclasses, depending on the major physical limitation to use. There are four limitations; erodibility (e), wetness (w), soil (s), and climate (c). They are denoted by the small letter e, w, s, or c after the LUC class number. The Site is suitable for pastoral farming but limited by moderate soil (s) limitations.

<u>LUC unit</u>

The third and most detailed level of classification is the LUC unit. The unit groups areas that require the same kind of management, the same kind and intensity of soil conservation treatment, and are

suited to the same kinds of crops, pasture or forestry species which require specific conservation measures and management practices to achieve similar yields.

The Site is LUC4s 7 and is described as terraces and plains with shallow and stony soils of medium to low fertility in seasonally moisture-deficient districts. These soils are often irrigated to overcome the moisture deficits, and are suitable for occasional cropping, pasture farming, tree crops and may be suitable for viticulture and berry fruit.

The Site is Land Use Classification 4s7 (NZLRI Land Use Capability 2021), therefore the NPS-HPL is not applicable. It is noted that the Site is surrounded by LUC 4s7 (same classification) and 3s5 (more productive/versatile) land.

7.1.3 National Policy Statement for Indigenous Biodiversity 2022 (NPS-IB).

The NPS-IB must be given effect to through ECan's and Selwyn's policies and plans. However, as the Councils have not yet had the opportunity to review their planning documents to implement the NPS-IB, an assessment of the proposal has been made against the objective and relevant policies, noting that the Site does not support indigenous vegetation.

The objective of this National Policy Statement is to protect, maintain, and restore indigenous biodiversity in a way that:

(a) recognises tangata whenua as kaitiaki, and people and communities as stewards, of indigenous biodiversity; and

(b) provides for the social, economic, and cultural wellbeing of people and communities now and in the future.

There are no indigenous vegetation communities or habitats within the Site as it has been used for primary production for several decades. However, South Island pied oystercatcher have been observed foraging in pasture and recently cultivated loamfield within the Site, and black-fronted tern, black-billed gull and red-billed gull may use the Site infrequently and irregularly for foraging. The Site may also be used by a small number of indigenous birds such as the South Island pied oystercatcher and pied stilt for nesting.

The establishment of the quarry may temporarily disrupt this feeding and nesting location. However, there is no shortage of similar habitat available locally, and the on-going use of the Site for, and staged rehabilitation to enable the Site to be used for, primary production will mean that the Site will continue to provide the same or similar habitat for birds. Further, because the Proposal is to progressively excavate in stages, disturbance effects will be limited to a relatively small portion of the Site at any one time. Any risk to nesting bird species will be managed by undertaking pre-construction nesting bird surveys during the breeding season (August to February).

It is also proposed to undertake extensive areas of indigenous planting around the Grange Road access and in the southeast corner of the Site, and along the rehabilitated batters adjacent to the site boundaries resulting in approximately 30 hectares of indigenous planting. This could provide new habitats for indigenous species and form part of a future ecological corridor across the Canterbury Plains. This will restore indigenous biodiversity while recognising the role of tangata whenua as kaitiaki and providing for the wellbeing of people and communities by providing much needed aggregate for the Region.

Policy 1: Indigenous biodiversity is managed in a way that gives effect to Te Rito o te Harakeke.

Based on the above, it is considered that indigenous biodiversity will be managed in a way that gives effect to Te Rito o te Harakeke, given the lack of indigenous vegetation and habitats within the Site, pre-construction nesting bird surveys and the proposed area of indigenous planting.

Policy 2: Tangata whenua are recognised as kaitiaki, and enabled to exercise kaitiakitanga for indigenous biodiversity in their rohe, including through:

(a) enabling tangata whenua to manage indigenous biodiversity on their land; and

(b) the identification and protection of indigenous species, populations and ecosystems that are taonga.

The Site is not owned by tangata whenua nor have any taonga bird species been observed at the Site. However, given the area of indigenous planting proposed, Burnham 2020 will engage with tangata whenua in selecting species and undertaking on-site works to enable them to exercise their kaitiakitanga.

Policy 3: A precautionary approach is adopted when considering adverse effects on indigenous biodiversity.

A precautionary approach has been taken, as whilst only a small number of nesting indigenous birds such as the South Island pied oystercatcher and pied stilt may be affected, it is proposed to undertake pre-construction nesting bird surveys, if the removal of vegetation occurs in August to February. This recognises that most indigenous bird species (excluding spur-winged plover) are either absolutely or partially protected under the Wildlife Act (1953), therefore it is unlawful to disturb the nesting of these species.

Policy 4: Indigenous biodiversity is resilient to the effects of climate change.

This Proposal is contributing to the resilience of indigenous biodiversity by planting indigenous vegetation within the Site that could provide new habitats for indigenous species and form part of a future ecological corridor across the Canterbury Plains.

Policy 5: Indigenous biodiversity is managed in an integrated way, within and across administrative boundaries.

Policy 5 is a matter than the relevant Councils need to address but cross-boundary management is probably not relevant to this Site as it is centrally located within the Selwyn District.

Policy 6: Significant indigenous vegetation and significant habitats of indigenous fauna are identified as significant natural areas (SNAs) using a consistent approach.

Policy 7: SNAs are protected by avoiding and managing adverse effects from new subdivision, use and development.

The Site is not a significant indigenous vegetation or a significant habitat of indigenous fauna, so Policies 6 and 7 are not relevant.

Policy 8: The importance of maintaining indigenous biodiversity outside SNAs is recognised and provided for.

As discussed above, the Site supports very little (if any) indigenous biodiversity, but this may be substantially enhanced through the planting of 30 hectares of indigenous vegetation.

Policy 9: Certain existing activities are provided for within and outside SNAs.

This Policy is not relevant as this Proposal is for a new activity on the Site.

Policy 10: Activities that contribute to New Zealand's social, economic, cultural, and environmental well-being are recognised and provided for.

The Proposal will support activities such as infrastructure, construction and flood management that support people's economic and social wellbeing. Furthermore, enabling the quarry to establish and operate, will result in a significant area of indigenous vegetation being planted to support indigenous biodiversity and the outcomes sought by the NPS-IB.

Policy 11: Geothermal SNAs are protected at a level that reflects their vulnerability, or in accordance with any pre-existing underlying geothermal system classification.

The Site does not lie in an area that has geothermal activity; therefore, this Policy is not relevant.

Policy 12: Indigenous biodiversity is managed within plantation forestry.

The Site does not contain plantation forestry; therefore, this Policy is not relevant.

Policy 13: Restoration of indigenous biodiversity is promoted and provided for.

It is proposed to undertake extensive areas of indigenous planting: at the commencement of quarrying activities around the Grange Road access and in the southeast corner of the Site, and along the rehabilitated batters adjacent to the site boundaries as part of site rehabilitation. This will result in approximately 30 hectares of indigenous planting.

Policy 14: Increased indigenous vegetation cover is promoted in both urban and non-urban environments.

It is proposed to undertake 30 hectares of indigenous planting on the Canterbury Plains that could form part of a future ecological corridor and contribute to achieving Policy 14.

Policy 15: Areas outside SNAs that support specified highly mobile fauna are identified and managed to maintain their populations across their natural range, and information and awareness of specified highly mobile fauna is improved.

Policy 16: Regional biodiversity strategies are developed and implemented to maintain and restore indigenous biodiversity at a landscape scale.

Policy 17: There is improved information and regular monitoring of indigenous biodiversity.

These Policies relate to work that needs to be undertaken by ECan at a regional level and cannot be appropriately considered as part of a consenting process.

Overall, it is considered that the Proposal generally achieves the objective and relevant policies of the NPS-IB and is consistent with the concept of Te Rito o te Harakeke.

7.2 Regional and District Plans

This section assesses the proposal against the relevant objectives and policies in the following plans:

- Canterbury Regional Policy Statement (CRPS).
- Canterbury Land and Water Regional Plan (CLAWRP).
- Canterbury Air Regional Plan (CARP).
- Selwyn District Plan (SDP).
- Partially Operative Selwyn District Plan (POSDP).

7.2.1 Land Use and Infrastructure

Document	Provisions	Summary
CRPS	Chapter 5 – Obj 5.2.1. Pols 5.3.2, 5.3,7, 5.3.8 and 5.3.12.	The Site is located outside Greater Christchurch and the objective and policies seek to ensure that future development will achieve consolidated, well designed and sustainable growth in and around existing urban areas. Development should be avoided, remedied or mitigated, including where these would compromise or foreclose the productivity of the region's soil resources, without regard to the need to make appropriate use of soil which is valued for existing or foreseeable future primary production, or through further fragmentation of rural land, and significant natural and physical resources. Development should also avoid or mitigate reverse sensitivity effects and conflicts between incompatible activities, including identified mineral extraction areas; and integrate with transport networks to provide for the

		sustainable and efficient movement of goods and services, and a logical, permeable and safe transport system. The policies also seek to maintain and enhance natural and physical resources contributing to Canterbury's overall rural productive economy in areas which are valued for existing or foreseeable future primary production, by: 1. avoiding development, and/or fragmentation which; a. forecloses the ability to make appropriate use of that land for primary production; and/or b. results in reverse sensitivity effects that limit or precludes primary production.

Discussion

Development is not defined in the CRPS, and primary production is defined as 'the production (but not processing) of primary products including agricultural, horticultural, pastoral, aquacultural, and forestry products and includes the use of land and auxiliary buildings for these purposes.'[7] Whilst the definition does not specifically include quarrying or mineral extraction, Burnham 2020 considers aggregate to be a primary product.

The processing of aggregate is specifically excluded from the definition of 'primary production'. However, the processing of aggregate cannot be defined as 'development' as implied by the use of the term in the CRPS. This is illustrated in the objectives and policies in the Land Use and Infrastructure, which clearly apply to residential or other forms of 'built development'.

Addressing the use of the Site for aggerate extraction (primary production), the Proposal will not foreclose the ability of the Site to be used for other forms of primary production such as agriculture. Pastoral and agricultural activities will continue while quarrying occurs, as this latter activity will be staged. Rehabilitation of the Site will also enable the continued use of the Site for agriculture. Thus, there will be no fragmentation of rural productive land or adverse effects on this important physical resource, noting that the aggregate is also an important physical resource.

The processing of the aggregate is directly associated with the use of the land for primary production (aggregate extraction) and will commence at the same time as, operate alongside, and cease shortly after, the extraction activities. As such, it also will not foreclose the ability of the Site to be used for other forms of primary production such as agriculture.

Furthermore, the Site is remote to large-scale residential populations, although it is acknowledged that there is a pocket of development to the South-East of the Site. The scale of the Site will enable activities that generate noise and dust to be centrally located, and the existing shelterbelt and the proposed bunding and stockpiling will ensure that potential effects on surrounding roads and properties are effectively mitigated.

[7] Glossary and Definitions, CRPS 2013.

The quarrying operation will not be sensitive to any surrounding primary production activities, so it will not cause reverse sensitivity effects.

The Site integrates with the existing transport network as it is located on an arterial road that connects to State Highway 1, limiting the need for trucks to use local roads that may not have constructed to support large volumes of heavy trucks. It is acknowledged that Aylesbury Road will need to be widened to manage effects arising from trucks damaging the edge of the road and the intersection of Aylesbury Road and SH1 needs to be upgraded but not because of the quarry. However, until that intersection is upgraded, the number of truck movements generated by the quarry will be limited to 250 per day to enable the safe and efficient operation of the road network.

Overall, the Proposal will generally achieve the outcomes sought by the objectives and will be generally consistent with the policies of Chapter 5 of the CRPS.

7.2.2 Mineral Extraction and cleanfilling

Document	Provisions	Summary
CRPS	Obj 15.2.1 and Pol 15.3.1	Soils are to be maintained and enhanced to safeguard their mauri, their life supporting capacity, their health and their productive capacity. This is to be achieved by ensuring that land-uses and land management practices avoid significant long-term adverse effects on soil quality, and remedy or mitigate significant soil degradation where it has occurred or is occurring; and promote land-use practices that maintain and improve soil quality.
CLAWRP	Pols 4.18, 4.19 and 4.22	These more general policies seek that the discharge of contaminants to groundwater from earthworks, excavation or disposal sites and contaminated land is avoided or minimised by ensuring that activities are sited, designed and managed to avoid the contamination of groundwater including from sedimentation; and contaminated land is monitored where appropriate. Note that Policy 4.94 below specifically addresses the effect of gravel extraction on groundwater.
	Pols 4.93 and 4.94.	These gravel extraction-specific policies recognise the importance of gravel extraction for the construction and maintenance of infrastructure, economic activity and the re-build of Christchurch. 4.93 Recognise the value of gravel extraction for construction and maintenance of infrastructure, for economic activity, for flood management purposes and for the re-build of Christchurch. 4.94 Enable the extraction of gravel from land, provided adverse effects on groundwater quality are minimised

		and remediation is undertaken to minimise any ongoing risk of groundwater contamination.
SDP	Objs B1.1.1, 1.1.2 and 1.1.3 Pols B1.1.1, B1.1.2, B1.1.3, B1.1.6 and B1.1.1.7	The objectives seek to manage the adverse effects of activities on land and soil resources, ensure people and property are not affected by contaminated or unstable soil and promote the sustainable management of the soil resource. This is achieved by appropriate management of contaminated land and hazardous substances to avoid adverse effects on people and the mitigation or remediation of adverse effects on the environment. Policies B1.1.6 and B1.1.7 seek to manage damage to soils by encouraging initiatives by landowners to reduce the adverse effects of activities on soil structure and erosion and avoid removing large quantities of topsoil from sites unless the site will be covered in hardstanding or the topsoil replaced and the site replanted once the activity ceases.
POSDP	Obj 01 Pols EW-P3 and P4.	The objectives and policies seek to manage potential adverse effects resulting from earthworks to limit erosion, inundation or siltation so that it does not impede the functioning of natural biological and physical processes, and minimise any adverse visual effects, loss of privacy, dust nuisance, or shading adverse effects during or on completion of earthworks.
	GRUZ-P4	Policy GRUZ-P4 seeks to provide for the economic development potential of the rural area, by enabling a range of activities that have a direct relationship with primary production (noting the definition of Primary Production in the OPSDP includes quarrying activities) have a functional or operational need to locate in the rural area, represent an efficient use of natural and physical resources, and maintain or enhance the character and amenity values of the surrounding area.
	GRUZ P8	Policy GRUZ-P8 enables mineral extraction in the General Rural Zone while managing the spatial extent and effects of mineral extraction activities in order to maintain the amenity values of sensitive activities and residential activities; internalising adverse environmental effects as far as practicable, including by using industry best practice and management plans; and avoiding mineral extraction on highly productive land unless there is a functional or operational need to locate it on that land and in

		the case of aggregate extraction provides a significant national or regional public benefit..
	GRUZ P9	This Policy requires the rehabilitation of mineral extraction sites, so that they can be used for permitted or consented activities that have an economic, environmental, social or cultural benefit. The final landform must maintain or enhance the amenity values in the surrounding area.

Discussion

The proposed quarry is important for the Selwyn District and wider Canterbury Region, as it will provide a steady supply of aggregate in proximity to its markets. This is important as aggregate is expensive to transport but is vital to the construction of infrastructure and buildings. This is recognised in Policy 4.93 of the CLAWRP.

Policy GRUZ-P8 of the PSDP seeks to enable mineral extraction in the General Rural Zone provided that the spatial extent and effects of the activity are managed to maintain amenity values of sensitive activities and residential activities, internalises adverse environmental effects as far as is practicable, including by using industry best practise and management plans, and avoiding mineral extraction on highly productive land.

Burnham 2020 chose the Site at Aylesbury Road and Grange Road, Burnham because it is rural in character and the General Rural Zone seeks to enable activities such as quarrying (mineral extraction). The Site is some distance from a large residential population such as Rolleston or Christchurch, but within reasonable distance of its markets. The greatest population density in proximity to the Site is located along Two Chain Road and at the Burnham Camp.

The Site is large and can readily contain all associated processing activities and provide a secure resource over a long period of time, to minimise the need to find further sites in the future: providing certainty to the local community. Its size also means that it can internalise most adverse effects such as construction and operational noise, with processing activities being centrally located within the Site. The existing shelterbelt around the Site, additional planting, the long-term bund along Aylesbury Road and the temporary stockpiles will screen views from adjoining private properties and public road, as well as provide some mitigation for dust.

Policies B1.1.6 and B1.1.7 of the SDP seek to manage damage to soils by reducing the adverse effects of activities on soil structure and avoiding the removal of large quantities of topsoil from sites unless the topsoil will be replaced and replanted once the activity ceases. The activity of quarrying requires the removal of large areas of topsoil; however, this will be undertaken in phases to limit the amount of time the soil is stockpiled, which could affect its structure. These works will be undertaken in accordance with a Soil Management Plan (**Appendix 13a**).

The extraction activity itself will be managed in accordance with the Quarry Management Plan (**Appendix 6**), a Dust Management Plan (**Appendix 7**) and a range of both design and mitigation measures to manage potential adverse effects on noise, air and water quality.

Water quality in the underlying aquifer will not be adversely affected during extraction as the use and storage of hazardous substances will be carefully controlled and spills will be quickly cleaned up. Any identified HAIL activities within the Site will be managed by way of a DSI to be prepared and implemented as quarrying occurs in the proceeding phase, and water falling as precipitation or

discharged through the settling ponds will be filtered through underlying aggregate, in a manner no different to that currently occurring at the Site.

Existing air quality will be maintained by continuously monitoring wind speed and direction and dust concentration to ensure that the appropriate mitigation is undertaken especially during wind conditions that might impact nearby residential properties such that offsite dust effects at nearby receptor locations will be no more than minor.

The generation of potential noise effects has been considered in the spatial design of the Proposal, with the processing plant located towards the centre of the Site. Bunds and stockpiles will be used at the site perimeter to further mitigate quarry noise effects on identified sensitive receivers and residences. Noise criteria have been developed by acoustic experts, Marshall Day, which reflect the POSDP noise standards and are considered appropriate for the protection of residential amenity in a rural zone. Noise modelling confirms operational quarrying activities will comply with these proposed noise limits, and the noise effects are considered reasonable in the context of the receiving environment in the General Rural Zone. It is therefore considered that proposed quarrying activities will maintain the acoustic amenity of sensitive activities and residential activities.

With respect to truck movements, it has been assessed that without mitigation, acoustic amenity will not be maintained, and adverse noise effects will be generated, particularly at the residences at 168 and 146 Aylesbury Road. Significant traffic noise effects are unlikely during the day and limited in frequency during the early morning period. However, the implementation of acoustic mitigation measures such as acoustic fencing will reduce the level of any adverse noise effects resulting from truck movements during the daytime and in the early morning between 5am and 7am. Furthermore, the quarry is located in a rural area, where early morning activities associated with Burnham Camp and primary production are anticipated.

The Proposal has avoided locating on highly productive land as identified in the National Policy Statement for Highly Productive Land.

GRUZ P9 requires the rehabilitation of mineral extraction sites, so that they can be used for permitted or consented activities that have an economic, environmental, social or cultural benefit. The final landform must maintain or enhance the amenity values in the surrounding area. It is proposed to rehabilitate the land as each phase of extraction is completed, by cleanfilling with 200mm of overburden, subsoil or waste aggregate and 200mm of topsoil, which will be planted in pasture, irrigated and lightly stocked. Cleanfill for the Site will only be sourced from within the quarry and will be free of contaminants, thus minimising any further risk to water quality in the underlying aquifer. Stockpiles will be pushed into the quarry and the slopes graded to an average slope of 1 in 2 and planted with indigenous vegetation. The plants will be irrigated for at least two years after planting until established; and pest protection implemented and maintained for two years after establishment. Therefore, the Proposal accords with Policies B1.1.6 and B1.1.7 of the SDP, which seek that topsoil is replaced and replanted once quarrying has ceased.

Whilst the Site will not be rehabilitated back to existing ground level due to the lack of certainty over access to suitable cleanfill, it will likely be used for primary production. However, it could also be used for other purposes and the planting of at least 30 hectares of indigenous vegetation will have an ecological benefit. So, the final landform will at least maintain, if not enhance, the amenity values in the surrounding area.

Overall, the proposed on-site quarrying activities (both construction and operational) will generally accord with the outcomes sought by the relevant objectives and will be generally consistent with the policies in the CRPS, CLAWRP, the SDP and the POSDP that seek to enable well managed mineral extraction activities in the General Rural Zone of the SDP and OPSDP. However, it is acknowledged that without mitigation, adverse effects from off-site traffic noise effects ranging from slight to significant could be generated on the existing residences at 168 and 146 Aylesbury Road, albeit infrequently. It is therefore proposed to implement mitigation measures to minimise adverse truck noise effects, but this is subject to agreement by the properties' owners. As such, existing acoustic amenity at these sensitive receivers will not be fully maintained.

7.2.3 Landscapes and Rural Character

Document	Provisions	Summary
CRPS	Obj 12.2.2. Pols 12.3.3.	The CRPS requires identification and management of other important landscapes that are not outstanding natural landscapes. Other important landscapes may include natural character, amenity and historic and cultural heritage.
OSDP	Obj B1.4.1. Pols B1.4.2	The objective and policies only relate to Outstanding Natural Features and Landscapes.
POSDP	GRUZ-O1	The objective provides for development in the rural areas provided that it supports, maintains or enhances the function and form, character and amenity value of the rural areas, prioritises primary production over other activities, allows primary production and activities that directly support primary production and have a functional or operational need to locate in the General Rural Zone to operate without being compromised by reverse sensitivity effects, retains the contrast in character to the urban areas and protects highly productive land.
	GRUZ-P1	The policy seeks to maintain or enhance the amenity values of rural areas by retaining a low overall building density, enabling primary production which includes quarrying activities while managing adverse effects of mineral extractive industries, managing the density and location of residential development, retaining a clear delineation and contrast between the district's rural areas and urban areas, and recognising that primary production produces noise, dust, odour and traffic that is noticeable to residents and visitors to the General Rural Zone.

Discussion

The landscape within which the Site is located has not been identified as having outstanding natural character or amenity values identified as a historic or cultural landscape and has no natural features or landscape of significance as identified in the SDP and POSDP. Therefore, the objectives and policies in the Landscape sections of the SDP and POSDP are not considered relevant.

The Landscape Effects Assessment (**Appendix 8**) has considered effects on landscape values (in its broadest sense) and concludes that whilst there will be an adverse effect on landscape character during the operation of the quarry, this will reduce over time as native planting becomes established, ensuring the Site remains well integrated into the broader landscape.

Of importance, is that GRUZ-P1 specifically seeks to provide primary production including quarrying activities, that this is an appropriate activity in the context of the Site and these activities should be enabled subject to managing adverse effects on rural character and amenity values.

The Site will remain predominantly in productive rural land use prior to, and following, each phase of extraction, thus it will retain its rural character albeit in the context of a modified landform rehabilitated with substantial planting. The quarry will result in a low overall building density, and a predominance of vegetation cover due to ongoing and future primary production within the Site. Overall, the Site will retain its rural character thus maintaining the contrast in character to the urban areas.

In conclusion, the Proposal will generally accord with the outcomes sought by the objectives and will be generally consistent with the policies that apply to landscapes and rural character in the CRPS, SDP and the POSDP.

7.2.4 Amenity Values

Document	Provisions	Summary
SDP	Objs B3.4.1 and B3.4.2 Pols B3.4.1, B3.4.3 and B3.4.4.	The Plan seeks that the district's rural area is a pleasant place to live and work and that a variety of activities are provided for. However, these need to avoid, remedy or mitigate significant adverse effects on amenity values, avoid reverse sensitivity effects and maintain low levels of building density in the Rural zone and the predominance of vegetation cover. The Plan also seeks that the adverse effects of non-rural based industrial activities are avoided, remedied or mitigated to the extent that they are no more than minor.
	Pol B3.4.11	Activities should avoid shining light at night into houses, other than a house located on the same site as the activity, or from vehicles using roads in the District.
	Pol B3.4.13	Continuous or regular noise is at a level which does not disturb people indoors on adjoining properties.

	Pol B3.4.16	Mitigate effects from dust including nuisance effects on adjoining dwellings caused by dust from earthworks or stockpiled material.
	Pol B3.4.17	Buildings and trees do not excessively shade adjoining properties.
POSDP	GRUZ-O1	The objective provides for development in the rural areas provided that it supports, maintains or enhances the function and form, character and amenity value of the rural areas, prioritises primary production over other activities, allows primary production and activities that directly support primary production and have a functional or operational need to locate in the General Rural Zone to operate without being compromised by reverse sensitivity effects, retains the contrast in character to the urban areas and protects highly productive land.
	GRUZ-P1	The policy seeks to maintain or enhance the amenity values of rural areas by retaining a low overall building density, enabling primary production which includes quarrying activities while managing adverse effects of mineral extractive industries, managing the density and location of residential development, retaining a clear delineation and contrast between the district's rural areas and urban areas, and recognising that primary production produce noise, dust, odour and traffic that is noticeable to residents and visitors to the General Rural Zone.
	Obj: NOISE—O1 Pol: NOISE-P1 and P8.	The objectives seek that the health and wellbeing of people and communities and their amenity values are protected from noise effects consistent with the anticipated outcomes for the receiving environment. Policy P1 seeks to manage noise effects by setting maximum noise limits, limits on the location, frequency and duration of activities and a vibration standard. Policy P8 seeks to manage the frequency and duration of temporary activities.
	Obj: LIGHT-O1 Pol: LIGHT-P1, P2 and P3.	The objective provides for artificial outdoor lighting that enables activities to occur beyond daylight hours while maintaining the health, safety and amenity values of people, and protecting the District's natural darkness and natural features. The policy directives seek to manage new artificial outdoor lighting by minimising light spill, glare onto adjoining sites and glare onto roads to provide for the health and safety of people

		and the safe and efficient operation of the land transport network. Policy P2A also recognises that artificial lighting may be required to support the operational needs of activities. Policy P3 directs that sky glow should also be minimised to • maintain people's ability to view the night sky; and • maintain the distinct character and amenity values of the district's night sky; and • protect the health and well-being of people and ecosystems.

Discussion

The POSDP recognises that the primary purpose of the General Rural Zone is to provide for primary production activities which includes quarrying activities, and other compatible activities. Furthermore, the POSDP recognises rural landscapes include mineral extraction and associated structures and buildings, and that these activities may have associated levels of noise, dust and odour. Whilst residential activities are part of the General Rural Zone, they should not compromise the ability of the Zone to be used for primary production.

Whilst the SDP includes Policy B3.4.3 (Avoid, remedy or mitigate significant adverse effects of activities on the amenity values of the rural area), it is clearly stated that the Policy should not be used as a catch-all to oppose changes to land uses. '*Changes in land uses do not necessarily detract from the amenity values of an area and may enhance them. Where an activity will detract from the amenity values of an area, Policy B3.4.3 requires those effects be mitigated.*

The requirement to mitigate adverse effects of activities in Policy B3.4.3 of this section does not replace more specific duties to protect areas and avoid adverse effects, in other policies in the Plan.'[8]

The SDP does not define the amenity values anticipated in the Rural Zone however it can be inferred from the policy framework as relatively low levels of noise and light at night, a low density of built form, and low levels of traffic on local roads with higher volumes including trucks on arterial roads and during activities such as harvesting.

Building density

Buildings associated with primary production will be clustered towards the centre of the Site away from property boundaries. Those related to the quarry will be clustered in proximity to the site access off Aylesbury Road and will be limited in number to 4 being the site office, workshops and laboratory. These will be screened from Aylesbury Road by a long-term bund and established and proposed planting. Overall, the density of buildings within the Site will be low given the size of the Site.

Reverse sensitivity

With respect to Policy GRUZ-O1(3), the proposed quarry will not be sensitive to any actual potential or perceived environmental effects generated by established primary production activities. Therefore,

[8] Selwyn District Plan, Rural Volume, Objectives and Policies, B3 Health Safety Values, Policy B3.4.3 Explanation and Reasons.

the quarry will be consistent with this Policy, as the establishment of a new quarry will not generate any reverse sensitivity effects or compromise any of the existing primary production activities.

Predominance of vegetation

The Site is currently in pasture and crops with no indigenous vegetation, with the site boundaries being planted with pines. It is proposed that the Site will continue to be used for primary production alongside staged quarry activities thus retaining a predominance of vegetation and through rehabilitation, the Site will be grassed and returned to primary production. The bunds along Aylesbury Road will be planted, the rehabilitated batter slopes, an area in the southeast corner of the Site and around the access from Grange Road will also be planted in indigenous vegetation to be retained in perpetuity. So, when viewed externally, there will be a predominance of vegetation.

Lighting

Lighting in the Rural Zone is often required for harvesting, shearing and other seasonal activities and there are no restrictions on outdoor lighting provided it does not shine directly onto another property.

Any lighting located within the Site will generally be directed away from site boundaries, and often below the surrounding ground level if associated with extraction or stockpiling. Furthermore, lighting will shine into the Site, be screened by the bund and temporary stockpiles, and will not spill onto the road or adjoining properties thereby reducing the risk of nuisance effects and glare for motorists. Lighting will shine downwards, maintaining people's ability to view the night sky.

Noise

Many people consider that rural areas should be relatively quiet especially at night with low ambient noise levels. However, the sound of machinery operating in fields and in farmyards or heavy trucks using local roads is not uncommon, with greater levels of noise associated with seasonal activities such as harvesting particularly in the early morning.

Construction and operational noise related to aggregate extraction and processing can be contained within the Site and will meet both the operative and proposed noise standards at the notional boundaries of adjoining residential dwellings. However, there is the potential for a significant increase in traffic noise to be experienced at the closest property at 168 Aylesbury Road on limited occasions. It is therefore proposed to implement mitigation measures such as acoustic fencing to reduce the level of this effect and limit both the number and frequency of truck movements in the early morning between 5am and 7am.

Dust

It is anticipated that dust will be managed to minimise dust emissions to within 100 metres of the source. This will be achieved through continuously monitoring wind speed and direction and dust concentration, retaining the existing shelterbelts, establishing bunding and temporary stockpiles on the site boundaries. A dust management plan will also be prepared and implemented to ensure that dust does not result in adverse effects on adjoining properties.

Shading by trees

No longer applicable: RMA, s 86F.

Overall, the Proposal will generally achieve the outcomes sought by the objectives and policies in the SDP and the POSDP that seek to maintain and / or enhance amenity values in the General Rural Zone. However, as discussed above, the Proposal will not maintain amenity values in relation to noise

at 168 and 146 Aylesbury Road. It is therefore proposed to implement mitigation measures to minimise adverse truck noise effects, but this is subject to agreement by the properties' owners. As such, existing acoustic amenity at these sensitive receivers will not be fully maintained.

7.2.5 Transport

Document	Provisions	Summary
CRPS	Obj 6.2.4 Pol 6.3.4	The CRPS seeks that transport infrastructure facilitates the movement of people and goods and the provision of services in Greater Christchurch, while reducing emission of contaminants to air and energy use, optimising use of existing capacity within the network; and enhancing transport safety. This is to be achieved through avoiding development that will overload strategic freight routes; providing patterns of development that optimise use of existing network capacity, providing opportunities for travel demand management; requiring integrated transport assessment for substantial developments; and improving road user safety.
SDP	Obj B2.1.1 Pol B2.1.2, B2.1.4(a), B2.1.13 and B2.1.14	The objective seeks an integrated approach to land use and transport planning to ensure the safe and efficient operation of the district's roads, pathways, railway lines and airfields is not compromised by adverse effects from activities on surrounding land or by residential growth. The policies seek to manage the effects of activities on the existing road network as increased volumes of traffic can affect the classification of a road and require upgrades. As such it is important to ensure that all sites have legal access to a legal road which is formed to the standard necessary, considering the number and type of vehicle movements generated by the activity; the road classification and function; and any pedestrian, cycle, public transport or other access required by the activity.
POSDP	Objs: TRAN-O1, TRAN-02, . Pols: TRAN-P3, TRAN-P4, TRAN-P7 and TRAN-P11.	The objectives seek to ensure people and places are connected through safe, efficient, and effective land transport corridors and land transport infrastructure for all transport modes which are well integrated with land use activities and subdivision development. Further that land transport corridors and land transport infrastructure need to be protected from incompatible land use activities and subdivision development. The Plan requires high trip generating activities to prepare Integrated Transport Assessments to maintain the safety and efficiency of the land transport corridor by ensuring there is

		sufficient capacity in land transport corridors and establish whether the high trip generating activity can be supported by active transport modes including accessibility to safe and convenient walking and cycling connections and access to public transport and public transport facilities. Policy TRAN-P4 seeks that the adverse effects of activities within the General Rural Zone that exceed the maximum number of vehicle movements for each site are managed. The policies also seek to recognise and protect the function of the District's land transport network and systems by managing the safe and efficient movement of people and goods by (i) avoiding significant adverse effects and minimising other adverse effects from activities on the safe, efficient and effective operation of land transport corridors and land transport infrastructure, (ii) ensuring transport corridors and land transport infrastructure can efficiently and effectively provide for the volume and type of transport movements based on the network road classifications, and (iii) and requiring the design, positioning, and maintenance of accessways, corner splays, vehicle crossings, intersections, footpaths, plantings, and signs to ensure appropriate sightline visibility is provided to road users to support safe and efficient vehicle, pedestrian, and cycle movements.

Discussion

The Site will be located on an arterial road that provides connections to SH1 Main South Road and SH73 West Coast Road. This enables most travel to and from the quarry to occur on the state highway and arterial road network and minimise the risk of trucks using local roads that have not been designed to support large numbers of heavy trucks.

The POSDP requires high trip generating activities to prepare Integrated Transport Assessments to assist in ensuring there is sufficient capacity in land transport corridors. Although the quarry does not reach the high trip generating activity threshold, essentially a full integrated traffic assessment has been undertaken by Stantec and the Assessment is provided in **Appendix 10**.

The number of truck movements generated by the quarry will be limited to 250 per day until such time as the SH1/Aylesbury Road intersection has been upgraded, ensuring the development of the quarry integrates with funded improvements to the network. In the interim, truck movements generated by the quarry will not overload the current capacity of the roading network.

The site access will be formed to a higher standard than required by the SDP to ensure turning trucks will not impact on the edge of the road and parking spaces are provided to reduce the risk of trucks parking on Aylesbury Road and becoming a limitation on visibility for other road users or a hazard for cyclists and pedestrians.

Aylesbury Road has a straight alignment and good sightlines that will not be affected by the Proposal. The road will be widened between the site access and Two Chain Road to enable two trucks to pass

and then turn into the Site without adversely impacting on the edge of the road causing its condition to deteriorate.

As discussed in **Section 6.2.3**, with the modifications proposed to the roading network, the limit on the number and frequency of truck movements in the early morning between 5am and 7am, and the planned modifications to the SH1 / Aylesbury Road intersection with traffic generated by the quarry limited to 250 heavy vehicles per day until that occurs, the additional quarry traffic can be accommodated within the existing land transport corridors and land transport infrastructure network without adversely affecting its safe, efficient and effective operation.

Overall, the Proposal will generally achieve the outcomes sought by the Transport objectives and will be generally consistent with the policies in the CRPS, SDP and the POSDP.

7.2.6 Ecosystems and Indigenous Biodiversity

Document	Provisions	Summary
CRPS	Objs: 9.21 and 9.2.3	The objectives seek to halt the decline in the quality and quantity of Canterbury's ecosystems and indigenous biodiversity, and that areas of significant indigenous vegetation and significant habitats of indigenous fauna are identified, and their values and ecosystem functions protected.
SDP	Obj: B1.2.1 and B1.2.4. Pol: B1.2.6.	The objectives seek to recognise and protect significant areas of indigenous vegetation and habitats of indigenous fauna and encourage the enhancement of areas of indigenous vegetation. The policies seek to avoid, remedy or mitigate adverse effects on indigenous ecosystems, vegetation and habitat, where these areas are important for maintaining the indigenous biodiversity and ecosystem functions and natural character of the District.
POSDP	Obj: ECO-O1 and ECO-O2. Pol: ECO-P11 and P12.	The objectives seek to manage indigenous biodiversity within the district through the exercise of kaitiakitanga and stewardship and recognise and provide for the relationship of Ngāi Tahu whānui, and their customs and traditions, with indigenous biodiversity. The policies direct that the planting of pest tree and plant species listed in ECO-SCHI Potential Plant Species, or the Canterbury Regional Pest Management Plan are avoided and that indigenous vegetation cover in extensive dryland pastoral systems are maintained.

Discussion

The Site does not contain any significant areas of indigenous vegetation or significant habitats of indigenous fauna and therefore the objectives and policies listed above are not relevant.

ECO-P11 seeks to avoid the planting of pest tree and plant species identified as pest species. The gaps in the existing shelterbelt will be planted with non-wilding pine species that are not identified pest plant species.

It is also proposed to undertake the planting of 30 hectares with indigenous vegetation, along the site boundaries and in areas adjacent to the access on Grange Road and in the southeast corner of the Site. This will significantly enhance the existing indigenous vegetation cover on the Site and assist in halting the decline in the quality and quantity of Canterbury's ecosystems and indigenous biodiversity and therefore achieves Objective 9.21 of the CRPS.

Overall, the Proposal will be entirely consistent with the direction set out in the ecosystems and indigenous biodiversity objective and policy directives in the CRPS, SDP and the POSDP.

7.2.7 Hazardous Substances

Document	Provisions	Summary
CRPS	Obj 18.2.1 and 18.2.2. Pols 18.3.1 and 18.3.2	The objectives and policies seek to manage the adverse effects of storing and using of hazardous substances and that new contamination of land is avoided. In particular, the use, storage or disposal of hazardous substances in high hazard areas must be avoided and managed in areas of unconfined or semi-confined aquifer, where the depth to groundwater is such that there is a risk of contamination of that groundwater, and generally on the environment.
CLAWRP	Pols 4.25 and 4.27.	Policy 4.25 provides for the use of hazardous substances that are not approved under the Hazardous Substances and New Organisms Act.
SDP	Objs 3.2.1 and B3.2.2 Pols B3.2.1 (a) and (b)	The Plan seeks to avoid, remedy or mitigate the adverse effects on human health and the environment including farm animals, waterbodies and ecosystems of manufacturing and storing of hazardous substances. Hazardous substances are to be stored in a manner to reduce the risk of leaks and spills to land and water, and to enable the storage of quantities and classes of hazardous substances in the rural areas that are commensurate with the types of activities provided for in the SDP. The quantities stored are often sufficient to contaminate land and soil with significant adverse effects, therefore, storage needs to be subject to conditions to protect the environment. There are also threshold limits to distinguish between small-scale activities where effects are likely to be minor, and larger scale activities that require resource consent.

POSDP	Obj HAZS-O1. Pol HAZS-P1	The objective and policy seek to recognise the benefits associated with activities involving the use, storage, disposal, and transportation of hazardous substances are recognised, while ensuring that risks to the environment and human health are minimised to acceptable levels.

Discussion

All the hazardous substances proposed to be stored and used within the Site have been approved under the Hazardous Substances and New Organisms Act.

Fuel will be kept in double skinned tanks and oil and greases will be stored in specially designed areas within the workshop, outside the quarry floor.

A hazardous substance risk register, and spill management plan will be developed for the Site and will comply with all relevant legislation.

Overall, the storage and use of hazardous substances will achieve the outcomes sought by the objectives and policies set out above.

7.2.8 Contaminated Land

Document	Provisions	Summary
POSDP	Obj CL-O1. Pols CL-P1	The objectives and policies seek to ensure that human health and the environment are protected from adverse effects on the use of contaminated land and require any proposal for development to apply a best practise approach to investigate risks and remediate the contamination or manage activities on contaminated land to protect people and their environment.

Discussion

A search of the Land Use Register on the ECan website revealed that the Site has not been identified as contaminated.

Nevertheless, Preliminary Site investigation (PSI) has been prepared which identified several areas where activities listed in the Hazardous Activities and Industries List (HAIL) are likely to have been undertaken.

A best practise approach to investigate any risks and remediate any contamination or manage activities on contaminated land to protect people and their environment has been proposed as part of the Proposal.

It is proposed that identified HAIL areas are subject to targeted detailed site investigations (DSI's) as quarrying progresses across the Site. This will ensure that any ongoing activities are captured by the assessments, and any remedial actions applied accordingly. Remedial actions will vary according to the nature and extent of contamination found during any DSI.

Overall, the proposed management of any potentially contaminated land on the Site will be consistent with the objectives and policies managing contaminated land, set out above.

7.2.9 Freshwater - Quality

Document	Provisions	Summary
CRPS	Obj 7.2.3.	The objective seeks to maintain or improve the overall quality of freshwater in the region and protect the life supporting capacity, ecosystem processes and indigenous species and their associated freshwater ecosystems are safeguarded.
CLAWRP	Objs 3.1, 3.2, 3.5, 3.8, 3.8A, 3.11, 3.13 and 3.24. Pols 4.1, 4.2, 4.4 and 4.7, 4.8A, 4.11, 4.12, 4.13, 4.14. 4.14B, 4.17, 4.23, 4.23A and 4.94. 11.4.1, 11.4.11, 11.4.12 and 11.4.38.	Put simply, the objectives seek to ensure the integrated management of water and land, as well as taking a mountain to the sea approach. Water quality is sought to be managed to protect the life supporting capacity of ecosystems, and to ensure that high-quality groundwater is available for abstraction. Aquifers are required to meet freshwater outcomes set out in the Plan, and overall water quality must not decline. Direct discharges to groundwater are controlled and cannot include untreated wastewater or industrial or trade waste. Furthermore, discharges to land that may enter groundwater are managed according to a hierarchy of avoid production of the contaminant, secondly reuse, recover or recycle and thirdly, use a land-based treatment, a wetland, where practical. Discharges should not exceed the natural capacity of the soil to treat or remove the contaminant, or the water storage capacity of the soil. However, Policy 4.14 recognises that this is not always possible and sets out other matters that need to be addressed: making the contaminant plume as small as practicable, separating the discharge from other discharges and drinking water supplies; not result in the accumulation of pathogens or persistent toxins and not raise groundwater to a level that would impede ground drainage. Stormwater needs to be managed to ensure that it does not cause or exacerbate the risk of inundation or damage to property or infrastructure downstream, or risks to the safety of people. Policy 4.23 specifically seek to protect sources of drinking water by ensuring that discharges do not adversely affect the taste, clarity and smell of drinking water and community drinking water supplies meet the CWMS drinking water targets and the New Zealand Drinking Water Standard. Policy 4.94 specifically enables the extraction of gravel from land, where adverse effects on groundwater quality are

		minimised and remediation is undertaken to minimise any ongoing risk of contamination. The Selwyn Te Waihora sub section contains additional policies of relevance that require discharges of wastewater to land to be in accordance with the best practicable option and not exceed the nitrogen load limits set in the Plan, except where the loss of nitrogen from both the discharge and the farming activity does not exceed the authorised discharge of nitrogen that was occurring prior to the discharge.
SDP	Obj B1.3.1.	The objective seeks the contamination of groundwater is avoided or mitigated, and that degraded water quality is improved, generally by changes to land use practices or controls on land uses.

Discussion

It is noted that Policy 4.94 of the CLAWRP specifically enables the extraction of gravel from land, where adverse effects on groundwater quality are minimised and remediation is undertaken to minimise any ongoing risk of contamination.

Sections 6.2.6 and 6.2.7 clearly set out the effects of the establishment and operation of the proposed quarry, and the on-going and future use of the Site for primary production. In summary,

- There will be no direct discharges of water or contaminants to the aquifer.
- The removal of the soil during quarrying activities and the exposure of the underlying gravels will promote the infiltration of both rainwater and water used within the quarry for washing aggregate, to the underlying groundwater and will remove sources of nitrates and E. coli that currently arise from the agricultural land use.
- A hazardous substance risk register, and management plan will be developed for the Site that will comply with all relevant legislation. The storage and use of hazardous substances will occur outside the quarry floor and in appropriately bunded areas to contain any potential spills.
- Wastewater from the staff facilities will be treated prior to discharging to land.
- Stormwater may pond during extreme weather events but essentially will be clean water and no excavation will occur within ponded water on the quarry floor.
- The annual loss of nitrate into the groundwater will remain largely the same as currently occurs, although the nitrate will reach the water table sooner than under the pre-quarry scenario, with no consequent effects on water quality.
- Assuming current farming practices are resumed on the rehabilitated land, there will be less reduction of the E. coli concentrations through the unsaturated zone between the surface soil profile and the groundwater table than is currently the case, but removal will be sufficient to avoid adverse water quality effects in neighbouring bores.

Overall, the Proposal will generally achieve the outcomes sought by the objectives and policies in relation to water quality in the CRPS, and the SDP.

7.2.10 Air Quality

Document	Provisions	Summary
CRPS	Obj 14.2.1, 14.2.2 Pols 14.3.1, 14.3.3 and 14.3.5	The objectives and policies seek to maintain or improve existing air quality whilst enabling the discharge of contaminants. However, there should be no significant localised adverse effects on social, cultural and amenity values, flora and fauna, and other natural and physical resources. Of particular relevance Policy 14.3.5 seeks those new activities which require resource consents to discharge contaminants into air located away from sensitive land uses and receiving environments unless the adverse effects of the discharge can be avoided or mitigated.
CARP	Objs 5.1-5.7 and 5.9-5.10 Pols 6.1,6.2, 6.3, 6.5, 6.6, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.15, 6.17, 6.22, 6.25, 6.26 and 6.28	The objectives reflect the importance of air quality to the health and wellbeing of the community and the competing needs that can affect it. There is a focus on maintaining acceptable, and improving degraded, ambient air quality. This is to be achieved by maintaining the amenity values of the receiving environment, considering the effects of new discharges on adjacent land uses and sensitive activities, avoiding offensive and objectionable effects and noxious or dangerous effects, and using technology. The policies seek that any discharge does not adversely impact on people's health and wellbeing, biodiversity, visibility or property as well as wāhi tapu, wāhi taonga, and places of significance to Ngāi Tahu. The policies also acknowledge that some activities have locational constraints that should be considered when imposing terms and conditions, and that where activities locate appropriately to mitigate adverse effects on air quality a longer consent duration may be available to provide on-going operational certainty. Discharges should apply good environmental practices and the best practicable option, recognising that changes in technology may allow for improvements in the quality of a discharge over the term of the consent and provide for this by imposing management and review conditions on new and replacement resource consents. Alternatively, where a discharge causes effects that are unpredictable because of

		scientific uncertainty or an absence of information, adopt a precautionary approach to assessing the effects. Applications for resource consent for discharges into air from industrial or trade activities classified as discretionary must address (as relevant to this application): • localised effects of the proposed discharge and the location of sensitive receptors; and • available mitigation and emission control options; and • the duration of consent being sought and the practicability for the effects of the discharge to be reduced over time. Of particular relevance to this application is the management of dust by ensuring that activities likely to discharge to air are appropriately located.

Discussion

It is proposed to develop a new aggregate quarry in a rural zone, away from residential areas, albeit there are several dwellings located within 250m of the quarry site. The potential for air quality effects relate almost exclusively to the potential for dust emissions, which could arise from extraction, vehicle movements, aggregate processing, stockpiling and rehabilitation activities.

As discussed under Section 6, an air discharge assessment has been carried out by PDP (**Appendix 15**) and the quarry will operate in accordance with a Dust Management Plan (**Appendix 7**). The effect of any discharges to air will be less than minor due to on-going monitoring that enables dust generating activities and any discharges to be managed quickly and efficiently. Furthermore, mitigation measures such as using water to dampen loose surfaces, limiting the speed limit of vehicles within the quarry, the planting of vegetation on batter slopes and establishing pasture on the rehabilitated quarry floor will effectively manage dust emissions, and therefore maintain the current air quality.

The application includes discharges to air from the processing of aggregate (defined as an industrial or trade activity in the CARP). Therefore, the Air Quality Assessment has addressed localised effects of the proposed discharge being as discussed above, identified the location of sensitive receptors in Figure 10 of the Air Quality Assessment; and identified mitigation measures, as discussed above. Overall, any potential adverse effects are certain, can be effectively managed and there is no need to apply the precautionary principal.

The ability to reduce effects of the discharge over time is limited and unnecessary in this instance, given that it is proposed to minimise dust emissions to within 100 metres of the source, which will mean that dust is generally retained within the Site and there will be very low potential for health effects.

Overall, the Proposal will generally achieve the outcomes sought by the objectives and will generally be consistent with the policies related to air quality in the CRPS and the CARP.

7.2.11 Reverse sensitivity

Document	Provisions	Summary
SDP	Pol B3.4.20	Mitigate reverse sensitivity by locating and managing new activities, which may have adverse effects on surrounding properties.
POSDP	GRUZ-P7	Avoid reverse sensitivity effects on: 1. lawfully authorised or established primary production activities; 2. activities that have a direct relationship with, or are dependent, on primary production; and 3. important infrastructure.

Discussion

The POSDP defines reverse sensitivity as follows: the potential for an approved (whether by consent or designation), lawfully established existing or permitted activity to be compromised, constrained, or curtailed by the more recent establishment, intensification, or alteration of another activity that may be sensitive to the actual, potential or perceived adverse environmental effects generated by the approved, lawfully established existing or permitted activity.

Burnham 2020 carefully chose the Site for its distance from large areas of population, and being in the Rural zone where primary production including quarrying activities are anticipated and provided for. It is recognised that there are lawfully authorised and established primary production activities located in close proximity to the Site of the Proposal.

The proposed quarry will not be sensitive to any actual, potential or perceived environmental effects generated by these established primary production activities, and therefore it will be consistent with this Policy. The establishment of new quarry will also avoid generating any reverse sensitivity effects on these existing primary production activities.

Overall, the Proposal will be entirely consistent with the policies that address reverse sensitivity in the SDP and POSDP.

7.2.12 Natural Hazards

Document	Provisions	Summary
CRPS	Obj 11.2.1 and 11.2.3 Pols 11.3.1, 11.3.2, 11.3.3, 113.5, 11.3.8 and 11.3.9	The objectives and policies seek to avoid the creation of new hazards as well as not increasing the risk to people and property from existing hazards, whilst recognising the effects of climate change. When considering natural hazards, and in determining if new subdivision, use or development is appropriate and sustainable, local authorities shall have particular regard to the effects of climate change.

SDP	Objs: B3.1.1 and B3.1.2 Pols: B3.1.7 and 3.1.8.	The objectives and policies seek that activities do not cause or exacerbate natural hazards, and mitigation measures do not cause or exacerbate adverse effects on the environment.
POSDP	Objs: NH-O1, NH-O3 and NH-04. Pols: NH-P1, NH-P2, NH-P3, NH-P4 and NH-P5. Flood Hazards: NH-P10 and NH-P12. Geotechnical Hazards: NH-P15 and NH-P17.	The objectives and policy directives addressing natural hazards, seek to avoid new use and development in areas where the risks from natural hazards to people, property and infrastructure are assessed as being unacceptable; and in all other areas, is undertaken in a manner that ensures that the risks of natural hazards to people, property and infrastructure are appropriately mitigated. Any risk assessment must include consideration of climate change and its influence on the frequency and severity of natural hazards. Further, methods to mitigate natural hazards must not create or exacerbate adverse effects on other people, property, infrastructure, or the environment. The policy directives of particular relevance to this Proposal seek to: In areas within the Plains Flood Management Overlay that are not a high hazard area, any new use and development is only enabled where every principal building has an appropriate floor level above the 200 year Average Return Interval (ARI) design flood level. Mange earthworks undertaken in the Plains Flood Management Overlay to ensure that they do not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land. Within the Greendale Fault Avoidance Overlay, avoid the development or use of land, buildings or structures for any, community facility, important infrastructure, land transport infrastructure of Major Hazard Facility. Within the Fault Awareness Overlay, restrict the development of important infrastructure; or land transport infrastructure; or Major Hazard Facility unless the adverse effects can be mitigated so as to ensure that there is no greater risk to human health during or after any earthquake.

Discussion

The Site is subject to flooding in a 1 in 200 and 1 in 500 ARI rainfall event but is not generally identified as a High Hazard area.

The flow of water across the Site is from North West/West to the South/South east, with the likely maximum depth of water being 1 metre during both ARI (Average Reoccurrence Interval) events but over most of the affected areas of the Site, the maximum depth will be 0.5 metres, except for one tiny area in the centre of the Site where the maximum depth will be more than 1.5 metres due to a previous excavation (high hazard in 1 in 500 year ARI event). The 500 year ARI rainfall hazard – Maximum of Depth (m) and Depth (m) x Velocity (m/s) will be less than 0.8m except for the same area in the centre of the Site which will have a maximum depth of 1-1.2 metres (high hazard).

The Site is not subject to flooding from the Waimakariri or Selwyn Rivers.

The establishment and operation of the quarry will not exacerbate the effects of flooding as the Site is of sufficient size that water will be retained within the Site and not flood onto adjoining roads or properties. This matter will also be addressed in the Quarry Management Plan.

The quarry can be readily evacuated in a flood event, with only a small number of people working in the quarry and hazardous substances will be stored in buildings that are located on land that will remain at the height of the existing ground level. The buildings will also be constructed to have a floor level above the 200 year Average Return Interval (ARI) design flood level.

It is recognised that part of the Site is located in the Greendale Fault Avoidance Overlay and the Fault Awareness Overlay. (Refer **Appendix 3**). However, it is not proposed to construct a community facility; or important infrastructure; or land transport infrastructure; or a Major Hazard Facility.

Overall, the Proposal will generally achieve the outcomes sought by the natural hazard objectives and policies in the CRPS, SDP and the POSDP.

7.2.13 Signs

Document	Provisions	Summary
SDP	Pols: B3.4.9 and B3.4.10.	The policies seek to manage the effects of signage on the amenity of the rural zone, and the health and safety of people. This is achieved by requiring signs and noticeboards to be located on the site to which the sign or notice board relates and managing the design and position of signs.
POSDP	Obj: SIGN-O1 Pols: SIGN-P1 and SIGN-P2.	The objective recognises that signs contribute to the District's economic and community wellbeing, and transport safety. Of relevance to this Proposal, the policy directives seek to enable signs that are an integral component of industrial and commercial activities, while managing the size, design, location, and number of signs to maintain transport safety, and the character and amenity values of the surrounding environment.

Discussion

It is proposed to display the name of the quarry either side of the vehicle entrance on Aylesbury Road. The two signs will be simple in design (two or three words naming the quarry), located within the Site

and setback from the road boundary. Consequently, the proposed signs will not obstruct or impair the view of any traffic signal, intersection, vehicle crossing, bend or corner and will maintain traffic safety.

The signs will not have flashing or revolving lights, sound effects, balloons or blimps; or moving parts and will not resemble a traffic sign or signal. Should the signage at the entrance to the Site be illuminated, the light spill onto any adjoining property or the road reserve will not exceed 3-lux spill.

The proposed signage will trigger Rule SIGN-R4.2 (Restricted Discretionary) in the POSDP as it is not proposed to be setback 20 metres from the road. The assessment of effects has assessed the effects of these infringements as being less than minor and the rural character of the Site will largely be retained as described in the Landscape Effects Assessment (**Appendix 8**).

Overall, the Proposal will achieve the outcomes sought by the objectives and will be consistent with the policies related to signs in the SDP and the POSDP.

7.3 Iwi Management Plans

The only iwi management plan of relevance to this application is the Mahaanui Iwi Management Plan 2013 (MIMP).

7.3.1 MIMP

MIMP is the manawhenua planning document reflecting the collective efforts of six Papatipu Rūnanga that represent the hapū who hold manawhenua rights over lands and waters within the takiwā from the Hurunui River to the Hakatere River and inland to Kā Tiritiri o Te Moana. The Site is within the Papatipu Rūnanga of Te Taumutu.

The plan provides a values-based, plain language policy framework for the protection and enhancement of Ngāi Tahu values, and for achieving outcomes that provide for the relationship of Ngāi Tahu with natural resources. The plan has the mandate of the six Papatipu Rūnanga, and is endorsed by Te Rūnanga o Ngāi Tahu, as the iwi authority. It is applicable to policy and planning processes under the RMA, in this case by providing context to the matters over which discretion is reserved under rule 11.5.33 of the CLAWRP.

Section 5.3 Wai Māori states that surface and groundwater resources are over-allocated in many catchments and water quality is degraded as a result of urban and rural land uses. This has significant effects on the relationship of Ngāi Tahu to water, particularly with regard to mauri, mahinga kai, cultural well-being and indigenous biodiversity. There are clear objectives that seek to ensure:

- Water quality in groundwater and surface water resources in the takiwā enables customary use mō tātou, ā, mō kā uri ā muri ake nei.
- Water and land are managed as interrelated resources embracing the practice of Ki Uta Ki Tai, which recognises the connection between land, groundwater, surface water and coastal waters.
- Water quality is such that future generations will not have to drink treated water.

The Te Waihora region-specific objectives include the following:

- Land and water use in the catchment respect the boundaries, availability and limits of our freshwater resources and the need to protect soil and water resources for future generations.

- The relationship between land use, groundwater, surface water and Te Waihora is recognised and provided for according to the principle of Ki Uta Ki Tai.

The MIMP also contains Policies P13.2 and P13.3 that specifically address the quarrying component of the Proposal including giving consideration to the location of the quarry, the type of quarry proposed, avoiding and mitigating adverse effects, the preparation of quarry management plans and site rehabilitation plans.

Discussion

These objectives, which predate the CLAWRP, have clearly informed its content, as the thrust of both documents is consistent. Many of the comments made above in evaluating this application against the objectives and policies of the CLAWRP are relevant also to assessment against the framework of the MIMP.

Specifically, this assessment has taken into consideration the need to address Ngāi Tahu values by ensuring all discharges are to land and not directly to water, maintaining existing water quality in the aquifer, managing discharges to air and rehabilitating the land including planting the regraded batter slopes that will form the site boundaries with indigenous vegetation. It is also proposed to plant an area in the South East corner of the Site and in proximity to the Grange Road access with indigenous vegetation. Eventually, 30 hectares of indigenous planting will be established within the Site.

It is also proposed to undertake pre-construction nesting bird surveys to minimise impacts on indigenous bird species.

In addition, there are no Statutory Acknowledgements or Silent File Areas within 1km of the Site. There is also no significant indigenous biodiversity (including remnant native bush, waterways, wetlands or waipuna) on the Site, or nearby, nor are there any sites of significance on or near the Site. There is a very low risk of accidental discoveries.

The table below addresses Policies P13.2 and P13.3 that seek to manage the impacts of quarrying / mineral extraction.

Matter	Discussion
<u>Location of the activity</u> • What is the general sensitivity of the site to the proposed activity? • How well does the proposed activity 'fit' with the existing landscape? • Is there significant indigenous biodiversity on the site, including remnant native bush? • What waterways, wetlands or waipuna exist on the site? • Are there sites of significance on or near the site?	The Site is not sensitive to the proposed quarry activities as it is devoid of indigenous vegetation and is not part of a Statutory Acknowledgements or Silent File Area. The Landscape Effects Assessment concludes that whilst there will be an initial moderate effect on landscape values, this will reduce as the proposed planting becomes established, the long-term bund along Aylesbury Road and the temporary stockpiles are formed and the gaps in the shelterbelt are planted. There is no significant indigenous biodiversity on the Site, including remnant native bush as the Site has been used for dairy finishing and

• What is the risk of accidental discoveries? • What is the wider cultural landscape context within which the site is located?	fodder crops. This has resulted in the domination of pasture associated with grazing and irrigation. No waterways, wetlands or waipuna exist on the Site. There no sites of significance on or near the Site. There is a very low risk of accidental discoveries. There are no Statutory Acknowledgements or Silent File Areas within 1km of the Site, and the Site sits outside any cultural overlay identified in the POSDP.
<u>Type of quarrying</u> • What resource is being extracted, what will it be used for, and is it sustainable?	It is proposed to extract, and process aggregate to support the construction industry and infrastructure projects in Christchurch and its surrounds.
<u>Avoiding and mitigating adverse effects</u> • What provisions are in place to address sediment and erosion control? • What provisions are in place for stormwater management? • What provisions are in place for waterway protection? • How will the site be restored once closed?	Activities within the Site will be undertaken in accordance with a Quarry Management Plan and a Dust Management Plan. Stormwater will discharge to land as currently occurs. It will be clean as hazardous substances will be carefully stored and used within the Site and any spills will be managed in accordance with a Spill Management Plan. There are no waterways within or in close proximity to the Site. The Site will be rehabilitated as each phase of extraction is completed. It is proposed to place 200mm of overburden, aggregate, silt or other material sourced from within the Site over the excavated quarry floor and cover with 200mm of topsoil, also sourced from within the Site including from temporary stockpiles along the site boundaries. This will then be planted in pasture and irrigated. The sides of the quarry will be battered to approximately 1 in 2 and planted in indigenous vegetation.

Management plans Quarry management plans for earthworks, erosion and sediment control, waterway protection, on site stormwater treatment and disposal and provisions for visual screening / barriers that include indigenous vegetation; and	A Quarry Management Plan is provided with this application. (**Appendix 6**).
Rehabilitation Site rehabilitation plans that include restoration of the site using indigenous species.	As discussed above.

Overall, it is considered that the Proposal will generally accord with the outcomes sought by the MIMP as the quarry will be established and operated to minimise adverse effects on the environment whilst also establishing approximately 30 hectares of indigenous vegetation.

7.4 Conclusion on Statutory Considerations

Overall, the Proposal will generally accord with the outcomes sought by the objectives and policies in the NPS-FM, CRPS, CLAWRP, CARP, SDP, POSDP and the MIMP because:

- The Site will be managed to minimise effects on the physical and natural environment.
- The quarrying activities will be undertaken in manner to minimise impacts on people's health and wellbeing.
- It will enable the extraction of a valuable natural resource that is vital to the economy of the Selwyn District and Christchurch City.
- The Site will be rehabilitated, and topsoil can be removed, stored, and replaced to enable the land to be used for primary production.
- By the time of closure, there will be approximately 30 hectares of indigenous vegetation established within the Site.

8.0 Consultation Record

Burnham 2020 has undertaken a range of consultation including open days, iwi engagement and general communication with neighbouring properties. Consultation undertaken to date, is summarised below. Consultation will also continue following lodgement of the application.

8.1 Iwi engagement

There are two Runanga with rohe over the area within which the Site is located: Te Taumutu Runanga and Te Ngai Tuahuriri Runanga. Both Runanga are represented by Mahaanui Kurataiao Ltd (MKT).

Burnham 2020 met with MKT on 27 February 2023. The main issues raised by MKT were:

- Would like to see indigenous, locally plants sourced for rehabilitation, ideally from DOC.
- Preference would be that the post-rehabilitated land would not be used for dairy support, due to the scale of dairy support in the region and effects on nitrate level.
- MKT have no policy opposing quarrying, but groundwater quality was a major issue, particularly in relation to stopping contaminants such as heavy metals and hydrocarbons from entering groundwater (discussion of spill control etc).
- MKT would like to review current farming nitrogen discharge levels onsite.
- Queried whether Burnham 2020 would consider being involved in offsite rehabilitation / restoration projects such as wetlands or Te Ara Kakariki. Burnham 2020 advised that they would be happy to discuss any proposals.

In terms of future meetings, MKT advised that their preference was to not meet in person pre-lodgement but rather work through the application as lodged, once received from Canterbury Regional Council and Selwyn District Council.

8.2 Key Stakeholders

8.2.1 Waka Kotahi

Stantec has had several discussions with Waka Kotahi transport safety engineers to understand plans for State Highway 1 in the vicinity of Aylesbury Road, in the context and understanding that a large-scale quarry is proposed on Aylesbury Road. Stantec advised that a transport assessment was being carried out, which would include consideration of access connections via the road network to State Highway 1. This consultation has directly informed the Transport Assessment in **Appendix 10** and a summary is set out below:

<u>April 2022</u>

Waka Kotahi advised that a feasibility assessment for the State Highway 1 / Aylesbury Road intersection had been completed as part of the Speed and Infrastructure Programme which included a project for the intersection and adjacent section of the highway. The preferred option was described as a single lane roundabout, with separation from the railway maintaining a distance of approximately

30 metres between limit lines. From these discussions, Stantec expected a design that would enable the full range of traffic movements at the intersection in a safe and efficient manner. However, it was recognised that consultation on the proposal had not commenced, property would need to be purchased, but it is likely that construction would be included in the next NLTF programme 2024-2027.

May 30 to 19 December 2022

On-going communication with Waka Kotahi regarding the concept design / layout of the SH1 / Aylesbury Road intersection. However, this was still being progressed during the second half of 2022 and was unavailable to Stantec.

16 March 2023

Waka Kotahi advised that they have developed a working concept/feasibility stage intersection design. It was understood that the design will be a single lane roundabout, which will be part of the Road to Zero package (State Highway 1 Templeton to Selwyn). The intersection is a safety project, independent of the Rolleston Access Upgrade package, with detailed design to be completed in the next year, and implementation funding to be included in 2024-27 budget.

23 May 2023

Waka Kotahi advised that the detailed design of the State Highway 1 / Aylesbury Road intersection had commenced, but that they still need to work through property and consenting. The “inscribed diameter” of the roundabout is proposed to be 50m (single lane). No specific traffic modelling of the roundabout has been undertaken as its primary function is as a safe access and u-turning location.

6 July 2023

Stantec requested a meeting to discuss the transport assessment but was advised that internal discussions were required to understand the sensitivity of information about the State Highway 1/Aylesbury upgrades as the Waka Kotahi communication team were about to commence some community engagement.

20 July 2023

Aurecon (Waka Kotahi’s consultant engineers) asked to meet with Stantec to understand the quarry project as it relates to the State Highway 1 / Aylesbury Road intersection.

3 August 2023

Stantec and Winstone had an online meeting with Aurecon to describe the quarry proposal and matters that may be of relevance to the roundabout project, including analysis carried out by Stantec, and matters relating to integration of the roundabout with the railway line. Aurecon set out the current design plans for the intersection.

21-29 August 2023

A discussion was held between Stantec and WSP who are also part of the Waka Kotahi design team to discuss the quarry project parameters and the analysis undertaken. Stantec agreed to supply collated traffic data, the transport assessment report, and intersection analysis models. Those have been provided to WSP and a link also made available to the Waka Kotahi safety engineer and planner.

8.2.2 KiwiRail

Burnham 2020 met with KiwiRail to discuss the project in May 2022.

8.2.3 Department of Corrections

The Department of Corrections responded to an invitation in November 2022 to attend public open days advising that their interest would likely be restricted to proposed transport routes.

Burnham 2020 has provided the Department of Corrections with a copy the Transport Assessment prepared by Stantec and proposes to meet with them following lodgement of the application.

8.2.4 Ministry of Defence (Burnham Camp)

Burnham 2020 made initial contact with the Ministry of Defence (MOD) in February 2020 who advised that its main concerns were likely to be air quality and traffic. MOD also noted that Burnham Camp was in effect a small town, and the MOD encouraged the individual residents of the Camp to lodge their own submissions if they had concerns.

Burnham 2020 presented a draft proposal to staff at Burnham Camp on 12 April 2023. The main issues raised included the following:

- The State Highway 1 / Aylesbury intersection is unsafe and not suitable for increased heavy vehicle movements. Alternative routes were queried and how Burnham 2020 would control any traffic routes that may be specified in future consent conditions.
- Several of the Camp residents are mana whenua, and Burnham 2020 was asked about the potential for future collaboration. Options for future social procurement, training and possible employment were raised. Burnham 2020 advised that they would be open to discussions on this point.
- Water quality at the Camp is excellent, and that any impacts on it from the Proposal needed to be carefully assessed.
- Potential air quality impacts, particularly as there is a school located within the Camp.

8.2.5 Neighbouring Properties

In September 2021, representatives of Burnham 2020 visited nearby residents on Wards Road, Kivers Road, Grange Road, Two Chain Road, Aylesbury Road and Sandy Knolls Road. The purpose of the visits was to advise residents that Burnham 2020 had purchased the Site and proposed to develop a quarry there. In October 2021 visits were made to those not at home during the earlier visits.

The above visits were followed by letters sent to the same properties in February 2022, advising on the status of the project and providing a point of contact for any queries.

8.2.6 Public Open Day

From 1-3 December 2022, representatives for Burnham 2020 held a series of open days at a marquee on the Burnham Site with display boards setting out the draft proposal. Invitations to the

open day were sent out in November 2022 by letter drops to local residents and emailed to other stakeholders including MOD / Burnham Camp, Department of Corrections / Rolleston Prison, and local councils (including relevant individual Councillors). The invitation was also extended to mana whenua via Mahaanui Kurataiao Ltd.

The event was well attended with the main issue raised being traffic effects on the local roading network.

9.0 Record of pre-application meetings with Councils

9.1 Canterbury Regional Council (Environment Canterbury)

Burnham 2020 initially met with Environment Canterbury (ECan) to discuss the Proposal on 11 May 2022. This was a general discussion to introduce the draft quarry concept to ECan and gather some initial thoughts and guidance.

This was followed by a formal pre-application meeting held on 11 May 2023. One of the key matters discussed was whether the silts and soil used to rehabilitate the Site will be defined as earthworks or cleanfill. ECan staff advised that in their opinion, it would be defined as 'cleanfill'. Further Council staff did not raise concerns about using material from the Site to refill the Site. However, ECan did note that whilst the Land and Water Plan refers to the 2002 MfE Cleanfill Guidelines, MfE has now adopted the WasteMinz 2022 Guidelines. ECan advised they are obviously seeking best practice; however Burnham 2020 can choose to use the 2002 MfE Guidelines or preferably use the WasteMinz 2022 Guidelines.

9.2 Selwyn District Council

Burnham 2020 initially met with Selwyn District Council to discuss the Proposal on 25 May 2022. This was followed by a formal pre-application meeting on 22 March 2023 at which the key issue discussed was traffic including:

- The design and timing of the construction of a roundabout at the State Highway 1 / Aylesbury Road intersection.
- the operation and safety of the 5-point Two Chain / Aylesbury intersection.
- SDC led improvements to the section of Aylesbury Road that runs past the Camp and the Site. This would likely be coupled with a reduction in the existing speed limit, possibly down to 50km/h.
- Use of the local roading network beyond Aylesbury Road, including Two Chain Road.

10.0 Notification

This section of the report provides discussion on whether this application for resource consent needs to be notified in accordance with Sections 95 to 95G of the RMA.

10.1 Public Notification

Sections 95 to 95F of the RMA sets out the requirements in relation to public and limited notification of applications for resource consent. The steps in Section 95A relate to whether application should be publicly notified.

Burnham 2020 requests that these applications be publicly notified by Selwyn District Council and Environment Canterbury, in accordance with section 95A(3)(a). Therefore, pursuant to section 95A(2)(a), both consent authorities are required to **publicly notify** the applications.

11.0 Term of Consent Sought

Burnham 2020 seek:

- a land use consent in perpetuity from Selwyn District Council.
- 35-year term from ECan on the regional council consents.

If consent is granted, the relevant factors to be considered by a decision maker in determining the appropriate term of consent are well traversed in case law. Most of these matters have been addressed in the sections above but to assist ECan and SDC are summarised below:

Matter	Consideration
Providing security of term for the Applicant, insofar as it is consistent with sustainable management.	Burnham 2020 will make a considerable investment in establishing and operating a quarry and securing a reliable, long term consent duration is important.
The level of adverse effects from the activities on the environment.	The assessment of effects undertaken under section 6 concludes that adverse effects on the environment will be less than minor or avoided, except for those related to traffic noise on 146 and 168 Aylesbury Road and any residential or other sensitive activities in the Burnham Camp adjacent to Aylesbury Road and initial adverse effects on landscape effects being more than minor, reducing over time as planting and bunding is established. Neither of these effects is a matter controlled by the Regional Council. It is understood that an appropriate term of consent is to be considered on a case-by-case basis. However, as set out in Sections 6 and 7, ECan can take comfort from the fact that all effects are known, so there is no need to apply the precautionary principal, can be avoided or mitigated and will not result in significant adverse effects on the environment or people. Furthermore, Burnham 2020 has taken a long-term approach to identifying and managing potential adverse effects. These factors support a longer term of consent.

Matter	Consideration
Consideration of alternatives.	Burnham 2020 considered several other sites before purchasing the Site on Aylesbury and Grange Roads. While sites for aggregate extraction are ideally located close to its markets but away from large populations, even in rural areas, scattered residential properties and even pockets of residential development are likely to occur. When also considering the availability of sites, their location, access to water for dust suppression, size to provide certainty over supply and to reduce the need for many small quarries with consequent effects and uncertainty for the community, and to be able to contain potential adverse effects, the number of alternative sites becomes limited. The low likelihood of significantly better sites becoming available in the future favours a lengthy term of consent.
The site's history and current zoning.	The Site is zoned as Rural in the Selwyn District Plan and General Rural in the Partially Operative District Plan and therefore the proposed uses are in accordance with the purpose of those Zones. In particular, the Partially Operative Plan specifically provides for mineral extraction including quarrying as an appropriate activity within the General Rural Zone. The unlikelihood of a major zoning change to the Site or immediate surrounds supports a longer term of consent.
The level of uncertainty about the effectiveness of conditions to protect the environment, including regard to the applicant's past record of compliance with consent conditions.	The proposed land use effects on the environment can be effectively managed by way of conditions of consent, given the low level of any potential adverse effects. There is little uncertainty about their effectiveness, supporting a lengthier term of consent. It is recognised that the Applicant will need to apply to renew the regional discharge and

Matter	Consideration
	cleanfill consents, which will enable any environmental effects that have arisen to be addressed at that time. Fletcher Concrete and Infrastructure Ltd (Burnham 2020 is a wholly owned subsidiary) is an experienced quarry operator with a good compliance record.
The ability of the Council to review conditions, and whether review conditions can sufficiently avoid or remedy any adverse effects.	ECan can review the conditions of consent, under s125. However, the Proposal will appropriately manage any adverse effects on the environment, therefore no such review would be needed in the foreseeable future.
Whether there has been any public objection / disquiet regarding the activity.	As far as Burnham 2020 is aware there has been no public objection/disquiet to the Proposal, and they have held public open days and consulted with adjoining neighbours, providing them with the opportunity to discuss the Proposal at any time.
The economic life of an operation and the prospect of further and continued investment.	The Site will operate as a quarry for 60 years (at current demand) and it is proposed to invest in continually improving operations such as using electric vehicles, conveyors to minimise the number of truck movements. Burnham 2020 will also be open to utilising new technologies to manage discharges to air and land. As such, there will be an initial, long-term and continued investment in the land. Therefore, to secure long-term consents for quarrying activities is imperative.
The potential availability of new information about methods of mitigation, or new environmental standards, during the term of the consent.	It is acknowledged the RMA 1991 will eventually be replaced with the Natural and Built Environment Act with a subsequent focus on environmental bottom lines. However, the timing of this is uncertain and it could be 10 or more years before the Act applies in Canterbury. However, if such changes occur during the term of the

Matter	Consideration
	consent, they can be addressed through a review of the consent conditions.

Burnham 2020 considers that there is sufficient certainty regarding potential and actual adverse effects on the environment and people, and for the reasons set out above, that should consent be granted it can be for the following terms:

- land use consent in perpetuity.
- 35-year term on all the regional council consents.

12.0 Conclusion

Burnham 2020 has lodged this application for resource consent to provide for the establishment and operation of an aggregate quarry within a Site located at the junction of Aylesbury Road and Grange Road, Burnham. The quarry is required to meet the current high demand for aggregate resource in Christchurch and its immediate environs.

The Site is located in the Selwyn-Waimakariri Combined Surface and Groundwater Allocation Zone (Allocation Zone). The Site is zoned as General Rural in the POSDP, and the fault line is mapped as Greendale Fault Overlay and Fault Awareness Overlay. The Site also lies within the Plains Flood Management Overlay. In the SDP, the Site is zoned as Rural Outer Plains and there is a fault line that runs across the northern portion of the Site.

Aylesbury Road is an arterial road and Grange Road is a local road under both the SDP and the POSDP.

The proposed quarrying activities will be undertaken in a series of phases as set out in the Quarry Staging plan in **Appendix 5**. The timing is only approximate, having been developed based on current demand projections for the quarry.

The active quarry area will be a maximum of 40 hectares and will comprise the fixed processing plant, other processing, stockpiling, unsealed customer loadout, silt processing and storage, excavation and active rehabilitation (excluding rehabilitated areas), including conveyance and unsealed accessways. Primary production will be undertaken on the yet to be quarried and rehabilitated areas.

A range of technical experts engaged by Burnham 2020 have both informed the design and assessment of the potential and actual effects of developing and operating the quarry.

The application is a Discretionary Activity under, the POSDP, the CLAWRP, the CARP and the NES-CS.

This assessment of environmental effects has determined that:

- effects on landscape character will be more than minor during the operation of the quarry and will gradually reduce to less than minor through successive phases of aggregate extraction and rehabilitation.
- visual effects experienced from public viewpoints will be less than minor and will further reduce as proposed native vegetation planted along the perimeter of the Site and at the entrance becomes established over time.
- views from private viewpoints will largely remain unchanged as they will be truncated or entirely curtailed by the existing shelterbelt planting, long-term bund and intervening areas of planting including additional native vegetation introduced along the tops of rehabilitated slopes of the quarry, resulting in less than minor adverse effects.
- activities within the Site will meet the POSDP noise limits.
- truck movements along Aylesbury Road during daytime hours will result in adverse noise effects on 168 Aylesbury Road without mitigation. Burnham 2020 proposes to engage with the property owner/occupier to address this matter. At 146 Aylesbury Road, the absolute noise level of 55 dB LAeq(1hr) for the ‘average’ number of truck movements, will ensure a level of residential daytime noise amenity anticipated by the residents.

- truck movements in the early morning will be limited to between 5am and 7am and confined to a limited number of days per year, but on such occasions, there is potential for a significant effect relative to the existing amenity at 168 Aylesbury Road unless acoustic mitigation measures are implemented. As above, Burnham 2020 proposes to engage with the property owner/occupier to address this matter.
- the safe and efficient operation of the road network can be maintained if the quarry does not generate more than 250 heavy vehicle movements per day (on any one day) prior to the State Highway 1 / Aylesbury Road intersection being upgraded to a roundabout, and a Transportation Route Management Plan is prepared and implemented.
- the identified areas where HAIL activities have occurred can be appropriately managed through targeted detailed site investigations (DSI's) as quarrying progresses across the Site. This will ensure that any ongoing activities are captured by the assessments, and any remedial actions applied accordingly.
- any potential effects on any nesting indigenous bird species during construction and extraction phases can be managed by undertaking pre-construction nesting bird surveys.
- the removal, management and replacement of soils arising from the proposed quarrying activities will be undertaken in accordance with a Soil Management Plan, which will minimise the risk of potential adverse effects on the soil.
- quarrying activities within the Site and future use of the land for farming can be effectively managed to maintain the current quality of groundwater.
- the application of mitigation measures will minimise dust emissions to within 100 metres of the source and, therefore, off-site dust effects at nearby receptor locations will be less than minor.
- the Site is unlikely to contain any archaeological material.
- the quarry will make a positive economic contribution by ensuring a steady supply of much needed aggregate in proximity to demand, thereby managing transport costs and avoiding affecting the cost and timeliness of new infrastructure, if quarried materials were less available.
- the quarry will provide employment opportunities, especially for those working in quarries that have ceased or are about to cease extractive activities.

An assessment of the relevant objective and policy provisions in the NPS-FM, NPS-HPL, the NPS-IB, CRPS, CLAWP, CARP, the SDP and the POSDP has been undertaken. Overall, the proposed quarry and associated activities:

- accord with concept of Te Mana o te Wai as set out in the NPS-FM and the concept of Te Rito o te Harakeke under the NPS-IB.
- do not require consideration under the NPS-HPL as the Site does not contain land defined as LUC 1, 2 or 3.
- will generally be consistent with the policy direction in the CRPS as the proposal will not foreclose the ability of the Site to be used for other forms of primary production such as agriculture, the containment of most potential adverse effects within the Site, and the use of an arterial road and State Highway 1 to transport aggregate.

- will generally achieve the direction in the CLAWRP to improve and/or maintain water quality including managing the effects of land uses as the Proposal will ensure that adverse effects on groundwater quality are minimised and remediation is undertaken to minimise any ongoing risk of contamination.
- will generally achieve the direction in the CARP to maintain and/or improve air quality by minimising dust emissions to within 100 metres of the source, which will mean that dust is generally retained within the Site and there will be very low potential for health effects.
- will generally accord with the objectives and generally be consistent with the policies in the SDP and the POSDP that seek to manage soil and land, water, quality of the environment, noise and vibration, dust and reverse sensitivity. However, GRUZ-P4 in the POSDP seeks that the character and amenity values of the surrounding area are maintained or enhanced. It is acknowledged that without mitigation, adverse effects from off-site traffic noise effects ranging from slight to significant could be generated at the existing residences at 146 and 168 Aylesbury Road. It is proposed to implement mitigation measures to minimise adverse truck noise effects but existing acoustic amenity at these sensitive receivers will not be fully maintained.

Overall, it is considered that the proposed expansion of extraction activities generally achieves the objectives and will generally be consistent with the policies in the identified statutory planning documents as set out above and, that granting of this land use consent would give effect to Part 2 of the Act.

The application must be processed on a publicly notified basis pursuant to Section 95 of the RMA as requested by Burnham 2020.