

**DRURY QUARRY –
SUTTON BLOCK
EXPANSION**

APPLICATION FOR RESOURCE CONSENT AND ASSESSMENT OF ENVIRONMENTAL EFFECTS

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Abbreviations

Abbreviation	Definition
AEE	Assessment of Effects on the Environment
ANZECC	Australian and New Zealand Environment and Conservation Council
AS2187.2:2006	Australian Standard AS2187.2:2006 Explosives – Storage and Use, Part 2: Use of Explosives
AUP	Auckland Unitary Plan – Operative in Part
AUP RPS	Auckland Unitary Plan – Operative in Part Regional Policy Statement
BCM	Biodiversity Compensation Model
BOAM	Biodiversity Offset and Accounting Model
COTMP	Chemical or Organic Treatment Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CSMP	Contaminated Site Management Plan
CVA	Cultural Values Assessment
DEB	Decanting Earth Bund
DMP	Dust Management Plan
DSI	Detailed Site Investigation
EIA	Economic Impact Assessment
ESC	Erosion and Sediment Controls
ESCAR	Erosion and Sediment Control Assessment Report
ESCP	Erosion and Sediment Control Plan
FOH	Front of House operations
FTAA	Fast-track Approvals Act 2024
GD05	Auckland Council Guideline Document 2016/005 (GD05): Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region
GMP	Groundwater Monitoring Plan
HAIL	Hazardous Activities and Industries List
ITA	Integrated Transport Assessment
LOQ	Life of Quarry
MIC	Maximum Instantaneous Charge
NAMP	Native Avifauna Management Plan
NFFMP	Native Freshwater Fauna Management Plan
NGDP:PP	Net Gain Delivery Plan: Planting Plan
NGDP:PWC	Net Gain Delivery Plan: Pest and Weed Control
NGDP:RP	Net Gain Delivery Plan: Riparian Planting
NGDP:WP	Net Gain Delivery Plan: Wetland Planting
NES	National Environmental Standard
NES-CS	National Environmental Standards for Contaminated Land 2011
NES-F	National Environmental Standards for Freshwater 2020
NPS-FM	National Policy Statement for Freshwater Management 2020 (as amended in October 2024)

Abbreviation	Definition
NPS-HPL	National Policy Statement for Highly Productive Land 2022
NPS-IB	National Policy Statement for Indigenous Biodiversity 2023
NZAA	New Zealand Archaeological Association
ONL	Outstanding Natural Landscape
PSI	Preliminary Site Investigation
RAP	Remedial Action Plan
REAR-TE	Residual Effects Analysis Report-Terrestrial Ecology
REAR-SW	Residual Effects Analysis Report-Stream and Wetland Loss
RMA	Resource Management Act 1991
SAL	Stevenson Aggregates Limited
SEA	Significant Ecological Area
SEV	Stream Ecological Valuation
SESCP	Specific Erosion Sediment Control Plan
SPQZ	Special Purpose - Quarry Zone
SRP	Sediment Retention Pond
SSMP	Slope Stability Management Plan
TMPD	Truck Movements per Day
TSP	Total Suspended Particulate
WCM	Waikato Coal Measures
ZOI	Zone of Influence

Glossary

Key project terms	
Project	Means the extraction, processing (including crushing, screening, washing, and blending), transport, storage, sale and recycling of aggregates (clay, silt, rock, sand), the stripping and deposition of overburden material, rehabilitation, landscaping and cleanfilling of the quarry, the use of land and accessory buildings for offices, workshops and car parking areas associated with the operation of the quarry, the construction and use of internal roads, and all ancillary activities described in the Application such as the removal of streams, the take and diversion of water and groundwater, the removal of vegetation, and the restoration and enhancement of vegetation within the Site.
Project footprint	The areas where works are anticipated associated with the project.
Stevenson Aggregates Limited or SAL	Company name of applicant.
Sutton Block (the Site) ¹	Is the land identified as the “Sutton Block” in drawing ‘Site Location – Wider Land Holdings’ – Figure 1 dated 25 March 2025 prepared by Boffa Miskell Limited.
Site description	
Kaarearea Paa	Wāhi tapu historic pā site, including a locally distinctive volcanic landform located to the southwest of the Sutton Block. The site is recorded on the NZAA database and scheduled as a Historic Heritage place and Site of Significance to Mana Whenua (Plan Change 102) under the AUP.
NT1 Stream (also referred to as Stream 4)	The tributaries within the Sutton Block all discharge to NT1 stream. There are two dams along NT1, these are referred to as the upper and lower dams (shown in Figure 3.11).
SAL landholdings	The wider landholdings owned by SAL which encompasses an area of approximately 515.5 ha. The landholdings include quarry activities, a clean fill, pastoral farmland and areas of native vegetation.
General terms	
Application	Means the application and assessment of environmental effects lodged with the Environmental Protection Authority on (TBC) and the applicant’s responses to requests for further information (TBC)
Back-break	The risk of unnecessarily broken rock in the final face and any temporary face
Background sound	The sound that is continuously present in a room or outdoor location. Often expressed as the A-weighted sound level exceeded for 90 % of a given time period i.e., L _{A90} .

¹ The Site at which the activity is to occur in accordance with Schedule 5, Clause 5(1)(b) of the FTAA.

Front of House operations	The existing facilities and activities which support the broader quarry operation (and will support the Sutton Block).
Life of Quarry	Approximate area of the Sutton Block pit over an approximate 50-year period.
Overburden	Topsoil and other subsurface material removed to access aggregate.
Lamella	Quarry process water sediment removal device.
Zone of Influence	The areas/resources that may be affected by the biophysical changes caused by the proposed Project and associated activities, particularly adjoining or connected terrestrial, freshwater and wetland habitats and associated native species.

Executive summary

Stevenson Aggregates Limited (SAL) is seeking to obtain resource consents for the construction and operation of a new quarry pit called the “Sutton Block” within the existing SAL landholdings at Drury. This Assessment of Effects on the Environment (AEE) report has been prepared to accompany a substantive application to the Environmental Protection Authority (EPA) for the construction and operation of the quarry pit and its ancillary activities, under section 42(1) of the Fast-track Approvals Act 2024 (FTAA). SAL is an ‘authorised person’ and the ‘Drury Quarry Expansion – Sutton Block’ is a listed project under Schedule 2 of the FTAA. This application is not for an ineligible activity as defined in section 5 of the FTAA.

This substantive application is seeking the following approvals under section 42(4) (a) of FTAA for resource consents that would otherwise be applied for under the Resource Management Act (1991) (RMA). SAL is one of New Zealand’s leading industry experts in aggregate extraction, processing and distribution. SAL Drury Quarry is New Zealand owned and operated and has been part of the Drury community for over 80 years. Drury Quarry is a greywacke hard rock quarry supplying concrete, asphalt and roading aggregate to the Auckland market. The Drury Quarry pit is located within the SAL landholdings which encompasses an area of approximately 515.5 ha.

Aggregate is used in a range of applications within the Auckland economy, and used throughout the urban environment to meet the needs of residential, business, infrastructure and road construction requirements. Aggregate extraction can only take place where it is found naturally in situ, and preferably is extracted in close proximity to demand in order to minimise the environmental effects and costs of transporting aggregate from the pit to the construction site.

Based on current demand estimates, the existing Drury pit will provide approximately 20 years of aggregate supply to Auckland. To continue to provide a local supply of aggregate resource the Sutton Block pit has been designed to provide approximately 240 Million Tonnes of additional aggregate to supply the market. It is anticipated that as the existing Drury Quarry pit nears the end of its life and reduces aggregate extraction, the Sutton Block pit will increase its aggregate extraction. This will ensure a continuous aggregate supply to the market, providing an essential resource to the Auckland region. This aggregate resource is pivotal in helping deliver significant regional and national infrastructure as directed by the FTAA.

The development of the Sutton Block under this proposed consent will involve the staged development of an area of approximately 108 ha to a maximum pit depth of approximately -60 RL m over an approximate 50-year period. The expansion of the pit will be incremental, deepening and widening as resource is extracted, and generally be developed in five indicative stages. The Sutton Block is designed to be a separate quarry pit although it will be serviced by the existing consented Drury Quarry ancillary site infrastructure and facilities.

This Assessment of Environmental Effects (AEE) that forms part of the substantive application under the FTAA, sets out the proposed design features and operational measures for the Sutton Block pit and measures proposed to minimise potential adverse effects on the environment. These include a staged management approach to erosion and sediment control, detailed design and construction monitoring, including implementation of trial batters to inform the quarry slope design, controlled blasting, dust mitigation measures, surface water augmentation to offset loss of stream base flows, pest management, riparian planting, stream diversion and off-site stream and wetland offset works.

The Project comprises the following primary activities:

- Establishment works (including haul road, overburden removal and bund establishment).
- Aggregate extraction and processing.

- Other ancillary activities (including earthworks, conveying, stockpiling and internal traffic movements).
- Operational drilling, blasting, stormwater, dust, erosion and sediment control management.
- Groundwater dewatering (maximum rate of 19,426 m³/d during Stage 5) and augmentation of streams.
- Vegetation removal (loss of approximately 16.78 ha of indigenous vegetation of moderate to high value and loss of approximately 5.25 ha of negligible value).
- Reclamation of streams and wetlands, along with stream diversion, resulting in the loss of approximately 3,341 linear meters of permanent and intermittent stream reaches, as well as around 1.9 hectares of wetlands.
- Avoidance of Kaarearea Paa (wāhi tapu historic pā site and Site of Significance to Mana Whenua) and Outstanding Natural Landscape (ONL).
- A comprehensive mitigation, offset package, including 62 ha of revegetation, 108 hectares of native forest enhancement through pest control, and the restoration of 3,341 m of stream and 4.04 ha of wetland habitat.

SAL seeks a 35 year term for its regional consents and permanent land-use consents to reflect the long term nature of a quarry development. The proposed works require consent as a non-complying activity overall under the AUP but is not subject to a s104(D) RMA assessment as set out under clause 17(1)(b), Schedule 5 of the FTAA. This AEE report draws the following conclusions:

- The Sutton Block project is consistent with the purpose of the FTAA as it will secure a significant volume of high-quality aggregate in the Auckland Region, a fundamental resource required to facilitate the delivery of infrastructure and development projects that provide significant regional and national benefits.
- Overall, the proposal is a non-complying activity. While s104(D) assessment is not required² the proposed works will have more than minor effects on stream and wetland habitat within the SAL landholdings prior to offsetting, and more than minor effects for the loss of rock forest due to it being an uncommon ecosystem type.
- The project is consistent with and finds direct policy support with much of the relevant policy direction, particularly in relation to extractives and supporting infrastructure, as well as achieving good ecological outcomes through offset measures.
- The proposal will have significant positive economic benefits by securing a future supply of high-quality aggregate in Auckland, which will enable and support Auckland's population growth and development supporting the future well-being of Auckland.
- Conditions of consent are proposed to ensure the proposal is appropriately managed and the proposed positive ecological effects to offset for the potential adverse effects will eventuate.
- In relation to the substantive assessment under section 104, the proposal is consistent with the relevant planning provisions and manages effects through design and proposed conditions so that overall, the project results in net ecological gains. Key relevant provisions the proposal is directly consistent with and of which the Project will achieve the outcomes sought include the AUP objectives and policies of the Special Purpose Quarry Zone. In addition the NPS-IB objective of maintaining Indigenous biodiversity so that there is no overall loss and NPS-IB specific exception for aggregate extraction activities that provide significant or regional public benefit. Consistency with these confirms the position that the Project is not required to avoid adverse effects on Significant Natural Areas due to its activity status as a quarry, and

² Clause 17(1)(b), Schedule 5 of the FTAA.

reinforces the position that quarrying activities are likely to result in some adverse effects due to their locational requirements.

SAL has undertaken stakeholder engagement with the local community, including through public open days, newsletter updates, community and one-on-one meetings where possible with landowners and occupiers adjacent to the Sutton Block. Consultation with Tangata Whenua has also been undertaken in relation to the project for approximately three years. Draft and final Cultural Value Assessments (CVA) have been received that SAL have taken into consideration. Where possible SAL has sought to address known and identified effects raised during stakeholder and Tangata Whenua consultation. SAL will continue to engage with stakeholders and Tangata Whenua throughout the consenting, construction and operational phases of the Sutton Block.

Overall, the proposal fulfils the intent and purpose of the FTAA and Parts 2, 3 and 6 of the Resource Management Act 1991 (RMA)³ in that it will allow for the development and operation of an environmentally sound and sustainable quarry, which will secure a future supply of high-quality aggregate in Auckland, to enable and support infrastructure and development projects with significant regional or national benefits.

³ Clause 17, Schedule 5 of the FTAA.

1 Introduction

1.1 Project overview

Stevenson Aggregates Limited (SAL) is one of New Zealand's leading industry experts in aggregate extraction, processing and distribution. SAL Drury Quarry is New Zealand owned and operated and has been part of the Drury community for over 80 years. Drury Quarry is a greywacke hard rock quarry supplying concrete, asphalt and roading aggregate to the Auckland market. The Drury Quarry pit is located within the wider area owned by SAL which encompasses approximately 515.5 ha, referred to in this application as the 'SAL landholdings'. The SAL landholdings include quarry activities, a clean fill, pastoral farmland and areas of native vegetation.

The construction of infrastructure and development within urban and rural areas of New Zealand depends on the ability to access, extract, process and transport aggregate. Aggregate extraction can only take place where it is found naturally in situ, and preferably is extracted in close proximity to where it is used in order to minimise the environmental effects and costs of transporting aggregate from the pit to the construction site.

Based on current demand estimates, the existing Drury Quarry pit will provide approximately 20 years of aggregate supply to Auckland. In order to continue to provide a local supply of aggregate resource, SAL proposes to develop a new pit within the existing SAL landholdings, called the 'Sutton Block'. The Sutton Block pit has been designed to provide approximately 240 Million Tonnes of additional aggregate to supply the market. It is anticipated that as the existing Drury Quarry pit nears the end of its life and reduces aggregate extraction, the Sutton Block pit will increase its aggregate extraction. This will ensure a continuous aggregate supply to the market, providing an essential resource to the Auckland region.

The Sutton Block is located to the northeast of the existing pit. The development of the Sutton Block will involve the staged expansion of an area of approximately 108 ha, up to a maximum pit depth of approximately -60 RL m. The term 'Life of Quarry (LOQ)' is used in this application to refer to the approximate area of the Sutton Block pit over an approximate 50-year period. The expansion of the pit will be incremental, deepening and widening as resource is extracted, and generally be developed in five stages (refer to the anticipated LOQ extent shown in Figure 1.1 below and indicative drawings attached as Appendix D of this report). The timing of these stages is indicative only and may vary over the life of the quarry.

The Sutton Block is designed to be a separate quarry pit although it will be serviced by the existing Drury Quarry ancillary site infrastructure and facilities. These include the 'Front of House' (FOH) operations such as the weigh bridge, processing plant(s), storage bins and stockpiles, the lamella, staff facilities, loading and parking zones.

The majority of the proposed pit area (approximately 78 ha) is located within the Special Purpose Quarry Zone (SPQZ) under the AUP, which anticipated the use of this area for quarrying activities. The remaining extent (approximately 30 ha) of the proposed Sutton Block is located within the Rural Zoning (primarily Rural - Mixed Rural Zone and a small area of Rural - Rural Production Zone). Within both zones there are a combination of ecological features including forest vegetation, wetland features and stream systems. There are four Significant Ecological Areas (SEA) within the immediately surrounding landscape, one of which is located entirely within the Sutton Block Life of Quarry (LOQ) extent and within the SPQZ and one partially within the LOQ footprint and SPQZ. The vegetation located within the quarry pit footprint is a mix of exotic and native vegetation.

During engagement with Tangata Whenua, the Sutton Block footprint was moved further to the north, away from the wāhi tapu historic pā site and locally distinctive volcanic landform, known as

Kaarearea Paa, located to the southwest of the Sutton Block. A 13 ha buffer was established between the edge of the LOQ extent and the associated Historic Heritage Overlay. Additionally, the project will avoid the SEA, historic heritage place extent as scheduled in the New Zealand Archaeological Association (NZAA) database, and the Site of Significance to Mana Whenua (AUP Plan Change 102) relating to Kaarearea Paa . As a result, a portion of the site zoned as SPQZ is unable to be utilised for quarry activities. Separately, a Natural Heritage: Outstanding Natural Landscapes Overlay (ONL) which covers the land to the north of the pit is also avoided.

To enable the development of the Sutton Block, and support the extraction of rock, the project will also include the construction of road infrastructure to establish haul road access, overburden removal, stockpiles including bunding, supporting infrastructure, and construction of a conveyor belt connecting the Sutton Block pit to the existing Drury Quarry FOH area. The works will also require stream diversion, stream reclamation, wetland reclamation, vegetation removal and a comprehensive mitigation and offset package has been developed to address the resulting adverse effects.

This AEE report has been prepared on behalf of Stevenson Aggregates Limited to support a resource consent application to accompany a substantive application to authorise the development of the Sutton Block, and the ongoing extraction of aggregate. This AEE sets out the proposed design features and operational measures for the Sutton Block pit and measures proposed to minimise potential adverse effects on the environment.

This report has been prepared in fulfilment of section 43 and Schedule 5, Schedule 7 and Schedule 8 of the FTAA, on behalf of SAL.

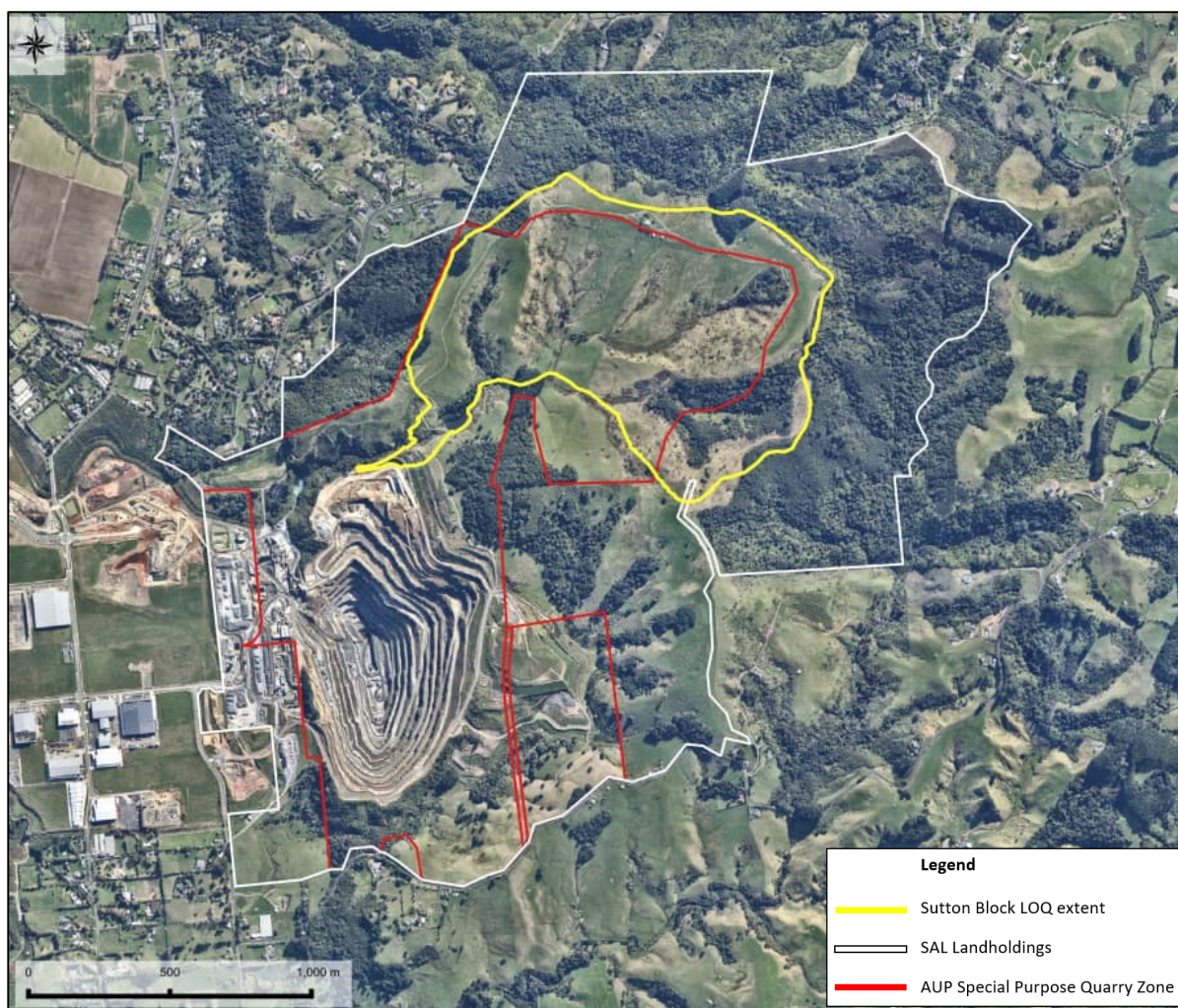


Figure 1.1: Proposed Sutton Block LOQ extent (yellow) in relation to the SAL Landholdings (white) and SPQZ (red). Source: Bioresarches, 2025.

1.2 Applicant and property details

Table 1.1: Applicant and property details

Applicant	Stevenson Aggregates Limited
Owner and occupier of the application site	Stevenson Aggregates Limited
Site address / map reference	121 MacWhinney Drive, Drury, 1189 Ponga Road, Drury, 2113 and Ponga Road, Papakura
Site area	Approximately 108 ha (LOQ pit extent)
Legal description	<u>121 MacWhinney Drive, Drury:</u> Lot 1 Deposited Plan 126627, Lot 4-5 Deposited Plan 509893 <u>1189 Ponga Road, Drury:</u> Sect 2 So 467566, Allot 37 Parish Of Hunua, Allot 198 Parish Of Hunua, Spo 190 Allt 190 Paro Hunua, Allot 191 Parish Of Hunua, Allot 197 Parish Of Hunua <u>Ponga Road, Papakura:</u> Lot 1 Deposited Plan 21743 <u>Peach Hill Road:</u> Lot 2 Deposited Plan 206902

Record of Title reference	121 MacWhinney Drive, Drury: 779147 1189 Ponga Road, Drury: NA578/180, 978840, NA573/82 Ponga Road, Papakura: NA482/210 Peach Hill Road: NA135B/311
District and Regional Council Plan	Auckland Unitary Plan – Operative in Part
Address for service during consent processing	Tonkin & Taylor Ltd PO Box 5271, Victoria Street West, Auckland 1142 Attention: Jessica Urquhart Phone: 09 3621769 Email: JUrquhart@tonkintaylor.co.nz
Address for service during consent implementation and invoicing	Stevenson Aggregates Limited Private Bag 94000, Auckland 2241 Attention: Jo Young Phone: 021 971 975 Email: Jo.Young@stevenson.co.nz

We attach the application form in Appendix A and the list of owners and occupiers of land adjacent to the Sutton Block⁴ in Appendix B. A list of all appendices and technical reports is provided in Section 1.8 below.

1.2.1 Company overview

In 2018, Fulton Hogan acquired SAL, which now operates as a subsidiary of Fulton Hogan delivering high-quality aggregates and concrete throughout New Zealand.

As noted above, Drury Quarry is New Zealand owned and operated and has been part of the Drury community for over 80 years. The quarry produces a wide range of top-quality aggregates for use in roading, basecourse, surfacing, drainage and concrete manufacture. Over 200 people are employed across the Drury Quarry operations.

Operations at Drury Quarry include:

- Aggregate – extraction, processing and distribution of a range of aggregate products for construction, infrastructure, roading, drainage and landscaping.
- Concrete – operation of a fleet of 65 concrete trucks, providing a range of concrete products and solutions for industrial, commercial and residential projects, including low-carbon concrete products.
- Lab testing services – operation of IANZ accredited labs providing a range of testing services for civil engineering applications and testing of concrete and aggregate products.

In addition to Drury Quarry, SAL owns and operates a number of quarries across the upper North Island, including:

- Bell Road Sand - Bell Road, Papamoa Beach: An operating Sand Plant;
- Poplar Lane Quarry - Poplar Lane, Pāpāmoa: An operating hard rock quarry;
- Waingaro Quarry - 184 Waingaro Road, Ngaruawahia: An operating hard rock quarry;
- Tauhei Quarry - 1500 Tauhei Road, Waikato: An operating hardrock quarry;
- Tūākau Sand - 86 Friedlander Road, Tūākau: An operating sand quarry with a cleanfill; and

⁴ For the purpose of Section 43 (3) (A), in accordance with Schedule 5, Clause 5 we provide a list of the names and address of owners and occupiers adjacent to the site.

- Clevedon Quarry - 546 McNichol Road, Clevedon: An operating hard rock quarry.

SAL also has ownership and/or operational interests in five concrete plants located in Penrose, Rānui, Silverdale, East Tamaki and Drury. SAL employs over 250 people across all sites.

In terms of environmental considerations, SAL has a strong focus on developing and using the latest technologies and processes to reduce its carbon footprint. SAL is implementing a variety of carbon-decreasing initiatives, including the development of new concrete products that reduce the requirement for cement and demand for water when manufacturing cement products. These include trialling perlite as a partial cement replacement.

1.3 Overview of resource consent requirements

The resource consents sought to enable the proposal are assessed in Section 8 and listed in Table 1.2, Table 1.3 and Table 1.4 below. It is our understanding that no additional consents are required, however, if further consent matters are identified post-lodgement of the application, these should also be considered as forming part of the application.

Overall, resource consent is required as a non-complying activity under the AUP but is not subject to a s104(d) RMA assessment as set out under clause 17 (1) (b), Schedule 5 of the FTAA.

Table 1.2: Summary of resource consents required under the AUP (in order of AUP chapter).

Rule reference / description	Activity status
E3.4.1 (A19) – Diversion of a river or stream to a new course and associated disturbance and sediment discharge (outside overlays)	Discretionary
E3.4.1 (A19) – Diversion of a river or stream to a new course and associated disturbance and sediment discharge (within overlays)	Non-complying
E3.4.1 (A20) – Diversion of a river or stream associated with mineral extraction activities within the H28 Special Purpose - Quarry Zone	Restricted discretionary
E3.4.1 (A33) - Culverts or fords more than 30 m in length when measured parallel to the direction of water flow (outside overlays)	Discretionary
E3.4.1 (A49) – New reclamation or drainage, including filling over a piped stream	Non-complying
E7.4.1 (A26) – Take and use of groundwater not meeting the permitted activity or restricted discretionary activity standards or not otherwise listed	Discretionary
E7.4.1 (A28) – The diversion of groundwater caused by any excavation, (including trench) or tunnel that does not meet the permitted activity standards or not otherwise listed	Restricted discretionary
E7.4.1 (A35) – Dams not otherwise listed or not meeting the permitted activity standards or controlled activity standards	Discretionary
E8.4.1 (A10) – All other diversion and discharge of stormwater runoff from impervious areas not otherwise provided for	Discretionary
E11.4.1 (A9) – Earthworks greater than 2,500 m ² within the Sediment Control Protection Area	Restricted discretionary
E11.4.3 (A28) – Land disturbance in the SEA not otherwise listed – Greater than 5 m ²	Restricted discretionary
E11.4.3 (A30) - Land disturbance in the SEA not otherwise listed – Greater than 5 m ³	Restricted discretionary
E15.4.1 (A10) – Vegetation alteration or removal, including cumulative removal on a site over a 10-year period, of greater than 250 m ² of indigenous	Restricted discretionary

Rule reference / description	Activity status
vegetation that: (a) is contiguous vegetation on a site or sites existing on 30 September 2013; and (b) is outside the rural urban boundary	
E15.4.1 (A17) – Vegetation alteration or removal within 10 m of rural streams in the Rural – Rural Production Zone and Rural – Mixed Rural Zone	Restricted discretionary
E15.4.1 (A18) – Vegetation alteration or removal within 20 m of a natural wetland, in the bed of a river or stream (permanent or intermittent), or lake	Restricted discretionary
E15.4.2 (A43) – Any vegetation alteration or removal not otherwise provided for	Discretionary
E15.4.2 (A44) – Any vegetation alteration or removal within a Quarry Zone	Restricted discretionary
E36.4.1 (A41) – Diverting the entry or exit point, piping or reducing the capacity of any part of an overland flow path	Restricted discretionary
H19.8.1 (A60) – Mineral extraction activities within H19.8.1 the Rural – Mixed Rural Zone and Rural – Rural Production Zone	Discretionary
H28.4.1 (A7) – Mineral extraction activities within Special Purpose – Quarry Zone	Controlled
H28.4.1 (A18) – Land disturbance Greater than 2,500 m ² within the Sediment Control Protection Area	Controlled

Table 1.3: Summary of resource consents required under the NES-F⁵

Rule reference / description	Activity status
Regulation 45A (1) - Vegetation clearance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of quarrying activities.	Discretionary
Regulation 45A (2) - Earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of quarrying activities.	
Regulation 45A (3) - Earthworks or land disturbance outside a 10 m, but within a 100 m, setback from a natural inland wetland is a discretionary activity if it: (a) is for the purpose of quarrying activities; and (b) results, or is likely to result, in the complete or partial drainage of all or part of the wetland.	
Regulation 45A (4) - The taking, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if: (a) the activity is for the purpose of quarrying activities; and (b) there is a hydrological connection between the taking, use, damming, or diversion and the wetland; and (c) the taking, use, damming, or diversion will change, or is likely to change, the water level range or hydrological function of the wetland.	
Regulation 57 (1) - Reclamation of the bed of any river is a discretionary activity.	
Regulation 71 (1) - The placement, use, alteration, extension, or reconstruction of a culvert in, on, over, or under the bed of a river is a	

⁵ NES- F Regulation 45A explicitly provides for quarrying activities.

Rule reference / description	Activity status
discretionary activity if it does not comply with any of the conditions in regulation 70(2).	

Table 1.4: Summary of resource consents required under the NES-CS

Rule reference / description	Activity status
Regulation 9 (1) - Removing or replacing fuel storage system, sampling soil, or disturbing soil	Controlled
Regulation 9 (3) - Subdividing or changing use	

1.4 Overview of works outside the Sutton Block (no consents required)

As noted in Section 1.1, the proposal involves a comprehensive mitigation and offset package. As part of this package, offset measures are proposed within the wider SAL landholdings, outside of the Sutton Block area. The overall package also includes planting, stream and wetland offset works at two offset sites; 86 Friedlander Road, Tuakau (Tuakau Site)⁶ and Ngā Motu o Hingaia Island within the Pahurehure Inlet of the Manukau Harbour (Hingaia Island Site)⁷.

All works undertaken on sites outside the Sutton Block are permitted activities under the relevant planning provisions and all necessary Landowner Approvals have been obtained (refer to Section 8.2.2).

1.5 Bundling

As the quarry and associated activities will operate as one integrated site, and all components of the quarry operations that require consent are interconnected, it is appropriate that the consents are bundled for the application and assessment purposes and that an overall assessment of the application is made as a non-complying activity. However, as noted above, whilst the proposal is a non-complying activity, under Clause 17(1)(b), Schedule 5 of the FTAA, a s104(D) assessment is not required.

1.6 Consent duration

Land-use consents are sought in perpetuity. A term of 35 years is sought for all other (i.e., regional) resource consents.

1.7 Lapse date

The default period of five years is sought as the lapse period for the consents.

1.8 Report Structure

The purpose of this AEE is to describe the proposed works associated with the construction and operation of the Sutton Block, including assessing the potential effects on the environment. The report also assesses the proposed quarry expansion against the relevant statutory documents.

Table 1.5 below outlines the structure of this report, including the associated technical reports and drawings.

⁶ Lot 4 Deposited Plan 21399

⁷ TBC

Table 1.5: Report structure

Sutton Block – Assessment of Effects on the Environment		
Volume 1	Assessment of Effects on the Environment	
	Appendix A	Application Form
	Appendix B	Adjacent landowners and occupiers
	Appendix C	Permitted Activity Assessment
	Appendix D	AEE drawing set
	Appendix E	Quarry locations map
	Appendix F	Consultation documentation
	Appendix G	Cultural Values Assessments
	Appendix H	Assessment of objectives and policies
	Appendix I	Proposed key conditions of consent
	Appendix J	Quarry Management Plan
Volume 2	Technical Reports	
	Technical Report A	Assessment of Ecological Effects
	Technical Report B	Ecological Management Plan
	Technical Report C	Residual Effects Analysis Reports: Terrestrial Ecology (REAR-TE)
	Technical Report D	Residual Effects Analysis Report: Stream and Wetland Loss (REAR-SW)
	Technical Report E	Net Gain Delivery Plans: Planting Plan (NGDP:PP)
	Technical Report F	Net Gain Delivery Plans: Pest and Weed Control (NGDP:PWC)
	Technical Report G	Net Gain Delivery Plans: Wetland Planting (NGDP:WP)
	Technical Report H	Net Gain Delivery Plans: Riparian Planting (NGDP:RP)
	Technical Report I	Assessment of Noise Effects
	Technical Report J	Landscape and Visual Amenity Effect Assessment
	Technical Report K	Air Quality Assessment
	Technical Report L	Groundwater & Surface Water Effects Assessment
	Technical Report M	Preliminary Site Investigation
	Technical Report N	Detailed Site Investigation
	Technical Report O	Soil Characterisation Investigation
	Technical Report P	Contaminated Site Management Plan and Remedial Action Plan
	Technical Report Q	Geotechnical Assessment
	Technical Report R	Erosion and Sediment Control Assessment Report
	Technical Report S	Economic Impact Assessment
	Technical Report T	Archaeological Assessment
	Technical Report U	Integrated Transportation Assessment
	Technical Report V	Blast Vibration and Noise Study

2 Project context

A secure and reliable aggregate supply is critical to economic and social well-being of Auckland's people and communities. This section provides an overview of aggregate use, demand, trends and the role quarries play in the overall aggregate supply chain and urban development.

2.1 Aggregate use

Rock aggregate is a foundation and building product and a fundamental component of concrete. It plays a critical role in various construction and civil engineering applications. Some of the primary uses of rock aggregate include:

- Concrete production;
- Asphalt mixtures;
- Road construction (used as a base material to build road foundations);
- Railroad ballast (used as a base material to support railway tracks);
- Drainage systems, including stormwater management and construction water and wastewater networks;
- Building foundations;
- Concrete blocks and pavers used for construction purposes;
- Industrial processes;
- Erosion Control (i.e. riprap); and
- Landscaping.

On average, each new house requires approximately 250 tonnes of aggregate. Construction of 1 km of a two-lane highway requires approximately 14,000 tonnes of construction aggregate (500 truck and trailer loads)⁸.

According to the Economic Impact Assessment (EIA) (Technical Report S, Volume 2), concrete is used in every aspect of economic activity in New Zealand and without a ready supply of appropriately located aggregate, the production of concrete and the development of buildings, roading and infrastructure would halt – or would cost considerably more.

2.2 Aggregate demand and trends

Aggregate production is closely correlated with economic fluctuations. The EIA states that between 2000 and 2005, aggregate production in New Zealand surged by 37%, reaching a peak of 36 million tonnes in 2005. Subsequently, production levels started to decline, reaching a low of 21 million tonnes in 2010, closely aligned with the economic recession as a result of the Global Financial Crisis. Aggregate production has since increased most years, in order to meet requirements for large-scale projects such as the Christchurch rebuild, Transmission Gully, Puhoi to Warkworth and City Rail Link with production increasing to 32.9 million tonnes in 2019. However, in 2020, the COVID-19 pandemic led to a decrease to 28.2 million cubic meters. At the highest alert level, mining activities were curtailed, leading to reduced production. Even at lower alert levels, projects involving aggregates may have been delayed, further contributing to decreased production volumes. While production has increased in 2022 and 2023, it is uncertain as to whether a trend will emerge.

Despite being NZ's largest population hub, with most of the growth occurring in Auckland, the region only produces around one quarter of New Zealand's aggregate. In 2023, Auckland was reported to have produced 8.0 million tonnes (unadjusted) of aggregate. The Waikato region, by comparison,

⁸ The Aggregate & Quarry Association of NZ, dated 2023, [Fact Files | Aggregate & Quarry Association \(aqa.org.nz\)](https://www.aqa.org.nz/fact-files)

has at times produced more aggregate than Auckland, as recently as 2013 and 2018. Over the past 10 years Auckland has consistently produced a lower amount of aggregate on a per-capita basis (based on aggregate production and population estimates) relative to the other regions. As this data suggests, Auckland has a well published local shortfall (local supply cannot match demand), meaning aggregate is imported from other regions.

Based on the medium population growth and no allowance for employment based on economic growth, aggregate demand in Auckland is projected to grow to 18.1 million tonnes by 2048, equal to a 17.4% increase.

Aggregate is a high-volume, low value⁹ product which is expensive to transport. This means that for aggregate extraction to be economical, it should be located proximate to the areas it is required, and closest to the areas with predicted highest demand.

Accordingly, with the predicted increase in demand, retention of existing aggregate extraction and securing of future supply is fundamental to ensuring that there is sufficient supply to meet or facilitate regional growth and ensure the cost of aggregate remains affordable.

2.3 Role of quarries

Quarries play a vital role in supporting infrastructure and urban growth throughout New Zealand by providing a steady and essential supply of raw materials for construction. Quarries are primary sources for extracting a variety of natural resources such as rock, limestone, sand, and other minerals. Mineral extraction can only take place where it is found naturally in situ.

As mentioned earlier, Auckland has a local shortfall (local supply cannot match demand) of aggregate requiring aggregate to be imported from other regions. According to the New Zealand Infrastructure Commission, Te Waihangā (2021), since 2014 there have been no new quarries established within Auckland and only three expansions have been undertaken¹⁰. A map of the active and potential future quarries within the Auckland, Waikato and Hauraki districts has been prepared (see Figure 2.1 and Appendix E). The map shows there are 43 active quarries and 4 potential quarries (land zoned or consented for quarrying) sites within the identified search area. Not all of these sites might be aggregate resources, with some potentially supplying other types of mineral resources. Nevertheless, even in the best-case scenario (i.e., they all contain aggregate resource), the map illustrates a shortfall of future quarries in these districts.

⁹ Aggregate is low value relative to its weight, refer to Technical Report S, Volume 2.

¹⁰ <https://tewaihanga.govt.nz/our-work/research-insights/infrastructure-resources-study>.

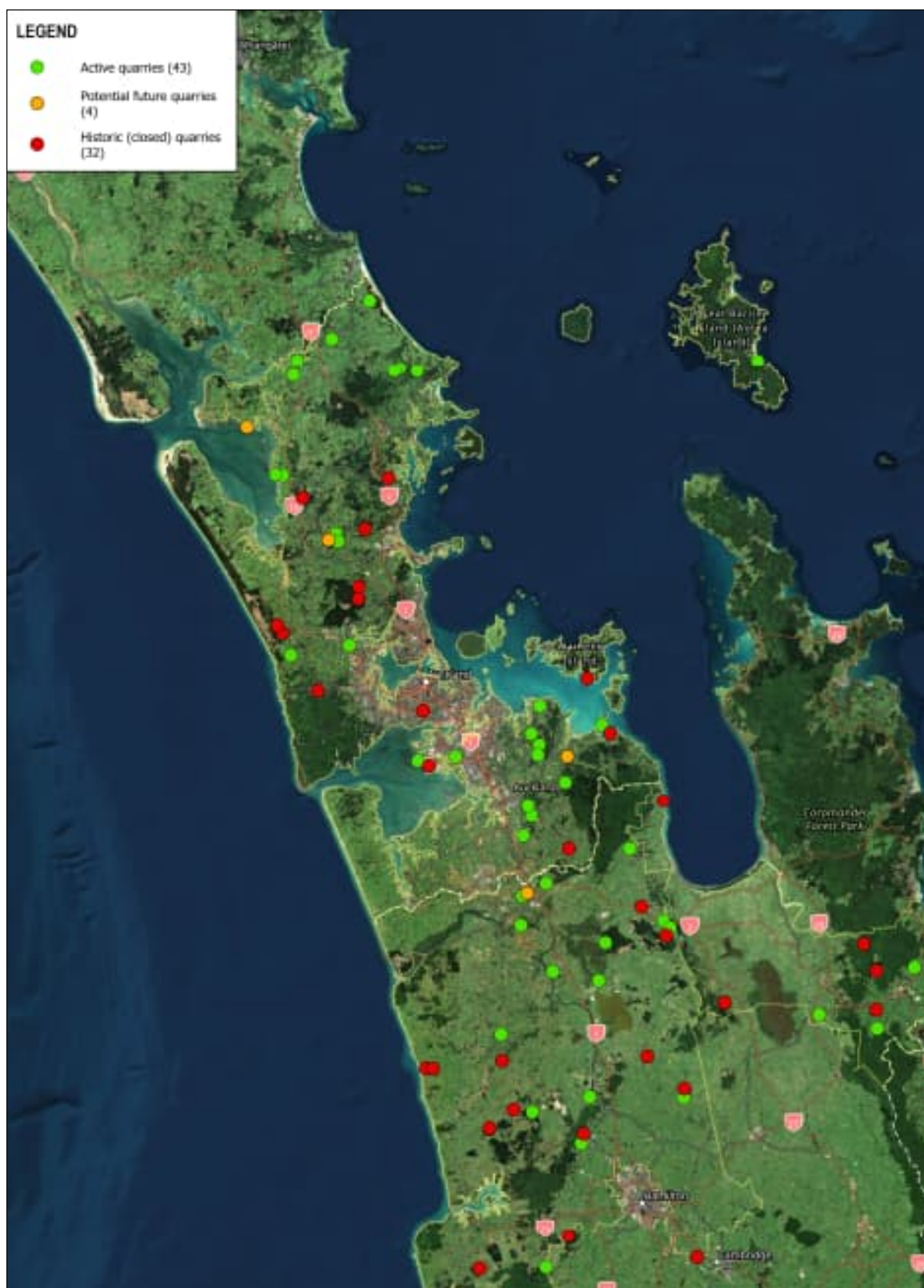


Figure 2.1: Active, potential future and historic (closed) quarries located within Auckland, Waikato and Hauraki District's. Source: Tonkin + Taylor 2023.

2.4 Building Auckland

Aggregate is used in a range of applications within the Auckland economy, and is used throughout the region to meet the needs of residential, business, infrastructure and road construction requirements. Auckland's current population is approximately 1.7 million. Future growth in Auckland is expected to add approximately 310,000 dwellings (requiring an average of 250 tonnes of aggregate each)¹¹ and 250,000 jobs by 2048¹².

As the city grows and expands, so too does the demand for aggregate. Spatially, the future growth is expected to be distributed around Auckland. Using Stats NZ's population projections and aggregating the Local Boards to five broad areas shows that spatially, Central, East and South Auckland account for 64% of future growth¹³. Areas predicted with the highest future growth influence where aggregate will be (indirectly) required.

Nationally, additional investment is required to address both future growth and historic backlogs and infrastructure shortfalls. It is estimated that the required infrastructure investment in Auckland is approximately \$20bn - \$30bn¹⁴. Within Auckland, there are a number of large, funded infrastructure projects from a range of central and local government agencies such as NZ Transport Agency Waka Kotahi, Ministry of Education, Watercare, Auckland Transport and Eke Panuku (refer to Technical Report S, Volume 2). In addition to the funded projects, various other central and local government agencies have numerous ongoing and planned projects to improve the region. This, combined with the expected future growth, will increase the demand for aggregate within Auckland.

The Stevenson Drury Quarry is one of the major sources of aggregate within Auckland. The existing Drury Quarry produces around 3.5 million tonnes of aggregate per annum, meeting over a quarter of Auckland's current aggregate requirements. The greywacke resource at Drury Quarry is of a high quality and, by comparison with other quarries, the resource at Drury is relatively well exposed with a comparatively low stripping and overburden ratio.

Current residential and infrastructure projects, such as Papakura to Drury four lane project, Waihoehoe Road (SH22 Drury upgrades), Drury town centre, Drury South Crossing projects, and Auckland Airport, require large amounts of accessible aggregate. Infrastructure programmes and projects are facing budget, delivery schedule and associated realisation delays. As mentioned above, and set out in Technical Report S, the close proximity of Drury Quarry to these projects and generally the Auckland market, is a significant advantage as it helps to reduce the economic cost of aggregate supply relative to other quarries and reduces other indirect effects like emissions and social costs¹⁵. Having efficient and sustainable access to aggregate is an important factor in both facilitating Auckland's economic growth aspirations and facilitating the delivery of infrastructure and development projects with significant regional and national benefits. Given the importance of aggregate for Auckland's economy, Auckland's built future is reliant upon maintaining and sourcing sustainable sources of aggregate.

¹¹ The Aggregate & Quarry Association of NZ, [Fact Files | Aggregate & Quarry Association](#).

¹² The 10-year Budget 2021-2031 (Our Recovery Budget) – Volume 2. Auckland Council. 2021. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/budget-plans/The-10-year-budget-2021-2031/10yearbudgetfull/10-year-budget-2021-2031-volume-2.pdf>

¹³ The 10-year Budget 2021-2031 (Our Recovery Budget) – Volume 2. Auckland Council. 2021. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/budget-plans/The-10-year-budget-2021-2031/10yearbudgetfull/10-year-budget-2021-2031-volume-2.pdf>

¹⁴ The 10-year Budget 2021-2031 (Our Recovery Budget) – Volume 2. Auckland Council. 2021. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/budget-plans/The-10-year-budget-2021-2031/10yearbudgetfull/10-year-budget-2021-2031-volume-2.pdf>.

¹⁵ Social costs linked to injuries and fatalities due to changes in distance travelled.

2.5 Resource Strategy for Aotearoa New Zealand: 2009 – 2029

The Minerals and Petroleum Resource Strategy for Aotearoa New Zealand: 2019-2029 ('Resource Strategy') sets out the Government's long-term strategy for the minerals and petroleum sector and the transition to a low-emission future and a productive, sustainable and inclusive economy. The Resource Strategy is broadly centred around the following three themes:

- A low carbon economy;
- Growing a productive, sustainable and inclusive economy; and
- Social responsibility.

The Resource Strategy explicitly recognises the need to retain local sources of quarry material and the importance of retaining aggregate supply to support housing and transport programmes. To meet the growing population of New Zealand, the Resource Strategy acknowledges that the minerals and petroleum sector has a critical role to play in building the future. In order to deliver housing and infrastructure that is suitable and affordable for the growing number of New Zealanders, an affordable and secure supply of aggregate resources is needed. The Resource Strategy acknowledges the importance of aggregate being sourced close to demand in order to keep transportation costs down and to reduce carbon emissions.

One of the Resource Strategy action areas is securing an affordable supply of resources, such as aggregate, to meet New Zealand's future needs. A future action identified is developing a better understanding of future demand and supply for aggregate to support a more productive sustainable and inclusive economy.

According to the cost and benefit analysis set out in Technical Report S, aggregate extraction from the Sutton Block would save around \$29.4 million to \$65.2 million per million tonnes of aggregate produced based on transport, environmental and social costs¹⁶. Thus, the proposed Sutton Block would provide a significant amount of high-quality aggregate for the Auckland market at sustainable prices.

¹⁶ This is based on the costs required to transport the aggregate consented at Drury from the nearest alternatives outside of Auckland to meet the region's demand. Refer to Section 4.3 of Technical Report S, Volume 2.

3 Existing Environment

3.1 Location

The SAL landholdings for Drury Quarry and the proposed Sutton Block project are located approximately 5 km south-east of the Drury township. The landholding is broadly defined by MacWhinney Road and Sonja Drive to the north, Peach Hill Road to the south and Fitzgerald Road to the west. The proposed Sutton Block is located directly north-east of the existing Drury Quarry pit and is currently in pasture utilised for grazing. The approximate site location of the Sutton Block is shown in Figure 3.1 below. Appendix D outlines the area within the SAL landholdings that forms part of this application. The project components and footprint are further described in Sections 4 and 5.

Primary access to the Drury Quarry site is via Bill Stevenson Drive and Maketu Road, which are accessed from the Ramarama interchange off State Highway 1 (SH1) (approximately 2.5 km from the Quarry entrance). An alternative connection to SH1 is available via the combination of the northern section of Maketu Road, Drury Road, Great South Road and SH22 (approximate travel distance of 5.3 km to the northbound on-ramp at the Drury Interchange).

The existing main entrance off Bill Stevenson Drive will continue to be used to service the Sutton Block given the expansion enables the continuity of quarrying activities without adding to the overall intensity of external traffic movements. A haul road connecting the existing FOH area to the proposed Sutton Block is to be established as part of the initial stages of work (Years 1-3). A location plan showing the SAL landholding in relation to the wider locality is shown in Figure 3.2 below and is included in Appendix D to the AEE.

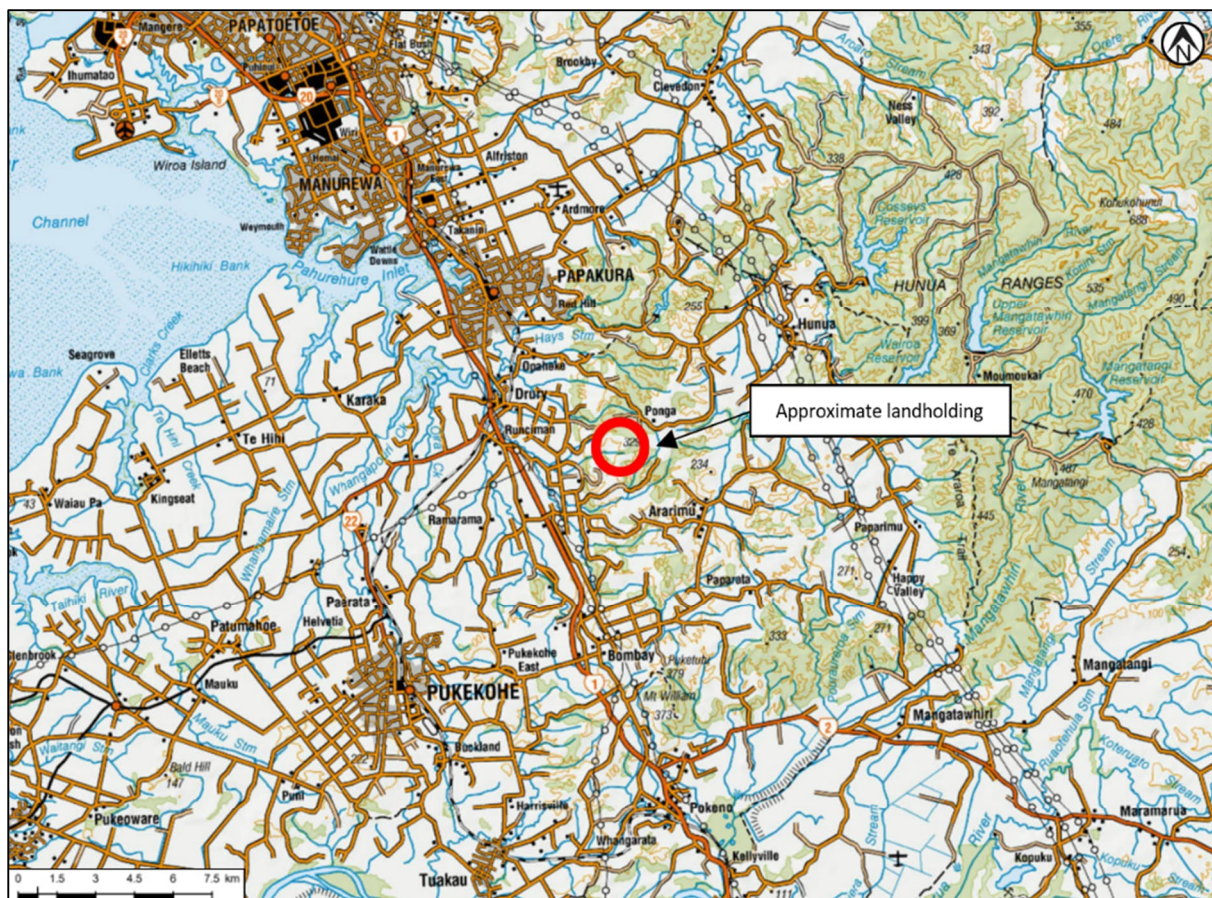


Figure 3.1: Approximate site location. Source: Land Information New Zealand (2023).



Figure 3.2: SAL wider landholdings. Source: Boffa Miskell (2023).

3.2 Site description

The SAL land holdings cover an area of approximately 515.5 ha that comprises of a range of terrain and land use typologies, including pastoral farmland and quarrying activity. The Sutton Block LOQ footprint is approximately 108 ha that is predominately grazed and contains two farm dwellings and two sheds. The SAL landholdings are zoned SPQZ, Rural – Mixed Rural, Rural - Rural Production Zone, Business – Heavy Industry Zone, and Business – Light Industry Zone.

As demonstrated in Figure 3.3 below, the majority of SAL landholdings, including the Sutton Block, is zoned SPQZ under the AUP (and was also zoned for Quarry use under the previous Papakura District Plan), which explicitly provides for significant mineral extraction activities. This zoning indicates that quarrying in this area has been anticipated for some time. The Sutton Block footprint is primarily located within the SPQZ approximately (78 ha or 72%), while the remaining 30 ha (28%) falls within Rural Zoning. Further details on the zoning and planning notations relevant to the Sutton Block expansion are provided in Table 8.1.

The Drury Quarry Front of House (FOH) operations (refer to Section 4.3.1) is where the bulk of the processing plant and broader quarry operations occur. These operations are necessary to support

the existing Drury Quarry operation and will also support the proposed Sutton Block. The FOH area is located within the Business – Heavy Industry Zone, Business – Light Industry Zone or SPQZ.

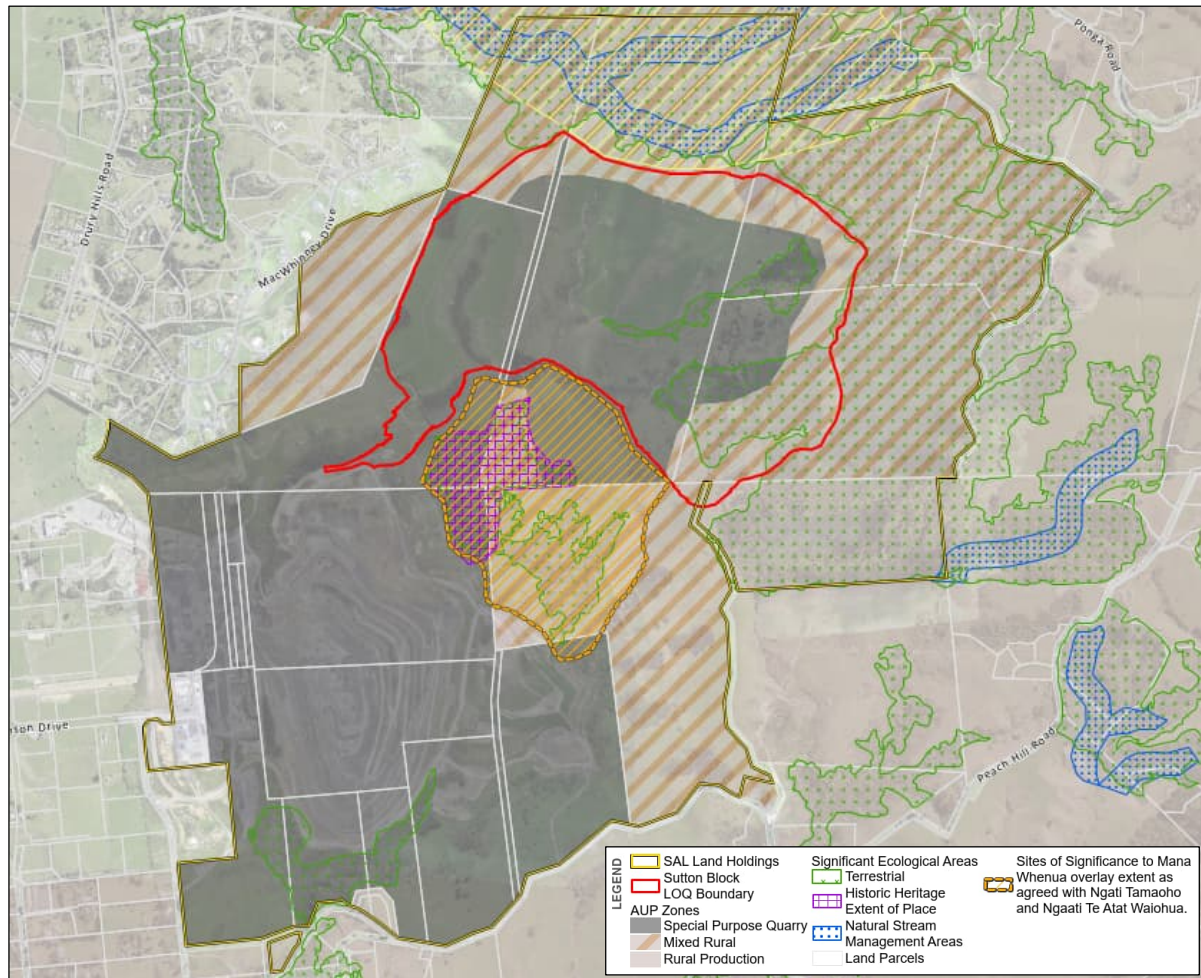


Figure 3.3: Key zoning/ planning notations. Source: Boffa Miskell.

The SAL landholdings have been delineated into 4 areas for ease of description, based on current land use (shown in Figure 3.4 below).

- Drury Quarry, comprising an area of approximately 75 ha, containing the existing Drury Quarry pit (including the Northern Extension) and FOH area.
- Thorburn Fill, comprising an area of approximately 21.4 ha located east of the existing quarry operation.
- Sutton Block, with approximately 108 ha proposed to be an active quarry area, located on the north-eastern part of the SAL landholdings, and currently used as grazing pasture.
- Reserve/pastoral land surrounding the Drury Quarry pit to the north, east and south (including MacWhinney Drive Reserve).



Figure 3.4: Site layout. Source: SAL (2021).

3.3 Existing Consents

The Drury Quarry has been operating at this site for over 80 years. Consequently, the SAL landholdings are subject to a suite of various existing resource consents that form part of the existing environment (refer to Section 8.3 for further details). Figure 3.5 illustrates the physical extent to which consents related to mineral extraction activities, including processing and storage of aggregate, vegetation removal, air discharges and earthworks apply.

Of particular interest is the existing earthworks consent¹⁷ that authorises the land disturbance at Drury Quarry over an area of 315 ha (purple hatched area in Figure 3.5), including the majority of the Sutton Block LOQ extent. Additionally, the FOH consent¹⁸ authorises the relocation and operation of key quarry activities including processing equipment, aggregate storage, weighbridge facilities, stormwater treatment and other administrative activities (green hatched area in Figure 3.5).

¹⁷ Earthworks consent reference R/LUC/2015/2419 and R/REG/2015/2420 expiry 14 August 2045.

¹⁸ Front of House Relocation consent reference BUN60359817 expiry 7 October 2055.

The long-standing operation of Drury Quarry, the site's underlying zoning, and the suite of existing consents demonstrates that the primary land use of the broader SAL Landholdings is quarrying. This primary land use is anticipated and supported through the planning provisions, as demonstrated by the underlying quarry zoning, which is in place to ensure that demand for minerals can be met and significant resource can be extracted. While the Sutton Block has not yet been subject to any quarrying activities, the quarry zone at the Sutton Block foreshadows the future use of the site as an active quarry and directly supports this activity occurring. In addition, quarrying of the Sutton Block will be consistent with the existing activities occurring on the wider SAL Land holdings and will benefit from sharing existing physical resources and ancillary plant established on site. The existing consents held for earthworks and FOH activities, further support the development of Sutton Block for ongoing and future mineral extraction.

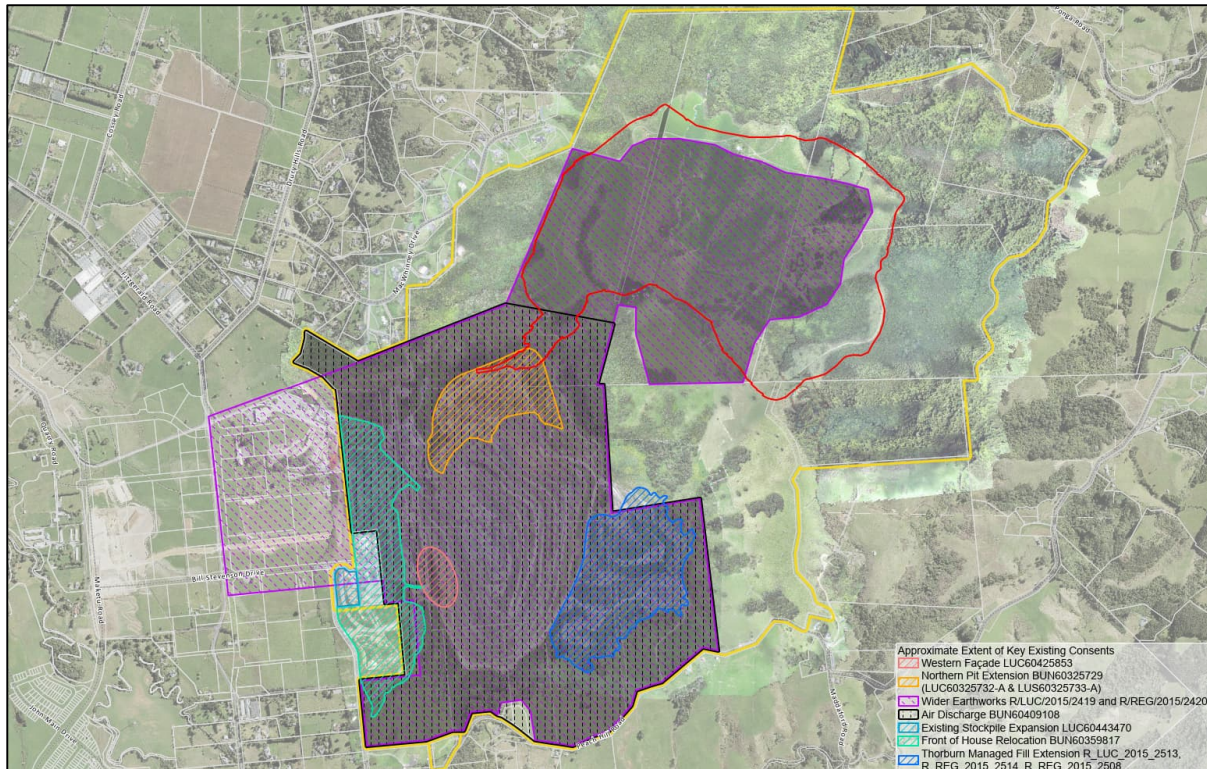


Figure 3.5: Approximate extent of key existing SAL consents that apply to the wider SAL Landholdings. Source: Boffa Miskell 2025.

3.4 Natural Environment

3.4.1 Topography

The SAL landholdings contain varying topography as described in the sections below. The landholding has a high point of approximately 329 RL m in the north-eastern portion and a low point of approximately 30 RL m along Quarry Road, to the west.

In general, the Sutton Block is dominated by relatively hilly pastoral land, sloping towards the south-west of the site. The ridges located within the Sutton Block reach elevations between 200 RL m to the west, to 280 RL m to the east. The elevation of the LOQ central area reduces to approximately 160 RL m.

The land west of the Sutton Block generally flattens towards SH1. The site gently slopes up to the north towards the ONL located north of the LOQ extent. The distinctive vegetated volcanic features of Kaarearea Paa are located to the southwest, between the Sutton Block and Drury Pit, and reach

approximately 215 RL m. The LOQ extent is characterized by gullies containing unnamed streams and wetlands that drain to the southwest into the Hingaia Stream.

3.4.2 Geology

The geology of the SAL landholdings, specifically the Sutton Block, is described in detail in the Geotechnical Assessment prepared by Riley Consultants Ltd (Technical Report Q, Volume 2).

The wider SAL landholding (as shown in Figure 3.6) is inferred to be underlain by three major geological units, being Waipapa Group greywacke, Waikato Coal Measures (WCM) and Bombay Basalts (volcanic basalt lava – Kaarearea Paa). This is overlaid by overburden materials consisting of Pleistocene deposits.

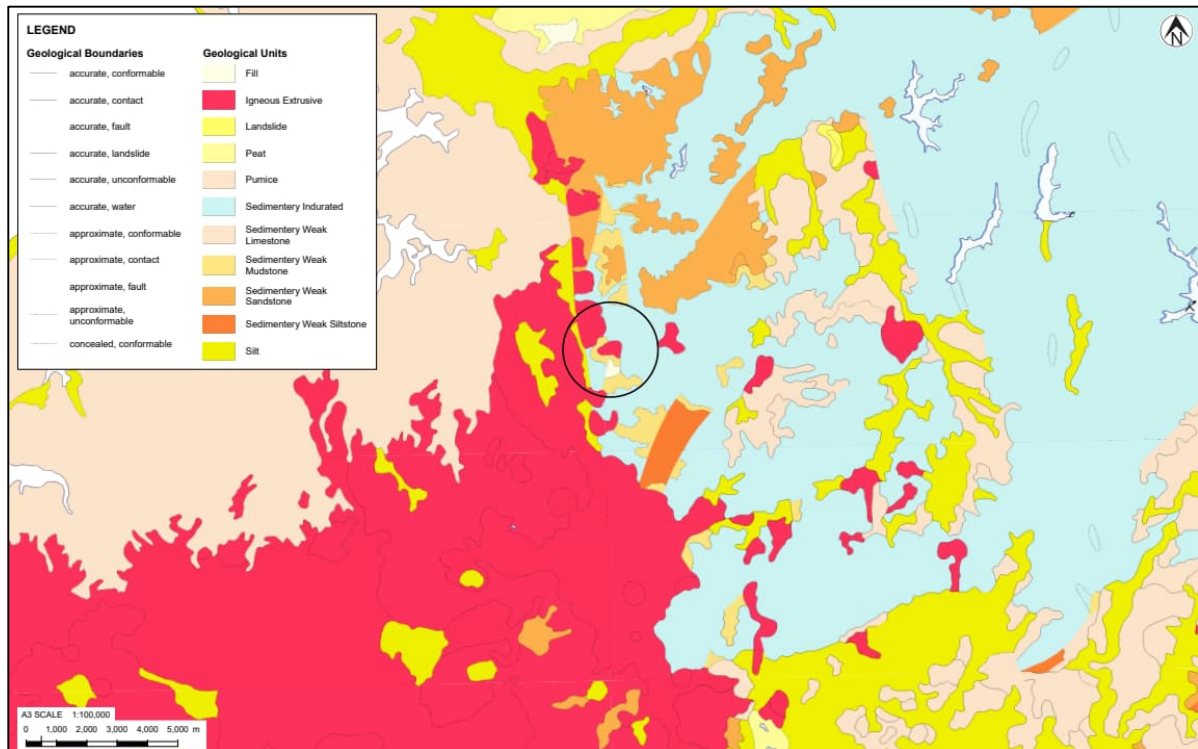


Figure 3.6: Geological setting with approximate SAL landholdings location in circled in Black. Source: GNS maps.

The inactive Drury Fault is located to the west of the Sutton Block. This fault forms the western extent of the existing Drury Quarry operations and is located outside of the Sutton Block LOQ extent (to the south). The Drury Fault is inferred to define the western limit of the practical recoverable aggregate resource. The western portion of the Sutton Block is inferred to be crossed by the inactive Hunua Fault, with the central portion of the Sutton Block crossed by a branch of the main Hunua Fault (not shown on Figure 3.7 below). The Hunua Fault is inferred to extend south near the eastern extent of the existing Drury Quarry.

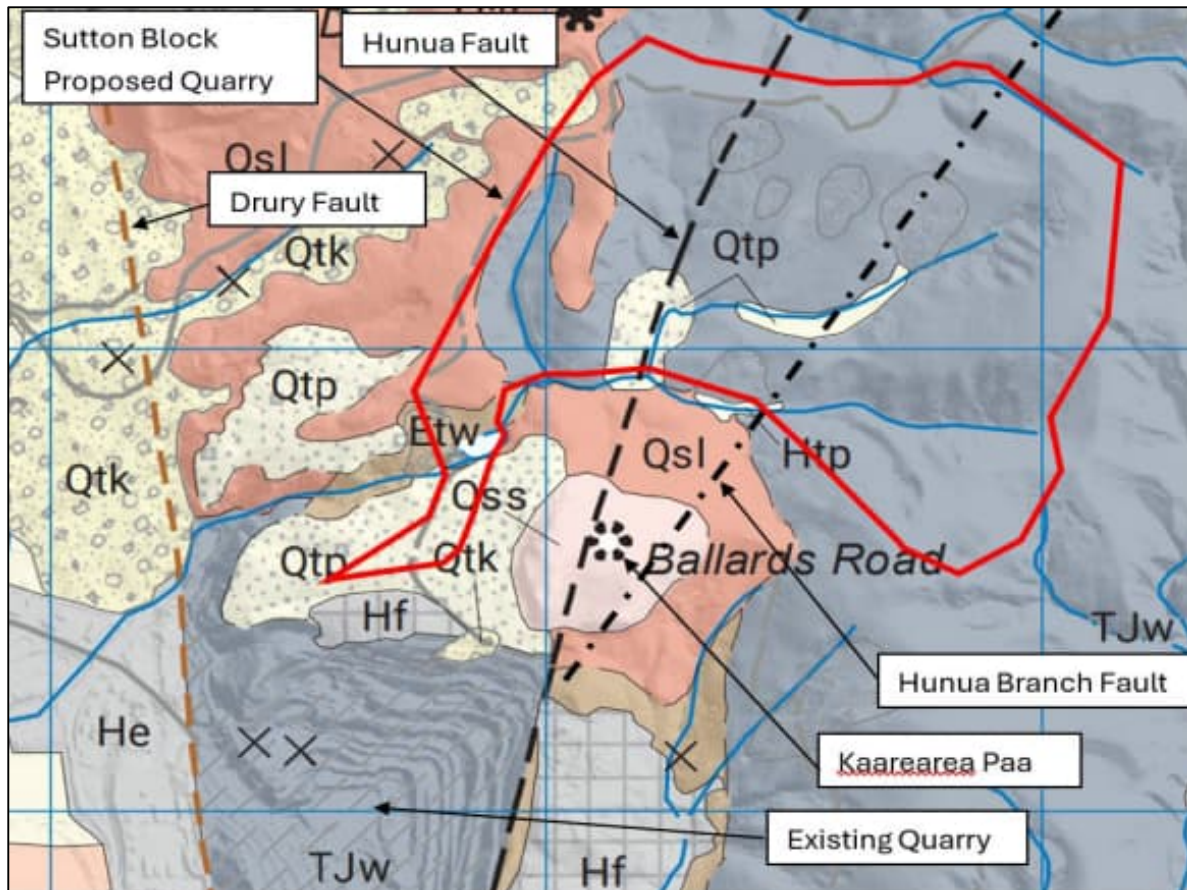


Figure 3.7: Location of the inactive Drury Fault and Hunua Fault in relation to Sutton Block. Source: Riley Consultants Ltd.

3.4.3 Climate

3.4.3.1 Wind

Wind is an important consideration, as it can have a significant effect on dust generation and transportation. The Air Quality Assessment prepared by Pattle Delamore Partners Ltd (Technical Report K, Volume 2) details the wind conditions in this locality. The findings of this report are based on a combination of wind modelling from sensors on masts reinstalled in September 2023 (located north of the existing Drury Quarry FOH processing plant), and synthetic data.

The recorded wind directions appear to be highly influenced by local terrain, with shielding of the regionally predominant south-westerly and secondary north-easterly wind-flows (refer to Figure 3.8). However, given the Sutton Block area is approximately 1 km north-east and 150 m elevated from the Drury Quarry sensors, it is likely to be more influenced by regional airflows. Synthetic data, which is considered to be representative of the Sutton Block area, shows the dominant wind directions are from the west southwest and southwest, with higher speed winds originating from the southwest (refer to Figure 3.9), predominately away from nearby residents.

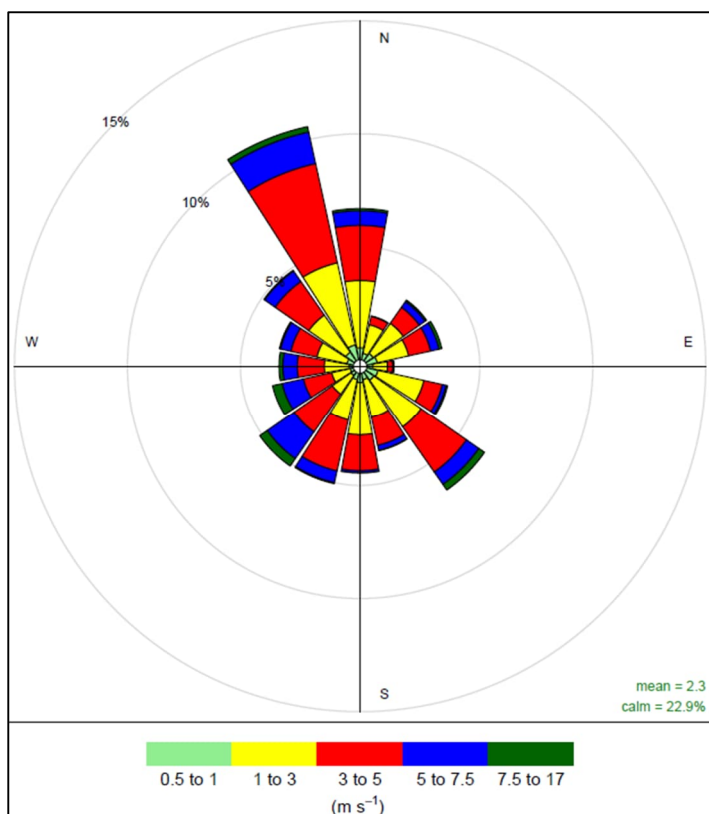


Figure 3.8: Drury Quarry wind data recorded Oct-2023 to Oct-2024. Source: Pattle Delamore Partners Ltd (2024).

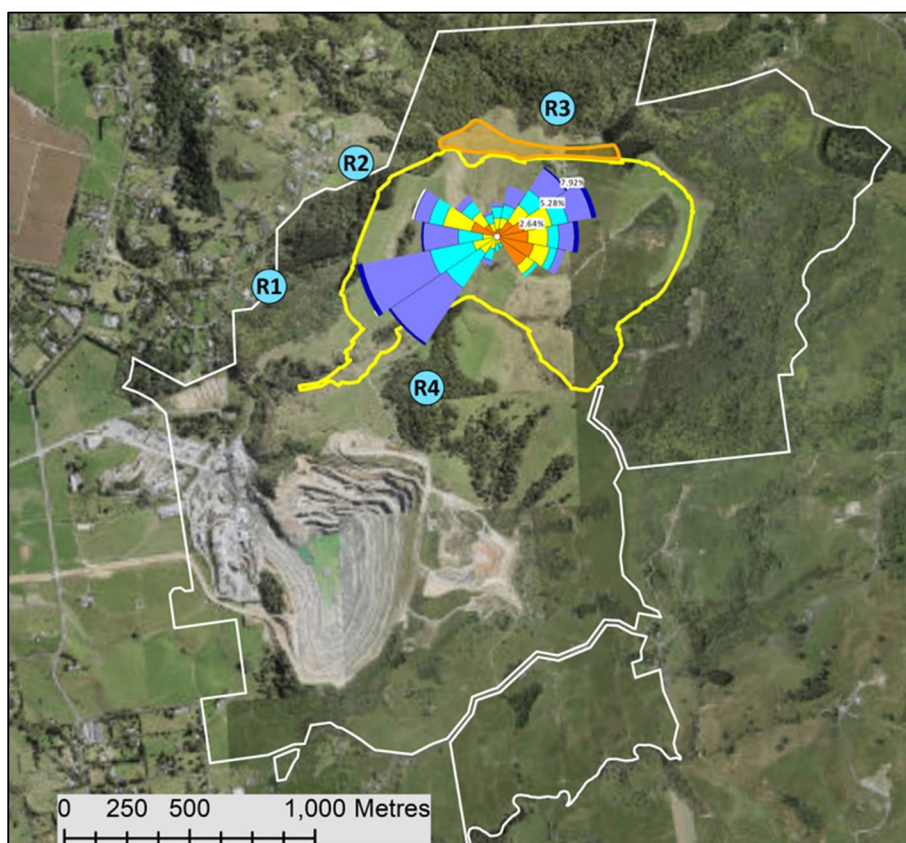


Figure 3.9: Stage 4 pit extent and CALMET-derived Wind Rose. Source: Pattle Delamore Partners Ltd (2024).

3.4.3.2 Rainfall

Rainfall within this location is also noteworthy as it acts as a natural dust suppressant. As described in the Air Quality Assessment (Technical Report K, Volume 2), the average daily precipitation from 2019 – 2022 for the Pukekohe area indicates that drier months of the year coincide with the summer months (December – February). Specifically, the driest months of the year are January and February. Over this four-year period, there were 803 days with < 0.2 mm of rain in a 24-hour period (or 'dry days'), which corresponds to almost half of the time (55%).

3.4.4 Ambient air quality

As outlined in the Air Quality Assessment (Technical Report K, Volume 2), SAL currently undertakes monitoring of total suspended particulate (TSP) using a fixed sampler located to the north of the existing Drury Quarry pit. Condition 29 of the existing discharge to air consent (Council ref: 36283) requires that TSP concentrations should not exceed 100 µg/m³ over a 24-hour period. Monitoring data shows no exceedances of the maximum TSP concentration, with an average TSP concentration 21.4 µg/m³ and a maximum recorded concentration of 90.2 µg/m³.

Further to monitoring undertaken for the existing resource consent, short-term TSP concentration monitoring was undertaken within the Sutton Block. During the monitoring period (November 2021 – June 2022), daily average TSP concentration during this period was 5.9 µg/m³ and the maximum daily concentration was 27.7 µg/m³.

3.4.5 Groundwater

The existing groundwater systems are detailed in the Groundwater and Surface Water Effects Assessment (Technical Report L, Volume 2) and summarised below. The key groundwater systems are defined in Table 3.1: below for ease of reference and shown on Figure 3 attached to Technical Report L, Volume 2).

Table 3.1: Groundwater systems

Groundwater system	General characteristics
Shallow/perched	Pockets of local saturated zones (perched groundwater) which are not directly connected with the regional groundwater and generally discharge to local streams.
Transitional zone	Located between the shallow and deep groundwater systems.
Regional groundwater	Groundwater at depth within the greywacke which occurs in a fully saturated state.

3.4.5.1 Shallow/ perched groundwater

As noted in Table 3.1: , above the regional groundwater, there are pockets of local saturated zones (perched groundwater) which are not directly connected with the regional groundwater and generally discharge to local streams. Activities such as dewatering operations can cause the formation of perched conditions within the greywacke as shallow groundwater systems can be developed within the less permeable zones (i.e. zones with minor joints).

In Drury, shallow/perched groundwater occurs within the highly weathered greywacke, Waikato Coal Measures, and in the upper section of unweathered greywacke. Based on groundwater data from multilevel piezometers and other bores located to the east of the Drury Fault (as shown in Figure 3.7), shallow groundwater is present. Within the SAL landholdings, shallow/perched groundwater is located between 12 m and 75 m higher than the recorded regional groundwater levels in the same or similar locations.

Notably, the presence of the shallow/perched groundwater within Kaarearea Paa has been confirmed. Relevant data indicates that Kaarearea Paa and its related lava flows form a perched or shallow groundwater system separate to the deeper greywacke system. However, this system may not extend across the whole of Kaarearea Paa and could be limited to local depression zones within the lava flows.

3.4.5.2 Transition zone

Generally, with greater depths below shallow/ perched groundwater, there is a gradual increase in extent of the saturated zone. The findings of the Groundwater and Surface Water Effects Assessment indicate that a low permeability zone is likely between the Drury Quarry and a deep monitoring bore locations (refer to Figure 4 attached to Technical Report L).

3.4.5.3 Regional groundwater

Regional groundwater movement is irregular, dependent on the intensity and continuity of fractures within and across rock layers. In the absence of groundwater flow barriers (faults), the boundaries between the neighbouring groundwater catchments (shallow and regional groundwater) are driven by the relative elevations of the streambeds where groundwater discharge occurs.

Regional groundwater at the site is expected to generally flow in a westerly direction towards Hingaia Stream, however, it is disrupted by flow barrier faults. Based on the groundwater level monitoring data collected by PDP between 2012 and 2020, the groundwater flow barriers (Drury and Hunua Faults and their branches) have divided the regional groundwater into multiple hydrogeological blocks. These are referred to as the Hunua Greywacke Block, Drury Greywacke Block and Sutton Greywacke Block (the greywacke block east of Hunua Fault). Accordingly, the regional groundwater inflow into the proposed Sutton Block expansion is sourced from the Sutton Greywacke Block. Chemical analysis also indicates minor direct hydraulic connectivity between the streams and the regional groundwater at the site.

The groundwater level in the Hunua and Drury Blocks currently is controlled by dewatering of the quarries within these blocks (i.e., former Hunua Pit, Symonds Hill Pit and Drury Pit). The pre-quarry groundwater levels beneath the proposed quarry footprint within the Hunua, Drury and Sutton Greywacke Blocks are approximately 64 RL m, 58 RL m and 170 RL m each. As a result of dewatering at the Symonds Hill Pit and Drury Quarry, the groundwater levels in the Hunua and Drury Greywacke Blocks have been lowered and sit at approximately 63.6 RL m and -39.3 RL m (October 2024), respectively.

3.4.6 Surface water

3.4.6.1 Surface water catchments

Detailed descriptions of the surface water catchments within the Sutton Block are provided in both the Groundwater and Surface Water Effects Assessment (Technical Report L, Volume 2) and Erosion and Sediment Control Assessment Report (Technical Report R, Volume 2). A summary is provided below.

There is a divide that separates the surface water catchments that discharge to the Tāmaki Strait and Firth of Thames to the east and the catchments that discharge to the Manukau Harbour (via Hingaia Stream) in the west. The Sutton Block is located to the west of this divide, within the head of NT1 Catchment. This catchment contains multiple streams which converge just beyond the southern edge of the Sutton Block LOQ extent to form one stream (also referred to as Quarry Stream/NT1) which outflows from the site and eventually joins the Hingaia Stream. Hingaia Stream discharges into the Pahurehure Inlet of the Manukau Harbour.

3.4.7 Groundwater and surface water quality

Sampling of groundwater and surface water surrounding the Sutton Block LOQ footprint has been undertaken to assess water quality in the area in 2012, 2015 and 2022. The findings of this sampling, including sample locations, are detailed in the Groundwater and Surface Water Effects Assessment (Technical Report L, Volume 2) and briefly summarised below.

The sampling identified dissolved reactive phosphorous, sulphate and metals (including arsenic). Low concentrations of dissolved reactive phosphorous exceeding ANZECC Primary Industry guidelines in both surface and groundwater was detected during sampling undertaken. The highest measured concentration was 24.4 mg/L at borehole SG11 L located to the north of the Sutton Block LOQ extent (refer to Technical Report L, Volume 2).

The concentration of sulphate in the groundwater and surface water is below the drinking water guideline except for in the Drury Quarry sump (331 mg/L). The sulphate concentration in groundwater ranges between 5 to 197 mg/L and is likely to be due to natural sources.

The 2022 sampling found a number of metal concentrations were in exceedance of all guidelines, including drinking water, in boreholes drilled in the Sutton Block. No metal concentration was detected in surface water of the NT1 stream, which flows through the Sutton Block downstream of the bores.

The existing Drury Quarry sump water, which is sourced from both groundwater and surface water, from the same catchment and regional aquifer as the Sutton Block, complies with the ANZECC guidelines. This indicates that the elevated metal concentrations found in the upper catchment of the Sutton Block (geographically located above the existing Drury Quarry and in the upper areas of the NT1 catchment) suggest a localized contamination source unrelated to the existing Drury Quarry operations.

3.4.8 Contamination

An assessment of the soil and potential sources of contamination within the Sutton Block LOQ footprint is outlined within the Preliminary and Detailed Site Investigations (PSI and DSI), and Soil Characterisation Investigation (SCI) (Technical Reports M – O, Volume 2) and summarised below.

The vast majority of the Sutton Block LOQ footprint is considered as representing non-HAIL¹⁹ areas. No fill was encountered across the Sutton Block LOQ footprint, with a majority of soil samples taken complying with the AUP definition of cleanfill.

The PSI and DSI did identify a limited discrete area located near the existing farm dwelling, storage shed and shearing shed (refer to Figure 3.10 below and Figure 2 of Technical Report N, Volume 2) as being a HAIL site. Soil samples from these areas contain concentrations of heavy metals in excess of background criteria which does not comply with Regulation 5(9) of the NES-CS.

¹⁹ The HAIL is the Hazardous Activities and Industries List, produced by the Ministry for the Environment. It lists activities and industries that are considered likely to cause land contamination due to hazardous substance use, storage or disposal.

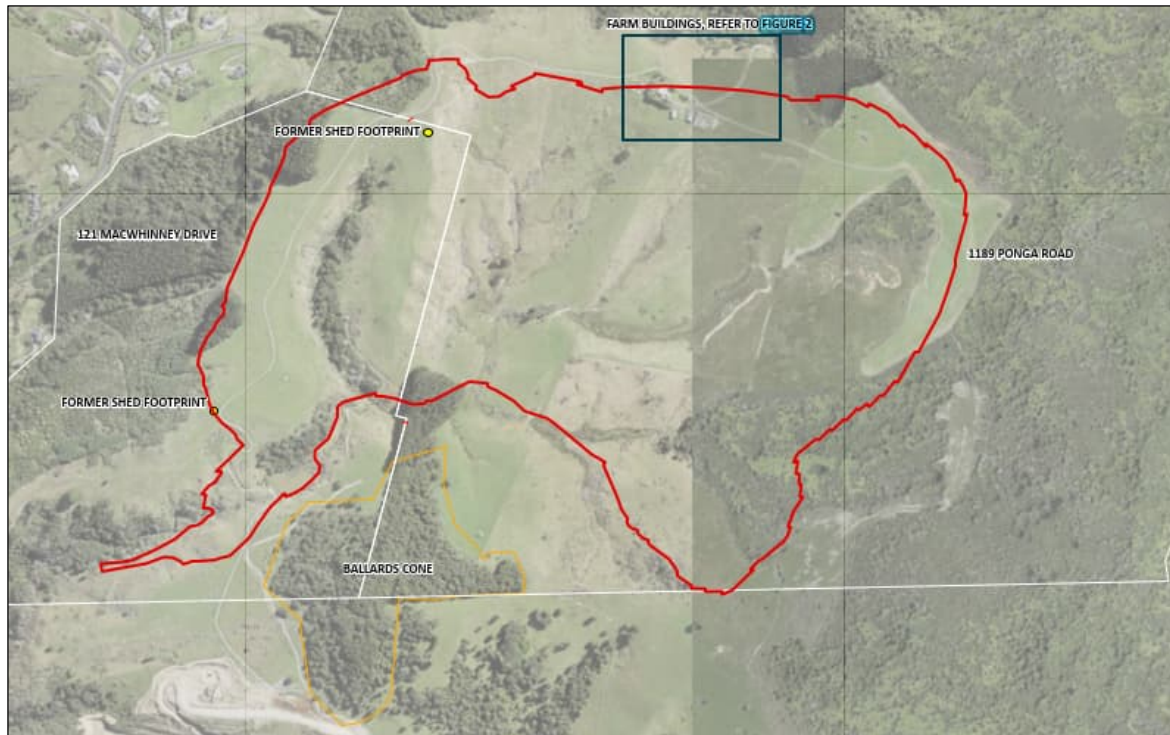


Figure 3.10: Land around the existing farm buildings is only portion of land classified as a HAIL site.

3.4.9 Freshwater ecology

The freshwater ecology of the site is described in detail within the Assessment of Ecological Effects (Technical Report A, Volume 2) and summarised below.

3.4.9.1 Streams

The Sutton Block LOQ footprint contains nine un-named streams (or stream systems), as shown in Figure 3.11 below. The streams are all upper tributaries to the Hingaia Stream, three stream reaches are permanent and the remainder are intermittent. Key details of each stream are outlined below.

- **Stream 1:** a permanent stream located in the north-eastern part of the Sutton Block LOQ footprint covering a catchment area of 3.4 ha. The stream exhibits good water flow, with channel width averaging 0.68 meters, with water depth averaging 0.14 meters, featuring incised and undercut banks. The substrate is dominated by silt with wood and small gravel.
- **Stream 2:** is situated in the south-eastern extent of the LOQ footprint covering a catchment area of 4 ha. The stream length is approx. 688 m, and is classified as intermittent at its upper reaches, transitioning to a permanent stream before draining into Wetland 2a. The stream flows for a further 45 m before terminating at a culverted farm crossing and forming a confluence with Stream 4. The headwaters of Stream 2 have a channel width averaging 0.43 m, with water depth averaging 0.04 m. The headwaters exhibited low hydrological heterogeneity, and the channel was characterized by slow, shallow runs and chutes. The lower reach was typically deeper and wider with channel width averaging 0.71 meters, with water depth averaging 0.19 meters, featuring incised and undercut banks. The substrate is primarily hard including gravel, cobbles and bedrock. Additionally, layers of deposited fine sediments were observed. This sedimentation increases downstream, where the riparian yard is replaced with pasture grasses and exotic shrubs.
- **Stream 2b:** is an intermittent stream located in the south-eastern extent of the Sutton Block. The stream is approx. 241 m in length, before forming a confluence with Stream 2. The stream

has an average channel width of 0.28 m and a depth ranging between 0.06 m to 0.15 m. The stream largely consists of sequential shallow pools and is dominated by hard substrates including gravel and bedrock. The streambed is coated with deposited fine sediments.

- Stream 3: an intermittent stream located outside the southern extent of the Sutton Block LOQ footprint with a smaller catchment of 2.9 ha. The stream is approximately 135 m long draining into the upper reach of Stream 4. The stream channel width averages 0.39 m, with an average depth of 0.03 m. Water flow within the stream is slow, consisting of a single run and soft substrates with an unnatural loading of fine sediments and some woody debris. Development of the Sutton Block avoids Stream 3.
- Stream 4: a permanent stream located downstream of the confluence of Stream 2 and 7. The lower part of Stream 4 (Stream 4a) is also downstream of the confluence of Stream 5. The length of the Stream to the man-made dam is approximately 371 m in length. The dam pond is approximately 128 m in length and discharges via a culvert under the access road, before continuing as a stream to flow west down a steep, boulder reach for an additional 115 m. The channel averages 1.78 m in width, with incised bank, and water depth averaging 0.22 m. The stream has consistent flow, with pools, runs, and riffles, and is dominated by hard substrates.
- Stream 5: located in the north-western portion of the LOQ footprint with a total length of 452 m. The upper 397 m are intermittent, becoming permanent downstream in the final 55 m where it adjoins Stream 4. The stream exhibits slow water flow with various features like runs, chutes, pools, and a large waterfall. Channel banks average 0.56 m in width with water depth averaging 0.06 m. The streambed is primarily covered with fine sediments, with occasional hard substrates and small wood.
- Stream 6: an intermittent stream located in the northern part of the LOQ footprint. Multiple tributaries flow into Stream 6, with the headwater catchment creating a total of 1,043 m of stream length. The tributaries feature flowing water with highly incised banks with thick slash often obscuring their channels. Stream 6 has highly incised banks, some undercut banks, and soft substrates with intermittent hard substrates. The channel width of Stream 6 averages 0.61 m, with water depth averaging 0.08 m.
- Stream 7: primarily intermittent stream located in the northern portion of the LOQ footprint with a catchment area of 2.5 ha. The stream flows from the north-east to the south-west for 292 m, passing through Wetland 7 and Wetland 1a before turning into a permanent flowing stream for an additional 270 m prior to the confluence with Stream 4. The channel width averages 0.53 m in the upper and 1.38 m in the lower reaches. The depth averages 0.15 m. Stream banks are significantly impacted by stock pugging, and the soft bottomed streambed consists of compacted clay, resulting in poor hydrological diversity, primarily featuring a single run.
- Stream 9: an intermittent stream located in the north of the Sutton Block extent and within a separate catchment from Streams 1-7. Stream 9 is approximately 85 m in length before exiting the LOQ extent. The stream channel has an average width of 0.36 m and shallow average depth of 0.04 m, primarily consisting of shallow trickles and isolated pools. Water flow is slow, comprising of a single run and the substrate was mainly soft. An unnatural loading of fine sediments and some woody debris and leaf litter was also identified.

Based on the description above, dominant substrates within the streams include gravel, silt, clay and bedrock. The riparian vegetation varies for each stream, but generally consists of pasture, gorse, and occasional native trees.

Considering representativeness, rarity/distinctiveness, diversity and pattern and ecological context, four of the streams (Stream 1, 2, 4, and 5) are considered to have Moderate ecological value overall. The remaining five streams (Stream 1b, 3, 6, 7 and 9) have either Very Low or Low overall ecological value.

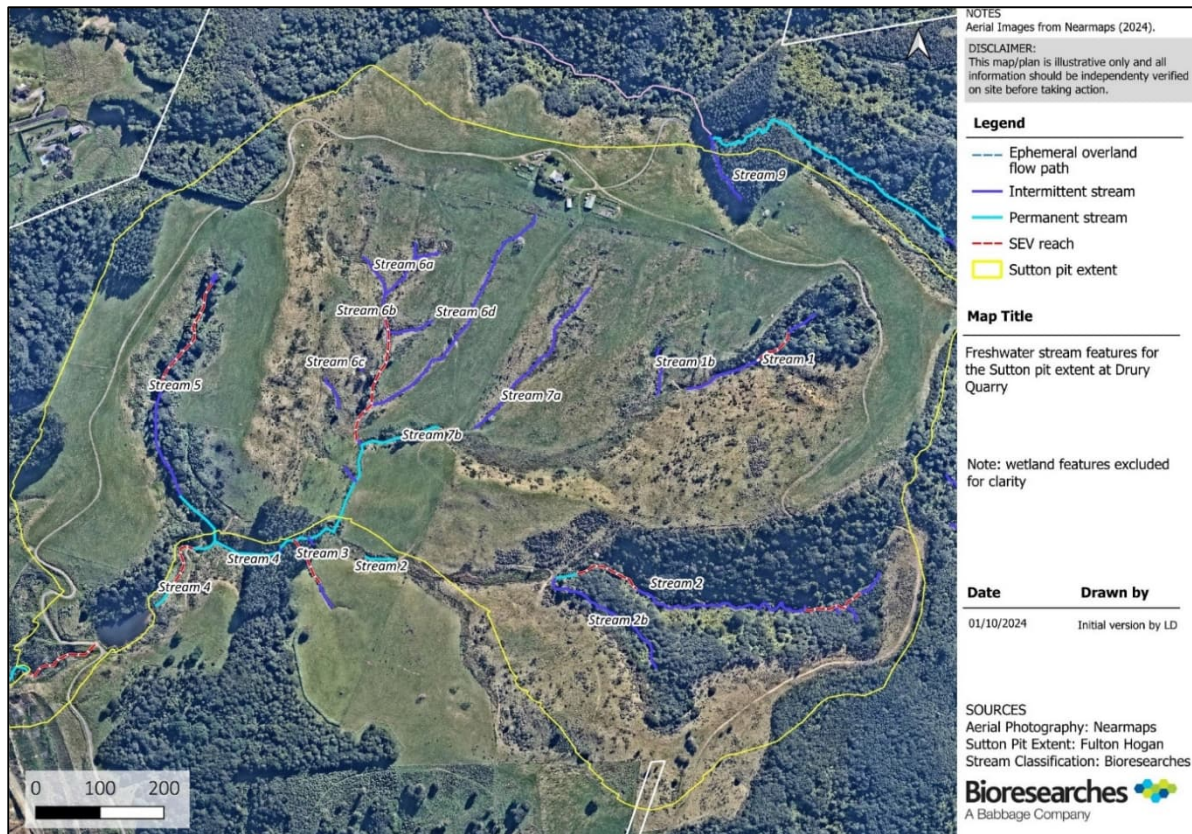


Figure 3.11: Streams within the Sutton Pit and immediate vicinity. Source Bioresearches 2024.

3.4.9.2 Wetlands

The ecological report identifies that there are fourteen, mainly exotic areas of wetland within, or in close proximity to the Sutton Block LOQ footprint. All the wetlands meet the definition of a Natural Inland Wetland in the NPS-FM. None of these wetlands are scheduled under the AUP. The wetlands are numbered in general accordance with the catchment or stream system within which they are located (refer to Figure 3.12 below).

Wetland 1a and 2a are considered to be of YModerate ecological value due to their size and rarity/distinctiveness. Both of these wetlands are permanent wetlands fed via a combination of surface water and groundwater flows. No Threatened or At Risk flora or fauna species were identified within the wetlands. However, notably both wetlands may provide temporary habitat for At Risk longfin eel as they migrate upstream. Additionally, Wetland 2a contains indigenous vegetation (Raupō reedland (WL19)). The other twelve wetlands are intermittently saturated, dominated by exotic plant species, and are deemed as having Low overall ecological value.

All of the fourteen wetlands are currently unfenced and are subject to frequent stock access leading to obvious damage. Except for Wetland 9 (pine trees), the wetlands have no effective riparian buffer for the majority of their extent, offering little riparian function or benefit.

The Sutton Block expansion area was redesigned in 2023 to be setback further from Kaarearea Paa, avoiding reclamation of the southern boundary streams and wetlands (Streams 2 and 4a and wetlands 2b, some of 2a and 8).

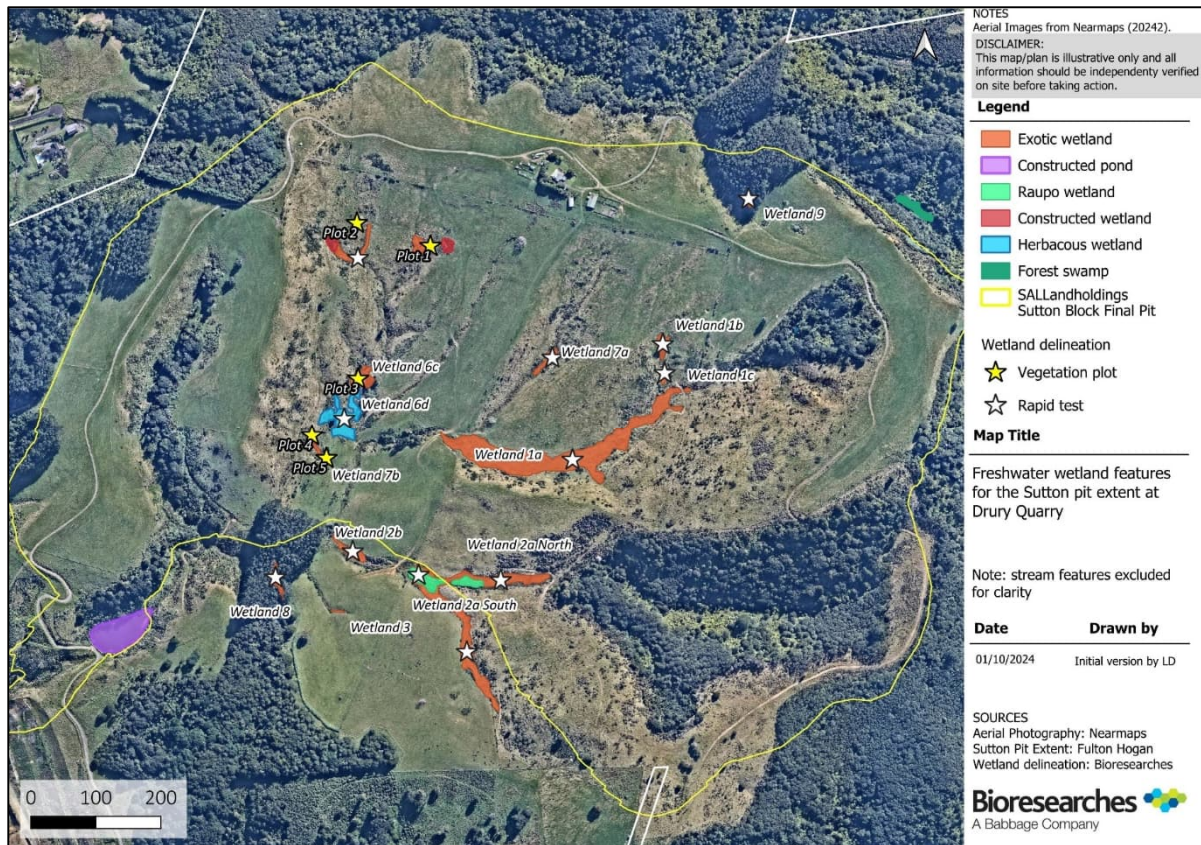


Figure 3.12: Existing wetlands and constructed pond ('existing dam pond') within Sutton Block LOQ extent and immediate vicinity. Source Bioresearches 2024.

3.4.9.3 Existing dam pond

The site contains an artificially constructed pond (referred to as 'existing dam pond' refer to Figure 3.12 above) located downstream of the confluence of Stream 5 and Stream 4 upper. The existing dam pond is approximately 128 m in length and discharges via a culvert under the existing access road, before continuing as a stream (Stream 4 lower). Stream 4 lower flows west down a steep, boulder reach for an additional 115 m before exiting the Sutton Block expansion area.

3.4.9.4 Freshwater Fauna

Macroinvertebrates were sampled from each SEV reach within Streams 1, 2, 3, 4, 5 and 6. The complete findings are provided in Appendix F of the Assessment of Ecological Effects (Technical Report A, Volume 2).

Macroinvertebrate diversity, as represented by the number of taxa present, was highly variable with the highest number of taxa recorded at Stream 4 (18 taxa) and the lowest at Stream 5 (14 taxa). The freshwater snail was observed within each stream, albeit at very low abundances within Stream 4 and Stream 5. The overall ecological value for invertebrates is therefore considered to be Low.

Indigenous fish surveys were carried out at four sites within the Sutton Block, including Stream 1, Stream 4 and within an upstream and downstream reach of Stream 2. The identified fish communities were indigenous but in low abundances and diversities. The observed species include:

- Stream 1: kōura.
- Stream 2: kōura, longfin eel and shortfin eel.
- Stream 4: longfin eel and shortfin eel (eDNA only).

The observed presence of longfin eels elevates the ecological value of Stream 2 and Stream 4 as habitat for 'At Risk' aquatic biota.

The New Zealand Freshwater Fish Database show similar assemblages of native aquatic fauna have previously been recorded within the Sutton Block, with shortfin eel and kākahi observed within Stream 4, Stream 6, Stream 7, kōura, kākahi and banded kōkopu within Stream 6, and kōura and kākahi within Stream 5.

It is noted that fish communities within the Sutton Block will be naturally restricted due to the presence of a 20 m waterfall downstream of Stream 4 which acts as an almost impassable barrier to fish passage. Additionally, until recently, there was a lack of fish passage under the road to the online pond in Stream 4. These barriers are also apparent from the high biodiversity of fish life below the waterfall, with additional species including common bully, banded kōkopu, and inanga. The overall ecological value for fish is considered to be Moderate.

3.4.10 Terrestrial ecology

3.4.10.1 Vegetation

The site is located within the southwestern portion of the Hunua Ecological District. Four small areas of indigenous terrestrial vegetation are identified within the Sutton Block footprint, comprising of Broadleaf Podocarp Forest, Kānuka scrub/forest 'VS2' and a small section of naturally uncommon Rock Forest.

As shown in Figure 3.13, that there are two SEAs identified in the AUP within the proposed area of works, including:

- SEA_T_5323 (surrounds the northern and eastern edges and a portion is within the proposed Sutton Block LOQ footprint), which primarily consists of Kānuka Forest 'VS2' and a small amount of Broadleaf Podocarp Forest; and
- SEA_T_1177 (located within the north-east corner of the Sutton Block LOQ footprint), which primarily consists of Broadleaf Podocarp Forest.

Another SEA is located in the immediately surrounding landscape is SEA_T_5349 (located outside the proposed Sutton Block LOQ footprint to the south), captures Kaarearea Paa which contains a Rock Forest on volcanic boulder field with Pūriri forest, Taraire, Tawa, Podocarp forest and anthropogenic Totara forest.

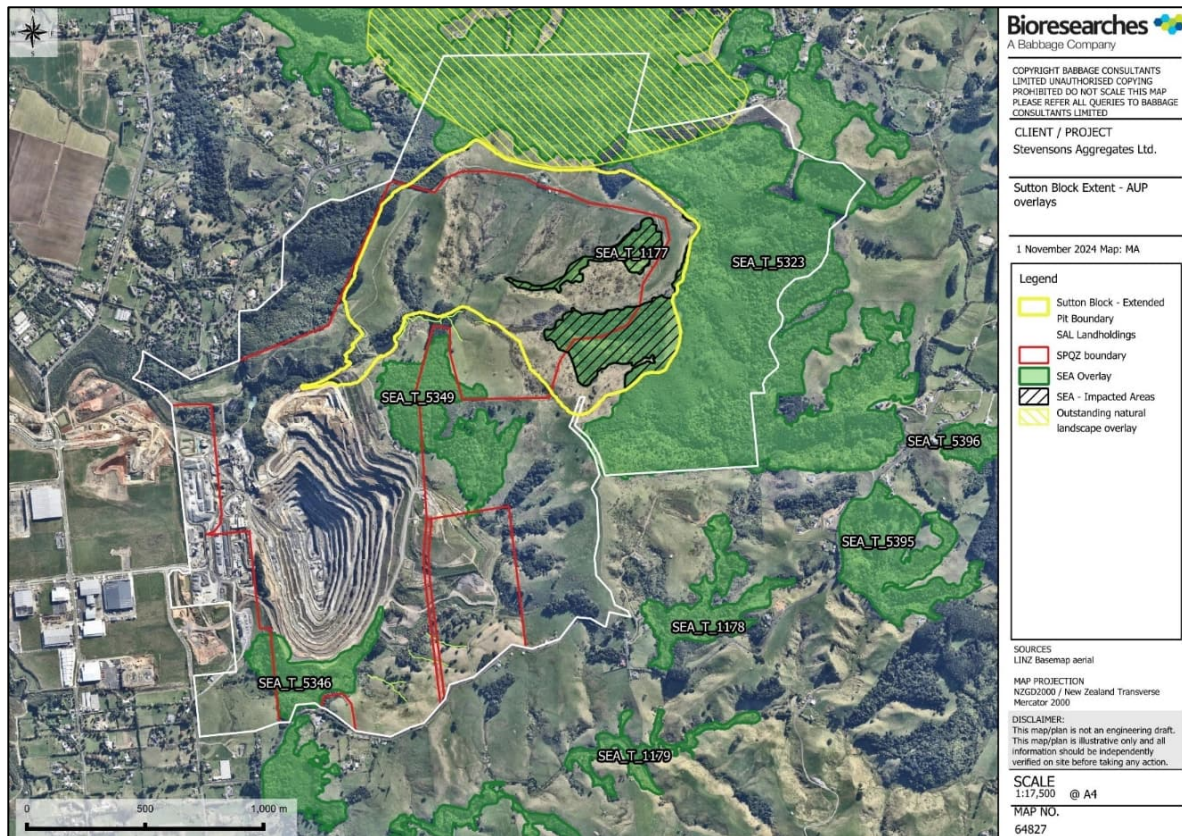


Figure 3.13: Significant Ecological Areas within Sutton Block LOQ extent and immediate vicinity and ONL overlay. Source Bioresearches 2024.

As shown in Figure 3.14, Broadleaf Podocarp Forest is represented in five areas across the site totalling 7.33 ha, two of which are subject to SEA overlays (including SEA_T_5323 and SEA_T_1177). Although the Broadleaf Podocarp Forest has moderate representative and high rarity/distinctiveness, it is heavily degraded due to ongoing stock access. Therefore, it has Moderate ecological value overall.

Two areas of Kānuka Forest (8.8 ha) occur within the quarry footprint, a larger section that is a regenerating protrusion of SEA_T_5323 to the west, and a smaller section that is the existing western boundary of the larger section of SEA_T_5323. As with other indigenous ecosystem types within the footprint, the Kānuka Forest is degraded by stock access and is generally of Moderate overall value.

Approximately 0.65 ha of damaged Rock Forest remnant is located on a volcanic boulder field in the southeastern corner of the proposed Sutton Block LOQ footprint. Native scrub/forest on a volcanic boulder field is a naturally uncommon ecosystem nationally and is considered endangered. This fragment of Rock Forest within the Sutton Block is not directly connected to nearby areas of native forest and is subject to livestock grazing. Overall, it is considered to be of High ecological value.

Scattered across the site is a total of 130 individual native relict trees found amongst pasture. The most numerous of these is the stand of Kahikatea at the lower western end of the kānuka forest. The trees are judged to be 50 – 60 years old based on their Diameter at Breast Height (dbh) measurements and they occupy an area of <0.1 ha. Some 84 kahikatea trees and one multi-trunked pukatea were measured within this stand.

A small stand of nine pukatea trees grow in a gully to the west of WF9-1 and there are other scattered specimens of this species, tōtara and kahikatea across the site. Many of these are in poor health, displaying signs of stress due to exposure.

Other notable relict trees include three puriri trees located within WF9-5 in the northeastern corner of the Sutton Block LOQ footprint. Generally, the individual trees have no buffering and are exposed to prevailing conditions. Many are damaged by livestock and exhibit dieback and other symptoms of stress. Overall, they are considered to have Low ecological value.

The site also contains three small areas of Exotic Forest comprising of plantation pine forest. The pine trees are semi-mature and generally have no native understorey or groundcover. The Assessment of Ecological Effects (Technical Report A, Volume 2) determines that the overall ecological value is Low. Similarly, the site contains exotic scrub and exotic grassland, which respectively have Negligible and Low overall ecological value.

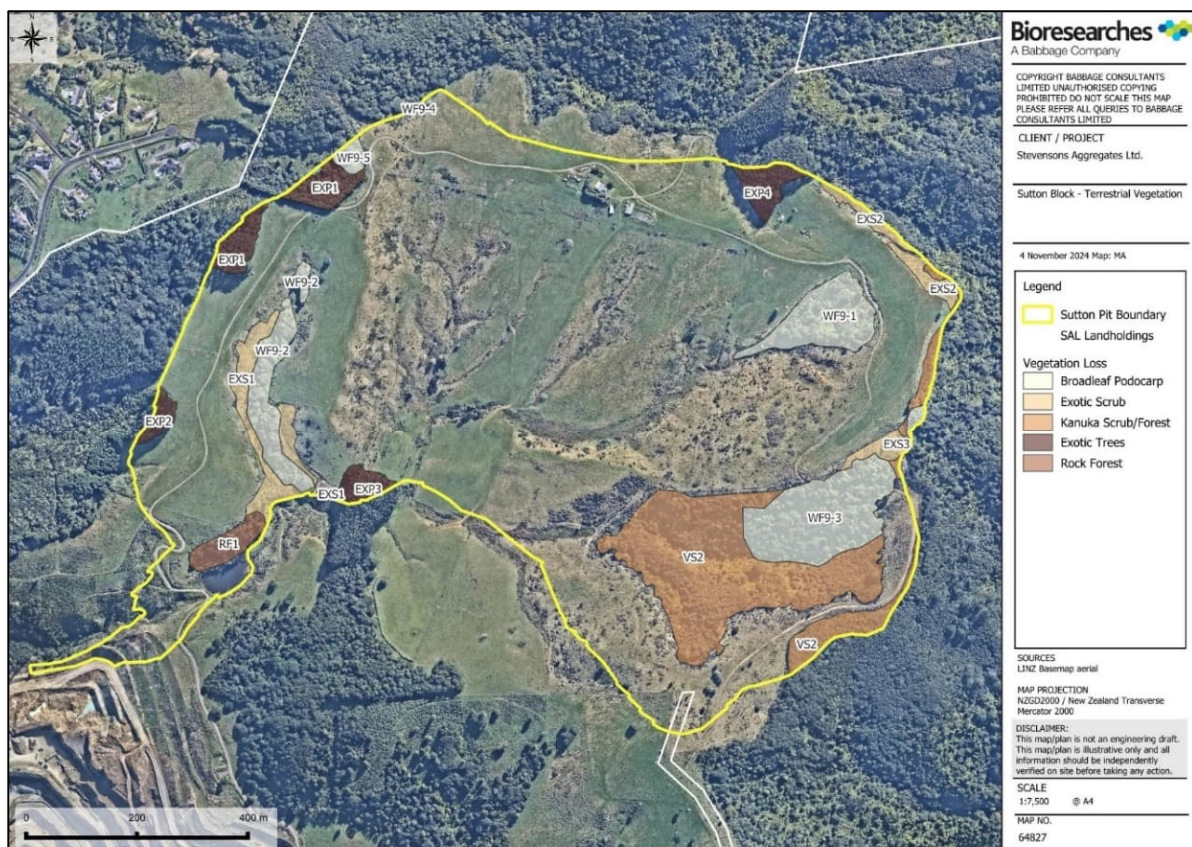


Figure 3.14: Terrestrial vegetation types with the proposed Sutton Block LOQ extent. Source Bioresearches 2024.

3.4.10.2 Fauna

The following fauna were identified through desktop assessments and surveys at the site as detailed in the Assessment of Ecological Effects (Technical Report A, Volume 2).

3.4.10.2.1 Invertebrates

The invertebrate searches did not identify any threatened or 'At Risk' species. The identified species include snails, millipedes, landhoppers, slaters, cockroaches, weevils, ground wētā and slugs. A native ant nest was also recorded in the northern fragment (SEA_T_1177) within a rotten log. Overall, the invertebrate fauna consisted of an expected diversity of common native species of Low ecological value.

3.4.10.2.2 Lizards

Copper skinks ('Regionally Declining') are the only native lizard species confirmed to be present within the site, of the six species originally identified as potentially present. It is possible for additional species to be present, but the poor habitat quality indicates limited capacity to support a diverse and representative assemblage of native lizards (geckos and skinks). On the basis that only one species was identified, at relatively low abundance, within low-quality habitat, the lizard values within the site are deemed to be Moderate.

3.4.10.2.3 Birds

One 'Threatened' or 'At Risk – Declining', High value bird species was confirmed as being present within the site. Specifically, a Pipit was identified once foraging in the pastoral areas within the site. The Sutton Block is not expected to support any other Threatened or At Risk species but supports a range of common, Not Threatened birds that are generally tolerant of degraded and highly modified environments. The project area is not considered to support breeding habitat due to intensive grazing. Accordingly, it is expected to only provide foraging habitat for the Pipit. Overall, the ecological value of Birds within the Sutton Block is considered Moderate, based on the presence of one 'High value' species.

3.4.10.2.4 Wetland birds

No wetland bird species, including bittern, dabchick, spotless crane, fernbird, or shags, were detected during wetland bird surveys. A single faint recording possibly identified as a bittern call was noted during the initial survey, but was not confirmed in follow-up recordings, suggesting the species may have briefly visited but no evidence to suggest bitterns are resident or breeding on-site. Both surveys were undertaken during bittern breeding season. Based on survey results, and limited habitat quality on site for wetland birds, it is considered highly unlikely these species are present or would visit the site regularly. As mentioned above, the overall ecological value of Birds within the Sutton Block is considered Moderate.

3.4.10.2.5 Bats

Four bat surveys were undertaken, one in Spring 2020, one in Spring/Summer of 2021/22, one in Summer 2024 and a fourth in spring 2024. In 2020, one bat pass was recorded within the immediately surrounding environment on the Drury property but outside the proposed Sutton Block LOQ footprint. No other passes were detected within or adjacent to the Site over the other surveys. While no activity was recorded within the project footprint, long-tailed bats are a very high value species known to be highly mobile. Vegetation within the project area has the potential to support roost habitat. Overall, while individuals have potential to visit the site intermittently (such as dispersing juveniles), the overall value of the potential habitats to bats is considered Moderate on the basis that there is no indication that they are used, but a low-level of activity has been recorded in the wider landscape of Sutton Block.

3.4.10.2.6 Hochstetter's Frogs

To detect the potential presence of Hochstetter's frogs within the Sutton Block, three environmental DNA (eDNA²⁰) samples were collected in March 2024 at the lower reaches of the water catchment within the Sutton Block (refer to Figure 3.15 below). These sites were selected as they are 5, 10 and 20 metres downstream from a small waterfall and is the lowest reach of the catchment of the proposed Sutton Block pit. No records of Hochstetter's or other frog species were identified. Further, a desktop study found that the nearest records of Hochstetter's frogs to the Sutton Block site are

²⁰ eDNA is genetic material that is shed by organisms as they move in, through, and around their environment (Wilderlab, 2024).

approximately 9 km northeast, on the western edge of the Hunua Ranges. Therefore, it is considered Hochstetter's frogs are not present within the Sutton Block site.

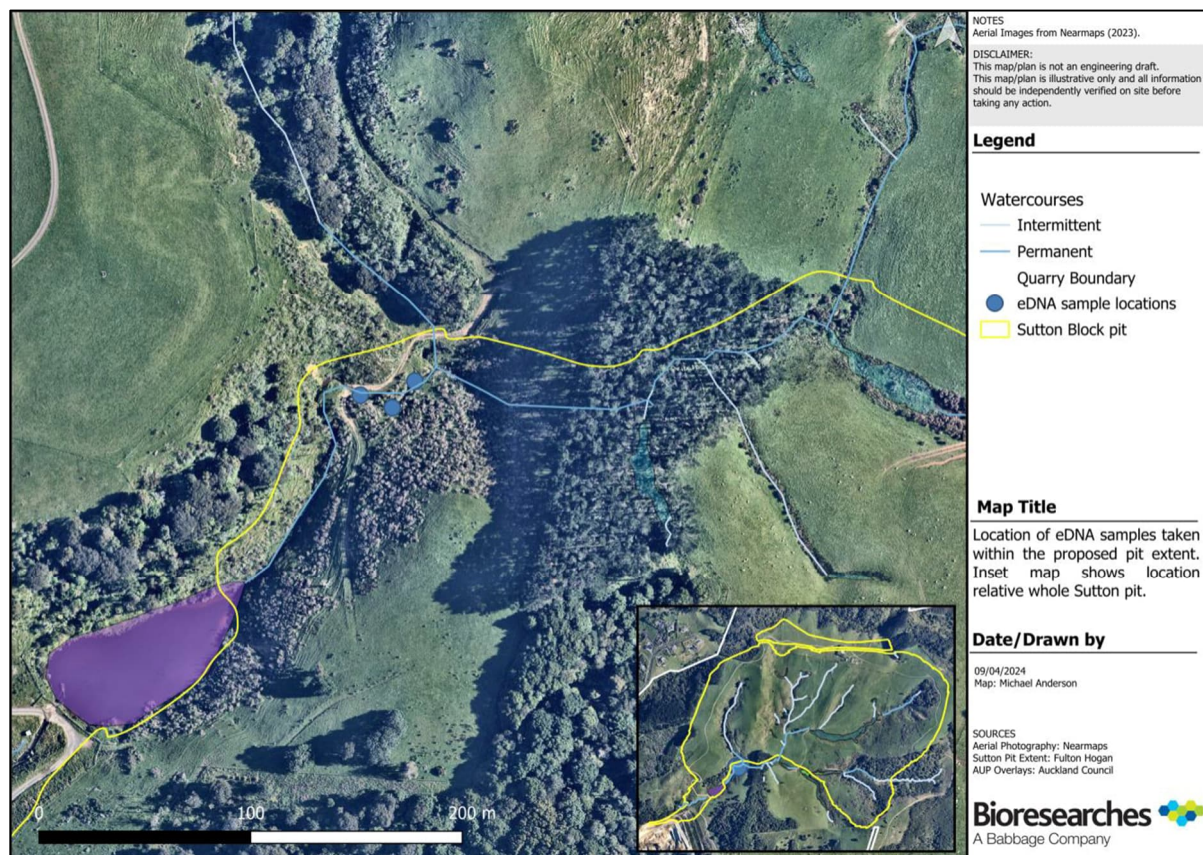


Figure 3.15: Locations of eDNA samples taken within Sutton Block site. Source Bioresearches 2024.

3.4.11 Landscape and natural character

The landscape and natural character of the SAL landholdings is detailed in the Landscape and Visual Amenity Effects Assessment (LVA) (Technical Report J, Volume 2) and summarised below.

Based on the findings of a site visit and desktop study, the SAL landholdings consist of a combination of modified, managed and unmodified areas. Generally, the Sutton Block consists of a broad valley which is defined by a sequence of connected ridges and landform which slopes towards the centre. As noted in Section 3.4.9, although pasture forms the primary vegetation type, the gullies contain pockets of indigenous vegetation (including SEAs), as well as a series of linear wetlands and local streams that ultimately flow into the Hingaia Stream, Drury Creek and the Manukau Harbour.

The landscape characteristics, attributes and values within, and in close proximity, to the Sutton Block LOQ extent are shown in Figure 3.13 and described as follows:

- The ONL to the north of the proposed quarry expansion is considered an important attribute due to its sequence of rolling ridges, stream corridors and native forest. Discrete pockets of pine occur in the northern portion of the site, either meeting the interface with the pasture or grouped within the wider context of indigenous vegetation beyond the extent of the adjacent SEA_T_5323.
- The northeastern portion of the site contains elevated hillside country and supports a large area of indigenous vegetation which forms part of SEA_T_5323. A large plantation pine forest block is also located in this area, straddling the interface between the indigenous vegetation and adjacent pasture.

- Kaarearea Paa is located outside of the proposed quarry expansion to the south. Although not identified as an ONL or ONF, Kaarearea Paa is a locally distinctive volcanic landform that rises above the existing quarry. The landform is a SEA (SEA_T_5349) and identified as a protected Historic Heritage Extent of Place Feature in the AUP²¹. Kaarearea Paa is also a wāhi tapu site, reflected by the AUP Plan Change 102 (PC 102), which schedules the area as a Site of Significance to Mana Whenua and has immediate legal effect. Additionally, Kaarearea Paa is scheduled in the NZAA database as a historic heritage place. Overall, the site is considered to have high cultural landscape values. Based on consultation with Ngāti Tamaoho and Ngaati Te Ata Waiohū, the LOQ footprint was moved further to the north from Kaarearea Paa, creating a 13 ha buffer between the edge of the LOQ extent and the Historic Heritage Overlay (shown in Figure 3.16).
- The existing Drury Quarry is located to the southwest of the proposed Sutton Block. Quarrying activities are also considered to be a noteworthy feature of the site, contributing to the distinctive characteristic of the environment.
- To the west of the Sutton Block, a remnant stand of Pine exists. This Pine is intermixed with indigenous vegetation stands and forms a backdrop to the residential properties along MacWhinney Drive.

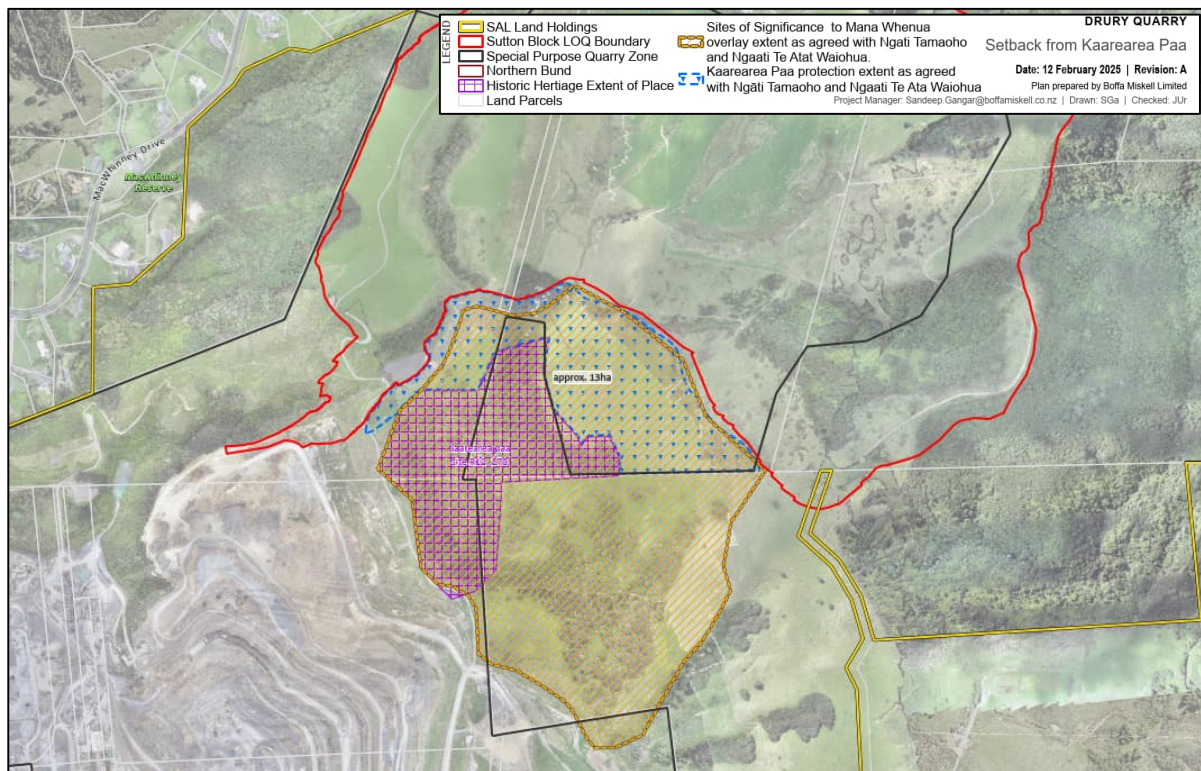


Figure 3.16: Approximate 13 ha buffer between Sutton Block LOQ extent and Kaarearea Paa and the Historic Heritage Overlay extent. Source: Boffa Miskell.

The primary aspects of the LVA's natural character assessment have been considered in relation to the waterbodies (wetlands, lakes, rivers and their margins) within the Sutton Block. Based on this analysis, the highest degrees of natural character are considered to be Stream 1 and Stream 2 with primarily Moderate values. The wetlands, while performing hydrological functions, are predominantly exotic and affected by human influences through farming practices. Wetland 2a is considered to have the highest degrees of natural character (Moderate biophysical and

²¹ Historic Heritage Overlay Extent of Place 693, Kaarearea Paa Site R12/278.

Moderate experiential attributes), in part due to the presence of indigenous species. Overall, the SAL landholdings contain environments and habitats with varying levels of naturalness, including pasture, indigenous vegetation, pine stand, wetlands and streams.

3.5 Human environment

3.5.1 Land uses

As detailed in Section 3.2, the land uses within the SAL landholdings are primarily for quarrying, or associated purposes. However, the Sutton Block is currently used as grazing pasture and contains a farm dwelling and associated sheds to the north.

To the west of the Sutton Block is MacWhinney Reserve which consists of large exotic pines and a mix of other exotic and native vegetation (Figure 3.17). The existing terraced quarry pit is located immediately to the southwest of the Sutton Block. The FOH operations and existing ancillary facilities are located at the western edge of the existing Drury Pit (refer to Section 4.3).



Figure 3.17: View from MacWhinney Drive looking on to MacWhinney Reserve (western edge of the proposed pit). Source: Boffa Miskell.

3.5.2 Adjacent land uses

Areas to the north and west of the Sutton Block are predominately rural residential lifestyle blocks. Dwellings located along MacWhinney Drive are located west/northwest of the Sutton Block, with the nearest dwelling located approx. 130 m northwest of the LOQ extent. To the north, at a higher elevation, are dwellings located along Sonja and Laurie Drive, with the nearest dwelling located approx. 715 m to the north of the LOQ extent.

Land use south of the existing Drury Quarry is predominately industrial, with the Drury South Crossing business park located immediately south of the Drury Quarry and FOH area (Figure 3.18). Beyond the Business and Industrial zone land to the west and east is more distant residential land.

Drury township is located approximately 5 km to south-east. Ramarama School is located on Ararimu Road and is located approximately 2.3 km by vehicle from the site.



Figure 3.18: Photograph of the Drury South Business Park facing south from the Upper Dam. Photograph taken 6 October 2023.

3.5.3 Tangata Whenua

A number of iwi groups have Tangata Whenua interests over the area of the site. These are identified on the Auckland Council Geomaps database as:

- Ngāti Whanaunga;
- Te Ākitai Waiohūa;
- Ngāti Tamaoho;
- Ngāi Tai ki Tāmaki;
- Te Ahiwaru – Waiohūa;
- Ngāti Tamaterā;
- Ngaati Te Ata Waiohūa;
- Ngāti Maru; and
- Waikato – Tainui.

SAL has been engaging with Tangata Whenua representatives in relation to the proposal for approximately three years (refer to Appendix F). During that time, SAL reached out to all of the groups listed above, of which the following five registered an interest in the project and ongoing engagement has been undertaken:

- Ngāti Tamaoho;
- Ngaati Te Ata Waiohūa;
- Te Ākitai Waiohūa;
- Ngāi Tai ki Tāmaki; and
- Ngāti Whanaunga.

As mentioned above, the Sutton Block project has evolved in response to feedback from internal and external parties, including Tangata Whenua, resulting in design changes, and, more recently, an increase in the size of the LOQ extent (Stage 5) that this application seeks to consent. Based on consultation undertaken by SAL, final and draft CVA and Deeds of Settlement our understanding is that the site and wider surroundings have cultural significance to a number of iwi and hapu groups. In relation to the Sutton Block (and surrounds), significant cultural sites and areas include Kaarearea Paa (including its volcanic features slopes and surrounding ridgelines), Hingaia Stream and its tributaries and wairepo (wetlands), Otuwairoa Stream and its tributaries and wairepo, Pou Hotiki hīrere (creek) and Te Maketu Historic Reserve (south of the site). These awa and wairepo were used for water, rongoā, food and medicine.

Kaarearea Paa including the northern and western slopes, holds significant cultural, spiritual, traditional and historic value. It forms part of a wider cultural landscape known as Te Maketū. Kaarearea Paa has been identified as wāhi tapu of the highest order as it contains a significant and large urupā and stone structures built by tupuna to strengthen the pā, protect special areas, and for gardening in the fertile areas. Historically, the pā was of great strategic importance to tupuna not only as a place of defence but also as an important route for migrations, travel and trade. The slopes and surrounding area are also known to have been previously occupied by tupuna offering a place to gather, sleep and cook. The forest in this area was also known to provide significant paopao kōwhatu (stoneworking sites) for the making of tools and other important taonga. Trees grown here, such as Mataiwaka and Ngāhokowhitu, were considered taonga and were reserved and used for the making of the significant waka, whare and whakairo of all kinds.

3.5.3.1 Statutory acknowledgements of Ngāti Tamaoho

A statutory acknowledgement is an acknowledgement by the Crown that recognises the mana of a Tangata Whenua group in relation to specified areas. In particular, statutory acknowledgements recognise the cultural, spiritual, historical and traditional associations with an area. The Hingaia and Otūwairoa Streams, and their tributaries (including the Waipokapū Stream, Mangapū Stream and Waihoehoe Stream) were important traditional resources of Ngāti Tamaoho, and it remains a water body of major cultural, spiritual and historic significance to the iwi. These water bodies, and the entire SAL landholdings, are subject to a statutory acknowledgement as part of the Ngāti Tamaoho Deed of Settlement with the Crown. In addition to these statutory acknowledgements, other iwi authorities and hapu claim an association with the streams too. These overlapping interests are described in Section 9.11 of this AEE.

3.5.3.1 Te Akitai Waiohua Deed of Settlement

The rohe of Te Ākitai Waiohua is identified in the Auckland Council Geomaps database and is based on the Area of Interest agreed between Te Ākitai Waiohua and the Crown in the Deed of Settlement (initialled on 23 December 2020, signed 12 November 2021). The Sutton Block site is located within the area of interest identified in the Deed of Settlement. As set out in Te Ākitai Waiohua Cultural Values Assessment (CVA) attached as Appendix G, Te Ākitai Waiohua, along with Ngāti Te Ata, settled in the Drury, Ōpaheke, Papakura and Takānini area. While this entire area is of interest to Te Ākitai Waiohua, Kaarearea Paa located within the Project site, is of particular value to Te Ākitai Waiohua. This is discussed further in Section 9.11 of this AEE.

3.5.4 Archaeology

An Archaeological Assessment has been undertaken by Clough & Associates Ltd (Technical Report T, Volume 2). This assessment identified sixteen recorded sites within a 1 km radius of the Drury Quarry Zone (as shown in Figure 3.19). Seven of these sites are located within the Drury Quarry Zone

and Quarry Buffer Area, two of these being in close proximity and one within the project area (refer to Figure 3.20).

- The proposed quarry expansion area has been designed to avoid impacting on the known extents of all archaeological sites, including R12/278 (Kaarearea Paa, Kārearea, Te Maketu – burials, stonework, earthworks, Pā) and R12/723 (Pits, Terraces, Stonework, Cultivations). Further information on these sites is as follows: R12/278 is located to the south of the LOQ footprint and is considered to have extensive and significant Māori habitation. The site is a scheduled Category B historic heritage place on the Historic Heritage Overlay in the AUP, with a defined Extent of Place.
- Site R12/723, located to the southwest of the LOQ footprint is considered a well-preserved traditional garden site that holds high value for its contribution to the archaeological landscape around Kaarearea Paa.
- Both R12/278 and R12/723 are part of the wider archaeological landscape known to Māori as Te Maketu. It is understood that four pā were built at different times on the area's volcanic cones and outcrop, with the most ancient pā likely to be Kaarearea Paa.

At Stage 5 (Years 40 – 50), the proposed quarry expansion will impact on NZAA recorded site R12/724 (Plants, Fence, Stonework, Earthworks). However, this site is possibly an early 20th century domestic occupation site, but more likely a later 20th century farming feature and therefore, does not fall under the archaeological provisions of the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014), as it relates to post-1900 activity. Additionally, although the site is of some historic interest, overall, it has limited historic values.

No additional unrecorded archaeological or other historic heritage sites were identified by background research or archaeological field inspections in 2006 or in 2021, 2022, 2023 and 2024 on the proposed quarry expansion area within the Sutton Block.

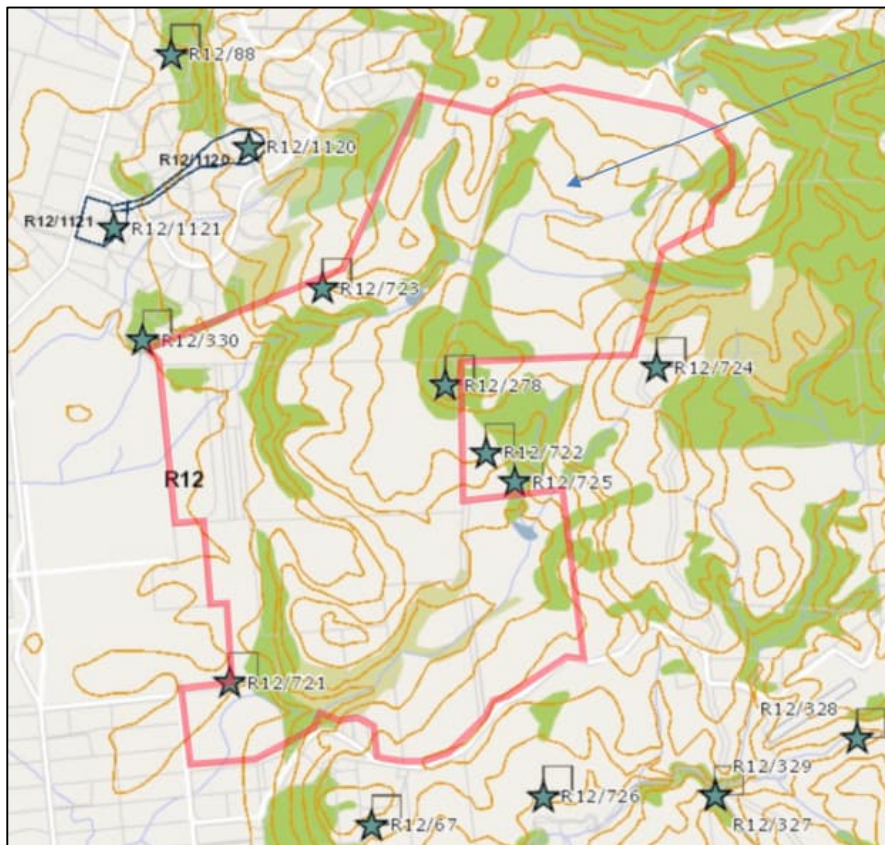


Figure 3.19: Location of recorded archaeological sites within and in the vicinity of the SAL Landholdings (Sutton Block indicated with arrow). Source: NZAA Archsite.

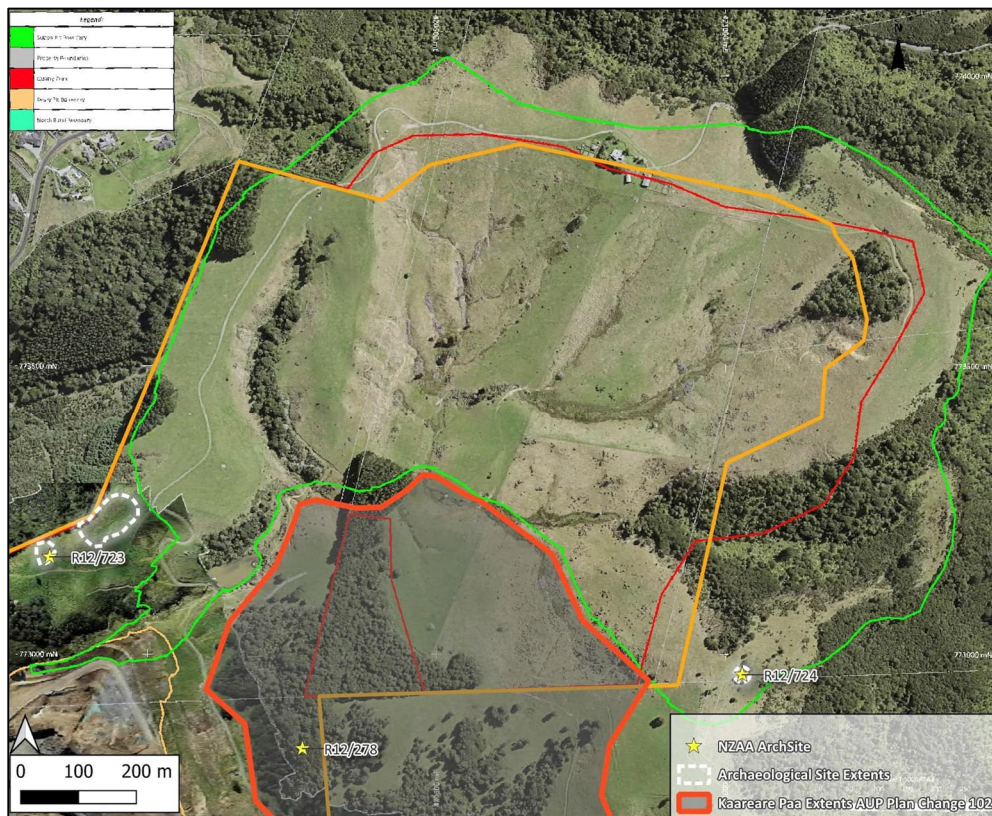


Figure 3.20: Location and extents of recorded sites within the Drury Quarry Zone (dark red outline) and within the project expansion area (green outline). Note, while R12/724 provides some historic interest, this site relates to post-1900 activity and therefore is not within the definition of an archaeological site under the HNZPTA 2014. Source: SAL.

3.5.5 Noise

Ambient noise monitoring has been undertaken by Marshall Day Acoustics as part of their Assessment of Noise Effects for this project (Technical Report I, Volume 2). The findings of this assessment are briefly described below.

As shown in Figure 3.21, in order to establish a baseline of the existing sound environment, week-long noise measurements were undertaken in November 2023 at the notional boundary of the following dwellings:

- 171 MacWhinney Drive (the closest dwelling to Sutton Block Stage 1).
- 359 MacWhinney Drive (the closest dwelling to later Sutton Block Stages).
- 1109 Ponga Road (the closest dwelling to the north-east).
- 93 MacWhinney Drive (a dwelling unlikely to be affected by Sutton Block noise).

Short-term attended measurements at 115 Sonja Drive (the closest dwelling to the north of the proposed Sutton Block) were also completed in October 2022. These measurements give a snapshot of daytime noise levels, which have been put into context with the week-long data.

The average sound levels indicate that the current noise environment for MacWhinney Drive receivers is already elevated by quarry and SH1 traffic noise. The balance between quarry and traffic

noise varies along different parts of MacWhinney Drive, with the most quarry noise received by the lower, south-western most dwellings (i.e., 93 MacWhinney Drive).

The character of the sound at Sonja Drive and Ponga Road receivers consists mainly of bird song and other natural sounds.

The highest average nighttime level was 47 dB L_{Aeq} measured at 93 MacWhinney Drive, 2 decibels above the AUP nighttime control. This is due to close proximity of the existing quarry and State Highway 1 traffic noise. The average nighttime noise level measures at the notional boundary of the three other properties listed above ranged from 39 - 43 dB L_{Aeq} .



Figure 3.21: Ambient noise monitoring positions.

3.5.6 Traffic

3.5.6.1 Roothing network

The roading network surrounding the SAL landholdings is described in the Integrated Transportation Assessment (Technical Report U, Volume 2) and summarised below. The Drury Quarry site is primarily served by Bill Stevenson Drive and Maketu Road, which connect to and from State Highway 1 via the Ramarama interchange at the southern end of Maketu Road (approximately 2.5 km from the Quarry entrance). Alternative access to State Highway 1 is available via the northern section of Maketu Road, Drury Road, Great South Road and State Highway 22.

Bill Stevenson Road runs east-west and is a two-way, two-lane road (single lane in each direction, except at the dedicated turn lane onto Maketu Road). Footpaths are provided on both sides of Bill Stevenson Drive and Maketu Road. Separate walking and cycling facilities are available on Maketu Road. Additionally, two temporary pedestrian refuge islands provide for the movement of pedestrians across the road.

Bill Stevenson Drive is intersected by several roads including, Waikura Road/Davies Road to the east and Toiawaka Road to the west. Waikura Road/Davies Road is a non-arterial road with a 7-meter

carriageway. There is also a pedestrian refuge island at the T-intersection with Bill Stevenson. Toiawaka Road is a non-arterial road running north-south.

Intersections like Maketu Road/Bill Stevenson Drive and Jack Stevenson Drive/Bill Stevenson Drive are signalized crossroads with pedestrian crossings, with the former anticipating future development to the west. There is a high degree of modification and building activity occurring within the wider Drury South area, including the transport network that is expected to continue over the coming years.

4 Sutton Block quarry design and operation

4.1 Introduction

This section provides an overview of the development and operation of the proposed Sutton Block pit located within the northern portion of the wider SAL landholdings. The project layout is shown in Appendix D.

Ongoing operational and phase development activities that are proposed to occur, from the site establishment earthworks until the final pit closure and rehabilitation, will include:

- Vegetation removal;
- Haul road to the North-West of the Sutton Block;
- Removal of overburden material;
- Establishment of bund along the perimeter of the Sutton Block;
- Operational drilling and blasting;
- Aggregate extraction;
- Aggregate processing;
- Stockpiling;
- Conveying;
- Internal traffic movements;
- Operational earthworks;
- Stream and wetland reclamation and stream diversion;
- Operational stormwater, dust, erosion and sediment control management;
- Construction stormwater, dust and erosion and sediment control management;
- Environmental mitigation activities, including enhancement planting and pest control; and
- Other ancillary activities.

4.2 Project overview and layout

The existing pit at Drury Quarry produces approximately 3.5 million tonnes of aggregate per annum. Based on current demand estimates, the existing pit will provide approximately a further 20 years of aggregate supply to Auckland. In order to continue to provide local supply of aggregate resource SAL proposes to develop a new separate pit (the 'Sutton Block') at the existing Drury Quarry site.

The Sutton Block pit has been designed to provide approximately 240 million tonnes of additional aggregate to supply the market. The Sutton Block pit expansion will involve a staged development across an area of approximately 108 ha, up to a maximum pit depth of -60 RL m, and with a maximum vertical height of approximately 320 m. This layout has been selected to maximise the extraction of both brown and blue greywacke rock while ensuring that the majority of the footprint is located within the existing SPQZ, loss of streams and wetlands outside the SPQZ is minimised, and infringement on Kaarearea Paa, and the ONL is avoided. The overall site layout is shown on drawing SSQ_23_404, rev: 02, attached as Appendix D.

In terms of staging, the Stage 1 (Years 0 – 3) involves the construction of the roading infrastructure required to access the site, stream diversion, establishment of erosion and sediment control measures, construction of a bund to the north of the site (referred to as the Northern Bund), initial offset planting and commencement of quarrying (refer to Section 5.1 for further details). Stage 2 (Years 3 – 15), Stage 3 (Years 15 – 30) and Stage 4 (Years 30 – 40) would involve the commencement of quarrying within the interim pit boundaries. Stage 5 (Years 40 – 50) reflects the LOQ footprint

(refer to Section 5.1 and the Drawing Set attached as Appendix D). The timing of these stages is indicative only and may vary over the life of the quarry. Notably, the timing and duration of each stage is dependent on market demand. Based on current demand estimates, the Sutton Block pit will provide approximately 50 years of aggregate supply to Auckland.

It is anticipated that there will be a cross over period when the Sutton Block first opens where quarrying of the existing Drury Pit and proposed Sutton Block pit will occur simultaneously. Typically, as a quarry pit nears the end of its life the aggregate becomes harder and more time-consuming to extract, but it is generally good quality rock (blue rock). At the start-up of a quarry, it can take time to extract aggregate due to the construction of infrastructure and removal of overburden taking many years. Usually in this early phase, it is a lower quality of rock (brown rock). By simultaneously quarrying both pits, the Sutton Block pit can be established and used to supply lower-quality rock, while still ensuring a steady supply of high-quality rock from the existing pit. This will ensure a continuous supply of aggregate to the Auckland market can be maintained.

The Sutton Block will generally be serviced by the existing Drury Quarry site infrastructure and facilities that are already consented (refer to Section 4.3 below). This will be supported by the construction of haul roads and a proposed conveyor belt connecting the Sutton Block pit to the existing primary processing plant, bunding and supporting infrastructure.

4.3 Existing ancillary site infrastructure

4.3.1 Front of house

As shown in Figure 4.1, Drury Quarry includes a number of existing FOH facilities and activities which support the broader quarry operation (and will support the Sutton Block). The FOH is accessed from Bill Stevenson Drive at the quarry entrance.

The FOH operations generally include:

- The front gate and access road (Bill Stevenson Drive);
- Transport office and truck parking area;
- Mechanical workshop;
- Weighbridge;
- Truck wheel wash;
- Aggregate storage bins and stockpiles;
- Primary processing plant;
- Tertiary processing plant;
- Seal chip aggregate plant;
- Asphalt aggregate plant;
- The lamella, filter press (quarry process water sediment removal devices) and associated sediment ponds;
- Concrete plant;
- Quarry administrative offices, laboratory and car parking area;
- Asphalt plant (currently under construction);
- Perlite plant (currently under construction); and
- Additional primary processing plant (currently under construction).

The existing FOH facilities will service the Sutton Block pit and no changes to the FOH are proposed as part of this application. Refer to Section 8.3 for a list of existing resource consents authorising the FOH facilities and associated discharges.



Figure 4.1: Front of House facilities layout.

4.3.2 Processing Plants

4.3.2.1 Primary Processing Plant (Fixed)

Initially, it is proposed that the Sutton Block will be serviced by the existing fixed primary processing plant, located in the FOH area, with a haul road linking the plant to Sutton Block.

As the Sutton Block develops, primary crushing will occur in Sutton Block and a conveyor belt will transport the rock (raw material) from the Sutton Block to the FOH area for further processing. The processing plant crushes the rock turning it into aggregate of different-sized fractions. The aggregate product is then stored in product bins or stockpiles to be sold or blended.

4.3.2.2 Tertiary Processing Plant, Asphalt Aggregate Plant and Seal Chip Aggregate Plant

These processing plants are key facilities for additional refinement of raw aggregate. They crush and screen previously extracted and processed aggregate to achieve a smaller desired size or quality.

The Tertiary and Asphalt Aggregate plants are located on the Eastern side of the FOH area, and the Seal Chip Aggregate plant is centrally located.

4.3.2.3 Primary Processing Plant (Mobile)

Mobile processing plants are located within the pit, nearby recently blasted rock. The rock is fed into a crusher using a 40 – 50 tonne excavator for processing. The product is then stockpiled using a conveyor before loading on trucks.

Mobile plant is not as efficient as fixed plant and therefore fixed plant is always the preferred option.

Drury Quarry is in the process of establishing an electric portable plant to replace and consolidate some of the existing mobile crushers to reduce diesel consumption and to meet customer demand.

4.3.3 Concrete plant

The existing concrete plant is located within the FOH area. The Sutton Block pit will produce and supply raw aggregate to be processed at the concrete plant. The Drury concrete plant produces a

range of concrete mixes used in commercial, infrastructure and residential projects. No changes are proposed as part of this application to the concrete plant.

4.3.4 Asphalt plant

The Sutton Block will produce and supply aggregate to the asphalt plant currently under construction located within the FOH area. The raw aggregate will be transported to the asphalt plant via trucks. The Asphalt Plant will process and combine various aggregates to create a final asphalt product. No changes are proposed as part of this application to the asphalt plant.

4.3.5 Thorburn Fill

The Thorburn Fill is a managed and clean fill operation located to the east of the existing Drury Quarry pit, covering an area of approximately 21 ha, within the wider landholdings owned by SAL. Currently, it services the existing quarrying operation, material from the industrial subdivision west of the existing pit and from the market. The Thorburn Fill operates under existing separate resource consents. No waste materials or overburden from the Sutton Block pit are proposed to be sent to the Thorburn Fill.

4.3.6 Perlite processing plant

A Perlite processing plant is currently under construction within the FOH area. The Perlite processing plant provides for the drying, further crushing and storing (pre and post processing) of perlite prior to it being transported to concrete plants around Auckland for use in concrete production. The use of perlite in concrete is a new technology and is proposed to be used in place of cement in the production of concrete to reduce emissions of CO₂. No changes are proposed as part of this application to the perlite processing plant.

4.4 Hours of operation

The peak hours of operation across the site vary depending on the type of activity, determined by various matters such as demand, product needs, staffing requirements, existing consent conditions and AUP Standards. Table 4.1 below sets out the general peak hours of operation for key existing facilities. These are the general peak hours as activities may occur 24 hours a day while complying with noise limits and any applicable consent conditions²². Note, operation of the Sutton Block will not result in a change to these existing facilities hours of operation and nor does this application seek to amend the hours of operation.

Table 4.1: General peak hours of operation for existing ancillary site infrastructure

Activity	Current peak times of operation
Sales	Monday – Friday: 5am – 5pm Saturday: 6am – 12pm
Production (primary plant)	Monday – Friday: 7am – 9pm Saturday: 7am – 2pm
Production (tertiary plant)	Monday – Friday: 5.30am – 9pm Saturday: 7am – 2pm
Sealing chip	Monday – Friday: 5.00am/7.00am – 9pm / 2am (peak varies) Saturday: 7am – 2pm

²² The Assessment of Noise Effects (Technical Report I, Volume 2) notes that the predicted noise levels rely on natural screening (terrain) from the north-western pit edge, and this must be in place to achieve daytime compliance.

Activity	Current peak times of operation
Asphalt Aggregates Plant	Monday – Friday: 5.30am – 7pm Saturday: 7am – 2pm
Portable processing plants	Monday – Friday: 6.00 am – 5pm (upper benches) Monday – Friday: 6.00 am – 5pm, 5pm – 3am (in main pit) Saturday: 6am – 3pm

4.5 Aggregate production capacity

The aggregate output at Drury Quarry is driven primarily by the processing capacity of the plant on site.

As described in Section 4.3, these processing facilities and other ancillary site infrastructure convert raw material (rock) into usable aggregate. Each processing facility has a specific throughput capacity, which defines the maximum quantity of material it can handle and process in a given period. This capacity is determined by the size and efficiency of the equipment. No changes are proposed to the processing facilities as part of this consent.

5 Construction sequence and programme

The Erosion and Sediment Control Assessment Report (ESCAR) attached as Technical Report R, Volume 2 includes an Erosion and Sediment Plan (ESCP) and drawings, that identify the erosion and sediment control (ESC) measures across the five stages of the proposed works (refer to Figure 5.1). The timing of these stages is indicative only and may vary over the life of the quarry. However, the indicative stages are considered to provide an appropriate basis for assessment purposes.

The initial stage of work (Stage 1) encompasses the creation of the access road to the site and the associated stream diversion, establishment of sediment control devices, overburden removal and establishment of the Northern Bund. The second (Stage 2) and third stages (Stage 3) of work reflect the initial pit development, which begins with the removal of additional overburden material and the creation of stockpiles. Stage 2 to 4 predominantly see the progressive widening of the pit. The final stage of work (Stage 5) reflects the footprint of the quarry pit over a 50-year period and predominantly when the pit will be progressively deepened.

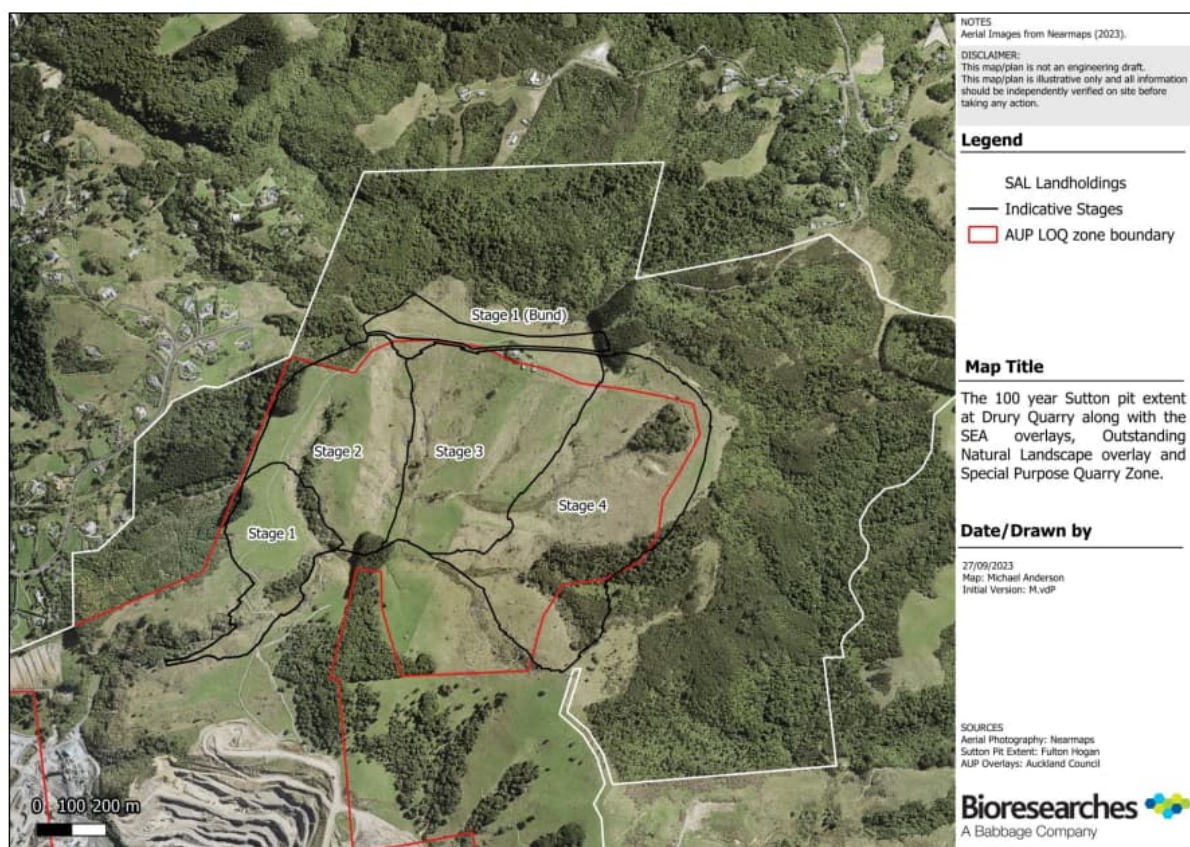


Figure 5.1: Indicative stages of Sutton Block development. Source Bioresearches 2024.

5.1 Stage 1 – Infrastructure establishment (Years 1 – 3)

The initial stage of work (Years 1 – 3) is broken down into the Enabling works and Establishment Works (Phases 1 – 9) involving the draining of the existing dam pond to establish a Sediment Retention Pond (SRP), associated diversion of Stream 4 lower, construction of the roading infrastructure required to assess the site, initial offset planting and establishment of the conveyor belt connecting to the existing primary processing plant. In order to progress these works, initial access to the Northern Bund area and Sutton Block pit will be via the existing farm track located to the northwest of the site (refer to Figure 5.2). The existing track will be widened to form an approximately 12 m wide by 487 m long haul road. Once established this haul road will also connect

the Sutton Block pit to the existing pit (refer to ESCP Drawings in Technical Report R, Volume 2 for further details).

Stage 1 also involves the commencement of overburden removal. Suitable material (engineering quality) will be used to construct erosion and sediment control devices, creation of the Northern Bund and a temporary stockpile (refer to Figure 5.7 for approximate location). Refer to Section 5.6 below for furthering details on overburden removal.

The Northern Bund is expected to be completed prior to Stage 2. Once complete, the bund will be established in grass and exotic tree planting will commence near the boundary of the ONL (at the toe of the bund).

Once the site access is established, and Stage 1 overburden is removed, the proposed conveyor system will shift raw material to the existing fixed primary processing plant. The conveyor system is proposed to be installed along the edge of the access road.

Upon the completion of the Stage 1 works, the lower half of Stream 5 will have been reclaimed as a result of the expansion of the footprint of the Sutton Block pit. Most of Stream 6 (including headwater tributaries and branches), Wetland 6, Stream 9 and Wetland 9 will also be reclaimed at this stage to establish the temporary overburden stockpile and Northern Bund.

Vegetation loss will occur in Stage 1, including removal of the Rock Forest (0.65 ha) and Broadleaf Podocarp Forest. A summary of the type and extent of vegetation loss for each stage and the timing of the subsequent offset planting is set out in Table 7.1. Notably, buffer planting along the northeastern edge of Kaarearea paa (SEA_T_5349), will be undertaken. Pest animal control and fencing will be undertaken as necessary.



Figure 5.2: Stage 1 – Indicative Sutton Block at 3 years.

5.2 Stage 2 - Operating Quarry (Years 3 – 15)

The second stage of work is the 15-year plan which involves the commencement of quarrying within the interim pit boundary (refer to Figure 5.3), located predominately within the Quarry Zone, with a slight expansion into the Rural – Mixed Rural Zone to the north of the pit. The direction of the expansion will depend on market demand. However, the indicative staging plan shows the expansion of the pit to the north-west. Expansion of the pit will be incremental, widening and deepening as resource is extracted. Internal pit roads will be constructed as the pit expands.

The works involved in Stage 2 are expected to involve the reclamation of the upper reaches of Stream 5 and remaining extents of Stream 6 as well as Wetland 6 (including 6b, 6c and 6d) and Wetland 7b. Notably, loss of catchment for Stream 4 (upper and middle) is expected to begin occurring at Stage 2.

Regarding vegetation, further extents of Broadleaf Podocarp Forest (total of 1.98 ha across Stages 1 and 2), 10 relict Trees and exotic vegetation will be lost from the western edge of the Sutton Block. Revegetation would target privet and pine dominant vegetation on SAL-owned land adjacent to MacWhinney Reserve as a priority following stakeholder engagement. Further buffer planting along the northeastern edge of Kaarearea Paa is proposed and a total of 20.32 ha of revegetation will be undertaken. At this stage enhancement of the entire 108.35 ha of podocarp broadleaved forest and kanuka forest will begin, providing biodiversity offsetting 20 – 30 years in advance for Rock Forest and some Kanuka type forest (refer to Table 7.1 below and BOCF for further information). Stage 2 involves the continued removal of overburden, blasting, excavation and loading of broken rock onto trucks or conveyors for transport to be crushed and sorted at the existing Drury Quarry processing facilities.

As Sutton Block develops, a primary crusher is proposed to be installed in the Sutton Block. The conveyor belt will transport the rock from the Sutton Block to the FOH area for further processing. A mobile processing plant will also operate within the Sutton Block.



Figure 5.3: Stage 2 – Indicative Sutton Block pit plan at 15 years.

5.3 Stage 3 – Operating Quarry (Years 15 – 30)

The third stage of works is further expansion of the interim pit boundary (refer to Figure 5.4) predominately within the SPQZ with a slight expansion into the Rural – Mixed Rural zone to the northeast. Like Stage 2, the direction of the expansion will depend on market demand. However, an indicative staging plan shows the expansion of the pit to the east. During this stage of the works, the expansion of the pit will be incremental, widening and deepening as resource is extracted. Internal pit roads will be constructed as the pit expands.

Stage 3 works will involve the reclamation of upper Stream 7, Wetland 7a and the downstream half of Wetland 1a. Although at this stage the loss of vegetation is limited, there will be encroachment into the primarily pastoral portion of SEA_T_1177.

Loss of 13 relict trees is anticipated during Stage 3. Advance planting of 10.96 ha of broadleaved podocarp forest will be undertaken to offset for the loss of 2.34 ha of broadleaved podocarp forest (BPF 2, 3 and 4) which is not expected to be removed for 10-20 years later.

The works associated with rock extraction involved in Stage 3 will generally include the same activities as Stage 2.

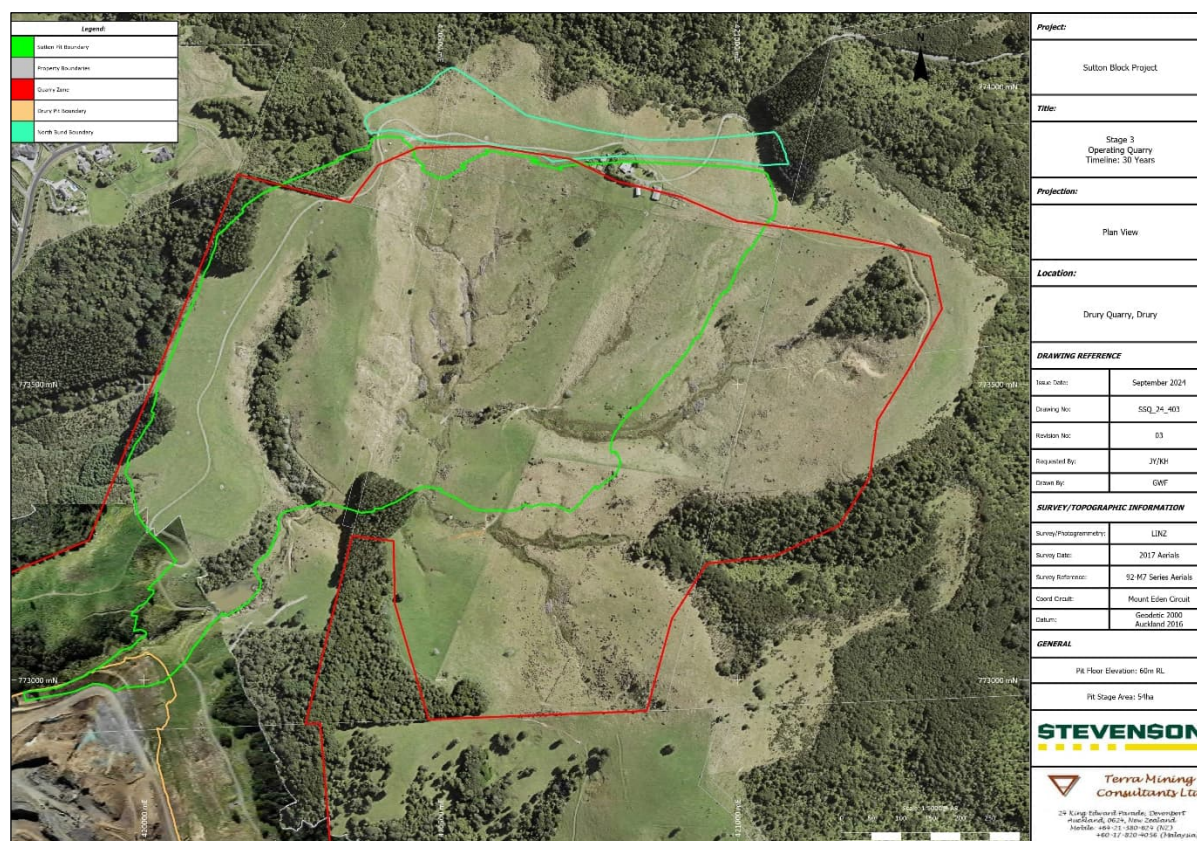


Figure 5.4: Stage 3 – Indicative Sutton Block at 30 years.

5.4 Stage 4 – Operating Quarry (Years 30 – 40)

The fourth stage reflects the further expansion of the interim pit boundary to the east and south however, the direction of the expansion will depend on market demand (refer to Figure 5.5). During Stage 4, the pit continues to expand beyond the SPQZ into the Rural – Mixed Rural zone. Specifically, approximately 77 ha of Stage 4 expansion will be within the SPQZ and 11 ha in Rural – Mixed Rural

zone²³. As with Stages 2 and 3, expansion of the pit will be incremental, widening and deepening as resource is extracted. Internal pit roads will be constructed as the pit expands.

Stage 4 works will generally involve the reclamation of Stream 1a, 1b and 2b associated Wetlands (Wetland 1b, 1c, 2a and 2b).

Stage 4 is anticipated to result in the removal of 2.66 ha of Taraire Broadleaf Podocarp Forest, 5.06 ha of Kānuka Forest (VS2) from SEA_T_1177 and SEA_T_5323 and 107 relict native trees. As set out above and in BOCP, all revegetation planting will have been carried out in Stages 1-3 in advance of Stage 4 losses.

Removal of overburden, blasting, excavation and loading of broken rock onto trucks or conveyors will continue. Crushing and initial processing of rock within the Sutton Block will continue to occur, with the majority of the crushed rock delivered to the existing Drury Pit fixed primary processing plant via conveyor belt.



Figure 5.5: Stage 4 – Indicative Sutton Block at 40 years.

5.5 Stage 5 – Life of Quarry Plan (Years 40 – 50)

The fifth and final stage reflects the quarry pit over an approximate 50-year period (refer to Figure 5.6). At Stage 5, the footprint of the quarry pit is expected to be approximately 108 ha, approximately 30 ha (or 28%) of this pit area will be located outside of the SPQZ, and within Rural zoning (Rural – Mixed Rural Zone and partially Rural – Rural Production Zone).

As with Stage 4, expansion of the pit will be incremental, deepening and widening as resource is extracted, with internal pit roads being constructed as expansion occurs. However, it is during this

²³ Pit extent for Stage 4 is approximately 88 ha.

stage we will predominately see the progressive deepening of the pit to a maximum depth of -60 RL m. During this stage, the temporary Northern Bund will also be removed.

The indicative staging plans show the pit expanding to the east and north. Stage 5 works will generally involve the reclamation of Stream 2 (including Stream 2b) and will see further expansion of the pit into SEA_T_5323 resulting in a loss of approximately 2.99 Broadleaf Podocarp forest and 3.61 ha of Kānuka forest.

It is proposed that the works towards the east are undertaken first before the northern bund is removed. This will allow for the exposed cut faces (which would be further revealed following the removal of the Northern Bund) to be lowered as the eastern ridge is modified.

Exotic tree planting established along the toe of the Northern Bund would now have reached its mature height (after at least 40 years of growth, reaching approximately 40 m in height). Following removal of the Northern Bund, it is anticipated that some views towards the quarry could be partially attainable from a number of elevated residents, despite the indigenous vegetation established within the ONL in Stage 2, assisting to heavily filter views of the quarry behind.

Within five years of confirmed closure, the Quarry Management Plan (QMP) will be updated to include closure and rehabilitation plans (as required by the proposed consent conditions attached as Appendix I).



Figure 5.6: Stage 5 – Indicative Sutton Block LOQ footprint at 50 years.

5.6 Overburden removal

The initial excavation of material is classed as overburden. Overburden consists of topsoil, followed by coal measures and highly weathered rock. The aggregate extraction process involves stripping, transporting, and removing topsoil and organic materials using conventional quarry hydraulic excavators and six-wheeled dump trucks (or scrapers). Overburden depths vary across the Sutton

Block pit but are typically 1 - 5 m deep in the centre of the Sutton Block and 10 - 15 m deep on average in the remainder of the Sutton Block.

From Stages 1 - 3, overburden will be used in a range of ways including:

- To form the Northern Bund (refer to Figure 5.7 for approximate location) located predominately outside the SPQZ and approximately 4 ha in area. The Northern Bund will eventually be removed as the quarry pit operations move into Stage 5 of operations.
- To form a temporary overburden stockpile (refer to Figure 5.7 for approximate location). It is expected that the temporary overburden will be required to remain in place for 10 - 15 years and will be removed as the quarry pit expands.
- To form erosion control clean water bunds.
- Where possible, the material will also be taken off site and sold to be used as fill (reliant on market demand).

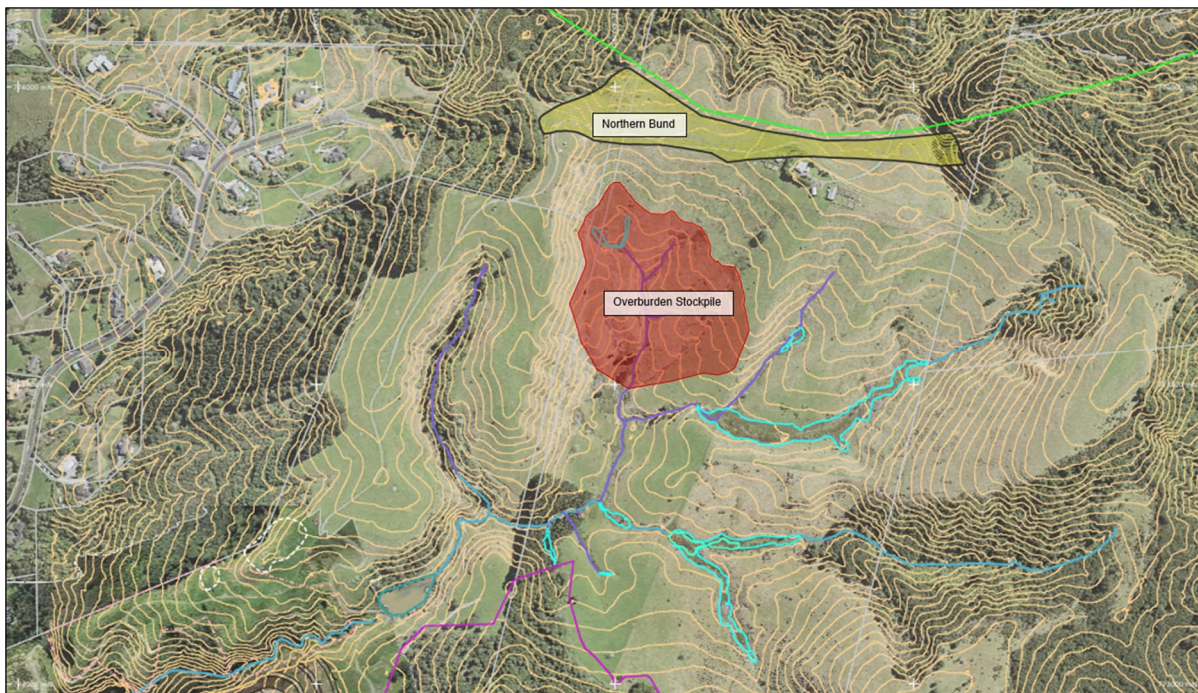


Figure 5.7: Northern Bund and temporary overburden stockpile.

6 Mitigation and monitoring

6.1 Construction erosion and sediment control

The ESCAR (Technical Report R, Volume 2) sets out a framework of controls to avoid, remedy and/or mitigate the potential adverse effects on the receiving environment, including measures to ensure sediment generation is minimised and the works are conducted in accordance with best practice. Given that the works proposed in each stage vary, specific ESC measures and plans have been prepared for each stage (Stage 1 – 5). Key ESC devices, such as SRPs, have been designed and located to service all five stages. Generally, the works from an erosion and sediment control perspective can be split into two categories. Stage 1 - Infrastructure Establishment and Access (Years 1 – 3) reflects a typical large bulk earthworks project. Stages 2 to 5 – Operating Quarry to LOQ (Years 3 – 50), are more representative of a quarrying operation, that includes sub-stages of typical earthwork operations. The proposed approach to erosion and sediment control reflects this and key details for each stage are summarised in the following sections.

6.1.1 Stage 1 – Site establishment and access

As outlined in Section 5.1, Stage 1 is split into the Enabling works and Establishment Works (Phases 1 – 9), involving establishment and access works. Upon the completion of the enabling works, the initial quarry operations will commence. This phase is expected to take up to three years to complete and will involve more traditional bulk earthwork activities, requiring a staged approach to erosion and sediment control.

6.1.1.1 Enabling works

To enable the construction of the Sutton Block Access Haul Road, and Permanent Stream Diversion Channel for Stream 4, a SRP (SRP-1) will be installed to treat site runoff for the early phases of Stage 1. It has been designed to service a catchment area of approximately 4.1 ha. SRP-1 is to be located in the footprint of the manmade existing dam pond (refer to Section 3.4.9.3 above). Overburden material of suitable engineering quality will be used to establish SRP-1 and the clean water diversions.

Pre-enabling works are required at the site in order to construct SRP-1. The existing dam pond weir will be removed to allow the stream to flow and to re-establish its flow path along its original alignment. This will allow the current dam wetted footprint area to begin to dry up for approximately two months before earthworks commence.

A new temporary stream channel will be constructed offline, established around the outside (true left bank) of the existing dam pond footprint and will discharge into the left bank culvert at the road crossing. Once the new temporary stream channel has been constructed and stabilised, a stabilised coffer dam upstream of the existing dam pond footprint will be installed to direct water into the new temporary stream channel. This will take the stream channel offline and allow the old dam pond area to be desilted (mucked out). SRP-1 will then be built within the farm dam footprint and will discharge to the right bank of the culvert.

6.1.1.2 Access and haul roads

Access to the Sutton Block site will be gained by forming an approximate 20 m wide and approximately 350 m long quarry access road from the existing Drury Quarry area. As mentioned above, initial access to the Northern Bund area will be via the existing farm track. The existing access track will be widened to form a 12 m wide haul road (referred to as the Northwest Haul Road).

Two Decanting Earth Bunds (DEBs) will be installed to manage runoff from the middle and upper Northwest Haul Road. The runoff from the lower section of the Northwest Haul Road will be directed to SRP-1.

Topsoil will be stripped to form bunds on both sides of the haul road. The bunds will be seeded and mulched immediately upon completion. The bunds will prevent clean water from flowing towards the haul road and direct all haul road runoff to a treatment device (DEB or SRP).

As the haul road is constructed it will also be sheeted with aggregate and is therefore expected to have low sediment yield.

6.1.1.3 Northern Bund

During the establishment phase (discussed below) and early works stages to set up the quarry pit, overburden will either be taken directly off site (sold as product), or to the new Northern Bund Disposal Area.

The Northern Bund (shown in Figure 5.7) will be established in a staged and progressive manner as overburden is produced. The total area of the Northern Bund is approximately 4 ha. Once complete, the bund will be established in grass and exotic tree planting will commence near the boundary of the ONL (at the toe of the bund). Although the Northern Bund serves as an overburden stockpile, once the early works stages are complete, its primary purpose is to mitigate visual effects.

Two SRPs will be installed to treat runoff from the construction of the bund. Perimeter bunds will also be installed to direct site runoff to two of these SRPs. The construction of the SRPs will be staged in accordance with the filling operation to help ensure that all controls are installed in advance of the bund extending beyond the catchment of the previous control device.

The overburden bund batters will be progressively stabilised as the fill levels are lifted and completed.

The Northern Bund is expected to be in place for approximately 40 years. As the quarry pit operations expand from Stage 4 into Stage 5, the bund will be removed, as it lies within the footprint of the proposed Stage 5 northern extent. As outlined in Section 5.5, the removal of the Northern Bund will also result in the loss of the exotic tree planting established on its toe. Accordingly, it is proposed that the works towards the east are undertaken first before the Northern Bund is removed. Furthermore, although it is anticipated that some views towards the quarry could be partially attainable from a number of elevated residents, the indigenous vegetation established within the ONL in Stage 2, will assist to heavily filter views of the quarry behind.

6.1.1.4 Establishment works

The ESCAR (Technical Report R, Volume 2) breaks the establishment works into nine phases. In summary, the Phase 1 – 5 of the Stage 1 Establishment Works will include:

- Using the initial topsoil strip to establish the cleanwater diversion bunds (CWB). Seeding and mulching of diversions will be undertaken immediately upon their completion.
- Using suitable material (engineering quality) to establish SRP-1 and disposing of unsuitable material at the designated overburden site.
- Upon completion of SRP-1, installing the dirty water diversion drains.
- Establishing a future DEB platform and silt fence to the southwest of SRP-1.
- Undertaking staged bench cuts to reduce the levels of the area immediately to the north of SRP-1.
- Ensuring completed batters are progressively stabilised, including hydroseeding any batters that are not rock (deemed stabilised).

- Taking any quarry rock material that is encountered to the existing Drury Quarry for processing.
- Directing all site water to SRP-1.

Phase 6 – 9 of the Stage 1 Establishment Works are expected to include:

- Works to excavate the footprint of the future access road will commence from the Drury Quarry pit.
- Realignment of Stream 4 to create a new permanent stream diversion and access road involving;
 - Use of silt fences during channel formation and stabilisation for the realignment of the stream;
 - Excavation of the new stream channel bench (extra width) to be formed offline;
 - On the designated bench the stream channel will be formed and stabilised with geotextile and erosion protection rock rip rap;
 - The upper benches above the stream channel bench will then be completed and stabilised with geotextile and erosion protection rock rip rap;
 - Once the new permanent stream diversion channel has been completed, the downstream end of the diversion channel will be extended to marry into the existing stream (refer to Figure 6.2);
 - Removal of the DEB;
 - Installation of a new temporary culvert to direct the temporary stream diversion into the new permanent channel. The culvert will be installed offline and made live upon completion;
 - SRP-1 will be removed;
 - All site water will be directed to the Drury Quarry Pit where the water will be treated and managed via the Drury Quarry Water Management treatment system; and
 - The access road will be completed, and works will commence to excavate and form a quarry pit (Sutton Block Quarry).

6.1.1.5 Temporary overburden stockpile

During the enabling works (Stage 1), the Northern Bund will near completion. In advance of this, a temporary overburden stockpile will be established towards the centre of the Sutton Block (shown in Figure 5.7).

Initially to gain access to the stockpile area, a track for will be formed and stabilised down from the Northern Bund area.

Similarly, to the Northern Bund, the stockpile will be established in a staged manner as overburden is produced. The total area of the overburden stockpile footprint is approximately 7 ha. A SRP will be installed to treat runoff from the construction and establishment of the stockpile area. Perimeter bunds will be installed to direct site runoff to the SRP and to limit its catchment to no more than 5 ha. The works will be staged with progressive stabilisation of the overburden area and batters to further minimise the open area to no more than 5 ha at any given time.

Lastly, the diversion bunding will be adjusted as required to ensure that the working 5 ha is directed to the SRP and clean and stabilised areas are directed away from the SRP as clean water discharges.

6.1.1.6 Pit development

Upon the completion of the enabling works, the initial quarry operations within the Sutton Block Quarry footprint will commence. The potential sources of sediment are associated with overburden removal and stockpiling within the LOQ footprint and the expansion of the quarry footprint. Internal pit roads will also be constructed as the pit expands. All site water will fall to the pit sump (this will form a mix of groundwater and surface water). From the pit, water will be either;

- Used for preliminary processing within the pit;
- Clean water pumped and discharged directly to Stream 4 (NT1) (Figure 6.1 below); or
- Dirty water will be either;
 - a Left to settle in the Sutton Block pit and once below a certain turbidity threshold (100NTU) discharged as clean water to the Stream 4 (NT1); or
 - b Pumped and integrated into the Drury Quarry Water Management and sent to the Lamella for processing before being discharged to the lower reaches of NT1 stream²⁴ (refer to Section 6.2.2 below).

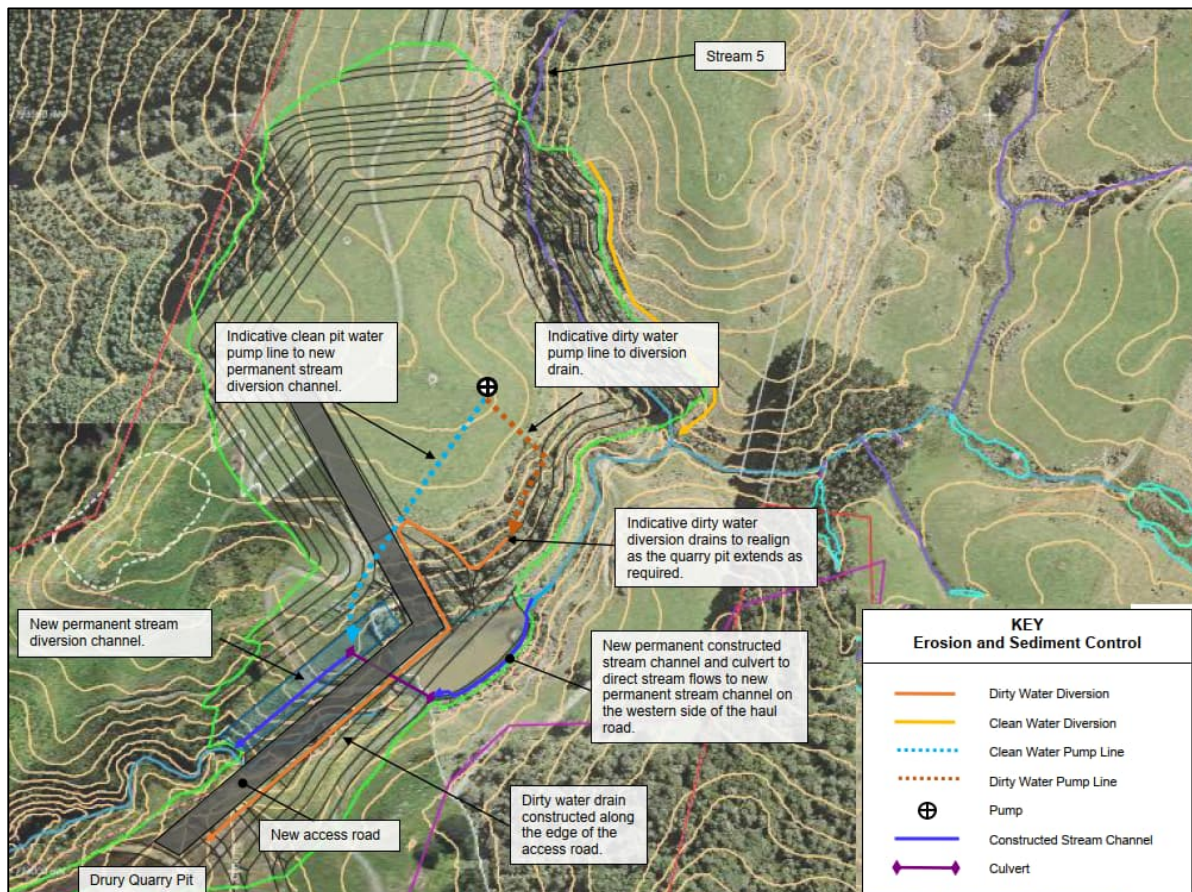


Figure 6.1: Indicative water management system proposed during stage 3. Source: Southern Skies.

²⁴ Discharges to lower reaches of the NT1 stream associated with the existing Drury Water Management system and lamella are authorised under resource consent reference BUN60359817 and do not form part of this resource consent application.

6.1.2 Stage 2, 3, 4 and 5 – Operating quarry

6.1.2.1 Operating Quarry

Upon completion of the establishment works and initial pit development, quarry operations will commence. A number of the ESC measures utilised for Stage 1 remain relevant to the operational stages of the Sutton Block quarry. These measures are detailed in the ESCAR (Technical Report R, Volume 2) and summarised below.

6.1.2.1.1 Erosion controls

In addition, monitoring of the receiving environment will be undertaken throughout the quarry life cycle to confirm the effectiveness of the measures and to ensure they can be adapted and updated to minimise the generation and discharge of sediment. The results of the monitoring programme will be used as a feedback loop to trigger the need to review and investigate both the effectiveness of measures, and whether additional controls, inspections or monitoring is needed to better control erosion and sedimentation.

6.2 Operational earthworks (rock extraction)

The same methodology and construction equipment and machinery will be used to quarry the rock within the Sutton Block pit as is used in the existing Drury Pit.

The proposed quarry pit design, individual batter (inter-bench) slope angles will be either 45° or 60° from horizontal. The grade of the slopes depends on the geology within the proposed pit design. To optimise geotechnical design parameters trial batters are proposed to be undertaken as part of the initial quarry expansion. A detailed description of this is set out in the Geotechnical Assessment attached as Technical Report Q, Volume 2.

Blasting is required to expand the pit and access aggregate. Blasting will generally be undertaken 1 - 2 times a week and range in size from 5,000 m³- 20,000 m³ with a maximum instantaneous charge (MIC) between 60 - 200 kg depending on the bench height. Key controls for mitigating vibration at the blasting site are timing manipulation. By using electronic detonators, each charge is timed for single detonation in regard to arrival times at the key points of interest. Blasting MIC, size and shape are other design features that are used to mitigate blasting vibration. Blasting from the existing pit complies with the vibration standards DIN4150.

The raw material will then be placed on the conveyor system and transported to the processing plant or stockpiled within the dedicated area within the existing FOH area.

Eventually, as the existing Drury Quarry pit operations are phased out and the Sutton Block pit expands, some of the process plant and stockpile areas will be relocated to the Sutton Block.

6.2.1 Dust

A range of dust mitigation measures are proposed to be implemented during construction and operational activities associated with the Sutton Block pit. Dust mitigation measures and procedures to be implemented onsite, as necessary include:

- Daily monitoring of weather forecast, and plan work scheduled and dust management responses accordingly.
- Continuous dust monitoring with telemetry at a number of locations around the Sutton Block and Drury pits.
- Ongoing operation of a meteorological monitoring site around both pits.
- Minimise un-stabilised areas.

- Static and tertiary processing plants connected to water source which continually releases water via spray bar.
- Portable water tanks used to wet material feed into plants and equipment.
- Keep exposed surfaces damp with water carts and/or fixed sprinklers when required.
- Controlling vehicle speeds to 30 km/h on site.
- Water supplying the dust suppression equipment is connected to the water management system.

Further details on dust mitigation will be set out in the Dust Management Plan (DMP) required to be prepared under proposed consent condition C8 (Appendix I).

6.2.2 Water Management System

The current Drury Quarry site water management system currently consists of a series of automated and manual turbidity-controlled pumps that move water (both groundwater and surface water) around the site to operate the plant, convey clean water and treat dirty water before being discharged off site (specifically, to the NT1 Stream).

The same system is proposed to service the Sutton Block pit (refer to Sutton Pit Water Management Plan attached as Technical Report L). The system has been designed, installed, and managed with significant extra capacity availability, allowing it to accommodate the Sutton Block pit once it comes online. Further details of the pumping system are set out in the ESCAR attached as Technical Report R, Volume 2.

As mentioned in Section 6.1.1.6 above, following commencement of quarrying in the Sutton Block, all surface and groundwater will be directed to the Sutton Quarry pit sump.

From the pit sump, dirty water is proposed to be pumped out from the base of the Sutton Block pit, conveyed through the lamella (quarry process water sediment removal device) and filter press (when turbidity is high), then discharging to a cleanwater pond and subsequently offsite to the northern diversion waterway (lower reaches of NT1 stream). The current turbidity limit set on the Drury pump pit is 100NTU.

Clean water collected from the quarry pit will be either pumped or conveyed directly to the cleanwater pond. From the cleanwater pond, water is discharged offsite to NT1/Stream 4 (refer to Figure 6.1 above) or used for quarrying activities (as required), such as processing of aggregate, chip washing, wheel washing and dust suppression via the wash circuit. The existing Drury wash circuit currently consists of a pumped circuit that delivers water to the various ancillary quarry facilities and will also eventually service the Sutton Block pit. A large portion of processing water is recycled. Water is also lost to sludge and evaporation.

Figure 6.3 below shows the existing current Drury Quarry pit sump which is being dewatered. There is a dual black pipeline running down the centre of the quarries benches to a pump located near the bottom, conveying water out of the pit to the Water Management System. As demonstrated in the image below, mobile plant and other machinery can continue to utilise the lower benches of the pit.

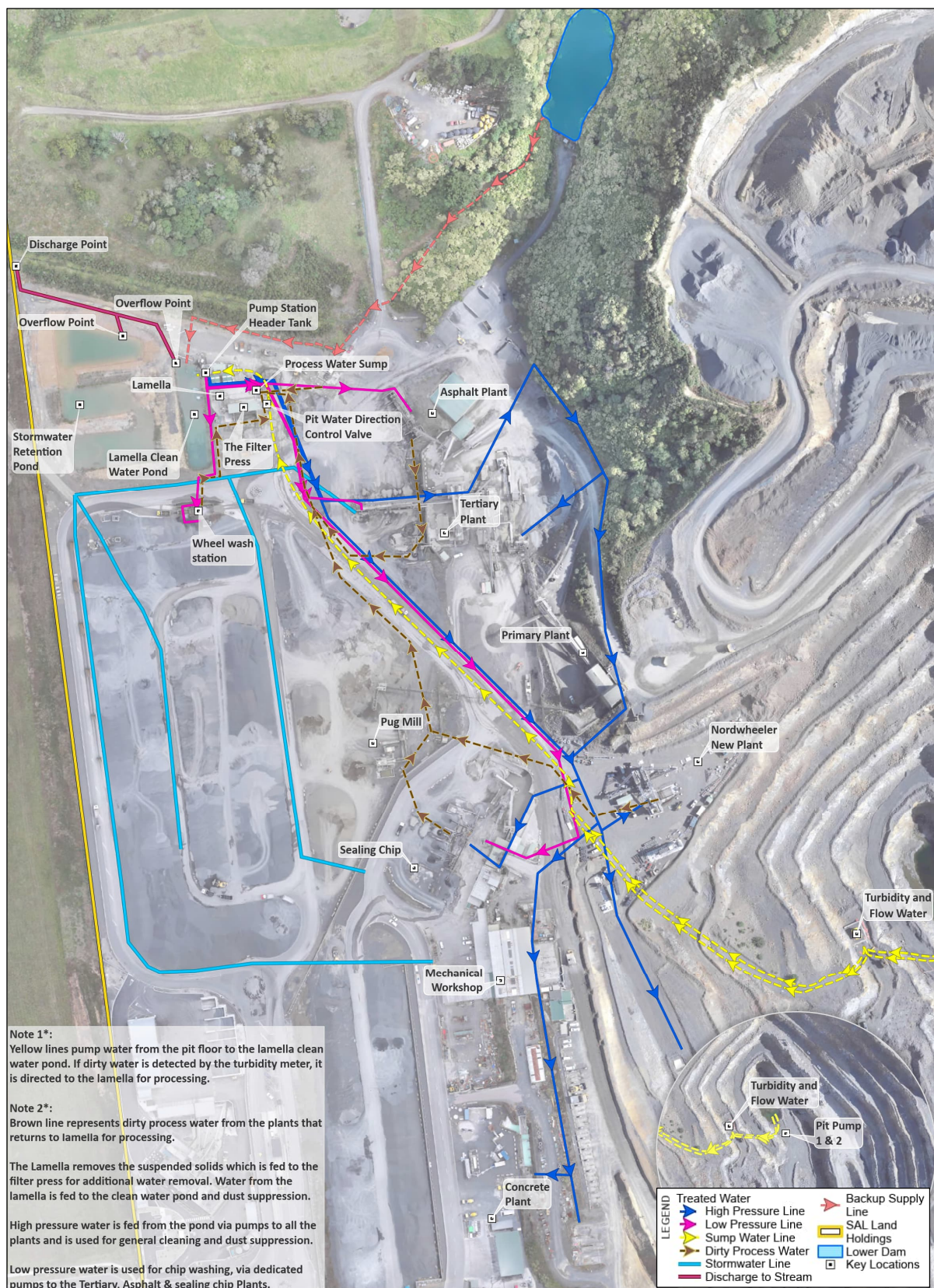


Figure 6.2: Current Drury Quarry Water Management Plan. Source: SAL.



Figure 6.3: Dewatering (mix of groundwater and surface water) at existing Drury Quarry.

6.2.3 Groundwater dewatering

The proposed lowest dewatering level for the new pit is expected to be - 60 RL m within a footprint of approximately 108 ha. The deepening and expansion of the new quarry is a gradual process consisting of four quarry dewatering stages (within an estimated 50-year time frame). The proposed dewatering stages are set out in the Groundwater and Surface Water Effects Assessment (Technical Report L, Volume 2) and shown in Table 6.1 below. The dewatering methodology is the same methodology as described in the water management system above (Section 6.2.2).

Table 6.1: Proposed dewatering stages

Quarry Stage	Approx. Timeline	Approx Pit Floor (m, RL)	Quarry Stage Area (ha)
Stage 1 (infrastructure establishment)	3 years	135	11
Stage 2 (operating quarry)	15 years	90	29.4
Stage 3 (operating quarry)	30 years	60	54.2
Stage 4 (operating quarry)	40 years	-60	87.6
Stage 5 (LOQ)	50 years		108

Based on a conservative assessment, the theoretical regional groundwater inflow is predicted to range from 4,300 m³/d (Stage 2) to 18,243 m³/d (Stage 5). The predicted zone of influence extends from 4.4 km (Stage 2) to 7.5 km (Stage 5).

It is expected there will be additional shallow groundwater inflow of up to 183 m³/d within the NT1 Catchment and a further short-term inflow of 1,000 m³/d is estimated to enter the sump due to the storage release from fractures following each quarry step. Therefore, the maximum groundwater diversion is expected at a maximum rate of 19,426 m³/d during Stage 5.

As outlined in Section 3.4.5, pre-quarry groundwater levels beneath the proposed quarry footprint within the Hunua, Drury and Sutton Greywacke Blocks are approximately 64 RL m, 58 RL m and 170 RL m. As a result of dewatering at the Symonds Hill Pit²⁵ and Drury Quarry, the groundwater levels in the Hunua and Drury Greywacke Blocks have been lowered and currently are sitting at approximately 63.6 RL m and -39.3 RL m (October 2024), respectively.

The Groundwater and Surface Water Effects Assessment (Technical Report L, Volume 2) provides details on the nearby Winstone Aggregates, Symonds Hill quarry pit and Drury Quarry pit dewatering consents and the potential predicted drawdowns assuming worst-case scenario (full hydraulic connectivity) between the Sutton Block and Hunua and Drury Greywacke Blocks.

Some of the key management measures related to groundwater include:

- Limits on quantities for dewatering and groundwater drawdown;
- Ongoing monitoring of actual groundwater inflow into the Sutton pit;
- Measuring and recording water levels at monthly intervals manually (or less with transducers or telemetry) in the monitoring bores;
- Technical review at intermediate drawdown steps; and
- Regular updates to the Groundwater Monitoring Plan (GMP).

Refer to the Groundwater and Surface Water Effects Assessment and Conditions attached as Appendix I for further details.

6.2.4 Surface water augmentation

As a result of the proposed dewatering, a reduction in stream baseflows is predicted. The reduction in stream baseflows occurs in downstream areas where the regional groundwater intercepts the streams.

The existing hydrogeological information indicates that currently, the regional groundwater in the greywacke rock-mass to the east of the Hunua Fault discharges into the shallow sediments and the streams at elevations below RL170 m. The estimated interaction between the shallow groundwater and the regional groundwater, west of the Hunua Fault occurs at RL60 m.

Based on the worst-case scenario there is predicted to be a loss of stream baseflows to the Maketu, NT1, Mangawheau, Hingaia and Wairoa streams at various stages (refer to Section 9.5.7).

The Groundwater and Surface Water Effects Assessment (Technical Report L, Volume 2) proposed the following key management measures to manage and mitigate the stream depletion effects:

- Ongoing monitoring of stream base flows and water quality to update and confirm predictions (from Stage 1);
- Augmenting flow at Maketu streams by either supplementing flow directly from the Sutton Block sump or via installing a bore within SAL property (E1778418/N5889315) (from Stage 2);
- Augmenting flow of NT1 Stream (Stream 4) via dewatering from the Sutton Block sump (from Stage 1);

²⁵ Located approximately 3.6 km to the North of the Sutton Block is Winstone Aggregates Symonds Hill Quarry.

- Installation of four additional monitoring gauging sites along the Southern Tributary (at NT1-8), Mangawheau Stream and Hingaia Tributary to undertake baseline monitoring for these catchments (from Stage 3);
- Installation of additional augmentation bores, if required, to supplement other streams if baseline monitoring indicates worse-case predictions are correct (from Stage 3); and
- Rereview of augmentation regime for all streams based on the results of ongoing and proposed stream flow monitoring programmes (from Stage 1).

6.2.5 Construction noise management

The initial site establishment activities (construction of haul road, northern bunds, establishment of ERSC measures) proposed at the start of Stage 1 are considered construction activities, as compared to the later stages of Stage 1 onwards when quarrying activities commence and the site moves into an operational phase. Construction works will generally occur during operational hours of the existing Drury Quarry operation (see Table 4.1).

All five stages of the proposed development comply with the daytime and night-time noise limits at all receivers. It is noted that the predicted noise level relies on natural screening (terrain) from the north-western pit edge, and this must be in place to achieve daytime compliance (refer to Figure 6.4 below and Figure 16 of Appendix D). A condition of consent (Condition E2 in Appendix I) is offered, requiring the existing ground levels in the northwest corner to be maintained to ensure compliance.

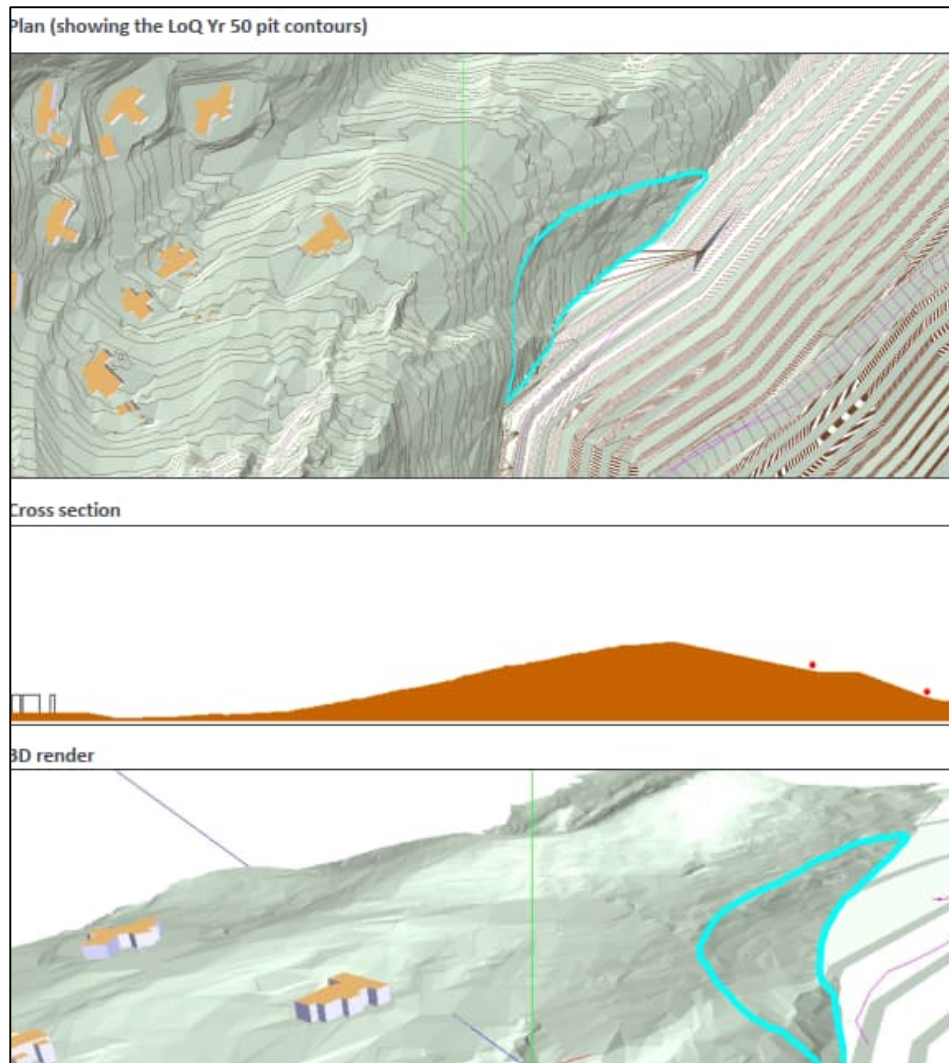


Figure 6.4: Pit edge screening between noise sources (pink) and 359 MacWhinney Drive dwelling. Source: Marshal Day Acoustics (2024).

In order to manage noise effects, the recommendations in the Assessment of Noise Effects (Technical Report I, Volume 2) will be undertaken, including:

- The pit bench design will be designed to ensure natural screening (terrain in form of quarry benches or bund) in the north-western corner. The purpose of this is to block line-of-sight from dwellings in upper MacWhinney Drive from mobile plant on high benches of the pit and act as an active noise barrier. This is proposed as a condition of consent (refer to Appendix I).
- Restrictions on night-time activities are to be limited to the base of the pit.
- A Communication Plan which outlines how neighbours are informed of the activities and timing associated with Sutton Block shall be developed.
- Two permanent noise monitoring sites will be established around Sutton Block – one to the west (i.e. near upper MacWhinney Drive) and one to the north-east (i.e. near Sonja or Laurie Drive) of the proposed development.
- A Construction Noise and Vibration Management Plan (CNVMP) is proposed to be prepared, as required under proposed Condition C4, that will set out various mitigation and management measures to further minimise any potential construction noise effects.

- An iterative management approach, in conjunction with on-going noise monitoring, will ensure that nighttime noise limits are not exceeded.

6.2.6 Vibration mitigation measures

Prior to any blasting at the Sutton Block, seed wave information will be collected to inform a site-specific vibration model and to determine the site-specific blast design constraints. During any blasting, the general mitigation techniques to be undertaken on-site include:

- Blast design optimization of blasting MIC, size and shape to reduce vibration levels;
- Blast timing manipulation through the use of electronic detonators; and
- Creation of buffer zones or setbacks between blasting operations and sensitive receivers.

In addition to the measures outlined above, the following will also be undertaken to manage (avoid, remedy or mitigate) air blast effects:

- Alterations to blast design to reduce blast gases, excess rock movement and velocity of detonation;
- Alterations to quarry design to change face direction away from neighbouring receivers; and
- Schedule blasting on days with favourable wind and weather conditions.

On-going monitoring of vibration levels will be undertaken throughout the LOQ. This monitoring will be used for continued seed wave analysis and calibration, and to adjust blasting parameters to ensure vibration levels are compliant with relevant standards. Other measures such as blast scheduling and on-going public consultation will also be implemented to minimize the impact of blasting activities and to ensure that the local community are informed of the blasting activities.

6.2.7 Construction traffic management

Traffic movements associated with the development of the Sutton Block pit will occur within land owned by SAL. Consequently, temporary construction traffic effects will be managed within the site and therefore no Construction Traffic Management Plan or construction traffic measures are proposed as part of the application.

6.2.8 Operational Traffic

The Integrated Traffic Assessment (ITA) (Technical Report U, Volume 2) states that the proposed Sutton Block expansion and associated quarrying is not expected to generate any additional traffic movements entering or leaving the site compared to truck movements generated by the existing Drury Quarry pit, inclusive of the ancillary activities. Depend on aggregate demand, the overall truck movements per day (tmpd) for the combined activities within the site is around 2,000 tmpd.

On average, the overall truck movements per day (tmpd) for the combined activities within the site accounts for between 600 – 800 tmpd (and could be up to 1,200 – 2,000 tmpd) depending on aggregate demand).

As discussed in Section 6.2 above, while the existing Drury Quarry pit operations continue, the raw material from the Sutton Block will be processed within the existing dedicated FOH area. Accordingly, the volumes of material that can leave the site are subject to several processing-based capacity constraints that limit traffic generation.

In addition, as part of the Drury South Precinct transport network planning and upgrading, specific consideration was given to the Drury Quarry operation. As a result, key parts of the transport network that service Drury Quarry (including the Sutton Block), such as Bill Stevenson Drive, have

sufficient traffic-carrying capacity, ensure the safety and operational effectiveness of the quarrying activities, while promoting efficiency for all users and visitors to the Drury South area.

6.2.9 Hours of operation

Hours of operation for the proposed Sutton Block pit will be fluid and are impacted by various factors such as demand and staffing requirements. Despite this, the site operates within noise limits as prescribed through the AUP and as discussed in Technical Report I²⁶. Due to the nature of the activity, the Sutton Block pit is expected to operate in some capacity 24 hours a day, in line with existing Drury Quarry operations (refer to Section 4.4). Nighttime activities are scaled-down compared with daytime, with the primary objective to tailor the nighttime activities so that they meet the 45 dB L_{Aeq} noise limit at the nearest dwelling (10pm to 7am weekdays and 6pm Saturdays to 7 am Mondays). SAL is always working on streamlining operations, and this may involve changes to the hours in the future, subject to any future consent processes.

6.3 Quarry management plan

A draft QMP (attached as Appendix J) sets out practices and procedures to be adopted at the Site to ensure compliance with key operational requirements associated with dust, erosion and sediment control, lighting, noise and vibration. It also sets out a complaint procedure and reporting requirements and requires closure and rehabilitation plans to be provided within five years of the confirmed closure of the quarry.

This QMP is required to be updated and submitted to Auckland Council for certification within 20 working days prior to commencement of construction in accordance with the proposed consent conditions attached as Appendix I.

6.4 Ecological management measures

Throughout the project, a programme of ecological management and monitoring will be put in place to avoid, remedy, or mitigate potential adverse ecological effects relating to construction. These measures are described in more detail in the Assessment of Ecological Effects (Technical Report A, Volume 2) and accompanying Ecological Management Plan (EMP) (Technical Report B, Volume 2) and are summarised below.

6.4.1 Vegetation clearance

Any existing vegetation within the extent of works will be removed progressively over the life of the quarry as and when required by excavators and trucks. A total of 16.78 ha of indigenous vegetation of moderate to high value is proposed to be removed to access and construct the quarry. This vegetation includes 14.25 ha from within an SEA overlay (SEA_T_5323, SEA_T_1177), comprising of 8.8 ha moderate value regenerating Kānuka Forest; 7.33 ha of moderate value Broadleaf Podocarp Forest and a 0.65 ha fragment of high value Rock Forest. Of the 14.25 ha of SEA vegetation removal, 7.58 ha is within the SPQZ. A further 5.25 ha of negligible value exotic vegetation and habitats, comprising regenerating gorse, herbaceous weeds and pine plantation will also be removed.

In order to help manage the adverse effects associated with this vegetation loss, an EMP (Technical Report B, Volume 2) has been prepared that encompasses a suite of management plans that sets out how adverse effects on retained and protected indigenous vegetation around the Sutton Block pit edge will be minimised through dense buffer infill planting and fencing (refer to Edge Effects Management Plan with EMP and consent condition C17), and measures to be implemented to avoid and minimise the potential effects on native biodiversity during the proposed development and

²⁶ Assessment of Noise Effects, Technical Report I, attached as Volume 2

operation of the Sutton Block. The EMP, amongst other things, sets out detail on staging of vegetation removal, vegetation removal methods and salvage methods for reuse of forest resources.

Vegetation clearance will also be timed to avoid the peak bird breeding season to the extent practicable. Should such restrictions not be practicable, breeding and nesting bird surveys are proposed to be undertaken by a suitably qualified ecologist prior to clearance activities commencing.

Generally, dust suppression is also noted in the Assessment of Ecological Effects (Technical Report A, Volume 2) as helping mitigate the indirect effects on the edges of adjacent vegetation that are not being removed. These measures are discussed in Section 6.2.1 and will be implemented through the DMP.

Following mitigation, minor adverse effects on terrestrial ecology are anticipated. These effects are discussed in Section 9.8 below.

6.4.2 Fauna management

As described in Section 3.4.9.3 and 3.4.10.2, a range of native fauna have been identified as potentially present within the Sutton Block LOQ extent. As such, an EMP (Technical Report B, Volume 2), has been prepared that covers the requirements for these are set out in more detail in the Assessment of Ecological Effects (Technical Report A, Volume 2), and in Conditions C12-C16 (Appendix I). In summary, the suite of management plans will cover measures to avoid, remedy or mitigate effects on:

- Lizards;
- Bats;
- Native Avifauna (birds); and
- Native Freshwater Fauna.

The measures will include:

- Implementation of a Lizard Management Plan (LMP), which defines the area of works, outlines methods for salvaging, timing, release site enhancement requirements, and post-translocation monitoring methods;
- Implementation of a Bat Management Plan (BMP), which outlines the Department of Conservation's (DoC) tree felling protocols, where roost habitat is located, and how those roost habitats will be compensated if they are present;
- A Native Avifauna Management Plan (NAMP) will be implemented, which will include seasonal constraints on felling during sensitive times such as bird breeding seasons, bird nest survey and checks and ongoing monitoring requirements;
- Implementation of a Native Freshwater Fauna Management Plan (NFFMP), involving methods to capture fish and recover kōura and kākahi, fishing efforts, relocation sites, storage and transportation to prevent stress and death/ predation; and
- Implementation of the Erosion and Sediment Control Plan (ESCP), which details methods on managing sediment in discharges of water as well as dust.

6.4.3 In-stream works and wetlands

As described in the Assessment of Ecological Effects (Technical Report A, Volume 2) and Residual Effects Analysis Report: Stream and Wetland Loss (REAR-SW) (Technical Report D, Volume 2) works will be required in streams and wetlands across the project footprint. Specifically, throughout the five stages of the proposed Sutton Block expansion, a number of Streams and Wetlands will be completely lost, and Stream 4 will be diverted. Over 50 years, there will be a loss of approximately

3,341 lineal metres of permanent and intermittent stream reaches, plus wetlands totalling approximately 1.9 ha (18,758 m²).

Prior to any stream works commencing, the NFFMP will be finalised. Under the NFFMP, fish management will be implemented within one week prior to streamworks/reclamation. Where streamworks will result in the disconnection of upstream habitats to the wider catchment, fish management will be extended throughout the entire reach to ensure no populations become isolated and “trapped”. All native fish captured will be relocated on the day of capture to a suitable alternative habitat, ideally within the same catchment where suitable shaded permanent water is present. Additionally, the proposed ESCP will also be implemented.

The NFFMP also sets out requirements to ensure that the proposed culvert along Stream 4 is designed and constructed to be ‘fish-friendly’, in accordance with New Zealand fish passage guidelines²⁷. The proposed ESCP sets out construction methods that will be undertaken during Stream 4 diversion. A Stream Diversion and Enhancement Plan is proposed to be prepared under consent condition C21 (Appendix I), requiring the ecological enhancement to be included within the design.

6.5 Landscape and visual management measures

The Landscape and Visual Effects Assessment (Technical Report J, Volume 2) outlines a number of measures which will help mitigate the landscape and visual effects associated with the project. These measures are also shown visually in Figure 17 – Proposed Landscape Mitigation of Appendix 3, Technical Report J. The proposed mitigation addresses both the design stage and the remaining (residual) adverse effects of the final development. These measures are summarised below.

- Screening of the Sutton Block from the local vicinity, as follows:
 - Upon granting of consent, the existing remnant pine trees along the western extent of the LOQ pit shall be removed prior to the implementation of the project, as they do not provide sufficient screening and are at risk of falling down during the life of the quarry. A 15 m wide planting buffer will then be established in the west. To achieve prompt visual screening, exotic species are proposed with native species also provided along the western portion of the buffer.
 - To reduce visibility of the quarry from locations along Sonja Drive and to assist with overburden disposal, a bund is proposed in the northern portion of the Site. This bund would be progressively formed during Stage 1 (3 years) before being removed during the later portions of Stage 5 (between 40 and 50 years). A 5 m wide planting buffer is proposed between the northern toe of the bund and neighbouring ONL to reduce views towards the quarry, including portions revealed following the bund removal. While exotic species are primarily proposed for prompt screening, they will be supplemented by indigenous planting within the ONL extent.
 - Acknowledging that the eastern ridge will be lowered during Stage 5 and noting that views of the quarry could be slightly increased at this time, a range of indigenous trees will be interplanted near the crest of the newly formed ridge (proximate to the pit edge).
- Other vegetation measures, are as follows:
 - A number of revegetation opportunities are present within the SAL Landholdings. Accordingly, mitigation planting of indigenous species is proposed around the lower flanks of Kaarearea Paa (south of the proposed Sutton Block extent), which will further

²⁷ National Institute of Water & Atmospheric Research Ltd. (NIWA) (204). New Zealand Fish Passage Guidelines Version 2.0. Prepared for the Ministry for the Environment June 2024.

support the legibility of the existing planting and hill feature. This planting will also link into the proposed enhancement planting, further to the east.

- Native vegetation is preferred for landscape mitigation around Kaarearea Paa.
 - Where exotic species are proposed for screening, these will be limited to one or two rows and supplemented with eco-sourced native trees.
 - Adhere to the offset revegetation and enhancement approach outlined in the Planting Plan (Technical Report E, Volume 2).
- Lighting:
 - Minimising lighting as far as practicable, to meet the permitted standards of the zone(s) under the AUP. Placement and direction of lights will avoid high points which are visible outside of the Site. Light shields will be used where necessary, and all lighting shall be down facing to minimise effects on the night sky (refer to condition E3).

The planting measures outlined above will be further developed and detailed through a Landscape and Visual Mitigation and Management Plan (LVMMP) (refer to proposed consent condition C attached as Appendix I).

6.6 Archaeological management measures

As stated in Section 0, there are several archaeological sites located in close proximity to the Sutton Block LOQ footprint, including Kaarearea Paa (R12/278) and its likely associated features (R12/723). On this basis, the Archaeological Assessment (Technical Report T, Volume 2) makes the following key recommendations for management and monitoring which will be adhered to by SAL:

- Clearly defining the extents of the recorded archaeological sites in the detailed quarry development plans to ensure their avoidance and protection during all future works.
- Ensuring R12/278 and R12/723 remain fenced off prior to the start of construction.
- The extent of R12/274, located just outside the proposed quarry area, should be defined by an archaeologist and its features protected from quarrying activities.
- Seeking an Authority to modify archaeological sites within the project area under section 44(a) of the HNZPTA 2014 prior to the start of earthworks as a precautionary measure. Note, this is being sought as part of the overall substantive application.
- Earthworks in the vicinity of identified archaeological sites should be monitored by an archaeologist to establish whether any unrecorded subsurface remains are present.
- If additional subsurface remains are exposed, the adverse effects should be mitigated through archaeological investigation to recover information relating to the history of the site and wider area.
- If no Authority has been obtained and subsurface archaeological evidence be unearthed during construction, or if human remains are discovered, the Accidental Discovery Rule (section E.12.6.1 of the AUP) will be complied with.
- Ongoing consultation with Tangata Whenua regarding the proposal as there are recorded sites in the project area relating to Māori settlement, including the significant scheduled historic heritage place R12/278, which is also a place of Māori interest or significance in the AUP.

Recorded site R12/724 (Plants, Fence, Stonework, Earthworks) is located within Stage 5 of the project area. As mentioned in the Archaeological Assessment (Technical Report T, Volume 2) this site is possibly an early 20th century domestic occupation site, but more likely a later 20th century farming feature that has limited historic values. Whilst it is a recorded site, the site is not defined as an Archaeological site under the HZPTA provisions. To mitigate any potential effects on the values of

R12/724, any remains or features revealed during topsoil stripping shall be recorded during archaeological monitoring.

6.7 Environmental monitoring and reporting

Monitoring is the collection and assessment of environmental and discharge information gathered at and around the Drury Quarry, specifically around the existing Drury Pit and proposed Sutton Block pit. An extensive environmental monitoring programme will be implemented throughout the life of the quarry operations, as set out in the proposed key conditions of consent (Appendix I). The monitoring programme will involve the following focus areas:

- Surface water;
- Groundwater;
- Sediment;
- Geotechnical – slope stability;
- Ecology;
- Noise and vibration; and
- Air quality.

The site's extensive history as a quarry has resulted in the accumulation of a substantial amount of baseline data. Ongoing monitoring continues to add to this dataset. Specific baseline monitoring data pertaining to the Sutton Block expansion pit is also currently being gathered and will continue until works commence on the site. This will provide an understanding of the baseline environmental conditions before development, such that subsequent environmental conditions during site development, operation and rehabilitation can be monitored and controlled appropriately. Regular reporting on the results of the monitoring will be provided to Auckland Council.

7 Ecological offset

A significant programme of ecological enhancement and restoration is proposed to address the ecological effects of the project which cannot be avoided, remedied, or mitigated. This includes a total of 62 ha of revegetation and 108 hectares of native forest enhancement through mammalian predator and pest control, enhancement of 3,341 m of stream and 4.04 ha of wetland restoration, including the creation of wetland habitat. The offset measures are primarily proposed within the wider SAL landholdings, in the immediate area surrounding the existing Drury pit and Sutton Block. The overall package also includes planting, stream and wetland offset works at two offset sites; 86 Friedlander Road, Tuakau (Tuakau Site) and Ngā Motu o Hingaia Island within the Pahurehure Inlet of the Manukau Harbour (Hingaia Island Site), subject to obtaining DoC's landowner approval.

The proposed ecological offset programme (or package) is described in the Residual Effects Analysis Report: Terrestrial Ecology (REAR:TE) and the Residual Effects Analysis Report: Stream and Wetland Loss Offset Report (REAR:SW) (Technical Reports B and C, Volume 2). The actions required to address the significant residual effects identified in the REAR:TE and REAR:SW are set out in a series of Net Gain Delivery Plans for forest planting, enhancement (pest and weed control), wetland planting and riparian planting. These delivery plans include:

- Net Gain Delivery Plan: Planting Plan (NGDP:PP) (herein referred to as 'Planting Plan') (Technical Report E, Volume 2)
- Net Gain Delivery Plan: Pest and Weed Control (NGDP:PWC) (herein referred to as 'Pest and Weed Control Plan') (Technical Report F, Volume 2);
- Net Gain Delivery Plan: Wetland Planting Plan (NGDP:WP) (herein referred to as 'Wetland Planting Plan') (Technical Report G, Volume 2); and
- Net Gain Delivery Plan: Riparian Planting (NGDP:RP) (herein referred to as 'Riparian Planting Plan') (Technical Report H, Volume 2).

Conditions of consent are also proposed (conditions C19, C20, C22 and C23 in Appendix I), consistent with those reports, including setting out the process for confirming the details and location of ecological enhancement off-site proposed at Tuakau Site and Hingaia Island Site.

7.1 Terrestrial offset

The REAR:TE details methods, explanations and outcomes of Biodiversity Offset and Accounting Models (BOAM) and Biodiversity Compensation Models (BCM). BOAM is an adaptive management framework, by which any cleared trees will be recorded and input into the model to determine the number of offset plantings expected to achieve Net Gain. The BCM helps provide surety for the offset calculations. The output of these models is designed to counterbalance the significant residual adverse effects that would be expected as a result of the project and are expected to result in an overall net gain in ecological values for the project. Specifically, the REAR:TE demonstrates that per the BOAM, 62.32 ha of revegetation planting and 108.35 ha of forest enhancement (pest and weed control) is required to offset the loss of 16.78 ha of native vegetation and fauna habitat proposed. This includes additional conservation actions involving planting of 887 relict trees to replace the 130 large relict trees proposed to be removed. As set out in the REAR:TE report, a summary of losses and modelled outputs and timing revegetation and enhancement areas required to achieve Net Gain is provided in Table 7.1 below. A proposed planting schedule by year is also provided in Section 9 of the Planting Plan. In summary, revegetation will start from year 1 and continue until year 16, with the forest fragments impacted first being replaced from years 1-5. Enrichment planting (phase 1) will occur 3 years after the initial pioneer planting (phase 1). All WF9 planting will be completed by year 13 and all Kanuka planting will be completed by year 16, allowing for a minimum of 19 years of monitoring to occur within the 35 year biodiversity offset timeframe.

Table 7.1: Summary of ecosystem type loss and vegetation and enhancement areas and times to achieve a Net Gain. Source Bioresarches 2024 (BOCP, Technical Report B)

Ecosystem type	Loss (ha)	Timing of removal	BOAM Actions		Time of Offset Planting	
			Revegetation	Enhancement ALL areas from Year 1	Phase 1	Phase 2
Rock Forest	0.65	0-5	8.32	5.35	Years 2 & 3	Years 5-9
Taraire, tawa podocarp Forest model 1 (WF9 2 and 5)	1.87	0-5	12	23	Years 1-5	Years 4 -8
Taraire, tawa podocarp Forest model 2 (WF9 1,3,4)	5.46	>30	20	40	Years 6-9	Years 9-13
Kanuka Forest (VS2)	8.8	>30	22	40	10-16 years	None
Relict native trees amongst pasture	130 trees	1-50	887 trees	-	1 – 10 years	none
Total	16.78		62.32	108.35		

The purpose of the Planting Plan (as required under condition C20 of Appendix I) is to ensure that a sufficient quantity, diversity and quality of planting is achieved to offset the terrestrial vegetation and habitats to be removed as a result of the Project. The Planting Plan also sets out management measures to ensure the planting is maintained to facilitate the on-going survival and development of the recreated and enhanced habitats, including recommending maintenance and monitoring measures.

All areas of offset planting set out in the Planting plan are proposed to be legally protected via vegetation covenants as proposed under consent condition C25 in Appendix I. Additionally, where grazing livestock are present secure stock proof fencing will be erected around the restoration planting areas.

7.1.1 Onsite planting

Sections 2, 3 and 4 of the Planting Plan set out the proposed planting plan, staging and planting schedules to be undertaken as part of the restoration planting proposed across the wider SAL landholdings (refer to Figure 7.1).

The three different ecosystem types proposed to be affected have been modelled separately and the quantum of biodiversity offset actions required have been determined for each type to replace what is lost and achieve a net biodiversity gain within a 30-year timeframe. Key measures to achieve this outcome include:

- For mature forests like rock forest and podocarp broadleaved forest, restoration involves two phases: first, establishing a pioneer plant community (e.g., manuka/kanuka, shrubs, small trees), followed by enrichment planting once the pioneer species are established;
- Buffering and connection of isolated rock forest fragments and areas of podocarp broadleaved forest to improve connectivity with the wider Hunua Ranges;
- Conversion of pine plantation to native forest;
- Salving of forest resources prior to revegetation removal including large basalt boulders for use within the rock forest restoration areas, collection of seeds, cuttings and transplanting of young seedlings;

- Appropriate site preparation and correct planting techniques to ensure the successful establishment and growth of plants;
- Ongoing maintenance and management of planted areas, including a requirement that over a 5-year period (or until 80% canopy cover is achieved) plants that fail to establish are replaced;

The details outlined above will be set out in the proposed Planting plan required under consent condition C20 and monitoring conditions H6-H8 in Appendix I.

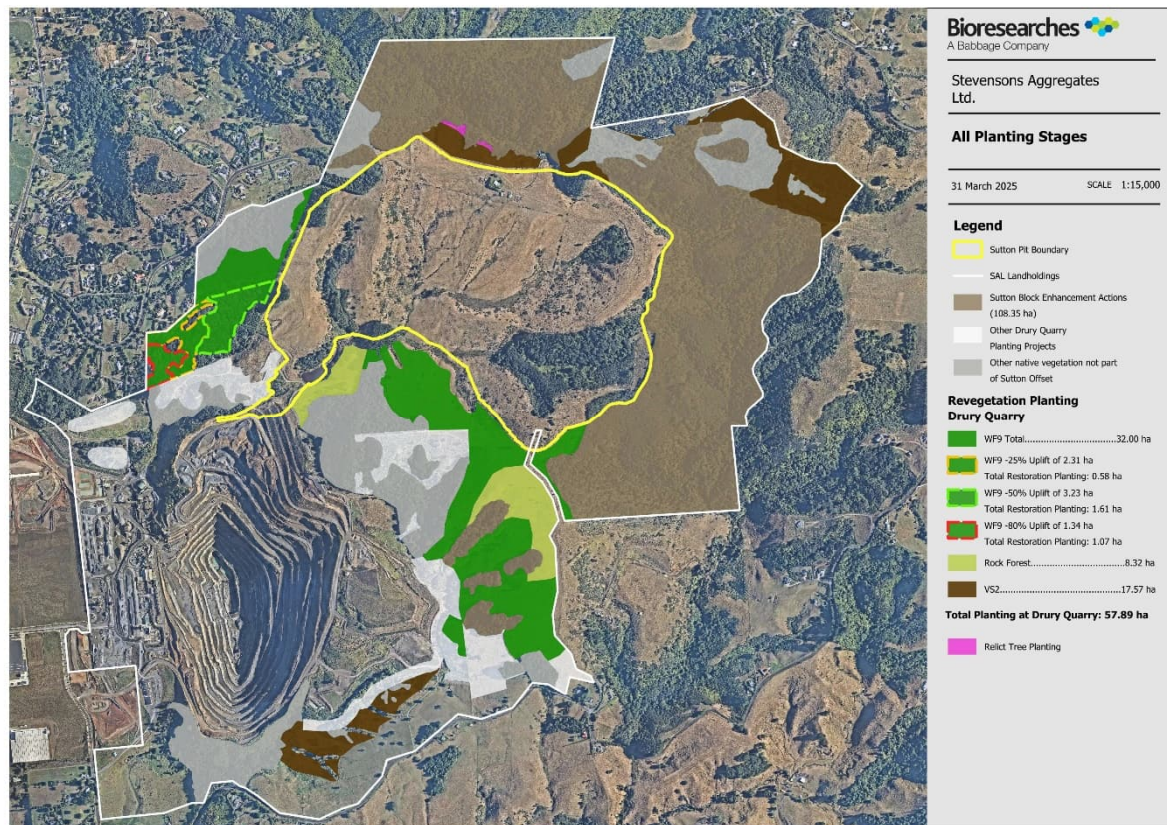


Figure 7.1: Proposed 62.32 ha of revegetation planting within SAL landholdings within 30-year timeframe.

7.1.2 Onsite pest management

The Pest and Weed Control Plan (Technical Report F, Volume 2) outlines the measures to be undertaken as part of the 108 ha of forest enhancement actions proposed across wider SAL landholdings (

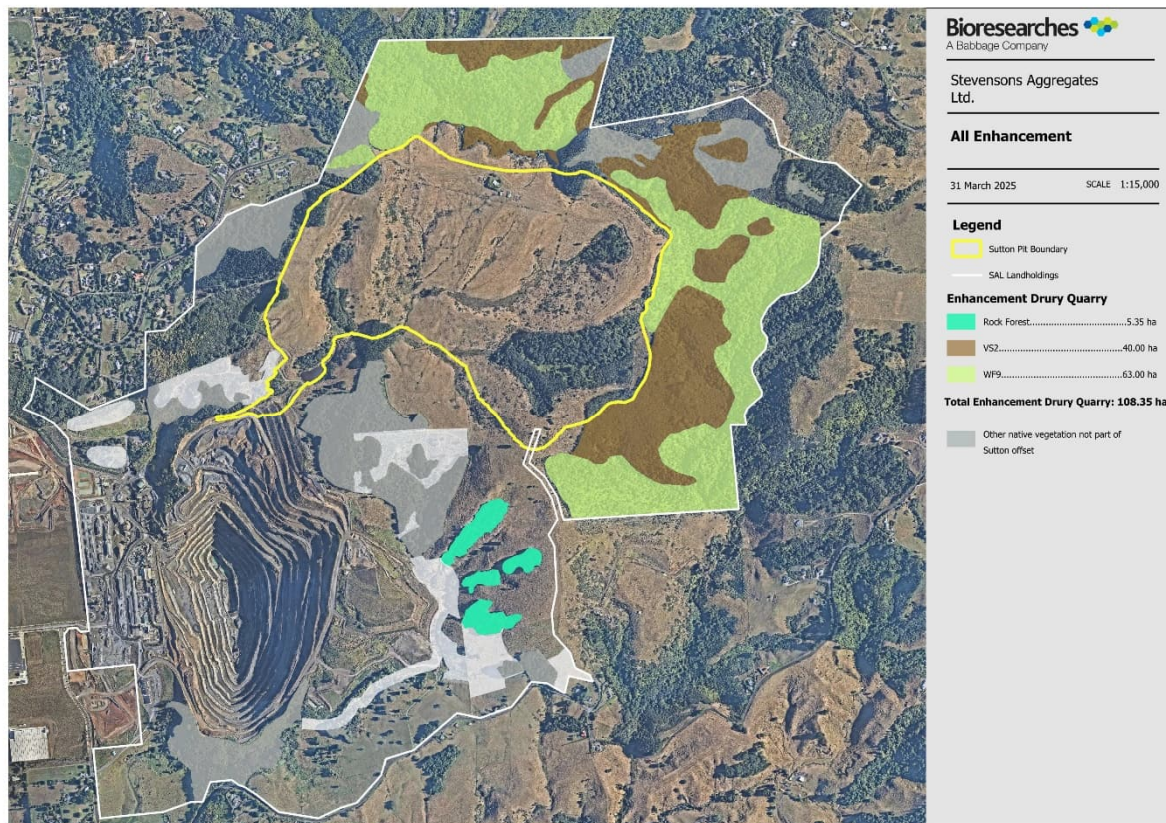


Figure 7.2). The aim of the proposed forest enhancement actions is to control and eradicate pest animals and plants from the forest enhancement area to improve biodiversity values and provide safe habitat for indigenous fauna and flora.

Sections 5 and 7 of the Pest and Weed Control Plan outlines the measures to be undertaken as part of pest plant and pest control management.

Key measures to achieve this outcome include:

- Pre-pest control programme for predators, browsers and pest plant management is proposed across the wider SAL landholdings, including surveys to establish baseline targets;
- Identifying and retaining existing native plants within the restoration planting areas as far as practicable;
- Fencing of rock forest remnant patches;
- Identify appropriate timing and density of traps/bait stations for control of predators;
- Management of pest predators (possums, rats and mustelids) and control of ungulate browsers (deer, goats and pigs);
- Pest plant removal, including surveys, methods and ongoing programme for weed control;
- Pest and weed control monitoring (including monitoring targets and contingencies), at specified intervals; and
- Vegetation condition monitoring at specified intervals.

The details outlined above will be set out in the proposed Pest and Weed Control plan required under consent condition C19 and monitoring condition H9 in Appendix I.

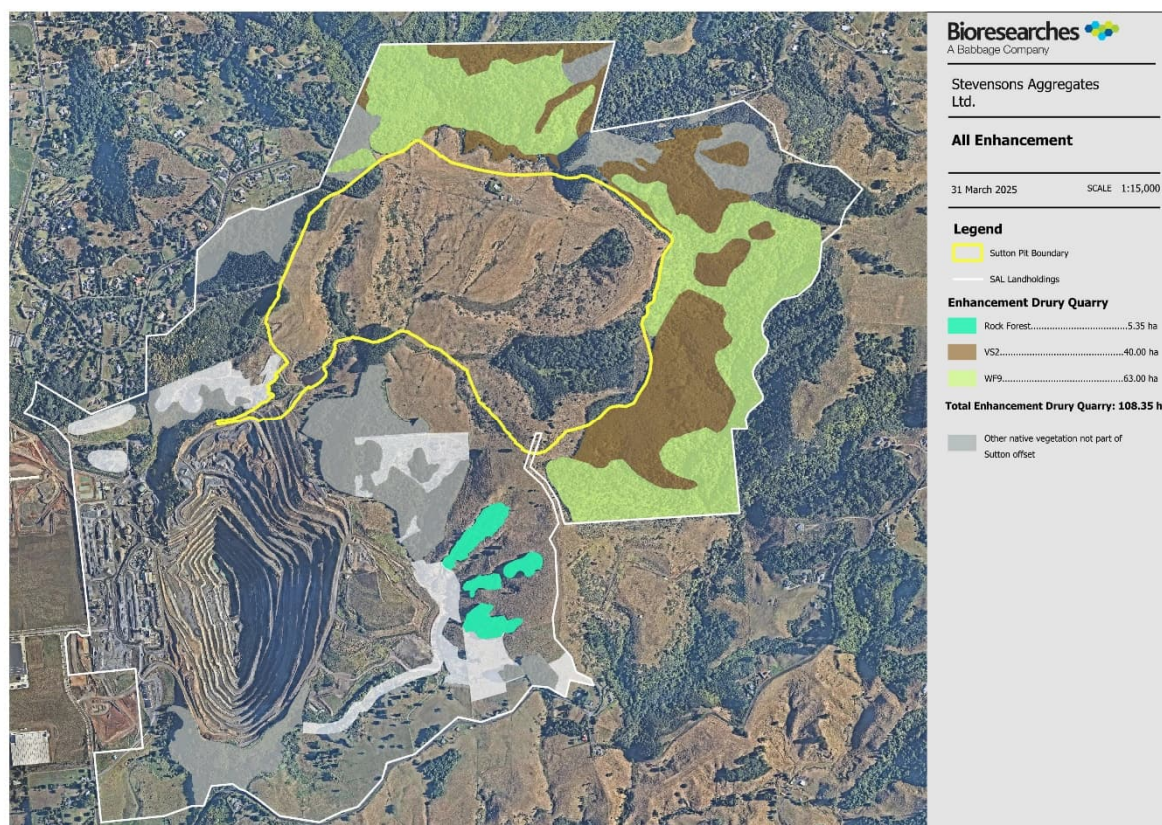


Figure 7.2: Forest enhancement area proposed within SAL landholdings, including vegetation types.

7.1.3 Offsite planting

As mentioned in above, a portion of the terrestrial offset package includes planting at two offset sites. The following sections provide details on these aspects of the offset package.

7.1.3.1 Hingaia Island site

As set out in Section 9 of the Planting Plan, approximately 5 ha of planting is proposed at Hingaia Island as part of the proposed offset package (refer to Figure 7.3 below)²⁸ subject to obtaining Department of Conservation (DoC) landowner consent (refer to Section 8.2.2 below). The planting will predominantly consist of Kanuka Scrub/Forest (VS2) and ten groups of Totara Trees (a total of 113 trees). The planting of totara trees is to replace the loss of mature Totara trees proposed to be removed as part of the Sutton Block development.

Further details of the planting phase, spacing, schedule and pest and weed control measures are set out in the Planting Plan.

²⁸ Address on AUP maps identified as 480 Bremner Road, Drury, Auckland, 2578.

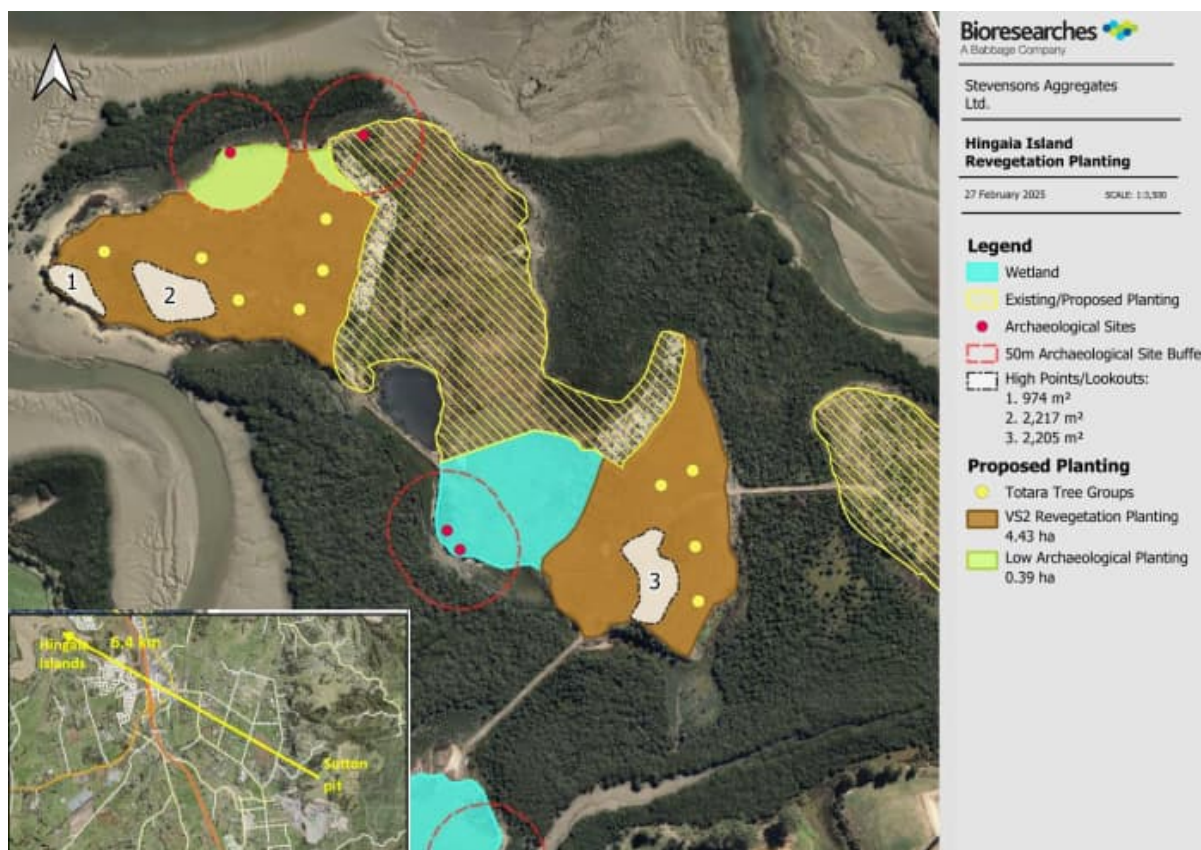


Figure 7.3: Proposed revegetation Planting at Hingaia Island, Manukau Harbour, approximately 6.5 km northwest of Drury Quarry.

7.1.3.2 Tuakau site

As outlined in the Planting Plan, relict tree replacement planting of kahikatea, pukatea, and rimu is proposed as offset at the Tuakau site, about 16 km southeast of Drury Quarry (refer to Figure 7.4). The Tuakau site offers suitable habitat for these species compared to site conditions within SAL landholdings. Section 10 of the Planting Plan details the measures for this site, including the planting schedule, spacing, and species required to achieve the expected biodiversity outcomes. In total, 628 young trees (kahikatea, pukatea, rimu) will be planted across 1.14 ha adjacent to existing protected kahikatea forest.



Figure 7.4: Tuakau Site proposed planting areas indicated.

7.2 Stream & wetland offset

As with the terrestrial offset package, the freshwater offset package involves a combination of aquatic offsetting within the wider SAL landholdings and at the Tuakau offset site.

The Stream and Wetland Loss Offset Report (Technical Report C, Volume 2) provides a summary of the approach, methodologies and analysis used to determine the wetland and stream ecological offset requirements for the Sutton Block expansion. Overall, the Sutton Block pit will result in a total loss of 3,341 m of stream length and 1.88 ha of wetland areas over 50- years. The stream offset package will result in a stream length loss to offset length ratio of 1:1 and an overall stream bed loss area to gain ratio of 1: 10. A total of 4.04 ha of wetland habitat will be restored, including the creation of wetland habitat.

7.2.1 Onsite stream offsetting – Peach Hill Road and Davies Road

As set out in the Riparian Planting Plan (Technical Report H, Volume 2), four Tributaries located within SAL's wider landholdings, located immediately north of Peach Hill Road, immediately west of Davies Road and south of Quarry Road, approximately 1.9 km from the southern extent of the Sutton Block are proposed to be enhanced through riparian planting (refer to Figure 7.5 below). Specifically, a total stream length of 1,053 m is proposed for the following streams:

- Peach Hill Road Tributary 1 – approximately 148 m of stream length, equating to 2,960 m² of riparian planting.
- Peach Hill Road Tributary 2 – approximately 164 m of stream length, equating to 3,280 m² of riparian planting.

- Peach Hill Road Tributary 3 – approximately 290 m of stream length, equating to 2,960 m² of riparian planting, equating to 5,800 m² of riparian planting.
- Davies Road Tributary – approximately 451 m of stream length, equating to 7,980 m² of riparian planting, equating to 5,800 m² of riparian planting.

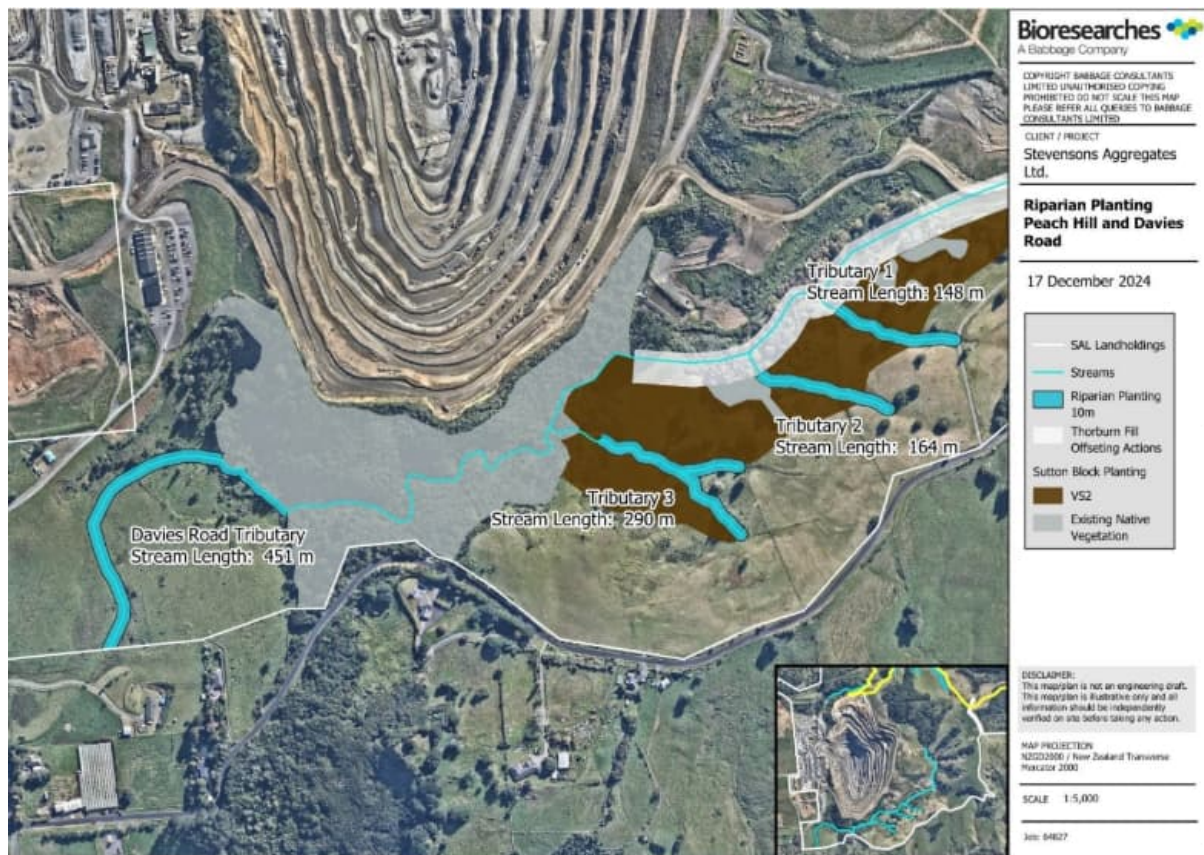


Figure 7.5: Peach Hill Road and Davies Road streams offset areas.

Key planting and enhancement measures set out in the Riparian Planting Plan include as Technical Report H, Volume 2 and is proposed to be implemented through Consent Condition C22.

7.2.2 Offsite stream & wetland off set – Tuakau Site

Any residual effects for the loss of aquatic habitat that cannot be addressed on site, will be addressed through offset at the Tuakau Site. Specifically, a total stream length of 740 m at the Western Stream and 1,549 m at the Tutaenui Stream is proposed to be enhanced through riparian planting at the Tuakau Site to offset the stream loss at the Sutton Block (refer to Figure 7.6) (refer to Planting Plan, Technical Report E, Volume 2). Additionally, 4.04 ha of wetland will be restored, including the creation of wetland habitat. This restoration and enhancement is intended to provide for a positive aquatic ecological benefit, habitat creation, biodiversity gains, and restore connectivity to existing habitats (refer to Wetland Planting Plan, Technical Report G, Volume 2).

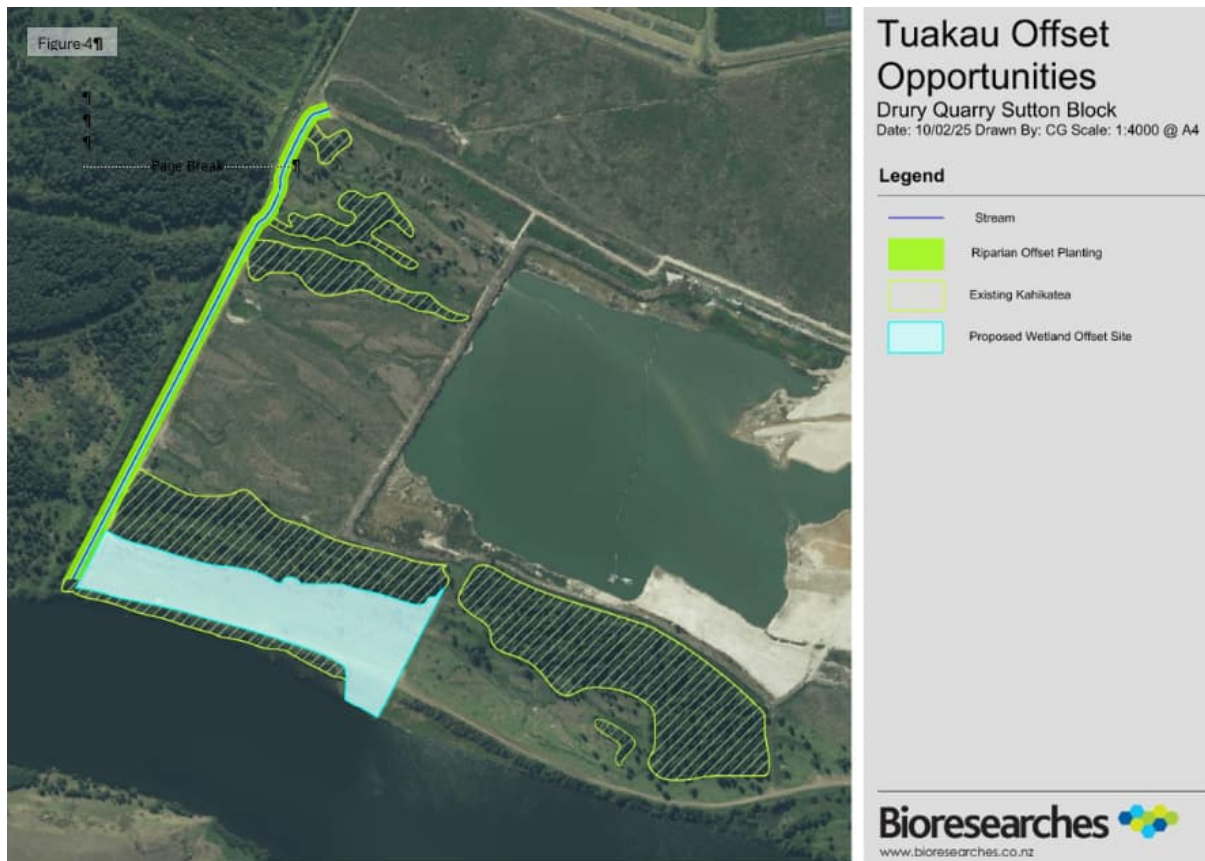


Figure 7.6: Tuakau Site stream and wetland offset areas. Tutaenui Stream (east), un-named stream Western Stream (west) and proposed wetland restoration area.

Key planting and enhancement measures set out in the Wetland Planting Plan and required to be implemented under proposed consent condition C23.

8 Resource consent requirements

To authorise the proposed works outlined in Sections 4 and 5, the applicant is seeking:

- New resource consents under the AUP and relevant NESs under section 42(4)(a) of the FTAA
- An archaeological authority under the HNZPTA under section 42(4)(i) of the FTAA; and
- Wildlife Act approval under section 42(4)(h) of the FTAA.

The following sections describe these.

8.1 New resource consents under Auckland Unitary Plan

The AUP is a single comprehensive plan for the Auckland Region and includes the Regional Policy Statement (AUP RPS) provisions, regional provisions and district provisions that apply across the region. The AUP was made operative in part in September 2016 and replaced the former regional policy statement and 12 district and regional plans.

The requirements for resource consents are determined by the rules in the AUP. The rules which apply are determined by the zoning of the site, any identified notations in the AUP and the nature of the activities proposed.

The general zoning and planning limitations that apply to the site under the AUP are set out in Table 8.1 below, and are shown in Appendix D.

Resource consents are being sought to enable the project works as described in this report and the application intends to include all necessary consents for those activities to occur, even if not specifically notified or identified in Table 8.2 and Table 8.3. Therefore, the consent requirements set out below may not be an exhaustive list and if further consent matters are identified, including post lodgement of the application, these should also be considered as forming part of the application.

Overall, resource consent is required as a non-complying activity, but is not subject to Section 104(d) assessment under Clause 17(1)(b), Schedule 5 of the FTAA

Table 8.1: Zoning and planning notations.

Zoning / Overlay or other planning limitation	Comment
Rural – Mixed Rural Zone	The northern portions of the LOQ footprint and the proposed North Bund are located within this zone.
Rural – Rural Production Zone	A small portion of the Sutton Block LOQ footprint extends into this zone at Lot 1 DP 21743.
Special Purpose – Quarry Zone	The majority of the Sutton Block LOQ footprint is located within this zone.
Quarry Buffer Area Overlay	The site is surrounded by this overlay around the majority of the northern, eastern and western boundaries. A portion of Sutton Block LOQ footprint is located within this overlay, including the proposed North Bund.
Significant Ecological Area Overlay (SEA): • SEA_T_1177 – Terrestrial • SEA_T_5323 – Terrestrial • SEA_T_5349 – Terrestrial	SEA overlays protect areas of vegetation which have been identified as having particular characteristics and are afforded a higher level of protection by the AUP. Four SEAs are identified within the wider SAL landholdings, three of which are within the immediate surrounding landscape. A portion of SEA_T_5323 extends into the LOQ zone to the east and is proposed

Zoning / Overlay or other planning limitation	Comment
	to be removed, SEA_T_1177 is located entirely within the LOQ footprint and SEA_T_5349 is located to the south (covering Kaarearea Paa) and will not be affected by the proposed works.
Natural Stream Management Areas Overlay [rp]	This overlay is located north of the Sutton Block landholdings. This overlay applies to rivers and streams with high natural character and high ecological values. The project footprint does not extend into these areas.
Historic Heritage Overlay Extent of Place - 693, Kaarearea Paa/Ballard's Cone Pā site, R12_278	This overlay is located at the centre of the SAL landholdings and immediately south of the Sutton Block LOQ footprint. The proposed area of works is setback from this Extent of Place overlay.
Site of Significance to Mana Whenua (Plan Change 102) – 111, Kaarearea Paa	This overlay is located at the centre of the SAL landholdings and immediately south of the Sutton Block LOQ footprint. The proposed area of works avoids the overlay which schedules Kaarearea Paa as a Site of Significance to Mana Whenua and has immediate legal effect.
Outstanding Natural Landscapes Overlay (ONL) – Area 60, Ponga Road	This overlay is located immediately north of Sutton Block LOQ footprint and the North Bund. The project area does not extend into this overlay.
High-Use Aquifer Management Areas Overlay	The wider SAL landholdings are located within the Drury Sand and Bombay Drury Kaawa Aquifers. This overlay extends to the west of the existing quarry.
Quality-Sensitive Aquifer Management Areas Overlay – Drury Sand Aquifer [rp]	A portion of the existing Drury Quarry operations is located within this overlay. The Sutton Block LOQ footprint is located outside of this overlay.
Controls: Macroinvertebrate Community Index	This control impacts the entire site.
Flood plains	Several Flood Plains are identified from the Auckland Council GeoMaps GIS Viewer within the site, generally following the position of the Overland Flow Paths.
Overland flow paths	Auckland Council GeoMaps shows a number of overland flow paths within the LOQ footprint area and across the SAL landholdings. There are rules for activities within overland flowpaths, which have been assessed in this AEE.
Streams	Multiple streams are located within the Sutton Block LOQ footprint.
Rural Urban Boundary (RUB)	The RUB is located immediately to the west of the FOH. This overlay does not affect the proposed area of work.
Land Use classification	The soils within Sutton Block are classified as Land Use Classification (LUC) 6 on the Maanaki Whenua NZLRI land use classification maps.
Treaty Settlements – Statutory Acknowledgements (Ngāti Tamaoho)	The entire site is identified as a Ngāti Tamaoho Statutory Acknowledgement Area (OTS-129-22 and OTS-129-06) on the Auckland Council GeoMaps GIS Viewer.

Zoning / Overlay or other planning limitation	Comment
Mana Whenua Area of Interest – Deed of Settlement (Te Ākitai Waiohū)	The entire site is identified as being within a Mana Whenua Area of Interest on the Auckland Council GeoMaps GIS Viewer as it is within Te Ākitai Waiohū rohe (as agreed between Te Ākitai Waiohū and the Crown in the Deed of Settlement).

Table 8.2: Resource consents required under the AUP

Rule reference / description	Activity status	Comment
Activities in, on, under or over the bed of lakes, rivers, streams (including intermittent streams) and wetlands		
E3.4.1 (A19) – Diversion of a river or stream to a new course and associated disturbance and sediment discharge (outside and within overlays)	Discretionary	A number of streams both outside and within SEA overlays, are proposed to be reclaimed and their flows subsequently diverted as shown in the drawings in Technical Report R, Volume 2. Accordingly, consent is sought as a both a discretionary and non-complying activity under Rule A19.
	Non-complying	
E3.4.1 (A20) – Diversion of a river or stream associated with mineral extraction activities within the H28 Special Purpose - Quarry Zone	Restricted discretionary	A number of streams within the SPQZ are proposed to be reclaimed and their flows subsequently diverted as shown in the drawings Technical Report R, Volume 2. Accordingly, consent is sought as a restricted discretionary activity under Rule A20.
E3.4.1 (A33) - Culverts or fords more than 30 m in length when measured parallel to the direction of water flow	Discretionary	A culvert is proposed as part of Stage 1 of the LOQ to enable access to the Sutton Block. The proposed culvert is located outside overlays. Detailed design of the proposed culvert has not yet been undertaken and therefore the exact length is not yet known. Accordingly, consent is sought as a discretionary activity under Rule A33 ²⁹ .
E3.4.1 (A49) – New reclamation or drainage, including filling over a piped stream	Non-complying	Approximately 3,341 linear metres of stream is proposed to be reclaimed. The streams, including their classification as intermittent/permanent, are described in Technical Report A, Volume 2. Accordingly, consent is sought as a non-complying activity under Rule A49.
Take and use of groundwater		
E7.4.1 (A26) – Take and use of groundwater not meeting the permitted activity or restricted discretionary activity standards or not otherwise listed	Discretionary	A maximum groundwater take diversion of 19,426 m ³ per day is proposed at Stage 5 of the LOQ, as described in Technical Report L, Volume 2. Accordingly, consent is sought as a discretionary activity under Rule A26.
Diversion of groundwater		

²⁹ Note, that consent is sought under the NES-F for culverts not complying with the relevant conditions outside SEA overlay as a Discretionary Activity under Regulation 70 (1).

Rule reference / description	Activity status	Comment
E.7.4.1 (A28) - The diversion of groundwater caused by any excavation, (including trench) or tunnel that does not meet the permitted activity standards or not otherwise listed	Restricted discretionary	The Sutton Block expansion will require excavations which exceed 108 ha in area and more than - 60 RL m below the natural ground level, and therefore the permitted activity standards are exceeded. Consent is sought for the diversion of groundwater associated with the proposed excavations. Expected volumes of groundwater to be diverted are described in Technical Report L, Volume 2. Accordingly, consent is sought as a restricted discretionary activity under Rule A28.
Damming water		
E7.4.1 (A35) – Dams not otherwise listed or not meeting the permitted activity standards or controlled activity standards	Discretionary	In order to complete the construction of the access road, temporary damming of Stream 4 is required as described in Stage 2C of the ESCP (Technical Report R, Volume 2). It is anticipated that the permitted standards for temporary dams are likely to be met, but as a precautionary measure, consent is sought as a restricted discretionary activity under Rule A35.
Diversion and discharge of stormwater runoff from impervious areas onto or into land or into water or to the coastal marine area pursuant to sections 14 and 15 of the Resource Management Act 1991		
E8.4.1 (A10) – All other diversion and discharge of stormwater runoff from impervious areas not otherwise provided for	Discretionary	All stormwater within the Sutton Block catchment will be diverted and discharged into the Sutton Block pit. This includes the diversion and discharge of stormwater across the proposed access and haul roads (impervious areas). Accordingly, consent is sought as a discretionary activity under Rule A10.
Land disturbance - Regional		
E11.4.1 (A9) – Earthworks greater than 2,500 m ² within the Sediment Control Protection Area	Restricted discretionary	The Sutton Block expansion requires excavations which exceed 108 ha in area, the majority of which is located within the SPQZ as shown in in Technical Report R, Volume 2. Earthworks within the SPQR, that are not subject to overlays, are consented by existing resource consents (refer to Section 8.3). Outside of the Quarry Zone, within the Rural Zoning, approximately 30 ha of earthworks is proposed to construct the LOQ footprint and Northern Bund (refer to Figure 4 attached as Appendix D). Given the number of streams and wetlands located within the Sutton Block (including outside of the SPQZ), land disturbance within the Sediment Control Protection Area is proposed. Accordingly, consent is sought as a restricted discretionary activity under Rule A9.
E11.4.3 (A28) – Land disturbance in the SEA not otherwise listed – Greater than 5 m ²	Restricted discretionary	Outside of the SPQZ, earthworks will encroach into SEA_T_5323 at the east of the proposed Sutton Block LOQ extent. As shown in Technical

Rule reference / description	Activity status	Comment
E11.4.3 (A30) - Land disturbance in the SEA not otherwise listed – Greater than 5 m ³	Restricted discretionary	Report R, Volume 2, earthworks will occur in the SEA across an area of approximately 14 ha and up to a maximum depth of - 60 RL m. Accordingly, consent is sought as a restricted discretionary activity under Rule A28 and A30.
Air quality		
E14.4.1 (A91) - Mineral extraction activities at a rate exceeding 200 tonnes/ hour from any one quarrying process within the Low air quality – dust and odour area (Quarry)	Controlled	The Sutton Block expansion involves the establishment of mineral extraction activities within the SPQZ, including associated generation of dust emissions. Accordingly, consent is sought for air discharge as a controlled activity under Rule A91.
E14.4.1 (A91) - Mineral extraction activities at a rate exceeding 200 tonnes/ hour from any one quarrying process within the Medium air quality - dust and odour rural area (Rural)	Discretionary	Approximately 30 ha (28%) of the LOQ footprint is located within the Rural Zoning. Accordingly, consent is sought for air discharge activities a discretionary activity under Rule A91.
Vegetation management and biodiversity		
E15.4.1 (A10) - Vegetation alteration or removal, including cumulative removal on a site over a 10-year period, of greater than 250 m ² of indigenous vegetation that: (a) is contiguous vegetation on a site or sites existing on 30 September 2013; and (b) is outside the rural urban boundary	Restricted discretionary	The site is outside of the Rural Urban Boundary. Approximately 16.78 ha of indigenous vegetation is proposed to be removed, comprised of 8.8 ha regenerating Kānuka Forest; 7.33 ha Broadleaf Podocarp Forest; and 0.65 ha Rock Forest. The areas of clearance are shown in Technical Report B, Volume 2. While not all contiguous, and over a 50-year period (LOQ), it is anticipated that the area of vegetation cleared will exceed 250 m ² for each 10-year period. Accordingly, consent is sought as a restricted discretionary activity under Rule A10.
E15.4.1 (A17) – Vegetation alteration or removal within 10 m of rural streams in the Rural – Rural Production Zone and Rural – Mixed Rural Zone	Restricted Discretionary	Vegetation clearance is required along the edges of streams and wetlands across the project footprint, as detailed in Technical Reports A and R, Volume 2. Most of the removal is proposed within the SPQZ. However, 30 ha of the Sutton Block LOQ extent is proposed to encroach into the Rural – Mixed Rural Zone and Rural – Rural Production Zone, requiring vegetation removal adjacent to Stream 9. Accordingly, consent is sought as a restricted discretionary activity under Rule A17 and A18.
E15.4.1 (A18) – Vegetation alteration or removal within 20 m of a natural wetland, in the bed of a river or stream (permanent or intermittent), or lake	Restricted discretionary	
E15.4.2 (A43) – Any vegetation alteration or removal not otherwise provided for	Discretionary	The proposed vegetation works includes clearance of approximately 14.25 ha from within SEA overlays (SEA_T_5323 and SEA_T_1177) both inside and outside of the SPQZ. Vegetation clearance within SEAs for the purpose of mineral extraction has not been otherwise provided for in the rules. Accordingly, consent is sought as a discretionary activity under Rule A43.
E15.4.2 (A44) – Any vegetation alteration or removal within a	Restricted discretionary	As described in Technical Report A, Volume 2, the total amount of vegetation to be removed from

Rule reference / description	Activity status	Comment
Quarry Zone and within a Significant Ecological Area		within SEAs is approximately 14.25 ha. Approximately 7.58 ha of this removal will be from within the SPQZ. Accordingly, consent is sought as a restricted discretionary activity under Rule A17 and A44.
Natural hazards and flooding		
E36.4.1 (A41) – Diverting the entry or exit point, piping or reducing the capacity of any part of an overland flow path	Restricted discretionary	A number of overland flow paths are identified within the proposed LOQ footprint. These will be diverted or filled as the LOQ footprint expands, as shown on the drawings in Technical Report R, Volume 2. The pre-development overland flow paths are shown in the drawing set attached as Appendix D. Accordingly, consent is sought as a restricted discretionary activity under Rule A41.
E36.4.1 (A56) – Infrastructure in overland flow paths not otherwise provided for	Restricted discretionary	As the Sutton Block footprint expands to LOQ, haul roads and access roads are considered to be infrastructure but are not otherwise provided for in the rules. Both will cross and divert numerous overland flow paths, as shown in Technical Report R, Volume 2. The pre-development overland flow paths are shown in the drawing set attached as Appendix D. Accordingly, consent is sought as a restricted discretionary activity under Rule A56.
Rural Zone – land use		
H19.8.1 (A60) – Mineral extraction activities in the Rural – Mixed Rural Zone	Discretionary	As indicated above, the proposed Northern Bund (until Stage 5) and approximately 30 ha (28%) of the LOQ footprint is located within the Rural – Mixed Rural Zone, including a small encroachment into the Rural – Rural Production Zone at Lot 1 DP 21743. Accordingly, consent is sought to establish mineral extraction activities as a discretionary activity under Rule A60.
H19.8.1 (A60) – Mineral extraction activities in the Rural – Rural Production Zone	Discretionary	
Special Purpose – Quarry Zone – land use		
H28.4.1 (A7) – Mineral extraction activities	Controlled	The Sutton Block expansion involves the establishment of mineral extraction activities within the SPQZ. Accordingly, consent is sought as a controlled activity under Rule A7.
H28.4.1 (A18) – Land disturbance Greater than 2,500 m ² within the Sediment Control Protection Area	Controlled	A number of streams and wetlands are located within the LOQ footprint, with earthworks occurring within the Sediment Control Protection Area of those streams and wetlands. Accordingly, consent is sought as a controlled activity under Rule A18.

Table 8.3: Resource consents required under National Environmental Standards

Rule reference / description	Activity status	Comment
NES-F		
Regulation 45A (1) - Vegetation clearance within, or within a 10 m	Discretionary	Quarrying activities, as defined in the National Planning Standards 2019, are proposed within the

Rule reference / description	Activity status	Comment
setback from, a natural inland wetland is a discretionary activity if it is for the purpose of quarrying activities.		Sutton Block. There are a number of natural wetlands within the Sutton Block, as shown in Technical Report A, Volume 2. Vegetation clearance and earthworks are proposed within a number of natural wetlands in order to establish quarrying activities within the Sutton Block. Over the LOQ, the proposed earthworks will result in the complete, or partial, drainage of a number of natural wetlands (refer to Figure 3.12). Additionally, the take, use and diversion of groundwater and diversion of streams are proposed throughout the stages of the LOQ, resulting in changes to the hydrological function of the wetlands. Accordingly, consent is sought as a discretionary activity under Regulation 45A.
Regulation 45A (2) - Earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of quarrying activities.		
Regulation 45A (3) - Earthworks or land disturbance outside a 10 m, but within a 100 m, setback from a natural inland wetland is a discretionary activity if it— (a) is for the purpose of quarrying activities; and (b) results, or is likely to result, in the complete or partial drainage of all or part of the wetland.		
Regulation 45A (4) - The taking, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if— (a) the activity is for the purpose of quarrying activities; and (b) there is a hydrological connection between the taking, use, damming, or diversion and the wetland; and (c) the taking, use, damming, or diversion will change, or is likely to change, the water level range or hydrological function of the wetland.		
Regulation 57 (1) - Reclamation of the bed of any river is a discretionary activity.	Discretionary	The reclamation of the bed of several rivers is proposed for the purpose of constructing the Sutton Block expansion. Aggregate is a natural material that is determined by geology and can therefore only be sourced from where it is naturally found in situ. Given aggregate is located in the Sutton Block, it is considered that there is a functional need for the proposed reclamation in order to be able to extract the aggregate from this particular location. Accordingly, consent is sought as a discretionary activity under Regulation 57.
Regulation 71 (1) - The placement, use, alteration, extension, or reconstruction of a culvert in, on, over, or under the bed of a river is a discretionary activity if it does not comply with any of the conditions in regulation 70(2).	Discretionary	The placement, use, and alteration of culverts is proposed. Regulation 70 states that this activity is permitted if it complies with the conditions outlined in Regulation 70(2). It is proposed that the culvert will be designed for fish passage of climbing capable species (i.e., eels and banded kōkopu) due to the existing waterfall downstream

Rule reference / description	Activity status	Comment
		of the Sutton Block works extent currently forming a natural barrier to fish passage accessing the upper catchment. Additionally, the ESCP indicates that the culverts will not be directly parallel to the slope of the bed of the stream. The specifications of the culvert will not be confirmed until detailed design phase and therefore, it is assumed that the permitted standards cannot be met. Accordingly, consent is sought as a discretionary activity under Regulation 71.
NES-CS		
Regulation 9 (1) - Removing or replacing fuel storage system, sampling soil, or disturbing soil	Controlled	As outlined in Section 3.4.8, small discrete areas of the Sutton Block LOQ footprint contain concentrations of heavy metals in excess of background criteria which does not comply with Regulation 5(9) of the NES-CS. Earthworks for quarrying activities are proposed in these areas. Accordingly, consent is required as a controlled activity under Regulation 9.
Regulation 9 (3) - Subdividing or changing use		

8.2 Other consents and approvals required

8.2.1 Additional approvals

In addition to the resource consent process, SAL will need to obtain a number of other authorisations, including building consents for ancillary structures on the site. SAL will apply for building consent for the construction of the ancillary structures following any grant of the required resource consents for the site.

Other required approvals are described below.

8.2.2 Landowner approval

As outlined in Section 1.4, the works undertaken on sites outside the Sutton Block as part of the mitigation, offset package are permitted activities. The measures undertaken within the wider SAL landholdings are not subject to landowner approvals, nor is the Tuakau Site which is also owned by SAL. For the Hingaia Island Site, DoC is the landowner. SAL is currently working with DoC to obtain their landowner approval. Planting on this island is contingent on obtaining DoC's landowner approval which is offered as a condition of consent (refer to Appendix I).

8.2.3 Archaeological authority

As stated in Section 0, there are several archaeological sites located in close proximity to the Sutton Block LOQ footprint, including Kaarearea Paa (R12/278) and its likely associated features (R12/723). Recorded site R12/724 (Plants, Fence, Stonework, Earthworks) is located within Stage 5 of the project area. Accordingly, the Archaeological Assessment (Technical Report T, Volume 2) recommends that an Authority to modify an archaeological site should be sought under section 44(a) of the HNZPTA 2014 prior to commencement of earthworks as a precaution for R12/278 and R12/723. On this basis, SAL is seeking a General Authority to "modify or destroy" under section 42(4)(i) of the FTAA. A separate package of documents (included as Part D) has been prepared as part of the overall substantial application to seek an Archaeological Authority. As noted above, R12/724 relates to post -1900 activity and therefore do not fall within the definition of an archaeological site under HNZPTA.

8.2.4 Freshwater species relocation permits

As described in Section 6.3, native fish recovery and relocation will be undertaken prior to works occurring within streams in the project footprint. Permits are required under the Conservation Act 1987 to transfer and release freshwater aquatic life. If the relocation site already has the species present, permits are obtained from MPI in accordance with section 26ZM(2) of the Conservation Act. If the species is not present, an authorisation must be obtained from DOC, under section 26ZM(3). The release location will be confirmed as part of the proposed NFFMP, which will be prepared prior to works commencing. If required, additional permits will be sought from DOC and MPI. These approvals do not form part of the Fast-track Approval process and will be applied for separately.

8.2.5 Wildlife Act permits

Wildlife Act approval is sought under section 42(4)(h) of the FTAA for salvage and relocation of protected species as a result of the project works. A separate package of documents (included as Part C) has been prepared as part of the overall substantial application to seek a Wildlife Approval. .

8.3 Existing resource consents

SAL currently hold a range of resource consents relating to the operation of the existing Drury Quarry pit and form part of the existing environment. Some of these existing consents will be relied upon as part of the operation of the proposed Sutton Block. Table 8.4 below summarises the relevant existing granted resource consents and Table 8.5 summarises the resource consents that have been lodged with Auckland Council as of February 2025.

Table 8.4: Existing resource consents – Drury Quarry and SAL landholdings

Consent number	Consent type	Expiry Date
BUN60409108 (LUC60409170 & DIS60409109)	Consents to replace the existing air discharge to air permit (R/REG/2013/5151/1) and for mining extraction activities within the SPQZ.	16 February 2058
BUN60359817 (LUC60359819 & DIS60359818)	Consents to relocate and reorganise Quarry FOH including processing equipment and aggregate storage facilities, parking, materials laboratory, weighbridge, wheel wash, stormwater treatment and various Quarry administrative functions. Also authorises the diversion and discharge of stormwater from the FOH area, including water discharged to NT1 stream.	7 October 2055 Lapse date of 7 October 2025
BUN60325729 (LUC60325732 & LUS60325733)	Consents to expand existing quarry pit including vegetation and stream removal. A section 127 variation ³⁰ application has been lodged with Auckland Council seeking to: - Relocate the riparian planting which will be lost, and - Relocate the stream protection to another section of the stream.	N/A Lapse date of 12 December 2023
24722	Consent to divert the McWhinney watercourse	30 April 2036
26543	Consent to divert surface water in 15 m of an unnamed tributary of the Hingaia Stream through a culvert	30 April 2036

³⁰ Council reference: LUC60325732-A

Consent number	Consent type	Expiry Date
25584	Consent to divert surface water in 330 m of an unnamed tributary of the Peach Hill stream through a constructed stabilised channel.	31 December 2036
9062	Consent to construct an internal haulage road, landscaping earth bund and a new access road to Ramarama Road. Consent was also sought to upgrade the existing access road to serve the block plant.	N/A
ARC permits 36799, 37315 and 37146	21.4 ha of earthworks associated with existing (retrospective) and proposed overburden stockpiling on the Thorburn Site, and isolated overburden stockpiling elsewhere around the quarry, and surface water diversion and reclamation associated with diversion of 1237 m of Peach Hill stream.	30 January 2045
40317	Consent to take groundwater – authorises the taking and use of groundwater for the purposes of dewatering a quarry and for general site use, dust suppression and stream augmentation purposes. Authorises up to 3700 cubic metres of groundwater to be taken daily. Annual limit (1 June – 31 May) should not exceed 1,350,500 cubic metres.	29 October 2044
ARC permits 15071, 15072, 15073, 15074, 15075 and 15076.	Consent to dam surface water for quarrying operations, specifically: • 15071: A 4 m high dam catchment 105 ha (top dam); • 15073: a 2 m high dam catchment 125 ha (bottom dam); and • 15075: a 1.5 m high dam catchment 125 ha (bottom weir). • And consent to take surface water from: • Waitangi, Mauku (the two western most streams), Waiuku, Ruakohua and Taihiki; • Whangamaire and Whangapouri (the two spring fed streams); and • Ngakoroa, Hingaia (the two eastern most streams), Glassons Creek, Drury Creek and Waihoihoi.	31 May 2027 (15071, 15073, 15075) 31 May 2025 (15072, 15074)
LU 9565 (as varied by LU 9985)	Consent to create an overburden disposal area including removal of protected vegetation and realignment of a stream at 475 Quarry Road.	N/A Lapse date of 3 June 2015
R/REG/2014/4143	Consent to divert and discharge stormwater from a metalled hard stand area of 4,200 m ² proposed for aggregate storage.	1 November 2049
R/LUC/2015/2419 and R/REG/2015/2420	Consent to replace sediment control resource consent 13241 to undertake earthworks and land disturbance at the Drury Quarry over an area of 315 hectares and to construct a stormwater pond in the Industrial Zone.	14 August 2045

Consent number	Consent type	Expiry Date
R/REG/2015/2514, R/REG/2015/2508 and R/LUC/2015/2513	The placement of managed fill at the existing Thorburn Site and for the placement of approximately 210,000 m ² of managed fill and clean fill over an area of 3.03 hectares to form the Noise Bund along the northern boundary of the property.	30 January 2045
BUN60078206 (R/LUC/2016/5186, R/REG/2016/5188, R/REG/2016/5229)	Consent to establish and operate a batching plant producing ready-mix concrete, including the use of land for a new high risk industrial or trade activity, storage and use of hazardous substances, discharge of contaminants from a new industrial or trade activity, and discharge to air for the manufacture of concrete.	25 January 2037
BUN60400412 (LUC60400414, DIS60400413 & DIS60400961)	Consent to construct and operate an asphalt plant on site, including the use of land for an existing high risk industrial or trade activity, storage and use of hazardous substances, discharge of contaminants from a new industrial or trade activity and from combustion activities, and discharge to air for the manufacture of asphalt paving mix.	10 January 2048 (DIS60400413) 10 January 2058 (DIS60400961)
BUN60415900 (LUC60415901, DIS60415902 & DIS60415935)	Consent to construct and operate a perlite processing plant on site, including the use of land for a new high risk industrial trade activity, storage of LPG (hazardous substance), discharge of contaminants from a new ITA, and discharge to air for the processing of perlite.	8 August 2038
LUC60425853	Consent to remove approximately 5,589 m ² of indigenous vegetation from within the Drury Quarry to enable the extension of the existing quarry pit and quarrying of the western façade, including undertaking compensation revegetation across an area of 4.22 ha and enhancement planting across 0.56 ha.	N/A Lapse date of 26 March 2029
LUC60325732-A & LUS60325733-A	Consent to change the location of offset (terrestrial and freshwater) planting to elsewhere on the SAL wider landholdings associated with the Northern Pit Extension.	03 April 2025

Table 8.5: Lodged resource consents – Drury Quarry and SAL landholdings³¹

Consent number	Consent type
LUC60443470	Consent to to expand the existing stockpiling activity within Lot 109 (41 Bill Stevenson Drive) and to establish two vehicle crossings (one on Bill Stevenson Drive and one on Waikura Road) to service the stockpile area. Removal of two street trees and relocation of utilities within the road reserve are required to enable the new vehicle crossings. This application is still processing.

³¹ Applications lodged with Auckland Council as of 25 March 2025.

Consent number	Consent type
WAT60277068-C	Section 127 variation to conditions to revise daily and annual dewatering quantities, change bore location and trigger values for Drury Quarry. Specifically, to increase the daily consented dewatering rate from 3,700 m ³ /d to 5,750 m ³ /d (including storage) and the annual dewatering rate from 1,350,000 to 2,098,750 m ³ /year, change the authorised drawdown trigger level for monitoring bore SG6, and update the accompanying Monitoring Plan. This application is still processing.
BUN60441128	Consent to construct a solar farm covering approximately 10.9 ha hectares and have an installed capacity of up to some 8.2 MWp DC / 8.4 MVA AC. The solar farm is proposed at the southern extent of the Drury Quarry site, off Peach Hill Road. This application is still processing.

9 Assessment of effects on the environment

9.1 Introduction

The following assessment identifies and assesses the types of effects that may arise from the proposed works in accordance with Schedule 5 of the FTAA. The conclusions in the following subsections have been drawn from the technical reports contained in Volume 2. The technical reports contained in Volume 2 are based on information available as of 30 March 2025. This section also outlines the measures that the applicant proposes to avoid, remedy, mitigate or off-set any potential adverse effects on the environment.

9.2 Positive effects

9.2.1 Provision of regionally significant mineral resources

As recognised by the AUP, mineral resources are important for the Auckland region. In particular, aggregate is fundamental for numerous applications in the local economy, contributing to the advancement of urban and infrastructure development. As previously noted, aggregate serves as a foundational building material and is a fundamental component of concrete, playing a crucial role in diverse construction and civil engineering projects. Ensuring a consistent and readily available source of high-quality, locally sourced aggregate is necessary for supporting Auckland's economic growth aspirations and meeting the infrastructure needs of Auckland's rapidly growing population and economy.

The greywacke resource at the Sutton Block expansion is of high quality and is comparatively well-exposed with low stripping and overburden ratios. The Sutton Block is located close to State Highway 1, a key transport route to provide aggregate to the Auckland region and particularly the areas of projected future growth in South and East Auckland. The existing Drury Quarry is one of the major sources of aggregate within Auckland, supplying 30% of Auckland's current aggregate requirements. As set out in Technical Report S, Volume 2, Auckland over the past decade has consistently produced a lower amount of aggregate on a per-capita basis relative to the other regions, requiring a portion of its aggregate to be imported. Due to the high costs associated with transporting aggregate, for aggregate extraction to be economical, and more sustainable (by reducing other indirect effects like emissions and social costs³²), it should be located proximate to the areas required. Accordingly, the expansion of the Sutton Block will benefit the region by securing a locally sourced aggregate supply to facilitate regional growth and ensure the cost of aggregate remains affordable.

The expansion of the Sutton Block will enable the ongoing use of the existing Drury Quarry ancillary infrastructure and facilities. This is an efficient use of resources as it provides for the continued use of the existing Drury Quarry operation and secures an additional 50 years of local aggregate supply for the Auckland region in a location that has been operating as a quarry for over 80 years. The Drury South precinct has been specifically planned and designed to accommodate the Drury quarry to ensure that aggregate extraction can continue in a manner that minimises adverse effects.

Lastly, the Sutton Block will be a state-of-the-art 'quarry of the future'. Central to its design philosophy are principles of sustainability, to minimise the environmental footprint of its operation as far as practical. Notably, carbon reduction will be a key consideration, achieved through the reduction in diesel-powered dump trucks and eventually the utilization of an electric conveyor.

³² Social costs linked to injuries and fatalities due to changes in distance travelled.

9.2.2 Economic benefits

The Sutton Block is a valuable regional and national resource that is of strategic importance to the future growth of Auckland particularly in respect of Drury Quarry's close proximity to planned regionally significant infrastructure projects, high-quality rock, and substantial aggregate resource.

If granted, the consents package will secure additional mineral resources to provide for the on-going supply of aggregate to the Auckland market for an estimated 50 years.

As described in the Economic Impact Assessment (Technical Report S, Volume 2), the positive economic benefits of the proposed Sutton Block expansion primarily relate to cost savings derived from the lower transport requirements of sourcing aggregate from an accessible Auckland quarry. In comparison to alternative aggregate sources, aggregate extraction from the Sutton Block would save between \$29.4 million to \$65.2 million per million tonnes of aggregate based on transport, environmental and social-related costs. This additional expense would likely get passed on to the consumers, particularly when aggregate demand exceeds supply. The impact of cost-effective aggregate extends significantly further than just the construction sector – economic growth is in part related to urban development and the supply of affordable housing. Therefore, to grow the economy and provide affordable housing opportunities, a sustained availability of cost-effective aggregate is required. Further economic growth in the region helps businesses to expand within Auckland rather than relocate and assists large infrastructure projects to be delivered on time and to budget.

The Sutton Block will secure a significant amount of high-quality aggregate for the Auckland market at sustainable prices for another 50 years. Securing this future supply will have a positive economic effect on the wellbeing of Aucklanders and assist in facilitating the delivery of infrastructure and development projects with significant regional or national benefits.

9.2.3 Ecological offset

Approximately 62 ha of revegetation planting and 108 ha of forest enhancement (pest and weed control) is proposed to mitigate and offset the removal of vegetation. Restoration and enhancement planting, including proposed pest control, will provide for positive terrestrial benefits through habitation creation, biodiversity gains, and enhancing connectivity to existing habitats surrounding the Sutton Block. Planting of approximately 887 relict trees to replace the loss of larger relict mature trees will provide a net biodiversity gain. Over half (56%) of the revegetation planting and two thirds (66%) of enhancement actions will occur at least 10 years in advance of the loss of vegetation, providing very important biodiversity gains ahead of vegetation loss and addressing time lags inherent in loss of vegetation. All replanting will be completed by year 16, allowing for a minimum of 19 years of monitoring to occur within the 35 year biodiversity offset timeframe.

Additionally, the proposed ecological enhancements at the Tuakau Site includes 3,341 lineal metres of stream enhancement with riparian planting and fencing, modification or removal of a floodgate to allow for fish passage, and 4.04 ha of wetland restoration, including creation of wetland habitat. The proposed planting is anticipated to result in an overall Net Gain in ecological values. The proposed wetland restoration will also have positive effects in the form of creating additional habitat and ecological connectivity to the Waikato River and its tributaries. Notably, covenants are proposed for areas of vegetation that are not already covered by existing covenants. The new covenants aim to ensure that the net positive effects listed above can occur and continue on a long-term basis by preserving and protecting the land in perpetuity from any inappropriate use and development. It is noted that the offset will be of a quantum to address the more than minor residual effects of the Sutton Block expansion.

9.2.4 Conclusion

The Sutton Block expansion will result in a range of positive effects, including:

- Ensuring a consistent supply of high-quality aggregate for Auckland over the next 50 years, enabling and supporting Auckland's population growth and development.
- Economic benefits for Auckland region which will assist in enabling people and communities to provide for their economic and social well-being.
- Environmental benefits associated with reduced transport distances in comparison to if the aggregate was sourced from outside the region.
- Efficient use of existing ancillary infrastructure at the site and aggregate resources within a site that has been identified under the AUP for mineral extraction.
- Ecological offset that will result in positive terrestrial and aquatic environmental outcomes resulting in an overall net gain in ecological values.
- Overall, these will result in significant positive effects associated with the project.

9.3 Geology

9.3.1 Site suitability

The underlying geology is a critical consideration when selecting a site for quarry expansion. The quarry expansion will encounter Waipapa Greywacke (the resource), South Auckland Volcanics and WCM, with localised areas of conglomerate expected to be encountered. The ground investigations as set out in the Geotechnical Assessment (Technical Report Q, Volume 2) conclude that the proposed Sutton Block LOQ footprint is generally feasible from a geotechnical perspective. Accordingly, the proposed Sutton Block expansion can be undertaken, subject to detailed design and construction monitoring.

9.3.2 Slope stability

The development and operation of a quarry relies on having a safe and efficient site with good slope stability. Slope instability can cause a range of potential adverse effects, including back-break and uncontrolled sediment discharges. Slope instability can be triggered by cutting into a slope and destabilising the material above. As such, it is important to identify potential instability risks and adapt the design accordingly to remove or manage the area.

Slope stability modelling, as set out in the Geotechnical Assessment (Technical Report Q, Volume 2), indicates areas of localised instability through overburden material of residual Waipapa Greywacke, WCM and residual South Auckland Volcanics. Accordingly, this has been accounted for in the development of the Sutton Block LOQ footprint design, and will be managed through a range of measures, including:

- Detailed design and construction monitoring, including implementation of trial batters for the proposed quarry slope within the South Auckland Volcanics and WCM overburden material. This is to optimise geotechnical design parameters to be performed as part of the initial quarry expansion and may include flattening back batters within WCM and some localised sections with the residual South Auckland Volcanics to approximately 1V:2H (27°) to increase stability.
- Remove overburden residual volcanics from the quarry slopes where possible. Where not possible, no benches are to be cut into residual overburden material. Residual greywacke encountered within the southeastern corner of the proposed pit to be flattened back to a maximum slope angle of approximately 1V:2H (27°).

- Retention of the existing wetlands near the southern extent of the quarry excavation poses potential slope stability in the upper WCM layers and dewatering risk (refer to Section 15.2 and 15.3 of Technical Report Q, Volume 2). To manage this, ongoing assessment and monitoring of the hydraulic conductivity between the wetlands and upper portions of the pit slopes within WCM is proposed. This includes forming trial batters at a minimum of 20 m from the wetland perimeter and monitoring for deformation and groundwater effects. If monitoring indicates instability or dewatering of the wetland, setback adjustments or groundwater barriers along the wetland's northern edge within the WCM upper slopes will be considered. Potential measures include sheet piles, grout curtains, soil nails and/or geotextiles. Blasting trials undertaken prior to production blasting to inform batter design and as the quarry approaches the final face position to minimise the risk of back-break.
- Geotechnical engineering monitoring will occur throughout the establishment of the LOQ footprint. If adverse or unexpected geological conditions are encountered, the design will be amended to address these conditions, which may include revisions to the batter design. Observations of the works by a geotechnical engineer are particularly critical in order to confirm that the ground and groundwater conditions assumed as part of the design process are consistent with what is encountered as part of the physical work; and Preparation of a Slope Stability Management Plan (SSMP), incorporating an annual stability review of the batters (trial and operational) once quarry construction commences, including an annual review of stormwater control measures, monitoring of groundwater connectivity between wetlands adjoining the pit and proposed pit slopes formed in the WCM, specific hold points of the quarry face and monitoring requirements.

In summary, slope stability modelling indicates there are some areas of instability within the Sutton Block LOQ footprint, these will be managed (avoided, remedied or mitigated) during the quarry design and construction process, such that the potential risks and associated adverse effects of slope instability will be minor.

9.3.3 Seismic risk

Earthquakes pose a potential risk to quarry stability. In the event of an earthquake, there is a risk of batter collapse. There are no active faults present within 20 km of the project site according to the New Zealand Active Faults Database. The slope stability analysis outlined in the Geotechnical Assessment (Technical Report Q, Volume 2) takes into account seismic risk. An assumed earthquake magnitude of 5.9 was adopted based on NZGS guidelines³³ and a 100-year- return period for slope stability assessment purposes for the pseudo-seismic limit state analysis. The pseudo-seismic stability analysis indicates that the overall quarry had a satisfactory Factor of Safety against instability for the assumed 100 Year Seismic Event. Some of the upper WCM sections did not meet the target Factor of Safety values. Flattening back the WCM batters to increase slope stability would see the Factor of Safety targets met or surpassed. As mentioned above, there are various management measures proposed to inform the overall batter design and ongoing monitoring to ensure that potential adverse effects during a seismic event will be less than minor.

9.3.4 Conclusion

Subject to detailed design, informed by the results of trial batters and blasting, and ongoing construction monitoring, the proposed Sutton Block can be constructed and operated safely within the proposed LOQ footprint. Additional stability enhancement measures (such as flattening back batters and setback adjustments or groundwater barriers along the southern extent of the quarry) may be required to attain sufficient stability through the WCM sections. However, from a

³³ New Zealand Geotechnical Society (NZGS) and Ministry of Business Innovation & Employment (MBIE) Earthquake Geotechnical Engineering Practice in New Zealand, Rev 1, Issue Date: November 2021.

geotechnical perspective slope stability can be achieved, and seismic risk managed, through design, construction and ongoing monitoring. Overall, it is considered geotechnical risk will be minor.

9.4 Air quality

Due to the nature of quarrying activity, the potential air quality effects are limited to the generation of dust emissions, namely amenity effects and potential human health effects associated with dust.

As outlined above, the existing Drury quarry pit and FOH activities (including processing and stockpiling) have an existing air discharge permit (Council ref: DIS60409109) that was recently granted in 2023. Due to the recent grant of this consent, it is considered that the methods for both assessing and managing dust that formed part of that consent are up to date and in line with current practice. The Sutton Block will not result in any changes to the existing Drury Quarry pit or FOH activities, including the processing plants and stockpile areas.

The following sub-sections describe the nature of the discharges to air from the project and proposed controls to minimise this discharge and mitigate effects.

9.4.1 Amenity effects

Dust will be generated at the quarry, particularly during dry, windy conditions, either during the initial construction earthworks or associated with daily quarrying operations. This has the potential for nuisance effects if not well-controlled.

The operation of Sutton Block pit has the greatest potential for offsite dust effects. Activities that have the potential to generate dust include overburden removal and disposal, construction of haul roads, aggregate extraction and processing operations, and aggregate loading and transport. The closest receptor to the LOQ footprint is approximately 80 m away (Kaarearea paa), with the nearest sensitive receptor (dwelling) located approximately 130 m away (359 MacWhinney Drive).

A FIDOL (frequency, intensity, duration, offensiveness and location) assessment is included in Technical Report K, Volume 2. This assessment concludes that there is some potential for unmitigated air discharges from proposed quarrying activities to cause off-site effects, primarily at the end of MacWhinney Drive (around receptor R2 – 359 MacWhinney Drive) due to the height of the proposed works relative to this location and less dense vegetation bordering the site. However, with dust mitigation measures put in place (refer to Section 6.2.1 and DMP), dust emissions will be minimised to within 50 to 100 m of the source, and therefore there is a low likelihood of effects on any nearby sensitive receptors (identified in Figure 9.1 as R1 – R4).

If dust emissions occur, the extensive network of dust monitors employed around the Sutton Block are designed to ensure early detection and allow for mitigation measures to be deployed, minimising the duration of any dust event. A DMP is proposed to be prepared (as required by consent condition C8 in Appendix I) which will set out dust management measures to minimise the risk of offensive or objectionable dust emissions occurring beyond the boundary of the site. The Sutton Block DMP will be based on the Drury Quarry DMP measures that are currently implemented on site. These measures are consistent with the Ministry for the Environment Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions³⁴ and based on the existing Drury Quarry good compliance record, are expected to ensure that off-site nuisance and any visual amenity effects of dust from the Sutton Block will be less than minor.

³⁴ MfE Good Practice Guide for Assessing and Managing the Environmental Effects of Dust emissions, November 2016

9.4.2 Health effects

9.4.2.1 PM₁₀

Potential human health impacts are primarily driven by smaller size particulate (PM₁₀ and smaller). An assessment of the potential human health impacts from the discharge of dust from quarrying activities is included in the Air Quality Assessment (Technical Report K, Volume 2).

Given the sources and type of dust proposed to be discharged from the Sutton Block, human health effects from dust discharges are considered to be low for the following reasons:

- PM₁₀ and particularly PM_{2.5} are generally not significant components of the dust generated from quarry activities;
- Total cumulative concentrations of PM₁₀ are predicted to be well below the NESAQ assessment criteria (refer to Section 3.4.4); and
- Dust suppression also suppresses PM₁₀.

Based on the Air Quality Assessment, it is considered that PM₁₀ concentrations from the Sutton Block operation will not result in adverse health effects at nearby sensitive locations, particularly following proposed mitigation measures as outlined in the DMP.

9.4.2.2 Respirable Crystalline Silica

Ambient monitoring of Respirable Crystalline Silica (RCS) is not currently undertaken at the existing Drury Quarry site. However, analysis undertaken by SAL indicate that the processed material produced contains a silica content of between 0.5 and 13 percent.

Conservative screening calculations are included in the Air Quality Assessment (Technical Report K, Volume 2) to assess the potential for off-site RCS effects. Based on the conservative concentration calculations and review of relevant guidelines, PDP considers that the predicted RCS concentrations are low and are unlikely to generate any offsite RCS effects.

9.4.3 Cumulative effects

Quarrying of the existing Drury Quarry pit and proposed Sutton Block pit is proposed to occur simultaneously for a period of time and therefore has the potential to result in cumulative dust effects. Modelling has shown that to be affected by cumulative dust effects from both existing and proposed quarrying operations, the receptor must be located downwind of emission sources at the same time dust emissions are occurring.

The Air Quality Assessment (Technical Report K, Volume 2) assesses the potential dust effects from the existing Drury Quarry and proposed Sutton Block. Figure 9.1 below shows the potential dust effects from both activities assuming no mitigation is undertaken, with the purple shaded area indicating the possible zone that might experience cumulative effects.

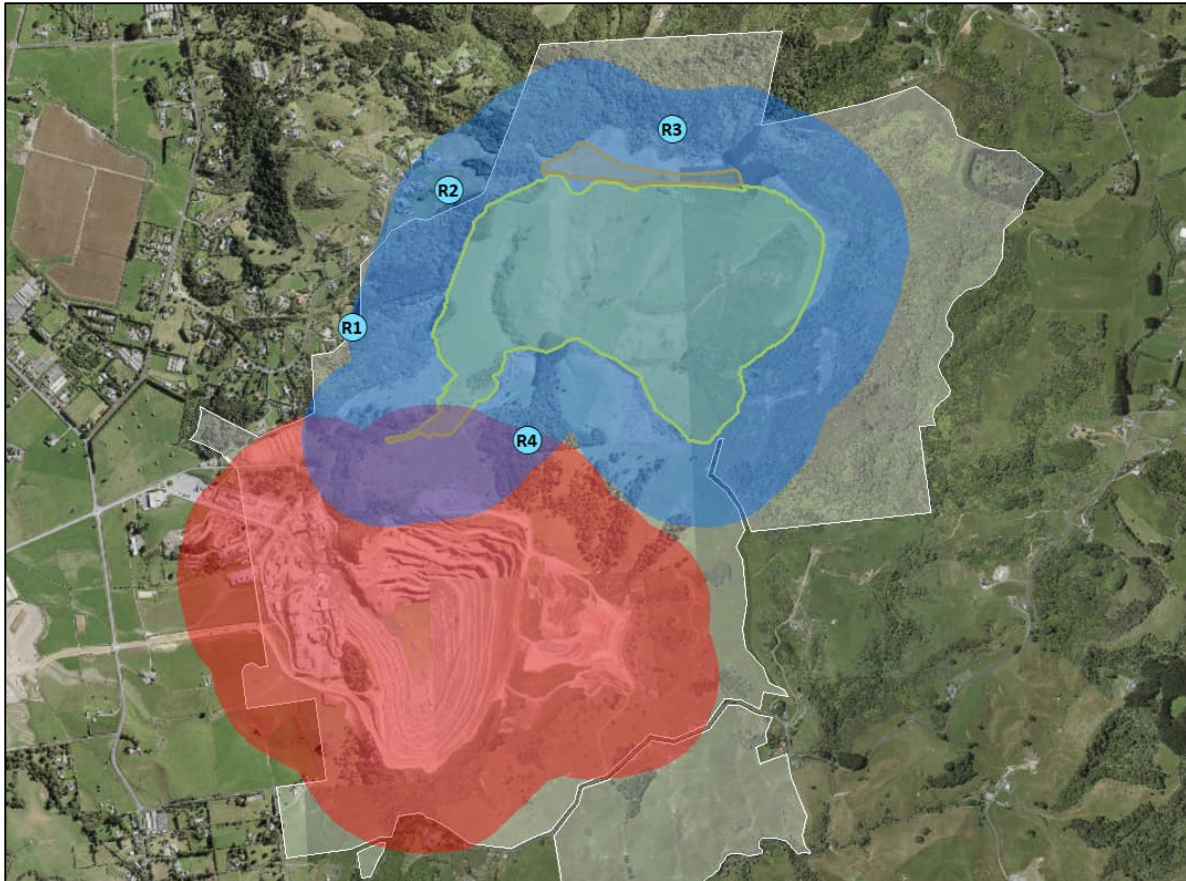


Figure 9.1: Area of potential dust effects. Source: PDP (2024).

Considering the site orientation, the existing Drury quarry and proposed Sutton Block would only be downwind of one another during either northeast or southwest winds. Therefore, there will be no off-site location that could be affected in this scenario. As shown in Figure 9.1 in the purple shaded area, there is potential for increased dust frequency at Kaarearea Paa due to there being more source locations generating dust on site. However, despite this the intensity of dust concentrations experienced at any one time at Kaarearea Paa is not expected to increase as a result of Sutton Block.

9.4.4 Conclusion

Overall, the potential effects of the project associated with dust are expected to be less than minor with mitigation measures in place.

9.5 Groundwater

9.5.1 Introduction

Potential effects on groundwater associated with the development and operation of the Sutton Block pit can be broadly split into five categories – groundwater take and diversion effects, groundwater drawdown on neighbouring groundwater users, stream depletion effects, effects on freshwater habitats and ground settlement effects as described in the Groundwater and Surface Water Effects Assessment (Technical Report L, Volume 2).

9.5.2 Groundwater take, diversion and drawdown

Development and operation of the Sutton Block requires the taking, diversion and drawdown of groundwater to enable aggregate extraction. The deepening and expansion of the Sutton Block is a

gradual process consisting of four quarry dewatering stages (within an estimated 50-year timeframe). The proposed lowest dewatering level for the Sutton Block pit is at - 60 RL m within a maximum footprint of approximately 108 ha.

The pre-quarry groundwater levels beneath the proposed Sutton Block footprint are about 64 RL m, 58 RL m and 170 RL m. As a result of dewatering at the Symonds Hill Pit and Drury Quarry, the groundwater levels in the Hunua and Drury Greywacke Blocks have been lowered and currently are at about 63.6 RL m and - 39.3 RL m (October 2024), respectively.

By the time Sutton Block extends to -60 RL m (Stage 3 – approximately 30 years from now), the regional groundwater to the west of the Hunua Fault within the Hunua and Drury Greywacke Blocks are likely to reach - 5 RL m and - 45 RL m (these are authorised/consented lowest dewatering levels for these quarries assumed for the current assessment).

The maximum groundwater diversion rate sought is 19,426 m³/d (during Stage 5). This takes into account regional groundwater diverted and additional shallow groundwater inflow estimated to flow into the pit as a result of storage release from fractures following each quarry stage. The zone of influence extends from 4.4 km (Stage 2) to 7.5 km (Stage 5). However, it is likely that the intervening faults will reduce the above effects as a result of the compartmental nature of the greywacke. As with other nearby quarries in the Greywacke Blocks, ongoing monitoring is required to refine the predictions as the quarry floor deepens (refer to proposed consent conditions Appendix I, Volume 1).

9.5.3 Effects on regional groundwater resources

Groundwater at depth within the greywacke occurs in a fully saturated state and is referred to as the regional groundwater. Groundwater movement in the regional groundwater is irregular, dependent on the intensity and continuity of fractures within and across individual strata. The regional groundwater inflow into the proposed Sutton Block is sourced from the greywacke east and west of the Hunua Fault.

Recharge to the regional groundwater is estimated to be about 60 mm/year (about 4.6% of rainfall).

For Stage 4, assuming full hydraulic connectivity between the proposed Sutton Block and Hunua and Drury Greywacke Blocks (worst case scenario), dewatering may cause groundwater within the Hunua and Drury Greywacke Blocks to drop to -60 RL. However, this scenario is considered to be less likely because intervening barrier faults are common in the greywacke in this area, and this is expected to reduce the predicted drawdowns. Moreover, the breach in the Hunua Fault (east of the Hunua and Drury Greywacke Blocks) is minimal (5%), which is likely to result in reductions in the theoretical drawdowns predicted for the Hunua and Drury Greywacke Blocks. To address this potential effect, A Groundwater Monitoring Plan is proposed as a condition of consent requiring ongoing monitoring of drawdown data during the pit development as it becomes available (refer to Appendix I, Volume 1).

9.5.4 Effects on neighbouring groundwater users

There are 22 farm wells in the Greywacke within the maximum zone of influence for the worst-case scenario Stage 4 dewatering stage (refer to Figure 15 attached to Technical Report L, Volume 2). Any existing water bores located within the zone of influence have the potential to be affected by the lowering of the groundwater table associated with the Sutton Block. The drawdown effects in the nearby bores within the Stage 4 zone of influence range between 0.4 m – 117 m (refer to Technical Report L, Volume 2 attached).

Based on the Auckland Council groundwater database, all bores within the maximum zone of influence (across all dewatering stages, including worse-case scenario dewatering Stage 4) are deeper than the predicted drawdowns and are likely to accommodate the drawdowns without any reduction in yield.

However, as for the existing Drury Quarry groundwater permit, if nearby farm wells do experience drawdowns as a result of the proposed Sutton Block development, this will be managed through the Groundwater Monitoring Plan required under proposed Consent Condition C9 which requires monitoring of boreholes to the proposed trigger level set out in Schedule A in Technical Report L, Volume 2, and will specify actions to be implemented to mitigate these effects (refer to Appendix I, Volume 1).

9.5.5 Effects on shallow groundwater

Above the regional groundwater, there are pockets of local saturated zones (perched groundwater) which are not directly connected with the regional groundwater and generally discharge to local streams. These pockets of saturated groundwater are referred to as shallow groundwater. Similar to other quarries within the greywacke, the proposed dewatering is not anticipated to have any drawdown effects on the shallow or perched groundwater in shallow sediments, pockets of saturation in the shallow greywacke, coal measures, Waitematā Group or the lava flows.

9.5.6 Effects on Kaarearea Paa

The proposed Sutton Block pit LOQ extent is outside the Site of Significance to Mana Whenua (PC 102) and setback approximately 100 m from the nearest corner of the Historic Heritage Overlay extent associated with Kaarearea Paa. The potential effects of lowering groundwater within Kaarearea Paa have been considered in the accompanying Groundwater and Surface Water Effects Assessment (attached as Technical Report L, Volume 2).

The proposed Sutton Block is designed to be excavated within the greywacke rocks and outside Kaarearea Paa lava flows. Based on the extensive groundwater modelling data from the existing Drury quarry, and other monitoring data from bores within the volcanic rocks along the Drury Fault, the deep groundwater system is predicted to be approximately 75 m lower than shallow groundwater within Kaarearea Paa.

The lowering of the groundwater within the deep regional groundwater system is predicted to have no drawdown effects on the shallow or perched groundwater system or lava flows in Kaarearea Paa. Therefore, no groundwater effects are expected on Kaarearea Paa as a result of the proposed Sutton Block development.

9.5.7 Stream depletion effects

Dewatering of the proposed Sutton Block has the potential to result in a reduction in stream baseflows in downstream areas where the regional groundwater systems intercept the streams. The predicted effects on the stream baseflows have been assessed using a water budget model based on the same methodology applied as for nearby Symonds Hill quarry and existing Drury Quarry consents. The assumptions used are based on a conservative approach and are considered to represent a worst-case scenario. The results of the predicted stream depletion effects for each proposed quarry stage are summarised in Section 6.2.4 above and Section 4.9 of the accompanying Groundwater and Surface Water Effects Assessment (refer to Technical Report L, Volume 2).

Dewatering of the proposed Sutton Block is predicted to result in the following loss of stream base flows:

- Maketu Stream between 457 m³/d during Stage 2 to 1,116 m³/d (31% reduction in stream base flow) during Stage 5;
- Mangawheau Stream ranges from 120 m³/d (2% reduction in stream base flow during Stage 2, Table 10) to 1,387 m³/d (12% reduction in stream base flow, Stage 5);
- Hingaia Stream (South of Maketu Stream) Tributary from Stage 2 ranges from 42 m³/d to (1% reduction in stream base flow) to 686 m³/d (4% reduction in stream base flow); and

- Wairoa Stream up to a maximum flow loss of 165 m³/d (less than 1% of reduction in stream base flows) during Stage 5.

In addition to the above, the proposed Sutton Block dewatering will also result in loss of baseflow on Hays, Symonds, Peach Hill and NT1 streams. However, the estimated loss of flow for Hays and Symonds Streams will not result in any additional flow loss than what is predicted, and consented, to occur from dewatering at the nearby Winstone Aggregates Symonds Hill quarry³⁵. Similarly, the predicted loss of flow on Peach Hill Stream is within the predicted and consented limits of the existing Drury Quarry Groundwater consent³⁶. Both Winstone Aggregate and SAL consents require augmenting of Hays, Symonds and Peach Hill Streams. The existing augmentation programs for these streams will offset the estimated loss of flow from the Sutton Block and no further consent are required.

As mentioned earlier, the NT1 stream (lower reaches of Stream 4), is downstream of the Sutton Block and Drury Quarry. The predicted loss of stream base flows to NT1 is proposed to be mitigated by the discharging of clean groundwater from the Sutton Pit sump directly to NT1 (refer to Section 6.2.4). Further, the existing Drury Quarry sump water is also discharged directly to NT1, mitigating any potential loss of stream base flows.

To mitigate the loss of stream base flow to the Maketu, augmentation is proposed to a tributary of the Maketu stream to the east of the Sutton Block. The source of augmentation will be either directly from the Sutton Block sump or a proposed bore location within SAL landholdings near E1778418/N5889315. The exact location of the proposed bore, if that is determined to be the preferred option, is to be agreed upon with Auckland Council and Tangata Whenua. The required augmentation flow rate for Maketu Stream for each quarry dewatering stage is set out in Schedule B of Technical Report L, Volume 2 and is based on a percentage of the estimated groundwater pit inflow and is required under proposed consent Condition G11 (Appendix I). The groundwater quality of either the Sutton Block sump water or the proposed augmentation bore will be analysed and compared with the Maketu Stream baseline water quality before augmentation to mitigate any potential adverse water quality effects.

For streams further away from the proposed Sutton Block (Mangawheau and Hingaia Streams), augmentation is also proposed, however, estimated flow rates are proposed to be based on stream flow monitoring data collected from the beginning of Stage 3 (when dewatering level reaches 60 RL m). In addition to nearby stream flow gauging stations³⁷, four additional monitoring gauging sites are proposed to be established along the Southern Tributary (at NT1-8), Mangawheau Stream and Hingaia Tributary. The location of the gauging stations are shown on Figures 17 and 18 of the attached Technical Report L, Volume 2 and is proposed as a condition of consent.

Wairoa Stream is located approximately 6 km from the proposed Sutton Block. Given this distance, and the low predicted flow loss, loss of stream base flows in the Wairoa Catchment as a result of the Sutton Block development is considered highly unlikely and no augmentation is required.

9.5.8 Effects on freshwater habitats

Augmenting stream flows with groundwater has the potential to have adverse effects on freshwater habitats, hydrology and water quality.

As discussed above, the proposed flow regime will be based on baseflow monitoring to ensure the compensation flows are sufficient to offset the predicted loss of flow as a result of dewatering (i.e.,

³⁵ Groundwater take permit reference WAT60152106-A.

³⁶ SAL Groundwater take permit reference 40317.

³⁷ Including the existing gauging station along the Mangawheau Stream at Aldridge Road, Hunua (site number 08529).

no more or less). This proposed augmenting regime will mitigate any potential adverse hydrological effects on freshwater habitats.

Based on water quality data collected from the existing Drury Quarry sump (refer to Section 3.4.5), groundwater from the existing Drury Quarry sump, which is from the same catchment and regional aquifer as the Sutton Block is generally free from contamination and complies with the ANZECC guidelines. Further, a proposed condition of consent G6 requires the stream baseline monitoring of water temperature and dissolved oxygen to be undertaken upstream and downstream of the augmentation discharge points at a minimum of four locations at each site. Consent condition G7 also requires the supplemented flows to not result in, after reasonable mixing, an increase of more than 3°C increase in water temperatures downstream and less than 6 milligrams per litre in dissolved oxygen concentration. This is to mitigate any potential adverse effects on freshwater habitats through the change in water temperature or dissolved oxygen. Taking into account the proposed consent condition requirements, supported by continuous baseline monitoring of each augmentation site, the proposed potential adverse effects of the augmentation regime of freshwater habitats are considered no more than minor.

9.5.9 Ground settlement effects

Lowering of groundwater pressures in the greywacke within the zone of influence can cause the consolidation of softer, near-surface sediments if drawdown effects can reach these sediments. Based on extensive monitoring data collected as part of the Drury Quarry dewatering consent, the predominant drawdown effects occur in the greywacke rocks rather than overlying soft sediments such as coal measures materials, and no drawdown effects in the near-surface sediments in the Tauranga Group to the west of the Drury Fault.

Therefore, no ground settlement effects are predicted to occur as a result of the Sutton Block development.

9.5.10 Conclusion

In conclusion, the adverse effects of the project on groundwater are expected to be minor as:

- Outside the zone of influence ('envelope of effects'), considering the extent of the Greywacke aquifer and the availability of the groundwater resource, the proposed dewatering is unlikely to have any drawdown effects on neighbouring groundwater users.
- No drawdown effects on the shallow (perched) groundwater systems or lava flows that supply Kaarearea Paa.
- The proposed stream depletion effects on nearby streams (specifically, the Maketu) without mitigation is considered to be more than minor. However, taking into consideration the proposed augmentation regime to offset the loss in stream base flows, subject to not resulting in a noticeable change in water temperature or dissolved oxygen effects are expected to be minor.
- The maximum groundwater diversion rate and take will not result in ground settlement effects.

9.6 Erosion and sedimentation

9.6.1 Introduction

Earthworks and on-site activities associated with the project will increase the risk of sediment loads in the surrounding waterways. Earthworks will occur throughout the construction and operation of the quarry. However, as the scale of earthworks during the initial construction works differ from the

on-going operational earthworks, they are discussed separately below. The ESC measures proposed are in accordance with Auckland Council GD05³⁸.

9.6.2 Initial construction earthworks (Stage 1 – site establishment and access)

Vegetation clearance, stream works and bulk earthworks activities have the potential to cause adverse erosion and sedimentation effects. In particular, earthworks and the associated mobilisation of sediment may adversely affect freshwater habitats and associated aquatic organisms in the vicinity and downstream of the project site if not managed appropriately.

As set out in Section 6.1.1, to address these effects an ESCAR has been prepared (Technical Report R, Volume 2) that outlines specific erosion and sediment control measures to be implemented through Stage 1 (including the various subphases) to minimise the effects of erosion and discharge of sediment-laden runoff generated by the works. This includes the following key measures (refer to Section 6.1.1 for further details):

- All perimeter controls as well as the main sediment retention devices will be installed prior to the commencement of bulk earthworks;
- Staging of earthworks in order to reduce the sediment yield and ensure adequate controls are in place downstream of the earthworks site. Upon completion of earthworks operations in each sub-phase, surface areas shall be stabilised;
- Construction of clean and dirty water diversions (bunds or channels) along the edge of both sides of the haul roads and overburden stockpiles;
- Temporary and permanent staged cleanwater stream diversion channels diverting the catchment stream flows around the Sutton Block pit;
- The use of SRPs and DEBs as the primary measures proposed to capture and treat dirty water. Organic and chemical treatment will be used to enhance sediment retention efficiency; and
- Silt fences will be used during channel formation and stabilisation for the realignment of the stream and in localised catchments that do not actively drain to a SRP or DEM.

Additionally, on-going monitoring of erosion and sediment control measures will be undertaken throughout the construction period. This monitoring will provide feedback to enable an iterative staged management approach to be used. Additional controls or measures will be implemented where and when (e.g. winter works) there is a greater risk of sediment discharges, or where monitoring indicates that additional controls are required.

9.6.3 Pit development and operational sediment discharges (Stages 2 – 5)

To manage the potential generation of sediment-laden water during Stages 2 – 5, a range of sediment control measures will be utilised. A number of the ESC measures utilised for Stage 1 remain relevant to the operational stages of the Sutton Block quarry including:

- Clean water diversions will be constructed to divert upper catchment clean water away from the area of works.
- Temporary and permanent staged clean water stream diversion channels to divert the catchment stream flows around the Sutton Block.
- Undertaking the works progressively to minimise the open areas.
- Use of silt fences will be used to treat site runoff from small areas that will not actively drain to a SRP or DEB.

³⁸ Auckland Council Guideline Document 2016/005 (GD05): Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region.

- Use of SRP or DEB (limited to the overburden stockpile and stream diversion works).

The key difference to ESC management from Stage 2 onwards is that all site water (groundwater and stormwater) will fall to the pit sump. As discussed in Section 6.1.1.6, from the pit, clean water will be pumped and discharged directly to stream 4 (NT1) and dirty water (water exceeding a turbidity limit of 100NTU) will be pumped and integrated into the Drury Quarry Water Management system and sent to the Lamella for processing prior to being discharged to the lower reaches of NT1 stream.

A dual pipe system, same as is currently operating at the Drury Quarry, is proposed. A turbidity-controlled pump at the pit sump will turn off and cease pumping when water exceeds a turbidity limit of 100NTU. The dirty water would then be retained in the Sutton Block pit until it meets the minimum limit before pumping resumes. If water needs to be removed from the pit or the water exceeds the set limit it will be pumped to the Drury water treatment system (lamella) prior to being discharged.

9.6.4 Estimated Sediment Yield

An estimate of sediment yield for the works that are to be treated via GD05 devices (Stage 1 – site establishment works and the overburn stockpile) has been developed using the Universal Soil Loss Equation (USLE). The USLE estimates are based on conservative assumptions and in summary identified:

- The existing upstream catchment load (including the Sutton Block LOQ) is estimated to be 90 ha.
- During year 1 of Stage 1 Enabling works, approximately 2 ha of earthworks (staged) is estimated to result in up to 4.3 tonnes of sediment, representing a 1% increase in the load derived from the existing catchment.
- During years 2 and 3 of Stage 1 Enabling works, the earthworks area of approximately 3.4 ha (staged) is estimated to generate 6.7 tonnes per year, representing a 2% increase in the load derived from the existing catchment each year.
- The overburden stockpile (assumed to have an open area of approximately 4 ha) is estimated to generate 3.4 tonnes per year, representing a 1.6% increase in the load derived from the existing catchment each year.
- The Northern Bund will be established in a staged and progressive manner as overburden is produced. Based on an open area of 2 ha, approximately 2.8 tonnes is expected to be generated per year.

As shown above, the potential for mobilization of sediment off site primarily will occur during the first three years of development over a 2 - 4 ha area, which in scale is comparable to a small earthworks site. Excessive sediment discharges have the potential to adversely affect aquatic fauna through increased turbidity, heat absorption and light refraction. The immediate potential downstream receiving environment is Stream 4 (NT1).

To minimise potential for excess fine sediment entering the catchment, the measures discussed above in Section 9.6.2 will be implemented. In addition to these measures, located downstream along Stream 4 (NT1) is the Drury Quarry lower dam. The lower dam is the existing Drury quarry water storage dam from which water previously was taken for the use of operating the site, then collected, and treated through the lamella system, before being discharged back into the clean water pond. The lower dam provides additional further treatment before discharging from the wider SAL landholdings and into the wider receiving environment, including the Hingaia Stream and Pahurehure Inlet. Additional secondary treatment from the lower dam is not relied upon in the ESCAR assessment (Technical Report R, Volume 2).

As noted in the ESCAR, the assumptions underlying the USLE estimates are deliberately conservative and are not directly representative of actual sediment yield (loads). The proposed ESC methodology is the best practicable option for the proposed development and represents best-practice.

9.6.5 Conclusion

Considering the points above, including taking an iterative staged management approach to sediment management, the proposed measures to be implemented during the construction and operation of the Sutton Block, sediment generation will be minimised, such that the potential additional sediment load generated from the site will be minor.

9.7 Ground contamination

Works located within potentially contaminated material could cause potential risks such as a risk to human health including the potential of contaminants entering the body through inhalation ingestion or skin absorption during the works. An assessment of the soil and potential sources of contamination within the Sutton Block LOQ footprint can be found within the PSI, DSI and SCI (Technical Reports M – O, Volume 2). A summary is provided in Section 3.4.8.

A large portion of the Sutton Block LOQ footprint has been assessed as representing non-HAIL areas. The areas with actual or potential sources of contamination are limited to discrete areas and is limited to surface and near-surface samples. Samples from these areas contain concentrations of heavy metals in excess of background criteria which does not comply with Regulation 5(9) of NES-CS.

Site management measures are proposed to be adopted during the removal of overburden within and in proximity to these discrete areas. These measures are contained within the attached Contaminated Soils Management Plan (CSMP) and Remedial Action Plan (RAP) (Technical Report P, Volume 2). The CSMP sets out health and safety procedures for those undertaking the ground works relating to excavation, disposal, sediment, dust, odour, imported fill and decontamination. The RAP sets out specific procedures for the remediation of lead-impacted surface soils identified in Figure 9.2. As there is known to be contamination in the area, the potential effects will be managed and minimised as far as practicable. Provided that the measures specified in the CSMP and RAP are adhered to, it is considered the works can be managed so there is very low risk to human health and the environment.

With the implementation of the mitigation measures that have been proposed within the CSMP and RAP, any adverse effects arising from potentially contaminated soils will be less than minor.



Figure 9.2: Sampling locations. Source: PDP (2023).

9.8 Terrestrial Ecology

9.8.1 Introduction

The proposed Sutton Block expansion will involve clearance of vegetation and earthworks, which will result in the loss of vegetation and habitat, and potential effects on native fauna and flora located within these areas and the immediate surrounds.

As outlined in Section 7.1, the REAE:TE, Planting Plan and Pest and Weed Control Plan (Technical Reports B, E, and F, Volume 2) have been developed to address the effects on terrestrial ecological values that cannot be avoided, remedied, or mitigated. The proposed 62 ha of revegetation planting and 108 ha of forest enhancement through weed and pest control within SAL Landholdings will result in a net gain in biodiversity values by protecting native fauna habitats, enhancing existing habitats and establishing connectivity between existing SEAs. In addition, the proposed restoration areas are to be protected through legal covenants (refer to consent condition C25 of Appendix I).

9.8.1.1 Vegetation and habitat

As detailed in Section 6.4.1, existing vegetation located within the Sutton Block LOQ footprint will be removed progressively over the 50-year expansion of the quarry as and when required by excavators and trucks. The avoidance of areas of cultural and ecological significance such as Kaarearea Paa (SEA_T_5349) have been key design considerations to the overall location and design of the proposed pit. However, in order to develop the Sutton Block, a significant amount of vegetation and habitat loss is unavoidable. Specifically, the project will result in the direct loss of the following vegetation types:

- 16.78 ha of indigenous vegetation, 14.25 ha of which will be from within SEA overlays (SEA_T_5323 and SEA_T_1177)³⁹, comprising of:
 - 8.8 ha regenerating Kānuka Forest;
 - 7.33 ha Broadleaf Podocarp Forest; and
 - 0.65 ha Rock Forest.
- 5.25 ha of exotic forest, comprising of:
 - regenerating gorse;
 - herbaceous weeds; and
 - pine plantation.

In addition to direct habitat loss, indirect effects on habitats and associated species are also likely to occur including reduced genetic diversity and potentially noise, vibration, light or dust disturbance. The loss of habitats will also result in the creation of new forest edge along the new pit where it abuts retained habitats. To mitigate these effects, an Edge Effects Management Plan (Chapter 7 of the EMP) includes measures such as dense buffer infill planting, fencing and pest animal control to protect retained and indigenous vegetation (refer to consent condition C17 of Appendix I).

As outlined in Section 6.4.1, a Pest and Weed Control Plan and Planting Plan (Technical Report B, E and F, Volume 2) have been prepared to address the significant residual adverse effects that are expected as a result of the loss of ecological values. To offset vegetation loss and the loss of high-value lizard habitat, 62 ha of revegetation and 108 hectares of native forest enhancement through mammalian predator and pest control is proposed within the current SAL landholdings. As illustrated in Figure 7.1, and set out in Table 7.1 above, the 62 ha of vegetation planting will generally consist of 8.32 ha of Rock Forest, 32 ha of Broadleaf Podocarp Forest and 22 of Kānuka Forest.

Additional offsite revegetation planting is proposed (refer to Section 7.1.3) to replace loss of 130 individual mature trees scattered amongst pasture within the Sutton Block at Hingaia Island site⁴⁰. Mature native trees have ecological value as sources of seed for regeneration in nearby forest habitats and as potential sources of food and nest/roost sites for mobile native fauna such as birds. Although their overall value to the Sutton site is assessed as Low, replacement planting to offset their loss is considered appropriate. This will ensure the resource they provide is replaced and exceeded in the long term and their genetic provenance is maintained.

As evidenced by the types of vegetation proposed above, the revegetation efforts will generally focus on replacing plant species that have been affected by the project. These efforts also aim to enhance existing habitat values through pest control. The proposed revegetation planting and forest enhancement actions have been designed to connect isolated patches of remnant rock forest, restore degraded habitats and provide a contiguous tract of forest between Kaarearea paa SEA_T_5349 and SEA_T_5323 located to the east and north of the Sutton Block. This will significantly improve the extent, quality and connectivity of local indigenous biodiversity and habitats, forming approximately 680 hectares of continuous indigenous forest and habitat. Further, as mentioned in the Pest and Weed Control Plan, enhancement of the entire 108.35 ha of broadleaved forest and kanuka forest will be completed by Stage 3 providing diversity offsetting 20 – 30 years in advance for Rock Forest and some Kanuka type forest. This will not only provide important biodiversity gains ahead of vegetation loss, it also allows for a minimum of 19 years of monitoring to occur within the 35-year biodiversity offset timeframe.

The proposed offsite planting at the Tuakau site will restore kahikatea forest to an area of river floodplain that is currently pasture. Combined with the proposed wetland offset planting it will

³⁹ 7.58 ha of SEA proposed to be removed is located within SPQZ.

⁴⁰ Subject to obtaining Doc's landowner approval.

buffer and expand existing kahikatea forest that is being managed for biodiversity conservation purposes.

Revegetation will generally follow the methodology below:

- Site preparation, including weed management, pest animal control and fencing where necessary;
- Utilisation of forest resources salvaged from the Sutton Block for the restoration planting (i.e., young seedlings, ponga logs carrying young epiphytes, mulched foliage, woodchips, surface humus, leaf litter and basalt boulders);
- Plants should be sourced from the Hunua Ecological District where practicable;
- Plant maintenance including weed management and infill planting where necessary; and
- Covenanting to ensure long-term protection of revegetated habitats (Condition.

Given the extensive revegetation and forest enhancement proposed, the residual effects on vegetation and habitat are considered to be minor, and more than minor for the loss of rock forest due to it being an uncommon ecosystem type. Overall, the Assessment of Ecological Effects determines an overall Net Gain for flora habitat values.

9.8.2 Native fauna

As detailed in the Assessment of Ecological Effects (Technical Report A, Volume 2), the potential effects of the project on fauna generally relate to edge effects, habitat loss, including removal of foraging, roosting and nesting habitat from the proposed vegetation clearance, as well as potential harm to any fauna present within this habitat (if they cannot readily disperse themselves, e.g., breeding birds; or if they are not detected during salvage and relocation activities). A range of native fauna has been identified as present or likely to be present across the SAL landholdings, including low levels of long-tailed bat activity, a wide suite of common (Not Threatened) native birds, pipits, Rhytida greenwood snails, and several lizard species such as copper skinks.

The Sutton Block LOQ extent occupies an area that is predominantly pasture, and those areas with other vegetation cover (Exotic, Rock Forest, Broadleaf Podocarp, Kānuka Forest) are heavily degraded as a result of ongoing stock access. The fauna values, identified by surveys and site observations, reflect this degradation, being generally low diversity and comprised of species that are tolerant of highly modified environments such as those 'high value' species (copper skink and pipit). Accordingly, the Assessment of Ecological Effects determines that the magnitude of effect on invertebrates, birds and lizards is Low, and Moderate for bats.

The EMP (Technical Report B, Volume 2) sets out a range of measures will be implemented to help manage potential effects on native fauna where works are occurring, including:

- To mitigate potential effects on lizards, Section 6 of the EMP outlines methods for salvaging, timing, an assessment of the release locations, any habitat enhancement required and monitoring methods.
- To mitigate potential effects on bats, the project will adopt bat tree-felling protocols to avoid or minimise direct harm. These protocols are captured in Section 5 of the EMP.
- To mitigate potential effects on birds, restrictions will be placed on the timing of works to avoid more sensitive times such as breeding season and protocols for undertaking bird nest surveys and checks. These protocols are set out in Chapter 4 of the EMP.

With the implementation of these measures, including minimization and offset, the Assessment of Ecological Effects concludes that the impact on birds will be very low, with a low level of effects on bats and lizards. Additionally, a biodiversity offset will result in a net gain for all fauna.

9.8.3 Conclusion

Based on consultation with Ngāti Tamoho and Ngaati Te Ata, the LOQ footprint was moved further north from Kaarearea Paa, including SEA_T_5349, resulting in avoidance of the Site of Significance to Mana Whenua (PC 102) and a 13 ha buffer from the Historic Heritage Overlay extent. As a result of this change, there was a reduction in stream loss and wetland extent. However, to expand the Drury Quarry, a significant amount of vegetation and habitat loss is unavoidable; the pit has been moved away from Kaarearea Paa but extended partially into SEA_T_5323. Accordingly, a suite of management plans focused on avoidance or mitigation of potential ecological effects will also be implemented.

Due to the nature and scale of the project, and that aggregate extraction can only take place where aggregate is found naturally in situ, some adverse ecological effects are unable to be avoided, remedied or mitigated due to the functional need of aggregate extraction. Therefore, a key component of the project is the extensive ecological off-set package. This package will provide ecological benefits over time through creation of new habitat and enhancement of existing habitat through buffer planting and pest control. The proposed revegetation planting will provide a contiguous tract of forest between Kaarearea Paa SEA_T_5349 and wider SEA_T_5323, significantly improving the extent, quality and connectivity of local indigenous biodiversity and habitats.

Overall, taking into account the management measures and off-setting proposed, it is considered that the overall effects of the project on terrestrial ecological values will be minor.

9.9 Freshwater ecology

9.9.1 Introduction

Details around the flow of water, the staging of stream diversion and the extent and location of stream and wetland reclamations are detailed in the ESCP (Technical Report R, Volume 2). In summary, the proposed establishment of the Sutton Block will involve the loss of approximately 3,341 lineal metres of permanent and intermittent stream reaches, plus wetlands totalling approximately 1.88 ha (18,758 m²). The works also involve the permanent diversion of Stream 4a (lower)). As detailed in the Assessment of Ecological Effects (Technical Report A, Volume 2), this loss will result in actual and potential ecological effects of habitat loss or degradation, death or injury to freshwater fauna, sedimentation, as well as loss of freshwater volume and connectivity.

As outlined in Section 7.2, the REAR-SW (Technical Report D, Volume 2) has been developed to address the effects on freshwater ecological values that cannot be avoided, remedied, or mitigated. This plan identifies onsite streams within the wider SAL landholdings and an offset site in Tuakau where stream and wetland enhancement/ restoration can be carried out to achieve a positive aquatic ecological benefit.

9.9.2 Permanent loss of stream habitat

The potential ecological effects of stream reclamation relate to the permanent and irreversible loss of stream habitat for macroinvertebrates and native fish, direct mortality of species within these systems (if they are not relocated) and creating barriers to fish passage. The proposed quarry construction and ancillary works will result in the infilling of 3,341 linear metres of intermittent and permanent stream, ranging from Moderate to Low ecological value. This loss will take place over the 50-year LOQ timeframe.

In order to avoid potential effects on freshwater systems, multiple design options were considered and refinements to the location and extent of the project footprint were undertaken. For example, as a result of iwi consultation, the Sutton Block extent was moved further away from Kaarearea Paa, thereby avoiding an additional 610 m of stream loss and 5,241 m² of wetland loss. Where avoidance

was not considered practicable, diversion has been considered, along with augmentation of stream systems applied to minimise the adverse effects on the primary values (habitat for macroinvertebrates and native fish) on the streams as assessed in Sections 9.9.4 and 9.9.7 below. Although the proposed layout and design of the Sutton Block minimises stream loss as far as practicable, the loss of streams is unavoidable for a project of this scale and nature.

As set out in Section 3.4.9 above, the ecological values of the nine streams (or stream systems) vary between Very Low – Moderate. Taking this into account, length of stream impacted and the loss being irreversible, the overall level of effect is considered to be High prior to any mitigation for three streams (Streams 1, 2, and 5) and Low to Moderate for the remaining streams. Therefore, the project is considered to have significant adverse effects on some streams within the project footprint.

In order to address the residual adverse effects, 3,341 lineal metres of stream will be enhanced with riparian planting. As discussed in Section 7.1.3 above, the stream offset package involves riparian planting of 1,053 m of stream length across four tributaries located within SAL landholdings and 2,289 m along the Western and Tutaenui Streams at the Tuakau site. Other enhancement measures including fencing, addition of habitat and partial restoration of native fish passage at the Tuakau Site). Although the stream length loss to offset length ratio is 1:1, the overall stream loss bed area to stream offset bed area is 1:10. Given that stream beds provide the majority of aquatic habitat, by enhancing bed area rather than solely focusing on gaining additional length, a large gain in habitat enhancement of the stream bed can be achieved.

Further, the stream loss of permanent and intermittent streams at the Sutton Block site will be offset through stream enhancement of predominately permanent streams. This will also result in a gain in ecological values and additionality in the stream offset, by enhancing habitat for aquatic macroinvertebrates, including macroinvertebrates that are not just seasonal, and providing food and habitat (pools, undercuts, woody debris) for native fish continuously, all year around.

As discussed in REAR-SW, the majority of the riparian planting is proposed to be completely established before the stream loss occurs. This is due to the staged reclamation of the streams occurring over 50-years. A Riparian Planting Plan for Peach Hill Road Streams, Davies Road Stream, Tutaenui Stream and West Stream on the Tuakau offset site is recommended as a condition of consent C22.

This offset is intended to provide for a positive aquatic ecological benefit, habitat creation, biodiversity gains, and restore connectivity to existing habitats.

Taking into account the proposed mitigation as well as the offset package, the residual effects are anticipated to result in a net gain.

9.9.3 Permanent loss of wetland habitat

The potential ecological effects of complete or partial wetland reclamation relate to the permanent and irreversible loss of wetland habitat and the direct mortality or harm of species within these systems (if they are not relocated). Additionally, for Wetland 2a (south) and Wetland 2b there is expected to be a reduction of hydrological function due to a reduction in freshwater volume from the upstream contributing catchment. Over the 50-year LOQ timeframe, the total wetland loss will be approximately 18,759 m² (1.8 ha).

The proposed layout and design of the Sutton Block minimises wetland loss as far as practicable, although, similarly to the stream loss much of this is unavoidable for a project of this scale and nature. Most wetlands on the Sutton Block are small, highly degraded pastoral wetlands, dominated by exotic vegetation, with low ecological values with respect to indigenous biodiversity. Wetlands 1a and 2a are larger in extent and provide more habitat, albeit highly degraded, and consequently are

considered to have moderate ecological value. The magnitude of effects of the works (complete or partial reclamation) is assessed against the ecological value assigned to each wetland to calculate an overall level of effect. Overall, the level of effect on wetlands is considered to range from Very Low-Moderate for all wetlands, except Wetlands 1a- 1C where the level of effect is considered High. Therefore, the project is considered to have significant adverse effects on wetlands within the project footprint.

Where the project involves the total loss of wetlands, offsetting is required to address the residual adverse effects. Part of the offsetting package is the restoration and recreation of 4.04 ha of wetland habitat at the Tuakau Site. The existing wetland is currently dominated by exotic pasture species with low botanical value and is heavily impacted by stock grazing. The offset package would restore the wetland into an indigenous wetland habitat, improve hydrological connectivity to the Waikato River, and restore connectivity to the large area of kahikatea and kahikatea wetland to the west of the site. Restoration of the wetland, along with the proposed riparian planting along the Western Stream, will connect these isolated habitats into one large, contiguous habitat, providing high net biodiversity gain, with additionality, no time lag, and no harm to the offset location. A Wetland Planting Plan is recommended as a condition of consent C22 (refer to Appendix I).

Taking into account the proposed offset package, the residual effects are anticipated to achieve an overall net gain.

9.9.4 Stream diversion

The proposed quarry construction and ancillary works will result in the permanent diversion of 115 linear metres of Stream 4 below the existing dam pond, involving temporary channelisation while the diversion route is established e.g., Stream 4a lower will be channelled while a new culvert is installed. Once the permanent stream diversion is in place, restoration of 128 m of stream 4 proposed to be located in the footprint of the existing manmade pond will be undertaken within the first three years of operation.

Mitigation can be applied to manage the effects of stream diversion. The lower portion of the stream channel is proposed to be constructed on the new benches, adjacent to and parallel with the current flow path.

The detailed design of the diversion channel will be managed collaboratively with the project engineers and the project ecologists to provide a naturalised channel with meanders, variations in hydrology and large boulders, which aims to achieve no loss in current Stream Ecological Value (SEV) values or stream length. If the final detailed design involves any loss of length or SEV because of the diversion, additional offset will be carried out at the Tuakau Site. Stream Protection and Diversion Plan (SPDP) is recommended as a condition of consent C21 (refer to Section 12 and Appendix I).

Overall, the stream diversion is anticipated to have a Moderate level of effect without mitigation. Accordingly, with minimisation measures in place the potential adverse effects are anticipated to reduce to minor.

9.9.5 Freshwater fauna

Without appropriate controls, there is a high potential for injury or mortality of native freshwater fauna including 'At Risk' species during in-filling and diversion of streams and wetlands.

Due to the nature of the activity, extent of habitat loss/alteration, the density and threat status of impacted species, and the ability of fauna to escape the disturbance, the Assessment of Ecological Effects (Technical Report A, Volume 2) deems the overall level of effect without mitigation as being Moderate.

Potential adverse effects can be mitigated through timing of the stream and wetland works, and native fish recovery and relocation immediately prior to streamworks. Section 8 of the EMP (Technical Report B, Volume 2) sets out NFFMP that includes methods to capture fish and recover kōura and kākahi, fishing efforts, relocation sites, storage and transportation to prevent stress and death/predation.

Fish management will be implemented within one week prior to streamworks/reclamation. Where streamworks will result in the disconnection of upstream habitats to the wider catchment (i.e. the partial reclamation of Stream 5 under Stage 1 and Wetland 1a under Stage 3), fish management will be extended throughout the entire reach to ensure no populations become isolated and “trapped”.

Following the implementation of the proposed minimisation measures, the magnitude of effect is reduced to Low. Accordingly, the adverse effects are anticipated to be minor.

9.9.6 Sedimentation

As described above, the proposed earthworks activities have the potential to degrade water quality through the discharge of sediment laden water to freshwater systems. High levels of sediment within streams can have adverse effects by smothering stream substrates. All streams within the Sutton Block will potentially be affected by sedimentation due to the staging of the works. Additionally, without mitigation, transportation of excess fine sediment to the downstream receiving catchment may also result in smothering of stream habitat beyond the LOQ footprint.

As discussed in Section 6 and outlined in the ESCP (Technical Report R, Volume 2), erosion and sediment control measures will be implemented to mitigate the potential sedimentation effects resulting from earthworks across all five stages of the project. The implementation of erosion and sediment controls will result in low magnitude effects, however, due to the sensitivity of the receiving environment, the overall effect of sedimentation from earthworks on freshwater habitat within the SAL landholdings is considered to be moderate (although short term).

9.9.7 Freshwater volume

The reduction of the catchment size contributing to the remaining streams adjacent to the Sutton Block, (Wetland 2a south, Wetland 2b, lower Stream 2 and Stream 4) will result in a reduction of freshwater volume. This reduction has the potential to increase the stress on aquatic fauna with pressures on temperature control and aquatic habitat abundance, as well as changing the regime from permanent to intermittent, or intermittent to ephemeral.

As the majority of the contributing catchment to Wetland 2a South is outside of the final pit and this wetland flows to remnant Wetland 2b and Stream 2, the habitats are likely to retain their permanent nature, albeit there are likely some changes in wetland vegetation with the loss of the Wetland 2a – North. The water levels in the wetland immediately below the current junction of Wetland 2a South and North will require monitoring and if a reduction in levels is determined in the later Stages of the pit development then augmentation will likely be needed.

The reduction in catchment to Stream 4, with the loss of Streams 6 and 7, and further down the catchment the loss of Stream 5, will result in a loss of water volume in the main stem stream. As the contributing catchment to upper Stream 4 will be 18.5 ha after Stage 5, and the stream is located near the base of Kaarearea paa, it is highly probable the stream will maintain permanent water. To maintain baseflows to Stream 4, augmentation with clean groundwater taken from the Sutton pit sump (refer to Section 6.2.2) is proposed at top of Stream 4 at the confluence of Stream 7 and Stream 2 catchments. Augmentation of the Maketu Stream base flows is also proposed from an augmentation bore located within SAL landholdings (refer to Section 9.5.7). Augmentation of the stream base flows would occur upstream from where there is potential for a decrease in freshwater

volume and would be managed to ensure no noticeable change in water temperatures downstream or reductions in dissolved oxygen concentration.

In order to minimise the potential adverse effects of the loss of freshwater volume, riparian planting with native vegetation is proposed onsite along the remaining reach of Stream 2; Stream 4 adjacent to the boundary; the bulk of Wetland 2a South; Stream 3 and its small headland wetland; and Wetland 8. The riparian planting will be 20 m on either side of the main tributaries and 10 m on either side of the minor tributaries and wetlands. Additionally, the riparian planting will be contiguous with the proposed terrestrial offset planting, and provide temperature control to the stream, woody and leafy inputs, including habitat for instream fauna. A Sutton Block Riparian Planting Plan is proposed as consent condition C18.

The Assessment of Ecological Effects (Technical Report A, Volume 2) states that due to the Moderate ecological value and Moderate magnitude of effect that the overall level of effect is Moderate. However, following the implementation of the proposed mitigation measures, the level of effect is reduced to Low. Therefore, the adverse effects of the establishment of the Sutton Block on freshwater volumes are assessed as being less than minor.

9.9.8 Fish passage

The replacement of the current double barrel culvert at the dam face with a new longer culvert joining the proposed permanent diversion channel of Stream 4 (proposed downstream of the existing manmade dam pond), presents the potential for a barrier to fish passage. This can lead to effects associated with preventing some species from migrating to complete their life cycles and isolating and fragmenting populations of other species.

To avoid installing barriers to fish passage, conditions of consent have been offered to ensure that, where appropriate, fish passage is provided. In brief, the culverts will be designed for fish passage of climbing capable species (i.e., eels and banded kōkopu) only, due to the waterfall downstream of the Sutton Block works extent. Specifically, the waterfall acts as a significant natural barrier to fish passage, preventing swimming species such as īnanga from accessing the upper catchment. The culverts will also be designed and installed in accordance with the New Zealand Fish Passage Guidelines.

Due to the Moderate ecological value and magnitude of effect, the overall level of effect is considered to be Moderate. Following the implementation of the proposed mitigation measures, the level of effect is reduced to Low. On this basis, the adverse effects of the proposal on fish passage are assessed as being less than minor.

9.9.9 Conclusion

Due to the nature and scale of the project, the loss of a large area of stream reaches and wetlands was unable to be wholly avoided. Accordingly, the proposed establishment of the Sutton Block will involve the loss of approximately 3,341 lineal metres of permanent and intermittent stream reaches, plus wetlands totalling approximately 1.87 ha. Minimisation measures such as an ESCP, fish passage provisions and stream diversions are proposed.

In order to manage the residual adverse effects on freshwater ecology, an extensive ecological offset package is proposed. This package will provide ecological benefits over time through restoration of 4.04 ha of wetland habitat, enhancement of existing stream habitat through riparian planting, addition of habitat (boulders, root wads), restoration of native fish passage, pest control, restore connectivity to existing habitat.

Overall, taking into account the management measures, it is considered that the overall potential effects of the project on freshwater ecological values will be more than minor.

9.10 Landscape and visual amenity

The project will involve the construction and operation of a quarry for an extended period of time across a combination of modified, managed and unmodified landscape settings. This will result in changes to the components, character or quality of the landscape values. To determine the natural character, landscape and visual effect of these changes, an LVA has been prepared by Boffa Miskell (Technical Report J, Volume 2).

9.10.1 Natural character effects

As discussed throughout this report, the removal or diversion of multiple Streams and Wetlands is proposed as part of the Sutton Block development. It is noted in the LVA that many of these features are located within the SPQZ, and as such, there is a level of anticipation that these features could be impacted through quarry activities.

Streams 1, 2 and 2b (mid to upper portion) have the highest degree of natural character (generally Moderate-High). Accordingly, the effect on natural character as a result of the loss of Stream 1, 2 (upper and mid portions) and 2b will be Moderate-High, as although not 'pristine' natural character environments, they support elevated biophysical and experiential degrees of natural character. However, with the exception of the upper portion of Stream 2, these streams are located within the SPQZ. Accordingly, when considering the underlying characteristics of the zone's future environment and the offsetting package, the adverse effects are reduced to Low for Stream 1, 2b and the mid portion of 2 and Moderate for the upper portion of 2.

Streams 1b, 7 and 9 will also be removed, but the adverse effects on natural character are considered Low due to the condition of these streams. Given Streams 1b and 7 are within the SPQZ, and considering the offsetting package the adverse effects are reduced to Very Low for those streams. The adverse effects on the other streams (Streams 4, 5, and 6) are also considered Low due to their lower degrees of natural character and are reduced to Very Low overall, after accounting for the underlying zoning and after offsetting.

Natural character effects will also occur due to changes to existing wetlands, with the greatest effect anticipated on Wetland 2a north, which also holds the highest degree of natural character. The removal of this wetland will result in Moderate natural character effects. Offsetting will mean that effects are managed through restoring other wetland features and in considering this alongside the underlying SPQZ, adverse effects are considered to be Very Low. The remaining affected wetlands are considered to have reduced degrees of natural character given their degraded condition and context within pastoral farming. Accordingly, is considered the adverse effects on the natural character of these wetlands will be Low-Moderate. With offsetting and the underlying zoning further considered, adverse effects are anticipated to be Very Low for these remaining wetlands.

As detailed above, some biophysical attributes may be partially restored through revegetation along the retained stream length and the diverted stream channel (Stream 4). Moreover, localised experiential levels of natural character may be attained through the presence of moving water and associated hydrologic functions. However, this is not expected to meaningfully influence the natural character characteristics and qualities within the diverted (and man-made) sections of the streams. Therefore, offsetting is proposed to manage these effects.

Overall, taking into consideration the predominately degraded existing natural character condition of the impacted streams and wetlands, and offsetting package proposed, the adverse effects on the natural character are deemed as being Low-Moderate and are therefore assessed as being no more than minor.

9.10.2 Landscape effects

9.10.2.1 Landscape characteristics, attributes and values effects

The key effect of the proposal on landscape character is the change from a primarily grazed pastoral farming landscape with indigenous areas of bush, to a quarry. Although the proposed location of the Sutton Block expansion is physically and visually linked to the northern portion of the existing Drury Quarry, the works will result in a change to the landscapes physical, associative and perceptual attributes. Notably, the expansion beyond the northern and eastern ridges means the activity will impact a different landscape catchment associated with attributes of greater value (e.g. SEA and ONL).

As outlined in Section 9.10.1 above, the majority of the Sutton Block (approximately 78 ha) is located within the SPQZ, which largely anticipates this change in activity. At the end of Stage 5, approximately 30 ha (28%) of the proposed quarry falls outside of the SPQZ, and within Rural Zoning (Rural – Mixed Rural Zone and Rural – Rural Production Zone). However, the LVA notes that the margins of these two zones do not relate to a change in landscape characteristics, and both areas remain influenced by the quarry activities to the south. Moreover, the AUP recognises the influence of quarries beyond the zoning through the Quarry Buffer Zone. Overall, when considering the association and perception of the adjacent land use (Drury Quarry), AUP provisions, and the area outside the SPQZ, the LVA considers that the project will result in Moderate adverse effects on landscape characteristics.

In terms of topography, during and following the completion of the quarry expansion, the broad valley landform of the Site will be permanently altered. Although the Site's ridges will be altered, elevated ridges will continue to surround the project (primarily in the north and east) and Kaarearea paa will not be directly impacted. Furthermore, the bowl-like landform is not considered a noteworthy feature of particular value and comparable valley landforms exist in the local context of the site. To minimise the landscape effects of the proposed Northern Bund, the LVA recommends the bund be graded to tie into the surrounding contours, appearing as an extension of the rising landform for the duration of its existence (from Stage 1 to part way through Stage 5). Overall, the LVA assessed the adverse effects on topographical values as Low-Moderate.

The Sutton Block LOQ footprint has been designed to avoid infringing on the AUP ONL overlay located to the north of the proposed quarry pit and Northern Bund. The LVA notes, that the areas of SAL landholdings in close proximity to the ONL do not demonstrate or contribute to the noted attributes of the ONL. Further, the ONL has been mapped in the vicinity of two established quarries (Drury and Symonds Hill quarries) forming part of the local context of the landscape. Indigenous planting is proposed in the pocket of pasture within the ONL as part of the ecological mitigation response. While it is acknowledged that pasture is a noted attribute, it is considered that establishing indigenous vegetation within this area will contribute to the natural values which underpin the outstanding qualities of this landscape. Taking the above into account, the LVA considers that the visual coherence and integrity of the ONL landscape will remain intact and any potential adverse effects of the Sutton Block on this feature will be Low.

Kaarearea Paa, while not identified as an ONL or ONF, is a locally distinctive volcanic landform that rises above the existing quarry activities. Kaarearea Paa is considered to have High cultural landscape values, that also contribute to the associative and perceptual values of this landscape. Whilst the Sutton Block has been intentionally set back from the Kaarearea Paa Historic Heritage Overlay and avoids the Site of Significance to Mana Whenua (PC 102), the project will reduce the overall landscape value of Kaarearea Paa due to the expansion of quarrying activities. To mitigate this effect, native mitigation planting is proposed to the east of Kaarearea Paa (south of the proposed pit) around the lower flanks of the landform which will enhance the connectivity of the feature with the existing planting and surrounding landscape. Overall, taking into account the

setback, underlying SPQZ and mitigation planting, the LVA considered the effects on Kaarearea Paa will be Low-Moderate.

Overall, the proposed activities are consistent with the existing association and perception of the site as that of a modified working landscape. The Sutton Block LOQ extent has been designed to avoid the ONL and Kaarearea Paa. Where avoidance of features/ landforms is not practicable, mitigation measures such as planting are proposed. On this basis, the adverse effects of the proposal on landscape characteristics, attributes and values are considered to be minor.

9.10.3 Visual amenity effects

Visual effects are effects on landscape values as experienced in views. The visibility of the project is defined by its visual catchment, which is the area or extent from which all or part of the project is visible. Visibility can be affected by topography and elements within the landscape such as vegetation. The nature of a view depends on how it is perceived and the extent to which it is valued.

Changes to an outlook can impact on visual amenity without appropriate management. Accordingly, to understand the effects on visual amenity, a number of representative viewpoints have been selected and the potential visual effects have been assessed (including through the use of Visual Simulations) at different stages of operation. These are current views, site establishment Stage 1 (Years 1 – 3 years), operating quarry Stage 2 (Years 3 – 15), operating quarry Stage 3 (Years 15 – 30), operating quarry Stage 4 (Years 30 – 40), and LOQ Stage 5 (Years 40 – 50) (Technical Report J, Volume 2).

Visual effects vary depending on the nature of the viewing audience, distance to the site and extent of views. Without any mitigation, the effects of viewing audiences would increase with each stage of the project as the footprint of the Sutton Block is expanded to the LOQ extent. As a result, of the proposed mitigation measures (refer to Section 6.5), visual effects on most viewing audiences will be reduced or maintained. In some cases, as the project progresses into the later phases, (i.e., Stages 3 – 5) new extents may become partially visible to some viewing audiences, increasing the adverse visual effects. Given the size and nature of the project, not all views can be entirely screened, and consideration needs to be given to the underlying zoning that largely anticipates quarry activities.

The greatest level of adverse visual effects are expected to be on Group 8 (residents and road users along Sonja Drive, Laurie Drive and Ponga Road to the north of the site). These viewing audiences are anticipated to obtain the most elevated visual effects ranging from Low-Moderate to Moderate – High. During Stage 1, the greatest change to these views will be the progressive development of the Northern Bund which will result in up to Moderate – High temporary adverse effects.

By Stage 2, the Northern Bund will have been completed and established in grass, providing some visual screening. The exotic tree planting near the boundary of the ONL will also be established at this time. Accordingly, any adverse effects at this stage are reduced to Low-Moderate on Group 8.

Through Stage 3 and Stage 4, the quarry will broadly expand behind the Northern Bund. While views of the quarry activities will be largely obscured, views of the upper portion of the eastern quarry faces will however become visible during this time. With the above in mind, it is considered adverse effects could be up to Moderate – High for some residents in Group 8.

During Stage 5, the Northern Bund would be removed as the quarry expands further north and east. It is proposed that the works towards the east are undertaken first before the Northern Bund is removed. The established planting will assist to heavily filter views of the quarry behind, but it is anticipated that some views towards the quarry could be partially attainable. With the above considered, effects would remain up to Moderate – High for the Group 8 residents.

With regard to the remaining groups, during Stage 3 and 4, Group 1 (MacWhinney Drive) will experience Very Low adverse effects due to their views being entirely screened as a result of the

proposed exotic planting in the west. Groups 2, 3, and 5 will experience Very Low to Low adverse effects throughout all stages of the project. This is due to their distant, low elevation and limited views of the project. From Stage 3, the remaining three groups (Groups 4, 6 and 7) will experience Low–Moderate or Moderate adverse effects on visual amenity due to increased visibility of the Site.

The LVA concludes that the greatest effects will be Moderate – High (on Group 8), however, when considering the offsetting together with the underlying zoning, the greatest adverse effects would be Moderate. Considering that the adverse effects of the proposal may be Moderate for a number of residents and road users across several stages of the project, it is considered that the overall effects on visual amenity are more than minor.

9.10.4 Conclusion

In conclusion, some areas of the Sutton Block LOQ extent such as the ONL, Kaarearea Paa, streams and wetlands are recognised as being sensitive to change, and these areas have been avoided in the design as far as practicable. Where avoidance is not possible, mitigation and offsetting, primarily in the form of substantial revegetation is proposed to help address the effects on landscape and visual amenity values (refer to Section 6.5).

Viewing audiences will be affected throughout the life of the project for different durations. The most affected parties are the residents and road users along Sonja Drive, Laurie Drive and Ponga Road to the north of the site (Group 8) who will experience temporary Moderate – High adverse effects during Stage 1. These effects are reduced to Low-Moderate in Stage 2 as mitigation measures such as revegetation and screening will become more effective. However, from Stage 3 the adverse effects will remain up to Moderate – High, as the upper eastern portion becomes visible.

When considering the proposed offset measures and that the Sutton Block is proposed predominantly within a zone which anticipates quarrying, the LVA concludes the greatest adverse effects would be Moderate. Moreover, the current wider landscape is characterised by existing quarrying activities.

Overall, the adverse effects on natural character and the landscape are considered to be no more than minor, while the effects on visual amenity, particularly for Group 8, are more than minor.

9.11 Cultural values

As set out in Section 3.5.3, several iwi groups are Tangata Whenua and have interests over the site. The potential cultural effects are broken down into three key themes as identified through extensive consultation undertaken by SAL (refer to Appendix F) and the draft and final CVAs received to date. Where this assessment refers to the concerns of Tangata Whenua, this reflects SAL interpretation of those concerns expressed in the CVAs or during consultation.

SAL will continue to engage with Tangata Whenua and will respond to any issues raised as the consent processing continues. The development of a Cultural Management Plan (CMP) is proposed through conditions of consent in collaboration with Tangata Whenua. The purpose of the plan is to set out preferred engagement and partnership protocols to inform operational and management measures of the quarry.

9.11.1 CVA's received

Table 9.1: below summarises the CVAs received to date and what stage of the Sutton Block pit extent they have assessed. All CVAs are attached as Appendix G.

In summary they meet this outcome:

Table 9.1: CVAs received to date

Tangata Whenua	CVAs received and date	Stage of Sutton Block pit extent assessed
Te Ākitai Waiohū	1. CVA April 2024, <u>following notification that the Project would follow the fast track process</u>; 2. ; 3. CVA Addendum 1 August 2024 to <u>reflect review of stage 1-4 AEE and technical reports</u>; and 4. CVA Addendum 2 March 2025 (to <u>reflect review of stage 1-5 AEE and technical reports</u>).	Stages 1-5
Ngāti Tamaoho	1. CVA September 2024.	Stages 1-4
Ngaati Te Ata Waiohū	1. CVA February 2025.	Stages 1-5
Ngaati Whanaunga	1. Cultural Impact Assessment 29 August 2024.	Stages 1-4
Ngāi Tai Ki Tamaki	1. CVA March 2023 (Draft prior to receiving Stage 4 AEE); 2. CVA Addendum 19 August 2024 (to update Cultural Impact, Summary and Conclusion and Recommendations to reflect preliminary assessments for stages 1-4); and 3. CVA Addendum 20 March 2025 to reflect review of Stage 1-5 AEE and Technical Reports.	Stages 1-5

9.11.2 Wāhi tapu and taonga sites

Of particular concern to Tangata Whenua is the potential effects of the Sutton Block on Kaarearea Paa. As mentioned in Section 3.5.3, Kaarearea Paa (including its volcanic features, slopes, surrounding ridgelines, streams and wetlands), holds immense spiritual, cultural, traditional and historical significance.

In response to concerns raised during consultation with Ngāti Tamaoho and Ngaati Te Ata Waiohū in 2023, SAL has redesigned the LOQ extent to avoid all scheduled wāhi tapu and taonga sites within the project area. The LOQ footprint was moved further to the north from Kaarearea Paa, creating a 13 ha buffer between the edge of the LOQ extent and the Historic Heritage Overlay extent associated with Kaarearea Paa (Figure 3.16). Since this time, the wider extent of Kaarearea Paa has been scheduled as a Site of Significance to Mana Whenua (PC 102). Accordingly, the Sutton Block LOQ extent continues to avoid this Site of Significance (PC 102). Shifting the proposed LOQ extent also resulted in a reduction of 610 m of stream loss and a 5,241 m² retention of wetland extent that would have otherwise been lost.

Extensive native planting and ongoing pest control is proposed along the northern and north-eastern slopes of Kaarearea Paa. The proposed planting will connect up to the existing SEA to the east and north of the Sutton Block providing enhanced connectivity for native flora and fauna. Kaarearea Paa will remain fenced off with the fenced extent extended to cover a greater area to ensure ongoing protection of this wāhi tapu site. Provision for access to Kaarearea Paa for Tangata Whenua, subject to health and safety requirements across the site, is proposed through conditions of consent. Pest control will continue and be expanded.

In response to concerns about potential vibration effects on Kaarearea Paa, in particular the taonga stone structures, from the quarry operation, management and mitigation measures to control blasting will be put in place to ensure compliance with vibration limits. Further, the electric conveyor belt will transport the rock, minimising the volume and frequency of trucks passing Kaarearea Paa.

Consent conditions propose the development of cultural management procedures to be undertaken at the commencement of works, to be implemented during topsoil removal. These procedures will specify steps to be followed as part of the Discovery Protocols in the event of accidental discovery of tāonga or kōiwi. These procedures will be developed with Tangata Whenua input.

9.11.3 Awa (water ways), Puna (springs), and Warepo (wetlands)

The Sutton Block contains a number of awa, puna and warepo, that ultimately flow to the Pou Hotiki hīrere, Hingaia awa and wider Te Mānukanuka O Hoturoa/Te Maanuka (Manukau harbour). These awa are Tangata Whenua tūpuna, part of their whakapapa. They are the lifeblood of the land and hold significant cultural and spiritual value.

Due to the location of the aggregate rock (a naturally forming material that only occurs in certain locations), loss of awa and warepo was not able to be avoided in entirety. As mentioned above, the change in pit location resulted in a reduction of stream and wetland loss. As part of the application, various measures are proposed to manage and minimise the risk of the proposed works on the mauri and wairua of the awa, puna and warepo that are to be retained. These include:

- The best practice approach to earthworks and sediment and erosion control, which is designed to minimise the generation of sediment and prevent the discharge of sediment-laden water, which will protect water quality. Offered as a condition of consent is the preparation of a COTMP that requires organic treatment options to be considered and used where appropriate. Similarly, the approach to stormwater detention, retention and treatment is consistent with best practice and will appropriately protect water quality and flows in receiving streams.
- The proposed augmentation regime to supplement the loss in stream base flows will use groundwater that naturally feeds the stream (e.g., from the same catchment and puna). This will help to ensure that the mauri and wairua of the nga awa are maintained.
- SAL is committed to the capture and relocation of native fauna to appropriate sites, and enhancement of these new sites/habitats.
- An extensive stream and wetland enhancement programme is proposed within the SAL landholdings and at the offset site at Tuakau. The ecological mitigation and offsetting package will seek to replace and enhance stream and wetland habitat value over the life of the project.
- Increased and enhanced native riparian margins of retained streams adjoining the Sutton Block.
- The proposed dewatering will not result in any drawdowns on shallow groundwater, or the lava flows below Kaarearea Paa.
- Required under the proposed consent conditions, copies of the annual freshwater monitoring data must be provided to Tangata Whenua upon request.

- SAL will provide Tangata Whenua with the opportunity to comment on draft management plans before they are submitted to Auckland Council for certification. This will allow Tangata Whenua to contribute to the development of mitigation and management measures.

9.11.4 Vegetation (ngahere) removal

As mentioned in Section 3.5.3, ngahere vegetation holds cultural significance to Tangata Whenua, all native trees are considered tapu.

The Sutton Block will result in the removal of native ngahere. The following measures are proposed to manage and mitigate the potential cultural effects of the loss of ngahere:

- The majority of mitigation and offset measures relating to vegetation loss is able to be accommodated on site. This includes an extensive programme of restoration planting of Rock Forest, Broadleaf Podocarp and Kānuka Forest.
- Approximately 5 ha of planting is proposed on Ngā Motu o Hingaia (Drury Islands). This was in response to feedback predominantly from Ngaati Te Ata Waiohua. This planting is subject to obtaining DoC's landowner consent (refer to consent conditions attached as Appendix I).
- An Edge Effects Management Plan (part of the EMP) includes measures such as dense buffer infill planting, fencing and plant and pest animal control to protect retained and indigenous vegetation. Monitoring and maintenance of planting and fencing will be undertaken.
- As stated in Section 7.1, a proposed planting schedule by year is provided in Section 9 of the Planting Plan. In summary, revegetation will start from year 1 and continue until year 16, with the forest fragments impacted first being replaced from years 1-5. The proposed timeframes allow for a minimum of 19 years of monitoring to occur within the 35 year biodiversity offset timeframe.
- SAL is committed to the salvaging of native seeds, cuttings and seedlings to preserve the whakapapa of the mature forest species being lost. Other native trees and plants will be sourced, where practical from the Hunua Ecological District, including from the Ngāti Tamaoho future nursery to ensure they are sourced from within the same rohe to further enhance the whakapapa.
- A proposed consent condition requires SAL to provide Tangata Whenua with the opportunity to take and use native logs for cultural purposes.
- Tangata Whenua will have opportunities to exercise their kaitiakitanga by assisting in the proposed ecological mitigation works through the review of draft management plans. This will enable their knowledge, expertise, and practices to be integrated into the final design of these measures.

9.11.5 Conclusion

Overall, a robust range of environmental management and mitigation measures are proposed in this application that will assist in mitigating and offsetting cultural effects associated with the Sutton Block development. SAL has undertaken and will continue to actively engage with Tangata Whenua. A Cultural Values condition is proposed, requiring the development of a Cultural Management Plan (CMP) in collaboration with Tangata Whenua, along with additional measures to ensure cultural effects are appropriately addressed throughout the life of the project.

In comparison to the originally proposed Sutton Block LOQ extent, the proposed Sutton Block footprint has been designed to avoid greater cultural effects on known wāhi tapu and taonga sites. Despite this, the proposed Sutton Block will still result in the loss of whenua, awa, warepo and ngahere in an area that holds significant cultural and historical values to Tangata Whenua.

Overall, the level and extent of cultural effects are to be determined by Tangata Whenua. However, SAL has sought to address known and identified effects where possible and are open to incorporating further measures and mechanisms into the consent and working with Tangata Whenua to address these concerns.

9.12 Archaeology

The Sutton Block development will involve bulk earthworks and aggregate extraction, which has the potential to impact on archaeological features. As outlined in Section 0, there are two known archaeological sites located in close proximity (R12/278 and R12/723), and another recorded site which is located within Stage 5 of the Sutton Block LOQ extent (R12/724). The proposed Sutton Block has been designed to avoid the extents of all recorded archaeological sites that fall under the archaeological provisions of the HNZPTA 2014⁴¹.

Background research and archaeological field inspections were conducted within the proposed LOQ extent in 2006, 2021, 2022, 2023 and 2024. Both the 2021 and 2022 field surveys involved several members of Ngāti Tamaoho Trust. Neither these investigations, nor any additional background research, have not identified any additional unrecorded archaeological or other historic heritage sites within the Sutton Block LOQ footprint.

The widening of the existing farm track to form the proposed haul road is located between sites R12/278 and R12/723. While these works will compromise the historic and landscape values surrounding these sites, it will avoid the known archaeological features of both sites as scheduled. Alternative access options were considered to the south of Kaarearea Paa but were discounted due to the likely impact to archaeological remains associated with R12/278.

The Archaeological Assessment concludes that the buffer between the proposed LOQ extent and the scheduled Extent of Place of R12/278 (as agreed in consultation with Ngāti Tamaoho and Ngaati Te Ata Waiohua), will provide some compensation for the effects of the proposed quarry expansion on heritage setting, aesthetic and landscape values.

Lastly, the Archaeological Assessment notes that it is possible for unrecorded subsurface archaeological sites to be exposed during development. Therefore, per the recommendation of the report, SAL will seek a General Authority to modify or destroy an archaeological site under section 44(a) of the HNZPTA 2014. This Authority will cover the entirety of the LOQ extent as a precautionary measure.

Overall, based on the above, the archaeological effects are considered less than minor.

9.13 Noise

9.13.1 Site establishment noise

The initial Stage 1 (years 1-3) construction works will involve bulk earthworks, heavy machinery (including excavators, bulldozers, graders and haulage trucks) and other noise-generating construction activities. These initial, temporary, construction works relate to the establishment of the access roads and Northern Bund. The Assessment of Noise Effects (Technical Report I, Volume 2) includes an assessment of construction noise based on a range of potential worst-case scenarios. The assessment concludes the initial construction works are temporary and will comply with the relevant permitted activity standards for construction noise. A Construction Noise and Vibration Management Plan will be prepared in accordance with proposed Condition C4 to ensure that construction noise and vibration standards will be complied with.

⁴¹ R12/278 and R12/723, noting that R12/724 doesn't fall under the archaeological provisions of the HNZPTA as a post-1900 activity.

Based on the findings of the Noise Effects report, it is considered the temporary construction noise effects, associated with Stage 1 will be less than minor.

9.13.2 Operational noise

There will be a number of potential noise sources throughout the operation of the Sutton Block, including earthworks, blasting and the operation of heavy machinery and vehicles. Excessive noise can have adverse effects on surrounding residents' amenity.

The Assessment of Noise Effects (Technical Report I, Volume 2) predicts noise levels at receivers to conclude that under a range of potential worst-case scenarios during the stages of the LOQ, noise levels will comply with the relevant AUP limits at all receivers and is required under proposed consent Condition E1 (Appendix I). These worst-case scenarios have assumed that all equipment will be operating simultaneously and will be located high on the benches. As noted above, the predicted noise levels also rely on maintaining pit edge (terrain) screening in the northwest corner of the pit (refer to Figure 16 in Appendix D) to achieve daytime compliance (refer to Condition E2 in Appendix I).

While the predicted noise levels comply with the relevant AUP standards (for all daytime and nighttime works), noise generated by the project will result in an increase in ambient noise levels and a change in noise environment for some receivers. The highest noise level predicted from the Sutton Block works is 53 dB L_{Aeq} at 359 MacWhinney Drive⁴² during the day at Year 30 (the loudest Sutton Block scenario), resulting in a predicted noise level increase of 7dB L_{Aeq} ⁴³ compared to the existing ambient noise levels. Based on the technical assessment, an increase between 5 - 8 decibels generally result in an appreciable to clearly noticeable change. However, because the Sutton Block will develop over several years, and the predicted increase will take 30 years to eventuate the subjective response (the neighbour's opinion, acceptance or otherwise) typically is likely to be more moderate and tolerance of the gradual noise increase resulting in less impact. Further, noise levels in upper MacWhinney Drive, will generally be less than they currently experience, except for daytime of the Year 30, where an increase of up to 7dB L_{Aeq} is predicted. Overall, the Assessment of Noise Effects considers the effects on these dwellings will be reasonable.

Noise levels to the north and north-east of the Sutton Block are not predicted to increase due to Sutton Block activity. All predicted noise levels within notional boundaries (daytime and night-time) are less than their existing ambient levels. It is noted that noise from the Sutton Block development may be audible at times, but this will fluctuate based on wind direction. Therefore, the Assessment of Noise Effects concludes the effects of Sutton Block noise on these dwellings will be negligible.

For some dwellings located further away from the existing Drury Quarry and SH1 (i.e. upper MacWhinney Drive, Sonja Drive and Ponga Road), the character of the existing daytime environment is likely to change. Currently, the character of noise received by more remote receivers consists mainly of bird song and natural sounds. General broadband noise from quarrying, and intermittent engine noise from particular mobile plants, is likely to become audible to a greater or lesser degree depending on staging, works and wind direction. While the character of the noise may change, the maximum predicted noise levels will comply with the zone-specific noise levels and the contribution from any single quarry source is predicted to be low.

The noise predictions are based on worst-case scenarios, with the actual noise levels likely to be lower than predicted as there will be less equipment operating than has been assumed and equipment operating on site will be further from the nearest receivers. As the quarry expands to the LOQ footprint, the equipment would be located deeper in the quarry pit and would be better shielded by the pit edge. Further management measures including installing noise monitors to the

⁴² 359 MacWhinney Drive is the closest dwelling to Sutton Block during Stages 2-4.

⁴³ Noise predicted at 359 MacWhinney Drive is 53 dB L_{Aeq} . AUP noise limit is 55 dB L_{Aeq} under AUP section E25.6.3.

west (i.e., near MacWhinney Drive) and one to the north-east (i.e. near Sonja or Laurie Drive) of the proposed pit (refer to Condition H4 of Appendix I), and SAL undertaking on going community engagement.

Considering the overall effects of operational noise and taking into consideration the predicted change in ambient noise levels for some nearby receivers in upper MacWhinney Drive, it is considered the adverse effects resulting from the Sutton Block expansion is considered to range from less than minor through to minor for 359 MacWhinney Drive at certain times of the day and during certain stages of the quarry life (specifically predicted year 30 scenario).

9.13.2.1 Nighttime noise effects

Construction and operation of the quarry is expected to occur in line with the operation of the existing Drury Quarry operation, with some work expected to occur during the nighttime. Nighttime activities are scaled-down compared with daytime, with the primary objective to tailor the nighttime activities so that they meet the 45 dB L_{Aeq} noise limit at the closest dwelling.

Similarly, to daytime works, Marshall Day has prepared a nighttime noise model for each of the five Sutton Block stages (Technical Report I, Volume 2), which has been used to inform an assessment of potential nighttime noise effects. Overall, the assessment concludes that nighttime works associated with the Sutton Block will comply with the relevant nighttime noise limits.

Noise predictions of 47-48 dB L_{Aeq} at the light and heavy industry zone boundaries for all nighttime scenarios are well within the relevant limits and generally not influenced by the Sutton Block works (rather FOH activities). The highest noise level predicted is up to 45 dB L_{Aeq} predicted at the notional boundary of 103 MacWhinney Drive at night⁴⁴. This is equal to the 45 dB L_{Aeq} limit and around 2 decibels less than the average nighttime noise level.

It should be noted that as the quarry expands to the LOQ footprint, the noise would be located deeper in the quarry pit and would be better shielded by the pit edge. Additionally, equipment and nighttime activities will be limited to the base of the pit and would be shielded by the pit edge as the quarry footprint expands.

An iterative staged management approach, in conjunction with on-going noise monitoring, will ensure that nighttime noise limits are not exceeded. Should the noise level of any activity or equipment be predicted to exceed nighttime noise limits, the nighttime activities will be scaled down to ensure they do comply. This is an iterative process undertaken with SAL management and noise specialists that occurs as part of the Drury Quarry pit operation and will continue to occur throughout the duration of the Sutton Block operation.

9.13.3 Conclusion

Overall, it is considered that the potential adverse effects from noise on sensitive receivers associated with the project construction and operation will range from less than minor to minor for 359 MacWhinney Drive with the implementation of mitigation measures and less than minor for all other receivers.

9.14 Vibration

9.14.1 Construction vibration effects

Temporary vibration effects may occur from plant and vehicle movements during Stage 1 – which is the initial construction stages of the Sutton Block. In general, the vibration from construction

⁴⁴ 103 MacWhinney Drive is the closest dwelling to the FOH operations.

activities is predicted to comply with the relevant AUP vibration standards and vibration limits in DIN4150-3.

A Construction Noise and Vibration Management Plan (CNVMP) is proposed to be prepared that will set out various mitigation and management measures to further minimise any potential construction effects. Therefore, potential temporary vibration effects are considered to be less than minor.

9.14.2 Operational vibration effects

9.14.2.1 Vibration from vehicle and plant movement

During the operational stages of the Sutton Block (Stages 2 - 5), the operation of heavy vehicles and plant has the potential to generate vibration effects on nearby sensitive receivers. The primary infrastructure to transport rock from the Sutton Block pit to the FOH area is an electric conveyor belt. This will significantly reduce the volume of heavy vehicles and machinery servicing the Sutton Block pit. Vibration from vehicle and plant movements will be managed (avoided, remedied or mitigated) on-site by quarry management through daily operations. Vibration from these daily quarry activities is not predicted to result in any noticeable offsite vibration effects.

9.14.2.2 Vibration from blasting

Blasting is required to expand the pit and access aggregate and would generally be undertaken 1 - 2 times per week, depending on aggregate demand. Blasting within the Sutton Block will only commence once excavation has reached a bedrock of such strength where efficient excavation becomes challenging. Thus, both excavation and bench establishment (including batter trials as recommended by the Geotechnical Assessment) will have been completed beforehand. Blasting operations will not take place at the outer perimeter of the LOQ design. The benches will serve a dual purpose: they offer protection against air blasts for nearby houses (namely MacWhinney Drive) and provide a safe separation distance.

Orica NZ Ltd have undertaken a Blast Vibration and Noise Study (Technical Report V, Volume 2) to develop site law⁴⁵ for future blasting at the Sutton Block expansion. The aim of the site law is to create an accurate model to predict vibration from blasting. This site law is based on extensive knowledge and vibration recordings from the Drury pit. The same blasting technique, explosive type and design standards for the Drury Quarry will be undertaken at the Sutton Block.

Orica considers the Australian Standard AS2187.2-2006 to be more suitable than the DIN4150 standard (the standard that is adopted in the AUP) to assess potential amenity and building structural integrity effects associated with blast-related activities (refer to Technical Report V, Volume 2). Therefore, compliance with Australian Standard AS2187.2-2006 is proposed as a condition of consent (refer to Appendix I). This standard includes limits for ground vibration and air overpressure for maintaining human comfort, along with limits for preventing cosmetic damage to structures. For completeness, Orica has assessed the vibration and noise from blasting against both standards.

Predicted vibration levels at the nearest sensitive receiver (359 MacWhinney Drive, located approximately 400 m north of where blasting is proposed) are expected to be below the 5 mm/s threshold with managed blasting techniques (refer to Section 6.2.6 above). Based on Drury Quarry blasting, blast vibration is emitted for approximately 0.5 - 2.5 seconds at a time. According to Orica, vibration becomes perceptible to persons at levels between 0.5 mm/s and 1 mm/s, with acceptable levels between 5 and 10 mm/s for long-term projects and acceptable to the majority at higher values in the short term. With controlled blasting techniques implemented, blasting from the Sutton Block

⁴⁵ $PPV = K \left(\frac{D}{\sqrt{W}} \right)^n$ or $PPV = K(SD)^n$

is expected to be from 0.00 mm/s to 3.5 mm/s between 500 m and 1000 m distance. As blast distances reduce below 500 m, significant intervention in the blast design phase will be required to manipulate and control vibration.

Overall, subject to the implementation of controlled blast techniques (set out in Section 6.2.6 above), blasting from the Sutton Block is predicted to comply with both DIN4150 and Australian Standard AS2187.2-2006 at all neighbouring residential properties. Therefore, potential vibration effects are considered to be less than minor.

9.14.2.3 Air blast effects

Air blast refers to the shockwave of compressed air generated during the detonation of explosives and is a byproduct of the sudden release of energy from the explosion. Air blast creates a pressure wave that can be felt and heard in the surrounding areas. The intensity and effect are dependent on various factors, including the type and amount of explosives used, the depth and configuration of the blast holes, and the geological characteristics of the rock being blasted. The effect of air blasts in quarry operations is their potential to cause vibration, noise and structural damage to nearby buildings and structures.

The Blast Vibration and Noise Study (Technical Report V, Volume 2) has assumed that blasting at the Sutton Block will produce similar air blasts observed at the existing Drury Quarry. The Sutton Block contains a natural buffer zone of vegetation and hills, sheltering the dwellings along MacWhinney Drive and Sonja Drive. Additionally, blasting will not occur until the pit has been excavated down to a considerable depth, with measures in place to mitigate air blast effects (Section 6.2.6).

Blast orientation will be strategically planned to redirect blast vibration and air blast away from the nearby residences, utilizing various specialised blasting techniques set out in Section 6.2.6 above. Implementation of these techniques will mitigate the potential impact of quarry air blasts to be less than minor.

9.14.2.4 Vibration on Kaarearea Paa

The potential vibration effects on Kaarearea Paa were raised by Tangata Whenua during consultation, and accordingly, SAL requested Orica to install vibration monitors at the edge of Kaarearea Paa and to undertake an assessment of potential vibration effects.

Blasting in the northern area of the current pit has been as close as 163 m to Kaarearea Paa. Blast damage to the volcanic feature is unlikely with no visible ground cracking or damage reported. Orica considers this can be justified by the nature of blasting undertaken at Drury (and proposed at Sutton Block) due to the minimal vibration emitted from these types of blasts. Recent recordings of blast vibration at the boundary of Kaarearea Paa have been between 0.00 mm/s and 15.44 mm/s with no vibration controls measured in place. Vibration effects at the centre of Kaarearea Paa will differ based on natural barriers and a greater distance to the blast⁴⁶. Theoretical vibration predictions at the centre of Kaarearea Paa (refer to Technical Report V, Volume 2) are 5.55 mm/s, a significant reduction from the boundary reading. On-going vibration monitoring at the edge of Kaarearea Paa, with controls in place, will continue. Any monitoring data collected will be used in the seed wave analysis and calibration and to adjust blasting parameters to ensure vibration levels are compliant with relevant standards.

Orica considers with blast vibration control measures put in place, predicted vibration levels on Kaarearea Paa from Sutton Block will comply with both vibration standards (DIN4150 and Australian Standard AS2187.2-2006).

⁴⁶ Note, vibration monitors are only located at the edge of Kaarearea Paa to prevent access to the centre of the Pā site as requested by Tangata Whenua.

9.14.3 Conclusion

Overall, the adverse vibrations effects during the construction and operational stages of the Sutton Block expansion are considered to be less than minor.

9.15 Traffic

9.15.1 Traffic generation effects

An ITA (Technical Report U, Volume 2) has been prepared to assess the potential traffic effects associated with the proposal.

The Sutton Block expansion is not predicted to change the overall scale and intensity of traffic movement by the existing Drury Quarry. The Sutton Block will provide an extension to the availability of raw material (rock) to be processed into aggregate at the existing FOH facilities. As discussed in Section 4.5, the production capacity of both pits is influenced and constrained by the processing equipment and facilities on-site (such as the weighbridge). These production constraints effectively form an upper limit to what can be processed and transported off-site, limiting traffic generation off-site.

The ITA concludes that the number and intensity of truck movements is dictated by both external demand for aggregate and the ability of the site to process material ready for off-site delivery. Accordingly, the future number and intensity of quarrying-related vehicles generated by the Sutton Block operation is expected to remain within the range of movements currently anticipated by the existing quarrying activity (refer to Section 4.3 and Technical Report U, Volume 2).

In terms of potential trip-generation effects (network capacity and safety), the same transport routes that service the existing Drury Quarry operation will service the Sutton Block (refer to Section 3.5.5). A Transport Route Capacity Assessment, attached to the ITA, concludes that the primary transport route serving the quarry and its ancillary activities has sufficient capacity to accommodate up to an additional 8,000 tmpd from Drury Quarry, even after accounting for future traffic growth in the Drury South area. The ITA notes that the surrounding transport environment has been designed to ensure the safety and operational effectiveness of the quarrying activity while promoting effectiveness and efficiency for all users and visitors to the Drury South area.

The ITA considers that the only potential traffic effect of the Sutton Block operation is an extension of the duration over which the Drury Quarry as an overall activity will continue to operate. This means that while the magnitude of the effect will remain the same, they will be experienced over a longer period. However, this is not expected to result in any network operational or safety issues.

Overall, the ITA concludes that the Sutton Block will not result in any adverse transportation effects.

9.15.2 Conclusion

It is concluded that the potential traffic effects associated with both the construction and operation of the Sutton Block expansion will be less than minor.

9.16 Overall effects conclusion

In summary, the proposed Sutton Block expansion will generate a number of positive effects. In particular, the Sutton Block will continue to provide a source of regionally significant mineral resource for the next 50 years. The development and operation of the Sutton Block is essential to provide a local, high-quality, reliable supply of aggregate materials, reducing potential cost and delays for future and secured infrastructure and development projects that deliver significant regional and national benefits. Additionally, the proposed ecological offset will overtime result in positive terrestrial and aquatic environmental outcomes.

As discussed above, it is considered that the effects relating to geology, air quality, groundwater, erosion and sedimentation, ground contamination, archaeology, noise, vibration and traffic will be minor or less than minor. This has been achieved through careful consideration in regard to the design of the quarry footprint, the size of the landholdings secured by SAL, management and mitigation measures offered as conditions of consent.

With regard to landscape character and visual amenity, areas recognised as being sensitive to change (ONL, Kaarearea Paa, streams and wetlands) have been avoided in the design as far as practicable. Where avoidance was not possible, substantial revegetation and screening is proposed to mitigate potential landscape and visual amenity effects. The proposed revegetation planting and forest enhancement actions have been designed to connect isolated patches of remanent rock forest, restore degraded habitats and provide a contiguous tract of forest between Kaarearea paa SEA_T_5349 and SEA_T_5323 located to the east and north of the Sutton Block resulting in a significant improvement in the extent, quality and connectivity of local indigenous biodiversity and habitats. Further, the onsite stream offset planting proposed to the south of the existing Quarry (near Peach Hill Road and Davies Road) will connect up to SEA_T_5346, enhancing the ecological connectivity across the southern extent of SAL landholdings. Changes will be noticeable for a number of viewing audiences, resulting in adverse effects that range from Very Low to High (temporary). Notwithstanding this, the wider outlook for the majority of viewing audiences will remain characterised by the working landscape, which includes existing Drury Quarry, and the Sutton Block is proposed predominantly within a zone which anticipates quarrying. Overall, the adverse effects on natural character and the landscape are considered to be no more than minor, while the effects on visual amenity, particularly for Group 8, are more than minor.

In regard to cultural effects, SAL has received final and draft CVAs which identify a range of matters which are of significance, including effects on whenua, awa, puna, warepo, ngahere and wāhi tapu and taonga. SAL are committed to working closely with Ngāti Tamaoho, Ngaati Te Ata Waiohua, Te Ākitai Waiohua, Ngāi Tai ki Tāmaki and Ngaati Whanaunga. These relationships will continue over the life of the project. SAL has also tried to address the concerns raised by Tangata Whenua through the project design, where practicable. Notably, based on consultation with Ngāti Tamoho and Ngaati Te Ata Waiohua, the Sutton Block LOQ extent was moved further to the north from Kaarearea Paa, resulting in a 13 ha buffer between the edge of the LOQ extent and the Historic Heritage Overlay extent associated with Kaarearea Paa. The entire extent of the Site of Significance to Mana Whenua (PC 102) is also avoided.

Shifting the LOQ extent further north resulted in a reduction in 610 m of stream loss and 5,241 m² of wetland reclamation. However, due to the nature and scale of the project and given aggregate extraction can only take place where it is found naturally in situ, some adverse ecological effects (both terrestrial and freshwater) are unavoidable. Therefore, a key component of the project is the ecological off-set package. This package will provide ecological offset over time through creation of new habitat and enhancement of existing habitat through buffer planting, riparian planting, and pest control, which will enhance ecological connectivity across the wider SAL landholdings. Additionally, minimisation measures such as an ESCP, fish passage provisions and stream diversion to maintain connectivity are proposed. An extensive ecological off-set package is also proposed that will result in the restoration of 4.04 ha of wetland habitat, enhancement of existing stream habitat and restoration of native fish passage. Post-implementation of the proposed mitigation, off-set measures, the residual potential adverse effects on terrestrial ecology are considered to be minor, and more than minor on freshwater ecology.

10 Consultation

10.1 Introduction

In order to satisfy the requirements of section 29(1)(a) of the FTAA, SAL has undertaken consultation with the following parties as listed in section 11 of the FTAA:

- Relevant local authorities;
- Any relevant iwi authorities, hapū, and Treaty settlement entities, including—
 - iwi authorities and groups that represent hapū that are parties to relevant Mana Whakahono ā Rohe or joint management agreements.
- The relevant administering agencies.

SAL has also undertaken consultation and engagement with the local community and neighbouring properties regarding the Sutton Block Project.

Consultation began in 2021. A webpage has also been set up for the project with information and a number of frequently asked questions (FAQs)⁴⁷.

A summary of the consultation undertaken to date is provided in the following sections. A log of all consultation undertaken to date and other relevant consultation documentation is included in Appendix F.

10.2 Auckland Council

10.2.1 Regulatory – Premium Consenting

SAL has had pre-lodgement communications with the Auckland Council resource consent processing staff. A pre-application meeting was held with Auckland Council's Premium Consenting Team on Thursday 30 June 2022 with Auckland Council's Principal Project Lead and the assigned processing planner. Since then, SAL has regularly kept Auckland Council assigned planner informed about Project's progress, including the decision to expand the pit's footprint in 2024 and the intention to apply to the EPA for the project to be listed under Schedule 2 of the FTAA.

The most recent engagement with the assigned planner was on 6 March 2025, when SAL requested confirmation that no other existing resource consents apply for the same activity under s30 of the FTAA. As part of this request, SAL provided Auckland Council with a drawing, a list of parcels of land subject to the application, and a list of the resource consent requirements (a copy of Table 6.2 from Section 8.1 above).

10.3 Department of Conservation

Engagement with the Department of Conservation (DoC) has been undertaken regarding two aspects of the Project as summarised below.

10.3.1.1 Wildlife approval

On 12 February 2025, SAL's Project Ecologist contacted DoC regarding an application for Wildlife Approval to relocate identified and potentially present native lizards affected by the Project under Clause 1 of Schedule 7 of the FTAA.

⁴⁷ [Drury Quarry \(druryquarryinfo.nz\)](https://druryquarryinfo.nz)

As part of this pre-lodgement consultation, a copy of the draft Ecology Reports and relevant drawings related to the Wildlife Approval were provided to DoC on 18 March. No feedback has been received since submitting the requested information.

10.3.1.2 Hingaia Islands proposed planting

As discussed in Section 7.1.3 above, part of the offset package includes approximately 5ha of planting in Hingaia Islands owned by DoC.

On 25 February 2025, a meeting was held between DoC's appointed peer review ecologist, Graham Usser, and SAL's Project Botanist and Principal Planner to discuss the draft planting plan and schedule. The purpose of this meeting was to ensure the proposed planting aligned with DoC's master plan for the Hingaia Islands. During the meeting, Graham Usser recommended adjustments to the plan, including setting planting back from identified archaeological sites and modifying plant species to better match existing vegetation on the Hingaia Islands. These changes were incorporated into the current proposed plan shown in Figure 7.3 and in Section 9 of the Planting Plan (refer to Technical Report E, Volume 2).

The updated planting plan and schedule were subsequently presented to Fiona McKenzie, DoC Ranger – Community, and relevant Tangata Whenua groups at a hui on Friday, 28 February. At this hui, Graham Usser confirmed that the proposed planting plan and schedule were appropriate for Hingaia Island and consistent with the overall master plan for the site.

On 4 March, a copy of the planting plan, schedule, Draft Sutton Block AEE, and all draft technical reports were provided to DoC for review. Following this, Fiona McKenzie confirmed on 19 March that while two of the three Tangata Whenua groups involved in the island master plan supported the proposed planting, one Tangata Whenua group did not. As a result, DoC was unable to provide landowner approval at this stage.

SAL continues to engage with DoC to secure landowner approval. As outlined in Section 7.1.3, planting on the Hingaia Islands is contingent on obtaining DoC's approval and is proposed as a condition of consent.

10.4 Heritage New Zealand Pouhere Taonga

A pre-application meeting with HNZPT staff was held on 20 March 2025 to discuss the application for a general archaeological authority, sought as a precaution for the Project. Prior to the meeting, a copy of the Draft Archaeological Assessment and Archaeological Management Plan (AMP) was provided for review.

Key outcomes from the discussion included HNZPT's preference to process an application for Stage 1 of the Project only (covering the first five years) rather than the full project. Additionally, further details on earthworks volumes for Stage 1 were requested. This feedback has been incorporated into the final Archaeological Assessment and Archaeological Management Plan (AMP).

10.5 Tangata Whenua

Section 3.5.3 lists the nine Tangata Whenua groups that have an interest over the site. Of these groups the following five registered an interest in the Project and ongoing engagement is being undertaken:

- Ngāti Tamaoho;
- Ngaati Te Ata Waiohua;
- Te Ākitai Waiohua;
- Ngāi Tai ki Tāmaki; and

- Ngāti Whanaunga.

An overview of the consultation and engagement undertaken to date is included in Appendix F and is summarised below.

10.5.1 Ngāti Tamaoho

Ngāti Tamaoho have a statutory acknowledgment across the site, and it is located within their rohe. The rohe of Ngāti Tamaoho encompasses central Auckland to the north and extends south to Franklin. The western boundary encompasses the Manukau Harbour and Awhitū Peninsula, extending south to Franklin. The eastern boundary extends from the Firth of Thames and the Hunua Ranges. The rohe of Ngāti Tamaoho is identified in the Auckland Council Geomaps database. The Hingaia and Otūwairoa Streams, and their tributaries (including the Waipokapū Stream, Mangapū Stream and Waihoehoe Stream) were important traditional resources of Ngāti Tamaoho, and it remains a water body of major cultural, spiritual and historic significance to the iwi. It is subject to a statutory acknowledgement as part of the Ngāti Tamaoho Deed of Settlement with the Crown dated 30 April 2017.

Engagement with Ngāti Tamaoho began in 2007 during the plan change process to re-zone the Sutton Block landholdings. As part of this plan change process, SAL and Ngāti Tamaoho signed a Memorandum of Understanding (MOU). SAL began engagement with Ngāti Tamaoho regarding this application on 5 October 2021 via Teams and was followed by an initial hui on 5 November 2021 and a site walkover on 18 November 2021. Subsequently, hui have continued on a regular basis (see Appendix F). A draft CVA was provided on 13 October 2022 based on the initial LOQ footprint.

Following a hui on 20 July 2023, and discussions on 14 September 2023, the Sutton Block LOQ was moved to the north to exclude the gentle slopes and stream valley north-east of Kaarearea Paa to provide a substantial buffer between proposed quarrying activities and the boundary of the AUP Historic Heritage Overlay extent / scheduled Extent of Place of R12/278. Ngāti Tamaoho have indicated they support moving the LOQ pit in a northerly direction creating a 13 ha buffer from Kaarearea Paa (as reflected in the proposed pit drawings). As part of this engagement, SAL also supported the inclusion of a Site of Significance to Mana Whenua overlay to be scheduled over Kaarearea Paa as part of Plan Change 102 to recognise the importance of this feature to Tangata Whenua. This is now in effect. The Project avoids the Site of Significance to Mana Whenua overlay area. SAL has committed to provide future protection of Kaarearea Paa, including extended the fenced area to protect a greater area.

Between late 2023 and mid-2024, SAL held hui to discuss likely resource consent triggers, potential effects, and proposed mitigation, offset measures based on the previous Sutton Block LOQ extent, which included only Stages 1–4 of the quarry pit design (excluding Stage 5). On 10 June 2024, a draft AEE was issued to Tangata Whenua for review, reflecting the proposed LOQ extent at the time (Stages 1–4). In September 2024, Ngāti Tamaoho provided a CVA assessing the potential cultural effects of the Project based on the 2024 LOQ extent and summarizing the outcomes of the previous two years of engagement.

Following receipt of the CVA, SAL decided in mid-to-late 2024 to expand the Sutton Block LOQ footprint to include Stage 5. On 10 September 2024, SAL emailed all Tangata Whenua groups to inform them of the proposed change, providing an assessment of the key differences between Stages 4 and 5. A hui was held with Ngāti Tamaoho on 18 February 2025 to discuss Stage 5. After this hui, an updated summary memo comparing Stages 4 and 5, along with associated maps and revised Draft AEE, was provided to iwi for review. SAL also requested that Ngāti Tamaoho update their CVA.

On 24 March 2025, Ngāti Tamaoho confirmed via email that they would not be updating their CVA at this stage, as the Te Taiao unit was not comfortable assessing a proposal that would take place 20–30 years into the future. While they expressed support for Stage 4, they were unable to support

Stage 5 at this time. Their primary concern was the extended timeline for Stage 5's completion and the risk that future generations (those responsible for this work in 20 years) could be committed to a plan that may continue to expand, as had already occurred between Stage 4 and Stage 5.

During a hui on 25 March 2025, Ngāti Tamaoho reaffirmed this position. It was agreed that SAL and Ngāti Tamaoho would continue to engage on this matter.

10.5.2 Ngaati Te Ata Waiohua

The site is located within the rohe of Ngaati Te Ata Waiohua. The northern boundary extends from the mouth of the Kaipara to Mangawhai, from Mangawhai to Waitakaruru-Piako in the East, from Waitakaruru-Piako to Pukekawa returning to the mouth of the Waikato in the South. The western boundary comprises of the Tasman Sea, Southern shores of the Kaipara Harbour, Waitemata and Manukau Harbours.

On 11 April 2022, SAL met with a representative of Ngaati Te Ata Waiohua for a site visit of the Sutton Block expansion site. Following this visit, a further email was sent on 20 April 2022, Ngaati Te Ata Waiohua indicated an interest in being consulted regarding the Sutton Block expansion and initiated the preparation of a CVA. Ngaati Te Ata Waiohua have also undertaken a number of site visits and walkovers and met with SAL representatives multiple times since 2022 (see Appendix F). Subsequently, a CVA report based on the previous LOQ footprint (only Stages 1-4) was provided by Ngaati Te Ata Waiohua to SAL, dated September 2023. Ngaati Te Ata Waiohua, also participated in discussions with Ngāti Tamaoho and SAL regarding the inclusion of the Site of Significance to Mana Whenua overlay over Kaarearea Paa, which the Project avoids.

As outlined in Section 11.5.1, after receiving Ngāti Te Ata Waiohua's CVA, SAL decided to expand the Sutton Block LOQ footprint to include Stage 5. Ngāti Te Ata Waiohua received the same project updates via email and hui as described in Section 11.5.1. Additionally, a hui was held with Ngāti Te Ata Waiohua on 18 February 2025 to discuss Stage 5.

Following this hui, Ngāti Te Ata Waiohua provided an updated CVA with recommendations. These recommendations have been incorporated into the proposed management, mitigation, and offset measures as far as practicable and reflected in the proposed conditions of consent. SAL will continue to engage regularly with Ngāti Te Ata Waiohua.

10.5.3 Te Ākitai Waiohua

The site is located within the rohe of Te Ākitai Waiohua, which extends from South Kaipara in the north-west across to Puhoi and Wenderholm Park in the north-east. The eastern boundary follows the coast down to Tapapakanga Regional Park and the Hunua Ranges in the south-east. The southern boundary extends from the Hunua across Mangatawhiri, Mercer, Onewhero and Port Waikato to Pukekohe and Patumahoe, excluding Awhitu and Waiuku. The western boundary continues north along the coast and includes the islands of the Manukau Harbour, past the Waitakere Ranges in the west of Auckland. The rohe of Te Ākitai Waiohua is identified in the Auckland Council Geomaps database and is based on the Area of Interest agreed between Te Ākitai Waiohua and the Crown in the Deed of Settlement (initialled on 23 December 2020, signed 12 November 2021).

Following the further email sent on 20 April 2022, Te Ākitai Waiohua confirmed an interest in being consulted regarding the Sutton Block expansion during a site visit on 20 June 2022. A draft archaeological report was sent to Te Ākitai Waiohua, Ngāti Te Ata and Ngāti Tamaoho on 22 June 2022. As a result of on-going engagement, a number of site visits and meetings between SAL and representatives of Te Ākitai Waiohua have taken place between 2022 and 2024 (see Appendix F).

As discussed in 11.5.1, between late 2023 and mid-2024, SAL held hui to discuss likely resource consent triggers, potential effects, and proposed mitigation, offset measures based on the previous

Sutton Block LOQ extent, which included only Stages 1–4 of the quarry pit design (excluding Stage 5). Following these discussions, Te Ākitai Waiohū provided a CVA in April 2024, followed by an addendum on 10 June 2024, assessing Stages 1–4 of the Sutton Block LOQ extent.

After receiving the revised CVA, the Sutton Block footprint was expanded to include Stage 5. Ngāti Te Āta Waiohū received the same project updates via email and hui as outlined in Section 11.5.1. A hui was held with Ngāti Te Āta Waiohū on 19 February 2025, after which they prepared a further addendum that superseded their initial recommendations. As noted above, these recommendations have been reflected as far as practicable, and SAL will continue to engage with Ngāti Te Āta Waiohū.

10.5.4 Ngāi Tai ki Tāmaki

The site is located within the rohe of Ngāi Tai ki Tāmaki, encompassing from the top of Kohukohunui maunga to Otata on Great Barrier Island in the east, then to Kawau Island and south to Te Onewa down State Highway 1 to Mangatawhiri and back north to Kohukohunui.

As part of the engagement regarding the Sutton Block, a number of site visits and meetings between SAL and representatives of Te Ākitai Waiohū have taken place between 2022 and 2024 (see Appendix F). On 13 October 2023, a site visit was undertaken by Ngāi Tai ki Tāmaki. A hui with SAL was also held with representatives of Ngāti Whanaunga and Te Ākitai Waiohū also in attendance, providing an update on engagement with Ngāti Te Āta Waiohū and Ngāti Tamaoho regarding Kaarearea Paa.

SAL and Ngāi Tai ki Tāmaki have maintained regular contact regarding the project, primarily through email and hui. In March 2023, Ngāi Tai ki Tāmaki provided a CVA assessing the potential effects of the previous Sutton Block LOQ extent (Stages 1–4), followed by an updated CVA on 19 August 2024 to reflect project changes at that time.

Since then, SAL has decided to expand the Sutton Block to include Stage 5. Ngāi Tai ki Tāmaki received the same project updates via email and hui as outlined in Section 11.5.1. A hui was held on 18 February 2025, and on 20 March 2025, Ngāi Tai ki Tāmaki issued an addendum to their CVA assessing Stage 5 of the LOQ extent.

The addendum concludes that Ngāi Tai ki Tāmaki has no objection to Stage 5, provided they are kept informed of any project changes, updated on proposed planting at Hingaia Islands and consent conditions, and provided with a copy of the final Archaeological Assessment. SAL has agreed to these conditions and will continue to engage with Ngāi Tai ki Tāmaki.

10.5.5 Ngāti Whanaunga

The site is located within the rohe of Ngāti Whanaunga, which extends from Mahurangi Harbour, near Warkworth, to near Waihi Beach, Bay of Plenty. The rohe of Ngāti Whanaunga is identified in the Auckland Council Geomaps database.

A site walkover of the Sutton Block was undertaken on 21 July 2022. A further hui and site walkover took place on 24 November 2022, with representatives from Te Ākitai Waiohū and Ngāi Tai ki Tāmaki also in attendance. Further site visits and hui between SAL and representatives of Ngāti Whanaunga have taken place between 2022 and 2024 (see Appendix F). Updated Project information including, draft AEE and associated drawings were provided to Ngāti Whanaunga on 18 July 2023, and again on 16 July 2024 based on the previous LOQ extent (Stages 1-4). Ngāti Whanaunga subsequently provided a CVA dated 29 August 2024.

As discussed above, since receiving Ngāti Whanaunga CVA, the LOQ extent was expanded to include Stage 5. Ngāti Whanaunga received the same project updates via email and was invited to attend a hui on 18 February 2025 but did not attend. Since then, SAL has continued to request a revised CVA

or feedback from Ngāti Whanaunga but has not yet received a response. SAL will continue to engage with Ngāti Whanaunga.

10.5.6 Other iwi and hapu groups

Following the email sent on 20 April 2022, SAL received an email from Te Ahiwaru – Waiohūa deferring engagement regarding the Sutton Block expansion to Ngaati Te Ata Waiohūa and Ngāti Tamaoho (refer to Appendix F). No responses were received from Ngāti Tamaterā and Ngāti Maru.

Further to the email sent on 20 April 2022, SAL met with a representative of Waikato – Tainui on 20 July 2022 to provide an overview of the Sutton Block expansion. Following this, SAL received confirmation that Waikato – Tainui would not be providing a Cultural Impact Assessment (CIA) to SAL, noting that they wish to be engaged at a high level and expressing support for Ngāti Tamaoho's position regarding the protection of Maketu Pā.

As part of on-going engagement regarding the Tuakau sand quarry site with Waikato – Tainui, a site visit was undertaken on 8 December 2022 to the Tuakau offset site. A further email was sent to Waikato – Tainui on 13 January 2023, providing an overview of 2022 engagement activities.

10.6 Owners and occupiers of surrounding properties

Landowners and occupiers located in close proximity to the site were identified as key stakeholders by SAL. Engagement with these stakeholders has been on-going since March 2022. The sections below have been grouped geographically into neighbours to the north/northeast of the site and neighbours to the southeast. Details of this consultation are included in the consultation log (Appendix F).

10.6.1 Neighbours to north/northeast (MacWhinney, Sonja and Laurie Drives)

Initial contact regarding the Sutton Block expansion was made through an invitation to attend an information evening on Thursday 17 March 2022, 5pm - 7pm. Between 2022 and 2023, SAL's Communications & Stakeholder Manager received and responded to all queries and complaints from MacWhinney Drive residents.

In March 2023, residents were invited to the Drury Quarry Information Sessions held at Ramarama Hall, with several residents attending. SAL issued a letter drop on 8 September 2023 to residents inviting them to discuss the Sutton Block extension plans, with sessions on 18 September and 2 October 2023, 9am – 5pm; and 22 September and 7 October 2023, 11am – 4pm. Both face to face and online meetings were conducted. In early 2024, another letter drop was distributed regarding the Sutton Block project, inviting residents to contact SAL for further discussion.

The neighbours main concerns of potential effects were:

- Damage to property due to blasting;
- Light pollution;
- Dust;
- Noise; and
- Change in property values due to quarry expansion.

Proposed as part of the application is a set of robust consent conditions and management plans that will appropriately manage these effects to reduce effects on neighbouring properties and ensure compliance with the relevant standards.

10.6.2 Neighbours to the southeast (Peach Hill Road and Davies Road)

Initial contact regarding the Sutton Block expansion was made through an invitation to attend an information evening on Thursday 17 March 2022, 5pm – 7pm. A further “town hall” meeting was held with the Peach Hill Road residents on 28 July 2022, 5:30 pm – 7 pm at Ramarama Hall. A number of individual queries were received and responded to by SAL’s Communications & Stakeholder Manager and other SAL staff. An email was sent to Peach Hill Road residents providing an update to issues raised at the initial “town hall” meeting.

In March 2023, residents were invited to the Drury Quarry Information Sessions held at Ramarama Hall, with residents attending as a large group. Further “town hall” meetings were held on May 2023. At these meetings, presentations with Q&A are held regarding the purpose of the quarry, updates on any issues raised by residents as well as upcoming plans and projects. Informational brochures and the contact details of the engagement manager, quarry manager and general manager are available at these sessions. Electronic updates have also been sent out to those that signed up to the mailing list with updates on queries, opportunities for further feedback and invitations to the next “town hall” meeting.

Similar to above, the main potential effects of the project for these neighbours include:

- Increased office traffic along Davies Road;
- Dust;
- Light pollution;
- Noise; and
- Blasting.

As set out above, management of these effects are proposed to be addressed through consent conditions and associated management plans.

10.7 Wider public

The following forms of engagement and consultation with the wider public has also been undertaken to date by SAL.

10.7.1 Website

SAL established a website⁴⁸ specifically for providing information regarding the proposed Sutton Block expansion. The website was initially published around March 2022 with subsequent updates as the project progresses further. The website includes information on the following:

- Information about SAL;
- Information about the current Drury Quarry operation;
- Information about the proposed Sutton Block expansion; and
- A section which addresses a number of frequently asked questions (FAQs).

The website also lists contact details for SAL’s Communications & Stakeholder Team. The website will be maintained throughout the consent processing and during construction of the project, to provide interested parties with up-to-date information on the project and a supplementary channel to get in touch with SAL.

⁴⁸ www.druryquarryinfo.nz

10.7.2 Public information days

As part of SAL's ongoing engagement with the local community, SAL hosted public information days across two consecutive weekends at Ramarama Hall on:

- 19 March and 26 March 2022, 11am - 2pm; and
- 20 March and 27 March 2022, 2pm - 4pm.

The purpose of these public open days was for SAL to present information regarding the proposal, and for the public to ask questions and provide their feedback on the project. Forms were available for people to place feedback and ask questions.

A series of posters with content about the proposed Sutton Block expansion were displayed to outline the proposal and inform attendees. This content is shown in Appendix F of this AEE. Following the public open days, the poster content was published on the website described in Section 10.7.1.

In addition to the information days, SAL has attended multiple Drury Community Committee Meetings since 2022 where the Sutton Block project has been discussed along with general Drury Quarry operations.

10.7.3 Electronic updates

The contact details of SAL's Communications & Stakeholder Team are listed on the website and on the invitations to the public information days and neighbour information sessions for people to email feedback and ask questions, to be responded to by SAL staff.

Emails were also sent to those that had registered for updates through the website, public information days and neighbour information sessions.

10.8 Summary of feedback received

Over the course of the pre-lodgement period, SAL has proactively engaged in public consultation with a strategy aimed at reaching all potentially interested parties and giving them opportunities to obtain information about the proposed Sutton Block expansion and related issues.

As a result, SAL has received feedback from stakeholders covering a diverse range of topics. Some key themes repeatedly arose, such as:

- Noise;
- Traffic;
- Dust;
- Light pollution;
- Blasting;
- Property values;
- Proximity to Kaarearea Paa; and
- Potential impacts on streams and wetlands.

A full record of all consultation undertaken to date is included as Appendix F.

11 Statutory assessment

11.1 Statutory framework for Consideration of Resource Consent Application– s104

The following sections assess the resource consent components of the Substantive Application against the relevant statutory framework.

11.1.1 Section 104 – Consideration of applications for resource consent

Section 104 of the RMA sets out the matters which a consent authority must have regard to, subject to Part 2 of the RMA,⁴⁹ when considering an application for resource consent. With respect to this project, the relevant parts of section 104 include:

- Any actual or potential effects on the environment of allowing the activity;
- Any relevant provisions of a national policy statement, a coastal policy statement, regional policy statements and plans; and
- Any other matter the consent authority considers relevant and reasonably necessary to determine the application.

These are set out below.

11.1.2 Section 104(1)(a) - Actual and potential effects on the environment

The proposed quarry expansion covers a range of activities. These activities will occur during both the construction and operational phases of the Project and may result in actual or potential effects on the environment which need consideration and assessment under section 104 of the RMA. For the purpose of the section 104 assessments, the identification of relevant effects (as proposed to be mitigated or off-set) are comprehensively assessed in Section 929 of the AEE.

Although the Project gives rise to a range of potential effects on the environment, overall, the majority of these can be appropriately managed through design and or operational mitigation methodologies. In summary, it is considered that minor or less than minor adverse effects will occur for geology, air quality, groundwater, erosion and sedimentation, ground contamination, archaeology, vibration and traffic. This has been achieved through careful consideration in regard to the design of the quarry (as described in Sections 4 and 5), the size of the landholdings owned by SAL, and management and mitigation measures offered as conditions of consent (Appendix I). In terms of potential effects (both positive and adverse), core areas of focus have been:

- Provision of regionally significant mineral resource;
- Terrestrial and Freshwater Ecology
- Landscape, visual amenity and rural character
- Cultural Values

11.1.2.1 Positive effects - Provision of regionally significant mineral resource

Drury Quarry and the proposed Sutton Block project have a role to play in relation to providing for social and economic benefits to the community. These benefits are critical elements of achieving the sustainable management purpose of the RMA.

The existing Drury Quarry has been operating for over 80 years, and the Sutton Block extension will ensure aggregate material supply can be continuously maintained to the Auckland Region into the future. The Sutton Block is a valuable regional and national resource that is of strategic importance to the future growth of Auckland particularly in respect of Drury Quarry's close proximity to planned

⁴⁹ Under the FTAA, Part 2 of the RMA is limited to sections 5, 6 and 7 of the RMA – see clause 17(2)(a) of Schedule 17.

regionally significant infrastructure projects. The Sutton Block has been earmarked for development for some time as confirmed through the SPQZ zoning under the AUP. Securing this future supply will have positive economic effects on the well-being of Aucklanders and assist in facilitating the delivery of infrastructure and development projects with significant regional or national benefits.

Aggregate is fundamental for numerous development projects in the economy, contributing to the advancement of urban and infrastructure development. As previously outlined, aggregate serves as a foundational building material and is a fundamental component of concrete, playing a crucial role in diverse construction and civil engineering projects. Ensuring a consistent and readily available source of high-quality, locally sourced aggregate is necessary for supporting the Auckland Region's economic growth aspirations and facilitating the delivery of infrastructure and development projects with significant regional and national benefits.

Auckland's growing population is driving increased construction and a rising demand for aggregate. According to the EIA (Technical Report S, Volume 2), in 2022, the Auckland Region produced 12.9 million tonnes (adjusted), being the highest on record. While production has remained relatively stable over the past decade – averaging 10.9 million tonnes annually – recent years have seen slight increases, with 11.2 million tonnes (adjusted) produced in 2023. Despite these slight increases, supply is only just meeting current project demands, highlighting the need for a local, long-term aggregate supply to support the Auckland region's projected growth. Data over the last 10 years suggests that Auckland has had to consistently import a portion of its aggregate to supplement local supply.

To understand the potential future role that the Sutton Block expansion could have on the market, Market Economics has developed two growth scenarios for future aggregate demand (refer to EIA, Technical Report S, Volume 2). The medium growth projections show that Auckland's aggregate demand is projected to exceed supply by around 6.9 million tonnes in 2048. Under the higher growth scenario, this shortfall is around 20.4 million tonnes in 2048.

Infrastructure programmes and projects are facing budget constraints, delivery schedule and associated realisation delays. Regionally significant infrastructure projects currently under construction or planned for the immediate future within the Auckland Region are relying on aggregate being available from the existing quarry producers in the region.

The Sutton Block is located approximately 31 km south of Auckland CBD and is in close proximity to current and future expected regionally significant infrastructure projects in Auckland (for example, the Waihoehoe Road (Drury upgrade), State Highway 1 Papakura to Drury, City Rail Link and Auckland International Airport airfield expansion and domestic terminal development). The Sutton Block project would provide an additional 240 million tonnes of aggregate over 50 years, extending the life of supply of this critical product to enable the development and maintenance of regionally significant infrastructure projects.

As set out in the EIA (Technical Report S, Volume 2), the economic benefits of the Sutton Block aggregate are represented by significant cost savings derived from the lower transport requirements of sourcing aggregate from a quarry closer to Auckland. These are projected to be cost savings of \$8.9 million in transport costs, \$19.9 million in environmental costs, and \$0.6 million in social costs, per million tonnes of aggregate produced, when compared to the nearest alternative source in the Waikato region. This means that the economic benefits of the Sutton Block total to \$29.4 million for every million tonnes of aggregate that it will provide.

11.1.2.2 Terrestrial and Freshwater Ecological effects

The avoidance of ecological effects (both terrestrial and freshwater) has been an inherent part of the quarry design process and driven much of the layout of the project features (See Sections 4 and 5). The project avoids areas of significant ecological value where possible, including changes to the pit

design to move the pit north away from SEA_T_5349 (Kaarearea Paa) but to avoid encroachment within the upper catchment and streams located within SEA_T5323 in the north-eastern corner. However, due to the nature and scale of the project, location of the in-situ resource and location of the SPQZ, avoidance of all stream and wetland reclamation and associated vegetation removal is not possible.

A key component of the project is the ecological off-set package which will provide ecological offset over time both on-site and off-site (see Section 7). This will be achieved through creation of new habitat and enhancement of existing habitat; 62 ha of revegetation planting; 108 ha of enhancement planting; pest control; stream improvement works; riparian planting and fencing; removal of floodgates to allow for fish passage and 4.04 ha of wetland creation and restoration. Once mitigation measures have been implemented, the residual adverse effects on terrestrial ecology are considered to be minor. For freshwater ecology, the residual adverse effects will be more than minor on freshwater ecology but with offsetting, these effects are expected to result in a net gain.

11.1.2.3 Landscape effects

Changes to the landscape character and visual amenity experienced will occur throughout the life of the project for different durations, particularly for some residents and road users along Sonja Drive, Laurie Drive and Ponga Road. Mitigation planting and screening is proposed to mitigate landscape and visual effects to be no more than minor. Furthermore, the pit has been designed to avoid key landscape features, including Kaarearea Paa and retain important landscape features.

When considering effects on visual amenity and changes to landscape character, it is important that consideration is given to the current wider landscape context which is characterised by an existing operating quarry and the underlying SPQZ for the majority of the Sutton Block footprint. The SPQZ quarry zoning has been in place at the site since 2007 through the Papakura District Plan. The AUP carried over this zoning and the SPQZ is a zone that anticipates further quarrying and extraction activities to occur along with their associated visual and landscape effects.

11.1.2.4 Cultural effects

The potential cultural effects are discussed above in Section 9. As noted in that assessment, the identification of effects has been based on SAL's interpretation of the draft and final CVAs provided to date, consultation undertaken by SAL over a period of time⁵⁰ and review of published Treaty Settlement information⁵¹. The broad range of mitigation and management measures proposed are generally consistent with the recommendations set out in the CVAs. Due to the nature and scale of the Project invariably the proposed works will still likely result in effects on cultural values. Implementation of the extensive mitigation measures through a suite of environmental management plans required by the consent conditions aims to address these effects. However, the overall level and extent of cultural effects, post mitigation are to be determined by mana whenua.

In addition to environmental mitigation measures, the conditions of consent require the development of a Cultural Management Plan in collaboration with mana whenua. This plan will set out the preferred engagement and partnership protocols to inform operational and management measures at the quarry.

Further, cultural monitoring procedures will be developed with mana whenua in the event of any accidental discovery of taonga or kōiwi. Mana whenua will also be given the opportunity to comment on draft management plans prior to submission to Council for certification. As also noted above, the identification of cultural effects (and scale and significance of them), must be considered

⁵⁰ See Overview of Tangata Whenua Engagement Report dated 26 March 2025, attached as Appendix F..

⁵¹ Ngāti Tamaoho Statutory Acknowledgement Area (OTS-129-22 and OTS-129-06).

as preliminary, pending the further consultation and engagement that SAL intends to undertake with mana whenua.

11.1.3 Section 104(1)(ab) of the RMA – Measures proposed for ensuring positive effects on the environment to offset and compensate for any adverse effects on the environment

Under section 104(1)(ab) of RMA, a decision maker must consider the positive effects on the environment to offset or compensate for any adverse effects on the environment that will result from the proposed activity.

There is a functional need for the expansion of the Sutton Block to be located within the area identified, as that is where the resource resides in situ, and predominantly within an area zoned specifically for aggregate extraction. As set out above, avoidance of all adverse effects is not practicable. Where adverse effects cannot be avoided, then they have been remedied and mitigated.

Residual adverse effects on freshwater and terrestrial ecology are proposed to be offset through a comprehensive ecological package designed to achieve a Net Gain. This includes 62.32 ha of revegetation and 108.35ha of forest enhancement, 3,341 m lineal metres of stream enhancement, and 4.04 ha of wetland restoration, which will be protected in perpetuity by way of covenants. The overall Net Gain the proposed package is anticipated to achieve will be of a quantum to address the residual adverse effects. The revegetation planting and forest enhancement have been designed to significantly improve the connectivity between three SEA and the wider Hunua Ranges.

For these reasons, it is considered that in time the ecological package is expected to result in long-term regional ecological benefits that offset the effects. In particular the restoration and enhancement of degraded aquatic habitats will provide for habitat creation, biodiversity gains and restore connectivity to existing habitats. From a terrestrial perspective there will be significant restoration of the Drury property, where areas of vegetation will be reconnected and enhanced.

11.1.4 Relevant provisions of planning documents

11.1.4.1 Introduction

Section 104(1)(b) of the RMA requires an application for a resource consent to have regard to any relevant provisions of documents listed in s104(1)(b)(i-vi). The proposal is subject to a range of planning documents:

- National Environmental Standards for Contaminated Land, Freshwater and Air Quality;
- National Policy Statements for Highly Productive Land, Freshwater Management and Indigenous Biodiversity;
- the Regional Policy Statement (RPS) contained within the AUP and
- the regional and district components of the AUP.

The Project is assessed against these planning documents in the following sections, and a detailed assessment of the Project against the RPS and AUP is attached at Appendix H. These assessments conclude that the Project is overall consistent with the policy direction set out in these documents.

The detailed assessment of relevant AUP objectives and policies in Appendix H has been structured on a provision-by-provision basis and provides detailed comment on how Project elements engage with the relevant policy direction. The following assessment provides a summary of this assessment with a particular focus on the policy sets that apply to key Project activities and taking fair appraisal of the relevant objectives and policies, read holistically, interpreting them in their context.

For the Project, the provisions of the AUP and RPS which anticipate and enable quarrying and mineral extraction need to be considered alongside protections provided to freshwater systems,

indigenous biodiversity and cultural heritage and values in the AUP, as well as the NPS-FM and NPS-IB.

Read together, the provisions of these documents recognise the significance of mineral extraction activities, and the highly-constrained nature of their locations (i.e. the minerals *are where they are*), while requiring that effects on environmental values are either minimised, or where impact cannot be minimised, which is more likely, offset through other measures. The purpose of the offset measures being to avoid harm to the relevant values overall. The Project has achieved this requirement through a comprehensive package of mitigation measures, which ensure that the underlying values protected by the 'protective policies' are not materially harmed (and indeed, are generally enhanced).

11.1.5 National environmental standards

National Environment Standards prescribe standards for environmental matters in accordance with section 43 of the RMA. Each local authority must enforce the National Environmental Standards. Where specified, a local authority can impose stricter or more lenient standards than those set out in a National Environmental Standard. The relevant National Environmental Standards are set out below.

Overall, the proposal requires consent under a number of National Environmental Standards as set out in Section 1.3. These consents are included and assessed within this application and the Project is able to meet the requirements set down to enable the grant of consent.

11.1.5.1 National Environmental Standards for Contaminated Land 2011

The Resource Management Act (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES-CS) came into effect in 2012. The NES applies to assessing and managing the actual or potential adverse effects of contaminants in soil on human health from five activities, including soil disturbance. The NES-CS seeks to ensure that land affected by contaminated soil is appropriately identified and assessed before it is developed. If necessary, affected land will need to be remediated or the contaminants will need to be contained.

A PSI (Technical Report M) was undertaken to identify actual or potential sources of ground contamination within parts of the Sutton Block LOQ footprint. The PSI identifies certain HAIL activities as more than likely to have taken place within discrete sections of the LOQ footprint. The PSI concludes that large areas of the Sutton Block are confirmed as representing non-HAIL areas and are exempt from further requirements of the NES-CS under Regulation 5(7).

Investigation data from the DSI (Technical Report N, Volume 2) identified that HAIL activities may have impacted soils surrounding the dwelling, storage shed, and shearing shed located in northern portion of the LOQ footprint. Contaminants were detected in soil samples in discrete areas around the dwelling, storage shed, and shearing shed above the published concentrations for non-volcanic soils but are below the NES-CS Soil contamination standards and Soil Guideline Values for commercial/industrial land uses. Accordingly, SAL are seeking resource consent as a controlled activity under NES-CS Regulation 9(1) and 9(3) for the proposed soil disturbance and change in land use.

11.1.5.2 National Environmental Standards for Freshwater 2020

The Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-F) came into force in 2020 and is relevant as several natural inland wetlands have been identified within and in proximity to the Sutton Block LOQ footprint and the proposed works involve

reclamation of streams. Quarrying activity,⁵² is proposed within, or within 100 m setback, of natural inland wetlands and within the beds of streams. Accordingly, SAL is seeking resource consent as a discretionary activity under Regulation 45A(1)⁵³-(4) and 57 of the NES-F.

Regulation 45A(1) – (4) provides:

- (1) *Vegetation clearance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of quarrying activities.*
- (2) *Earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of quarrying activities.*
- (3) *Earthworks or land disturbance outside a 10 m, but within a 100 m, setback from a natural inland wetland is a discretionary activity if it—*
 - (a) *is for the purpose of quarrying activities; and*
 - (b) *results, or is likely to result, in the complete or partial drainage of all or part of the wetland.*
- (4) *The taking, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if—*
 - (a) *the activity is for the purpose of quarrying activities; and*
 - (b) *there is a hydrological connection between the taking, use, damming, or diversion and the wetland; and*
 - (c) *the taking, use, damming, or diversion will change, or is likely to change, the water level range or hydrological function of the wetland.*

In accordance with Regulation 45A(6) of the NES-F, a resource consent must not be granted unless the consent authority is satisfied that the quarrying activity will provide significant national or regional benefits; that there is a functional need for the quarrying activity in that location and that the effects management hierarchy has been applied.

Regulation 57 provides:

- (1) *Reclamation of the bed of any river is a discretionary activity.*
- (2) *A resource consent for a discretionary activity under this regulation must not be granted unless the consent authority has first—*
 - (a) *satisfied itself that there is a functional need for the reclamation of the river bed in that location; and*
 - (b) *applied the effects management hierarchy.*

As addressed in section 2 of the AEE, the removal of vegetation, earthworks and diversion of water is for the quarrying activities. As discussed in section 9 of the AEE and in the Economic Impact Assessment in Technical Report S, Volume 2, the quarrying activity at Drury will provide significant regional benefits and is vital for the growth and maintenance of the region, both in regard to housing, business and infrastructure. There is a clear functional need for the quarrying to occur in the location of the Sutton Block as that is where the aggregate resource is located in situ. This is supported by the Sutton Block area being zoned specifically for this purpose through the AUP.

⁵² Quarrying activities is defined in the National Planning Standards 2019.

⁵³ Rule 45A explicitly provides for Quarrying activities as a Discretionary activity. This Rule was implemented into the NES-FW on 5 January 2023.

The layout of the proposed Sutton Block has been changed to specifically avoid adverse effects on natural and cultural features where possible, including specifically the avoidance of a long section of stream in the south of the site adjoining Kaarearea Paa, and avoidance of the upper catchment and streams located within the north-eastern corner within SEA_T_5323. The proposal has sought to work through the mitigation hierarchy with avoidance and mitigation the first priorities.

11.1.5.3 National Environmental Standard for Air Quality

The National Environmental Standard for Air Quality (NES-AQ) came into effect in June 2011. The NES-AQ sets out the ambient air quality standards for a number of contaminants for the protection of human health.

The standards specified in the NES-AQ are considered in the Air Quality Assessment (Technical Report K, Volume 2). This report concludes that given the low background PM₁₀ concentrations in the surrounding environment, with the small contribution to PM₁₀ from quarry activities, total cumulative concentrations of PM₁₀ will be maintained well below the NES-AQ criteria. In addition, with the implementation of a Dust Management Plan, as required by the conditions of consent, all fugitive and point sources for discharges of contaminants to air will be appropriately managed.

The NES-AQ does not cause any issues for granting of the proposed air discharge permit for the proposed quarrying activities.

11.1.5.4 Resource Management (Measurement and Reporting of Water Takes) Regulations 2010

The proposal includes an application for a water take permit, which will exceed a rate of 5 litres/second, therefore the Water Take Regulations must be considered. Recommendations set out in Technical Report L and Conditions attached as Appendix I set out the proposed regime for measuring and reporting water use in accordance with these Regulations.

11.1.6 National policy statements

Overall, the proposal is considered consistent with the relevant National Policy Statements, as set out below in more detail.

11.1.6.1 National Policy Statement for Highly Productive Land 2022

The National Policy Statement for Highly Productive Land (NPS-HPL) came into force on 17 October 2022. It provides direction to protect highly productive land from inappropriate subdivision, land use and development under the RMA.

The NPS-HPL is limited to land that meets the transitional definition of 'highly productive land', being land zoned as rural or rural production and classified as Land Use Capability (LUC) 1 - 3. The northern portions of the Sutton Block are zoned Rural – Mixed Rural in the AUP. However, the land is classified as LUC 6 as mapped by the New Zealand Land Resource Inventory (NZLRI).

Accordingly, the NPS-HPL does not apply, and no further assessment is required.

11.1.6.2 National Policy Statement for Freshwater Management 2020

The National Policy Statement for Freshwater Management 2020 (NPS-FM) came into force on 3 September 2020 and provides direction on how local authorities should manage freshwater (including groundwater) under the RMA.

The central concept of the NPS-FM is 'Te Mana o te Wai' which *"is a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o te*

Wai is about restoring and preserving the balance between the water, the wider environment, and the community."

The Resource Management (Freshwater and Other Matters) Amendment Act was passed in October 2024 which amends sections 92, 104 and Schedule 4 of the RMA to remove the requirement to consider the hierarchy of obligations contained in clauses 1.3(5) and 2.1 of the NPS-FM from resource consent applications, and resource consent decisions.

An assessment of the Project against the relevant provisions of the NPS-FM is set out in Table 11.1 below.

The Project is consistent with all relevant provisions in the NPS-FM, and therefore consistent with the NPS-FM's overall policy direction.

Table 11.1: Assessment against NPS-FM

Reference	Objective/policy	Comment
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 2024 amendments to the NPS-FM excludes the consideration of the hierarchy of obligations contained in this objective from resource consent applications. The matters listed in (a)-(c) now carry equal weight. Overall, the Project is consistent with these matters for the following reasons. The purpose of the project is to secure a high-quality, future supply of local sourced aggregate to the Auckland Region to enable the efficient and cost-effective delivery of regionally and nationally significant infrastructure projects and urban development. These activities in turn will provide positive social and economic benefits. The construction and operation of the quarry has been designed to try to avoid adverse effects on freshwater systems where at all practicable. The very nature of the activity does mean that there will be loss of freshwater streams. However, mitigation measures are proposed to go towards offsetting this loss. As set out in the ESCR (Technical Report R), the matters set out in Objective 1 were taken into account when preparing the ESCP. The ongoing operation of the quarry will be managed carefully, with robust controls in place to manage sediment and other contaminants, to ensure that the life-supporting capacity is safeguarded.
Policy 1	Freshwater is managed in a way that gives effect to Te Mana o te Wai.	Te Mana o te Wai is a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the

Reference	Objective/policy	Comment
		health and well-being of the wider environment. It protects the mauri of the wai. As set out in the ESCR (Technical Report R), adoption of the measures detailed in the ESCP are anticipated to manage and mitigate sediment loading downstream to achieve a level of water quality management that are consistent with the policy direction of the NPS-FW and in accordance with Te Mana o te Wai. The project has been designed in a way to avoid effects on freshwater where at all possible, while mitigating and then off-setting where that is not possible. Prioritising water quality is important, and the design of the quarry and the associated management plans and conditions of consent will ensure the water quality of freshwater systems at the site is maintained and enhanced in some instances. SAL has undertaken extensive consultation with iwi groups and a focus of this has included the protection of water. A number of values identified by iwi have been incorporated into the project, including the redesign of the pit, which avoided further stream and wetland loss, the option to incorporate organic flocculants for sediment control, augmentation of stream base flows from the same aquifer naturally supply the stream riparian planting to enhance stream reaches and robust sediment control measures to protect the mauri of the wai. Proposed conditions of consent will provide an opportunity for mana whenua to review management plans including those relating to freshwater management. On this basis, the Project is consistent with Policy 1.
Policy 2	Tangata Whenua are actively involved in freshwater management (including decision-making processes), and Māori freshwater values are identified and provided for.	SAL has received a number of draft and final CVA reports for the project, following extensive consultation over a 3-year period with various Iwi groups. This is documented in Appendix F. These have identified values of significance to Tangata Whenua and described the relationships they have with the site and its features.

Reference	Objective/policy	Comment
		This has resulted in changes to the proposed pit design, to pull the pit back and away from Kaarearea Paa and avoid further stream loss. Effects on water have been addressed through implementation of design measures and mitigation, offset measures. These are outlined in the Technical Reports contained in Volume 2.
Policy 6	There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted.	The proposal results in the loss of natural inland wetlands. These wetlands are not particularly high-quality, and have large amounts of exotic species present. This is detailed in the Assessment of Ecological Effects, Technical Report A. The total wetland loss is 1.88 ha. This loss is unavoidable as it is located within the quarry pit and within the SPQZ land, which is earmarked for future quarrying activity. This loss of wetland at the Drury site will be addressed through the offset package proposed at the Tuakau offset site which will include 4.04 ha of wetland restoration, including the creation of wetland habitat. This restoration and enhancement is intended to provide for a positive aquatic ecological benefit and will ensure that overall there is no loss of extent of wetlands across the two properties. As a result, the Project is consistent with Policy 6.
Policy 7	The loss of river extent and values is avoided to the extent practicable.	The proposal results in the loss of 3,341 lineal metres of permanent and intermittent stream reaches on the property. The majority of these are within the SPQZ and their loss is unavoidable to enable the realisation of the zone's purpose. These stream reaches are progressively lost as the quarry pit design progresses and therefore the total loss will not be experienced immediately. The pit has been re-designed to avoid some stream loss, with the pit pulled back from Kaarearea Paa, and from encroaching into the upper catchment in the north-eastern corner which has resulted in stream length being retained. While loss of extent will occur and cannot be replicated, this has been avoided as far as practicable. Further, the loss of

Reference	Objective/policy	Comment
		values will be offset, with approximately 3,341 lineal metres of stream to be enhanced with riparian planting, fencing and restoration within SAL landholdings and at the Tuakau offset site. While the stream and offset package will result in a 1:1 ratio of stream loss to gain, the overall stream bed loss area to gain will be 1:10. Overall the programme of stream and wetland offset over time will result in a net gain. The Project is therefore consistent with Policy 7.
Policy 9	The habitats of indigenous freshwater species are protected.	As outlined in the EclA, limited freshwater species were found on site through surveys. However, longfin eels are present. In order to protect these species, the EMP (Technical Report B, Volume 2) includes a Native Freshwater Fish Management Plan which set out methods to capture fish, measures to prevent fish re-entering the reach prior to reclamation, and relocation sites. The proposed offset work both on site and at the Tuakau site, will improve habitats for indigenous freshwater species, and the Project will result in net gains in terms of habitat creation. The Project is therefore considered to be consistent with Policy 9.
Policy 11	Freshwater is allocated and used efficiently, all existing over-allocation is phased out, and future over-allocation is avoided.	There is sufficient water available within the regional aquifer underlying the site to provide efficient allocation of water for SAL's proposed future take. SAL proposes to re-use water within the quarry floor for the purposes of dust suppression and stream supplementation, which is considered an efficient use of water. The Project is therefore consistent with Policy 11.

11.1.6.3 National Policy Statement for Indigenous Biodiversity 2023

The National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB) came into force on 4 August 2023. It provides increased clarity and direction to councils on their roles and responsibilities for identifying, protecting and maintaining indigenous biodiversity under the RMA. An assessment of the proposal against the relevant provisions of the NPS-IB is set out in Table 11.2 below.

Clause 3.10 specifies how adverse effects on significant natural areas (SNA) will be managed for new subdivisions, use and development. However, the NPS-IB also specifically sets out a list of exceptions under clause 3.11. Of relevance to this application is the following exception for aggregate extraction:

- (1) *Clause 3.10(2) does not apply, and any adverse effects on an SNA of a new subdivision, use or development must be managed in accordance with clause 3.10(3) and (4), if: [...]*
- (a) *the new subdivision, use or development is required for the purposes of*
 - (iii) *aggregate extraction that provides significant national or regional public benefit that could not otherwise be achieved using resources within New Zealand; and*
 - (b) *there is a functional need or operational need for the new subdivision, use or development to be in that particular location; and*
 - (c) *there are no practicable alternative locations for the new subdivision, use or development.*

This exception provides context to the consideration and assessment of quarrying activities under the NPS-IB. It reinforces the position that quarrying activities are likely to result in some adverse effects or loss of biodiversity due to their locational requirements. As outlined above, there is a functional need for the quarrying to occur in the proposed location due to the presence of the aggregate, and there are no practicable alternative locations for the proposed extension of the Drury Quarry due to the existing FOH facilities that will be used to process the aggregate from the Sutton Block area.

The Project is consistent with all relevant provisions of the NPS-IB, and therefore consistent with the NPS-IB's overall policy direction.

Table 11.2: Assessment against NPS-IB

Reference	Objective/policy	Comment
Objective 1	The objective of this National Policy Statement is: (a) to maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity after the commencement date; and (b) to achieve this: (i) through recognising the mana of Tangata Whenua as kaitiaki of indigenous biodiversity; and (ii) by recognising people and communities, including landowners, as stewards of indigenous biodiversity; and (iii) by protecting and restoring indigenous biodiversity as necessary to achieve the overall maintenance of indigenous biodiversity; and (iv) while providing for the social, economic, and cultural wellbeing of people and communities now and in the future.	The Sutton Block is subject to a number of scheduled SEA areas within the AUP as well as other pockets of indigenous biodiversity as identified through the ecological surveys on site. Much of this is located within the SPQZ. In total 16.78 ha of indigenous vegetation and fauna habitat will be removed to accommodate the pit and associated quarry infrastructure. The vegetation affected includes Broadleaf Podocarp Forest (7.33 ha), Kānuka scrub/forest (8.8 ha) and Rock Forest (0.65 ha). Some individual mature native trees will also be lost. The project is consistent with the NPS-IB and the stated objective of maintaining indigenous biodiversity so that there is no overall loss. This is able to be achieved as where at all possible vegetation of significance has been retained and protected, including through the use of covenants and setbacks, while still enabling extraction of aggregate which is important to the functioning and growth of the region. In addition, where effects have not been

Reference	Objective/policy	Comment
		able to be avoided or mitigated, the project proposes to offset and compensate for vegetation loss. It is proposed that a total of 62 ha of revegetation and 108 ha of native forest enhancement through mammalian predator and pest control will be undertaken. The offset and compensation sites are predominantly located within the SAL landholdings and are therefore within close proximity to the impact sites and are within the same ecological district. The two offset sites, Hingaia Islands and Tuakau Site offer more favourable site conditions to offset some of the larger mature relict trees and are also located within close proximity to the impact site and are within the same ecological district. A net gain in biodiversity values for terrestrial ecology is expected following the completion of all offset and compensation actions. The Project is therefore consistent with Objective 1.
Policy 1	Indigenous biodiversity is managed in a way that gives effect to the decision-making principles and takes into account the principles of the Treaty of Waitangi.	The project has been widely consulted on with a number of iwi groups. This has included discussion around how to protect indigenous biodiversity on the site and understanding the cultural values of this biodiversity. Tangata Whenua have given a strong preference for native planting to occur for any revegetation on site (whether for ecological or landscape purposes). This has been adopted by SAL, with changes made to some of the proposed landscape planting to be predominantly indigenous (with the exception of a small cluster of exotic planting) to maximise visual screen while protecting indigenous biodiversity. The Project is therefore consistent with Policy 1.
Policy 2	Tangata Whenua exercise kaitiakitanga for indigenous biodiversity in their rohe, including through: (a) managing indigenous biodiversity on their land; and (b) identifying and protecting indigenous species, populations and ecosystems that are taonga; and (c) actively participating in other decision-making about indigenous biodiversity	The proposed conditions of consent require the preparation of a Cultural Management Plan in collaboration between SAL and Tangata Whenua. This approach has been agreed between SAL and Tangata Whenua as an appropriate mechanism for setting out matters, methods and processes for working together at the site. In addition the conditions of consent provide for Tangata Whenua to comment on draft management plans, including those

Reference	Objective/policy	Comment
		relating to indigenous biodiversity. It is therefore considered that the Project is consistent with Policy 2.
Policy 9	Certain established activities are provided for within and outside SNAs	There is recognition through the NPS-IB of aggregate extraction activities and the role they play. It is recognised through the exceptions listed in the NPS-IB clause 3.11 that aggregate extraction activities are not required to avoid adverse effects on SNA areas if they provide significant national or regional public benefit that cannot otherwise be achieved using resources within New Zealand. The Sutton Block is part of the wider Drury Quarry landholdings, which are located on a site that contains significant in situ aggregate resource. The resource is so significant, that the site, including the majority of the Sutton Block is specifically zoned for quarrying activities in the AUP. Drury Quarry is the largest aggregate quarry in Auckland and supplies approximately 30% of Auckland's aggregate supply. The Sutton Block will enable this significant contribution to Auckland's aggregate supply to continue as the existing Drury pit is exhausted. The Project is therefore consistent with Policy 9.
Policy 10	Activities that contribute to New Zealand's social, economic, cultural, and environmental wellbeing are recognised and provided for as set out in this National Policy Statement	The supply of aggregate is vitally important to the growth and development of Auckland. Aggregate is used widely in a number of applications, including the construction of infrastructure, housing and roading. All of these activities in turn contribute significantly to the social and economic fabric of New Zealand. Due to the in-situ nature of aggregate, the ability to avoid areas of indigenous biodiversity is limited, and instead where avoidance is not possible, offset and compensation measures are proposed to ensure that overall indigenous biodiversity is maintained. The Project is therefore consistent with Policy 10.

11.1.7 Section 104(1)(b)(v) and (vi) of the RMA - Auckland Unitary Plan (Operative in Part)

The AUP is a combined regional and district plan as provided for under section 80 of the RMA and also includes the regional policy statement. An assessment of the AUP is required under section 104(1)(b)(v) and (vi) of the RMA. The plan is set out in a clear hierarchy of provisions, beginning with the regional policy statement provisions first. These objectives and policies set the high-level framework and give the overview of the issues of the region. The subsequent objectives and policies within the regional and district provisions must give effect to these. In other words, the AUP is deliberately a vertically integrated plan, which is intended to be read and applied as such.

A provision-by-provision analysis of the Project against the RPS and AUP is contained at Appendix H.

11.1.7.1 Section 104(1)(b)(v) of the RMA - Auckland Unitary Plan Regional Policy Statement

The AUP RPS is required by sections 59 to 62 of the RMA, to provide an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region. The AUP RPS must also give effect to any national policy statement. It also has a relationship with the Auckland Plan, which is prepared under sections 79 and 80 of the Local Government (Auckland Council) Act 2009 and sets out a long-term strategy for Auckland's growth and development.

The AUP RPS provisions set out a number of issues of regional significance, creating an over-arching framework which is given effect to in the regional and district plan sections of the AUP. The AUP RPS objectives and policies are concerned with managing effects, but also with supporting and enabling regionally significant infrastructure to operate efficiently to support the population. Of particular significance to this proposal are the following sections of the AUP RPS:

- Urban growth and form – Auckland's growing population increases demand for housing, employment, business, infrastructure, social facilities and services. Growth needs to be provided for, including the provision and use of infrastructure in a way that is efficient, effective and timely.
- Infrastructure, transport and energy – the quality of the environment and the well-being of people and communities are affected by the management of and investment in infrastructure.
- Natural heritage – outstanding natural features and landscapes are identified and protected, ancestral relationships of Tangata Whenua and their culture and traditions with the landscapes are recognised and provided for.
- Natural resources – the combination of urban growth and past practices have placed pressure on land and water resources, including habitats and biodiversity, reduced air quality and increased demand for mineral resources.
- Issues of significance to Tangata Whenua – recognising Treaty of Waitangi, protecting Tangata Whenua culture and landscapes and recognising the interests, values and customary rights.

Analysis of the proposal against the key RPS themes outlined above, alongside the associated regional plan and district plan provisions of the AUP is provided in Table 11.3 below. A detailed assessment of the proposal against the specific objectives and policies of the AUP is provided in Appendix H.

Table 11.3: Key themes

Theme	Relevant objectives and policies	Comment
Special Purpose – Quarry Zone		

Theme	Relevant objectives and policies	Comment
Quarry zone character and adverse effects	H28.2(1) H28.2(2) H28.3(1) H28.3(2) H28.3(3) H28.3(4) H28.3(5) H28.3(6) H28.3(7)	The majority of the Sutton Block (72%) is located within the SPQZ. This zone provides for significant mineral extraction activities to ensure that mineral extraction can continue in a manner that minimises adverse effects. The zone prioritises supply of mineral sources from within Auckland and seeks to ensure that demand for minerals can be met. The proposed Sutton Block pit is within the SAL Landholdings and contains significant mineral resource. Furthermore, given the Sutton Block expansion is adjacent to the existing Drury Quarry pit, the existing quarry plant and ancillary infrastructure can be utilised, allowing for efficient use of an existing well-equipped facility. The Sutton Block is compatible with the existing land use within the SPQZ, being Drury Quarry. The current wider landscape is already characterised by existing quarrying activities. Importantly, the Sutton Block has been designed to avoid, remedy or mitigate effects on natural and physical resources and where that is not possible to offset or compensate for them. For example, the pit was shifted further north to avoid the key landscape feature and wāhi tapu historic pā site, Kaarearea Paa. Overall, the proposed Sutton Block pit is enabled by, and will achieve the outcomes sought within, the objectives and policies of the Quarry Zone.
Urban growth and form		
Providing for population growth	B2.2.1(1) B2.2.2(2) B2.3.1(2) B3.3.2(2)	The population of the Auckland region is expected to grow by approximately one million people (400,000 households) by 2040. Aggregate resource is necessary to enable continued development in Auckland, both in regard to infrastructure development and construction of residential houses to support wider housing initiatives. The AUP also acknowledges in B2.2.2(2)(k), that aggregate can only be sourced from where it is naturally found in situ, stating urban growth areas should avoid locating where commercially viable mineral resources are located. Drury Quarry currently supplies approximately 30% of the aggregate resource in Auckland and therefore is a significant contributor to Auckland achieving these policies. However, based on current demand estimates, the existing Drury Quarry pit will provide approximately 20 years of aggregate supply. The Sutton Block will help ensure a continuous aggregate supply beyond this time, because as the existing Drury Quarry pit nears the end of its life and reduces aggregate extraction, the Sutton Block pit will be increasing its extraction. The Sutton Block expansion will enable consistency of aggregate supply from a site which is adjacent to Drury Quarry, allowing the existing quarry plant and ancillary infrastructure to be utilised. Accordingly, the expansion is an efficient use of an existing well-equipped facility. The Sutton Block also enables more effective provision of aggregate

Theme	Relevant objectives and policies	Comment
		being located in close proximity to projected future growth areas in South and East Auckland. Overall, the development of the Sutton Block will enable the use of an existing commercially viable aggregate resource, which will directly support the growth of Auckland.
Health, safety and wellbeing of communities	B2.3.1(3) B3.2.1(2)	No public access to the Sutton Block pit will be provided and there are no significant off-site health and safety effects. Potential adverse effects will be avoided, remedied or mitigated through the implementation of appropriate management and operation measures.
Infrastructure		
Enabling infrastructure	B3.2.1(1) B3.2.1(3) B3.2.2(9) B3.2.2 (6) B7.4.2(1) B7.5.1(2) E26.2.1(3) E26.2.1(4) E26.2.1(8)	Ensuring the seamless provision of infrastructure is vital for a resilient and well-functioning city and society. However, the design, consenting and development of large-scale infrastructure is not a straightforward exercise and often involves long timeframes. For this reason, the efficient development of infrastructure is recognised and enabled through these objectives and policies. While the proposed Sutton Block is not infrastructure in itself (rather it is an aggregate extraction activity), a large part of the need for continued aggregate supply is to support the maintenance and development of infrastructure. Without this aggregate supply, it is likely that the provision of infrastructure would be compromised. Aggregate should be cost-effective to better facilitate development. Due to its accessibility and proximity to projected future growth areas in South and East Auckland, the Sutton Block is expected to save costs on transport compared to alternative sources. Overall, securing this future aggregate supply will assist in facilitating the delivery of infrastructure and development projects with significant regional or national benefits.
Mana Whenua		
Recognition of the Treaty of Waitangi	B6.2.1 (1) B6.2.1 (2) B6.2.2 (1)	SAL has undertaken consultation with iwi in the region and continues to undertake consultation to ensure that their views regarding the proposal can be taken into account, are recognised and can be addressed where at all possible. To-date, this engagement has occurred via hui, meetings, visits to Drury Quarry, discussions and social interaction. As described in Section 9 of the AEE, SAL are working closely with Ngāti Tamaoho, Ngaati Te Ata Waiohū, Te Ākitai Waiohū, Ngāi Tai ki Tamaki and Ngāti Whanaunga with the intention of building a partnership with them. SAL has received draft CVAs from Ngāti Tamaoho, Ngāti Te Ata Waiohū, Ngaati Whanaunga and Ngāi Tai Ki Tamaki which has provided important background context and information about the places and values of importance on site. In recognising the role of Tangata Whenua as kaitiaki with specialist historical knowledge of the area, feedback received through the engagement process has directly influenced the design of the Sutton Block. Specifically, the proposed Sutton

Theme	Relevant objectives and policies	Comment
		Block was moved further north from Kaarearea Paa, creating a 13 ha buffer between the LOQ extent and the Historic Heritage Overlay. SAL also supported the inclusion of a Site of Significance to Mana Whenua overlay be scheduled over Kaarearea Paa as part of Plan Change 102 to recognise the importance of this feature to Tangata Whenua. The Project avoids the Site of Significance to Mana Whenua overlay area, noting this meant a portion of the site zoned as SPQZ, became unable to be utilised for the quarry activities anticipated by the zone. In addition, the principles of the Treaty, including rangatiratanga and partnership have been adopted by SAL, and they have been working with Tangata Whenua to identify opportunities for kaitiakitanga and working together to protect sites of significance. The intention is to document these partnership opportunities through a proposed Cultural Management Plan, which will be set out through the proposed conditions of consent.
Recognising Mana Whenua values	B6.3.1 (1) B6.3.1 (2) B6.3.2 (1) B6.3.2 (2) B6.3.2 (3) B6.3.2 (4) B6.3.2 (6)	As stated above, SAL has undertaken extensive engagement over a 3-year period with various Iwi groups and has received a number of draft CVA reports. While each CVA is different and identifies things as they pertain to each Iwi or hapu group, there are some common themes also. The particular sites of significance within the locality includes Kaarearea Paa; the Hingaia Stream catchment including important waterbodies such as Hingaia Stream; Maketu Stream; Mangawheau Stream; Waihoihoi Stream and Waiora Stream; vegetation and associated fauna and taonga species. Although the Sutton Block was redesigned to avoid wāhi tapu sites such as Kaarearea Paa, the proposed Sutton Block requires unavoidable modification of the whenua through substantial earthworks and physical works. The effects on cultural values are assessed in Section 9.11 of the AEE, but the overall level of effect is to be determined by Tangata Whenua. Broadly, the proposal will result in residual terrestrial and freshwater effects, which could not be avoided, mitigated or remedied. However, these effects are addressed through a comprehensive ecological offset package which is designed to achieve a net gain in ecological values overall. A Cultural Management Plan is proposed to be prepared in collaboration with Tangata Whenua to ensure cultural effects associated with works in proximity to these sites are adequately addressed throughout the life of the Project.
Protection of Mana Whenua cultural heritage	B6.5.1 (1) B6.5.1 (2) B6.5.1 (3) B6.5.2 (2) B6.5.2 (5) B6.5.2 (8)	SAL recognise and acknowledge the relationship that Mana Whenua have with the land and their cultural heritage. There are a number of NZAA sites within the wider Drury landholding, including importantly Kaarearea Paa. The project does not directly impact the sites which are subject to HNZPT 2014 or scheduled in the AUP. While these sites are specifically identified through AUP and NZAA mechanisms, SAL recognise that engagement with iwi is an integral part of understanding the cultural values and wider site beyond scheduled areas from a cultural heritage perspective.

Theme	Relevant objectives and policies	Comment
		The engagement and consultation SAL has undertaken with Mana Whenua over the last 3 years and is on-going. This has provided information and helped identify values and matters of cultural significance, as outlined above and detailed in the AEE. Where at all possible the protection of these values have been reflected into design and operation of the proposed pit.
Sites and Places of Significance to Mana Whenua Overlay	D21.2(1) D21.2(2) D21.3(1) D21.3(2) D21.3(3) D21.3(5) D21.3(10) D21.3(11)	As stated above, in response to concerns raised during consultation with Ngāti Tamaoho and Ngaati Te Ata Waiohū in 2023, SAL has redesigned the LOQ extent to avoid all scheduled wāhi tapu and taonga sites within the project area. The LOQ footprint was moved further to the north from Kaarearea Paa, creating a 13 ha buffer between the edge of the LOQ extent and the Historic Heritage Overlay extent associated with Kaarearea Paa. Since this time, the wider extent of Kaarearea Paa has been scheduled as a Site of Significance to Mana Whenua under Plan Change 102 (111, Kaarearea Paa) which has immediate legal effect. Accordingly, the Sutton Block LOQ extent continues to avoid this Site of Significance, noting this meant a portion of the site zoned as SPQZ, became unable to be utilised for the quarry activities anticipated by the zone. In terms of enhancement, revegetation planting is also proposed as part of the on-site terrestrial offset. Specifically, part of this planting is proposed within the pasture area of the Site of Significance. This planting will provide enhanced ecological connectivity across the site, by connecting to existing areas of vegetation including SEA_T_5349 and SEA_T_5323. In addition to the methods above, a Cultural Management Plan is proposed to be prepared in collaboration with Tangata Whenua, in part, to ensure cultural effects associated with works in proximity to these sites are adequately addressed throughout the life of the Project. Overall the proposal is consistent with the objective and policies.
Natural Resources		
Stormwater management	B7.4.1(4) B7.4.2 (9) E1.3(8) E1.3(10) E1.3(11) E1.3(13)	The management of stormwater on the site both during the construction and operation of the quarry is vital for managing effects on freshwater systems. The site will be managed to ensure that stormwater in contact with development areas will be passed through the sedimentation ponds and then the on-site water treatment system. As stated in the ESCR, the proposed ESC methodology is the best practicable option for the proposal. It represents best-practice control measures, staged establishment, quarrying activities, and progressive stabilisation. It is consistent with the industry-leading approach that has appropriately minimised sediment discharges and downstream effects on multiple projects throughout the Auckland Region. Overall, the proposed discharge of treated sediment laden water during the earthworks, stream works, and subsequent quarrying is consistent with the relevant

Theme	Relevant objectives and policies	Comment
		policies and contributes to the outcomes they seek to achieve with respect to water quality and downstream environments.
Indigenous biodiversity	B7.2.1(1) B7.2.1 (2) B7.2.2 (1) B7.2.2 (5) D9.2 (1) D9.2 (2) D9.2 (3) D9.3 (1) E3.2(4) E3.2(15) E15.3(2) E15.3(3) E15.3(4) E15.3(7)	The basis of the objectives and policies relating to areas of significant biodiversity within the AUP, is to protect and maintain those areas where possible and to look to opportunities to enhance areas of degradation. As identified through the Assessment of Ecological Effects (Technical Report A, Volume 1), the area proposed for the Sutton Block is primarily pasture, with pockets of wetlands, streams and bush areas. Some of the bush areas are identified as SEA. It is noted that the relevant objectives and policies of the RPS and the SEA Overlay Chapter (D9) of the AUP relate to <i>areas</i> of significant indigenous biodiversity, or to the indigenous biodiversity within significant <i>areas</i>. These require assessment at the “area-wide” or habitat level, and in some cases, such as this, the objective can be met despite there being a loss of some biodiversity on a more “micro” level (ie individual flora or fauna). Accordingly, the proposed Sutton Block pit has been designed and developed, with particular attention being given to these natural values. Notably, the pit has been moved away from Kaarearea Paa to provide protection to important cultural heritage and the valued Rock Forest that is located within the Pa site. In addition, by moving the pit away from Kaarearea Paa, it has resulted in avoiding removal of 610 m of stream extent and 5,241 m² of wetland area. As discussed in Technical Report C and D, the Project will involve the removal of approximately 14.25 ha of SEA vegetation, both within and outside the SPQZ. Of this, around 7.58 ha is within the SPQZ, while the remainder falls within the Mixed Use Rural Zone. Removal of the SEA vegetation outside the SPQZ has been assessed as having a low – moderate levels of effect. This vegetation has been assessed to predominately consist of low-quality vegetation that is heavily grazed, and lacks native ground cover and understory, despite the SEA scheduling. However, the removal of this portion of SEA will result in some loss of buffering to the wider SEA to the east and north. The offset package has been designed to offset the potential edge effects, as well as the loss of ecological values on fauna and flora through a comprehensive package involving 62 ha of revegetation, 108 hectares of native forest enhancement through replanting and pest control designed to achieve a Net Gain in biodiversity values. Consequently, the areas of significant indigenous biodiversity will be better protected with the Project than without it, and the offset proposed will ensure that no material harm occurs. The Project is therefore consistent with the policy direction in relation to indigenous biodiversity in the AUP, particularly within the SPQZ.
Freshwater systems	B7.3.1 (1) B7.3.1 (2)	The AUP has a clear directive to enhance degraded freshwater systems, minimise loss of freshwater systems and avoid, remedy or mitigate adverse effects on freshwater systems.

Theme	Relevant objectives and policies	Comment
	B7.3.1 (3) B7.3.2 (1) B7.3.2 (4) B7.3.2 (5) B7.3.2 (6) E3.2(1) E3.2(2) E3.2(3) E3.2(4) E3.2(5) E3.2(6) E3.3(1) E3.3(2) E3.3(3) E3.3(4) E3.3(7) E3.3(10) E3.3(11) E3.3(12) E3.3(13) E3.3(15) E3.3(16)	The AUP does not require that loss of freshwater systems be avoided in entirety. These directives flow from the AUP RPS down through the regional plan provisions. While there is a strong theme on protection of freshwater, the provisions also run in partnership with those relating to mineral extraction, which enable the development and operation of quarries, despite the sometimes-unavoidable adverse effects of it on the environment, including freshwater systems. Despite the majority of the proposed Sutton Block footprint being zoned SPQZ, and therefore providing for this future land-use, the overall SAL landholdings contain a large number of freshwater systems including within the quarry footprint area. As a result, there will be a loss of freshwater systems through reclamation. This arises due to the removal of overburden and then the continued quarrying of the pit to reach aggregate. The quality of the affected freshwater systems varies depending on historical land use, with ecological values ranging from Very Low to Moderate. The values of each water system have been identified within Technical Report A. This loss of freshwater systems has been minimised where possible in the design process, including through the redesign of the pit extent, which has resulted in the reduction in stream loss, while recognising that the nature of the activity and its locational constraints, has meant that complete avoidance of freshwater system loss is not able to be achieved. The proposed ecological compensation and enhancement package considers that degraded water systems within the wider SAL landholdings and at the Tuakau offset site are likely to be enhanced through the removal of stock access and the establishment of new riparian planting. Overall, where possible, effects have been avoided or minimised, and where that is not possible mitigation and offset measures have been proposed and are encapsulated through proposed conditions of consent. Therefore, the proposal is broadly consistent with the relevant objectives and policies.
Air Quality	E14.2 (1) E14.2 (2) E14.2 (4) E14.3 (1) E14.3 (2) E14.3 (3) E14.3(5) E14.3 (6) E14.3 (8) H28.3(4) H28.3(7)	The SAL landholdings are primarily zoned SPQZ, with the surrounding area being rural zoning. The SPQZ is characterised as a low air quality environment under the AUP, and the rural zone areas are a medium air quality environment. As set out in Technical Report K, the local ambient air is characterised by rural activities, existing quarry activities and discharges and the State Highway, which is located within close proximity of the SAL landholdings. Importantly, the provisions of the AUP recognise that the operational requirements of mineral extraction activities are recognised and provided for. The policy framework acknowledges that higher levels of dust are expected within the SPQZ and aims to manage dust effects from quarrying activities on adjacent sensitive receivers from reaching unreasonable levels. Dust effects are expected to be

Theme	Relevant objectives and policies	Comment
		internalised, as far as practicable, while recognising the need to allow for the efficient ongoing extraction of mineral resources. As set out in Technical Report K, dust from the Sutton Block project is able to be contained on site. Dust mitigation measures are proposed to manage dust emission to be within 50 to 100 m of the source, resulting in a low likelihood of dust effects on nearby sensitive receptors. The potential human health effects of the proposed discharge have been assessed as low. A comprehensive ongoing monitoring system is proposed to ensure early detection of dust to allow for a range of mitigation measures to be deployed if necessary. Overall, it is considered that the policy is consistent with the relevant air quality objectives and policies.
Vegetation	E15.2(1) E15.2(2) E15.3(1) E15.3(2) E15.3(3) D9.2 (1) D9.2 (2) D9.2 (3) D9.3 (1)	The AUP seeks to preserve as much native vegetation as possible, while also providing for clearance of vegetation where necessary to enable mineral extraction activities. The SAL landholdings cover an area of approximately 515.5 ha and include tracts of both native and exotic vegetation. The exotic vegetation mainly includes plantation pine forest. Within the remainder of the property there is a mixture of pasture and scrub, and areas of established native vegetation. As part of the development of the proposal, areas of native vegetation have been avoided where possible, and enhanced through revegetation and additional planting. These areas are identified and described in Technical Report A. In total 16.78 ha of indigenous vegetation and fauna habitat will be removed to accommodate the pit and associated quarry infrastructure. The vegetation affected includes Broadleaf Podocarp Forest (7.33 ha), Kānuka scrub/forest (8.8 ha) and Rock Forest (0.65 ha). Some individual mature native trees will also be lost. Where at all possible vegetation of significance has been retained and protected, including through the use of covenants and setbacks, while still enabling extraction of aggregate which is important to the functioning and growth of the region. In addition to this, where effects have not been able to be avoided or mitigated, the project proposes to offset for vegetation loss. It is proposed that a total of 62 ha of revegetation and 108 ha of native forest enhancement through mammalian predator and pest control will be undertaken. The revegetation planting and forest enhancement has been designed to significantly improve the connectivity between areas of SEA vegetation across the wider SAL landholdings and the wider Hunua Ranges. The offset is proposed predominately within the SAL landholdings and across two offset sites which are in close proximity to the impact sites and are within the same ecological district. A net gain in biodiversity values for terrestrial ecology is expected following the completion of all offset and compensation actions. Based on the above, the project is considered to be consistent with the provisions relating to vegetation.

Theme	Relevant objectives and policies	Comment
Rural Environment		
Rural character and amenity	E14.2(4) E14.3(2) E14.3(3) E14.3(6) E25.3(9) H19.2.1(1) H19.2.1(5) H19.2.3(1) H19.2.3(2) H19.2.4(2)(b) H19.2.4(3) H19.2.4(1) H19.3.2(1)	The AUP aims to enable and support the use of rural areas for a range of associated activities. However, aggregate can only be sourced from where it is naturally found in situ. This is acknowledged in other provisions of the AUP, which seek to protect commercially viable aggregate from development. Due to the availability of aggregate at the site, much of the SAL Landholdings are zoned SPQZ. However, the site is subject to constraints such as Kaarearea Paa which is avoided by the project based on feedback through the engagement process. It is noted this avoidance results in a portion of the site zoned as SPQZ, being unable to be utilised for the quarry activities anticipated by the zone. The proposed design results in a relatively small proportion of the Sutton Block (28%), extending into Rural Zoning (predominately the Rural Mixed Use Zone). The AUP Rural Zone policy framework explicitly acknowledges that mineral extraction activities are typical features of the Rural–Rural Production and Rural – Mixed Rural Zones and that noise, dust, traffic and visual effects associated with mineral extraction activities generally will not give rise to reverse sensitivity issues. This policy position is reflected in the immediately wider surrounding landscape, where three existing quarries operate within wider rural areas, reinforcing the presence of mineral extraction activities within rural areas. Further, notably, much of the encroachment into the Rural Zone is into areas that could not be easily used for rural development / activities. Specifically, there are only narrow pockets of rural zoned land located between the SPQZ and surrounding SEA, with some distance to existing useable farmland. Moreover, the land is classified as LUC 6 (not considered to be highly productive land containing elite soils as per NPS HPL), meaning it is not suitable for some rural activities such as horticulture. In terms of character, the LVA (Technical Report J, Volume 2) notes that the margins of the SPQZ and Rural Zones do not relate to a change in landscape characteristics, and both areas remain influenced by the quarry activities to the south. The rural character of the area is a mixture of farmland, forestry and rural residential living. There are also large areas of native vegetation within the wider locality including the Hunua ranges. The ONL, Kaarearea Paa, streams and wetlands have been avoided by the design of the Sutton Block as far as practicable. Where avoidance is not possible, mitigation, offset and compensation is proposed, primarily in the form of substantial revegetation. Visually, the proposed quarry footprint is well-contained by existing topography and vegetation, and visual amenity effects are limited to specific properties and specific parts of the quarry operation. Mitigation planting is proposed to help manage visual effects. Noise and dust effects are mitigated through measures set out in the draft conditions (Appendix I).

Theme	Relevant objectives and policies	Comment
		A Condition of consent is proposed to permanently protect in perpetuity the 62 ha of proposed replanting, 108 ha of forest enhancement, primarily covering existing SEA vegetation, along with the proposed riparian planting offered as part of the ecological offset and compensation package through a covenant. This is directly consistent with Policy H19.2.4(3) which explicitly provides for enabling opportunities to enhance areas of existing SEA and protect existing SEA areas. Overall, the proposal is considered to be generally consistent with these objectives and policies.
Land disturbance	E11.2(1) E11.2(2) E11.2(3) E11.3(1) E11.3(2) E11.3(4) E11.3(5) E11.3(7) E11.3(8) E12.2(1) E12.3(1) E12.3(2) E12.3(3) E12.3(4) E12.3(5) E12.3(6)	The quarry will be developed and quarried in stages, minimising the area of soil exposed at any one time. Overland flows on the site will be directed into sedimentation ponds prior to discharge. The nature and scale of the project require large-scale earthworks to be undertaken to remove overburden. The majority of the earthworks on site are already consented through an existing consent (36799, 37315 and 37146). However, there are areas of earthworks proposed that sit outside of the consented earthworks areas and within overlays that are not authorised under the existing consent that are being applied for as part of this application. Land disturbance of scheduled sites such as Historical Heritage Sites, Sites of Significance to Mana Whenua and the ONL overlay have been avoided by the proposed Sutton Block design. However, there is encroachment into SEA's and other natural features such as streams and wetlands that could not be practicably avoided in their entirety. As noted above, where avoidance is not possible mitigation, followed by offset and compensation measures for residual effects have been proposed and are encapsulated through proposed conditions of consent. Based on the above, the works are assessed as being consistent with the relevant objectives and policies.
Environmental Risk		
Natural hazards and flooding	E36.2(1) E36.2(4) E36.2(5) E36.3(3) E36.3(4) E36.3(16) E36.3(21) E36.3(22) E36.3(23) E36.3(25) E36.3(26) E36.3(29) E36.3(30) E36.3(31) E36.3(32)	The quarry pit has been designed to respond to any natural hazards, in particular, areas of seismic activity and floodplains. As set out in Section 9.3, trail batters and blasting are proposed along with ongoing construction monitoring to ensure pit safety. This will ensure the potential risks from natural hazards will be managed to the extent practicable. Accordingly, the works are considered consistent with the relevant objectives and policies.

Theme	Relevant objectives and policies	Comment
	E36.3(33) E36.3(35)	

11.1.8 Section 104(1)(c) – any other relevant matter

11.1.8.1 Ngāti Tamaoho Statutory Acknowledgement

As discussed in section 3.5.3.1 and 10.5.1 of the AEE, Ngāti Tamaoho have a statutory acknowledgment across the site and it is located within their rohe. The Hingaia and Otūwairoa Streams and their tributaries remain water bodies of major cultural, spiritual and historic significance to the iwi. The statutory acknowledgment is part of the Ngāti Tamaoho Deed of Settlement with the Crown dated 30 April 2017.

11.1.8.2 Te Akitai Waiohua Deed of Settlement

The rohe of Te Ākitai Waiohua is identified in the Auckland Council Geomaps database and is based on the Area of Interest agreed between Te Ākitai Waiohua and the Crown in the Deed of Settlement (initialled on 23 December 2020, signed 12 November 2021). The Sutton Block site is located within the area of interest identified in the Deed of Settlement.

11.1.8.3 Auckland Plan 2050

The Auckland Plan is a spatial plan that sets the direction for how Auckland will grow and develop over the next 30 years. The plan was last updated in 2018. The plan includes a number of outcomes and within these outcomes are directions and focus areas. While there are no directly relevant outcomes for quarrying, there are several focus areas, including directions which support development of homes and places, opportunities and prosperity for Auckland's residents and ensuring Auckland's infrastructure is future proofed. The provision of high-quality aggregate resource for the region is an important component in supporting the outcomes sought by the Auckland Plan.

11.2 Conclusion on relevant plans and policy direction

As with any large-scale project that has been carefully designed, the Sutton Block aligns well with the majority of regional and district plan objectives and policies contained in the AUP. Most notably, the majority of the proposal is located within the SPQZ, which specifically provides for mineral extraction and compatible activities to occur. In addition, there is direction to safeguard areas, (such as those contained within the SPQZ), containing regionally significant extractable deposits to enable the benefits of the resource to be realised. This direction acknowledges the functional need for quarrying to occur in areas of identified resource, including the Sutton Block as that is where the aggregate resource is located in situ. For this reason alone, the proposed Sutton Block proposal finds direct support in the policy direction of the AUP set down for mineral extraction activities and is anticipated to occur within the works area.

The Project layout has been modified through the design process to avoid natural and cultural features where possible, such as the upper catchment and streams located within the north-eastern corner within SEA_T_5323 and Kaarearea Paa. The avoidance of Kaarearea Paa meant that a portion of the site zoned as SPQZ, is unable to be utilised for the quarry activities anticipated by the zone and additional resource has been identified outside the SPQZ adjoining the zone to enable the full resource to be realised. Despite the avoidance of natural and cultural features through design, the Project will result in modification of the environment, including terrestrial and freshwater systems. As a result, there are several AUP provisions that the proposal is less aligned with such as indigenous

biodiversity and freshwater systems when read in isolation. However, when considered in the context of broader mineral extraction directives of the AUP and the recognition of their potential to result in loss of natural areas the proposal remains consistent.

Where adverse effects cannot be avoided, then they have been remedied, mitigated or offset. Specifically, residual adverse effects on freshwater and terrestrial ecology are proposed to be offset through a comprehensive ecological package designed to achieve a Net Gain.

Overall, the development of the Sutton Block will enable the use of an existing regionally important aggregate resource, which will directly support the growth of Auckland. The proposal has sought to work through the mitigation hierarchy with avoidance and mitigation the first priorities, supplemented by an ecological compensation and enhancement package to manage residual effects. Accordingly, the Project is considered to be broadly consistent with the objectives and policies of the AUP.

11.3 Part 2 of the RMA

The following sections provide an assessment against the relevant Part 2 matters. Part 2 of the RMA sets out the purpose and principles of the Act. The purpose of the RMA is to promote the sustainable management of natural and physical resources. Section 5 – Purpose

Section 5(1) states that the purpose of the RMA is to promote the sustainable management of natural and physical resources, with sustainable management defined in Section 5(2).

The proposal is consistent with the overall purpose of the Act and the reasons for this assessment are summarised below:

- The Sutton Block will enable people and communities of the Auckland Region to provide for their social, economic and cultural wellbeing and for their health and safety by providing a secure continued supply of aggregate, which is a critical component in the construction and maintenance of infrastructure, housing and transport links for a further 50 years or more. As outlined earlier in this report, the demand for aggregate resource in Auckland continues to grow and there are distinct economic advantages to the community (including infrastructure providers) through the provision of rock from local sources.
- The life supporting capacities of air, water, soil and ecosystems will be protected by robust operating practices and monitoring regimes, consistent with best practice for quarry management. An extensive offsetting and compensation programme is proposed so that over time a net gain will be achieved in relation to ecological outcomes.
- Potential adverse effects from the construction and ongoing operation of the quarry will be avoided, remedied or mitigated through quarry design, construction management measures, and operational procedures, and proposed conditions of consent.

11.3.1 Section 6 – Matters of National Importance

Matters of national importance, which are to be recognised and provided for, are set out in Section 6 of the RMA. The following matters are of particular relevance to the Sutton Block project:

- a The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development;⁵⁴
- b The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development;⁵⁵

⁵⁴ Section 6(a) of the RMA.

⁵⁵ Section 6(b) of the RMA.

- c The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna;⁵⁶
- d The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga;⁵⁷ and
- e The protection of historic heritage from inappropriate subdivision, use, and development.⁵⁸

Preservation of the natural character of wetlands, rivers and their margins

The preservation of the natural character of the Maketu River, Hingaia Stream, Peach Hill Stream and identified wetlands is a key matter of relevance to the proposed quarry. Potential effects of the project on the natural character of wetlands, rivers and their margins have been considered throughout the project's development, including via the alternatives assessment.

Protection of outstanding natural features and landscapes

The location and design of the proposed quarry pit has taken into account existing scheduled natural features, such as the SEA areas and Kaarearea Paa and has been designed to largely avoid directly impacting on these features and completely avoid the adjoining ONL located to the north.

Protection of areas of significant indigenous vegetation and significant habitats indigenous fauna

The project will mitigate adverse effects on natural character by minimising construction effects on natural stream environments where possible and mitigating both terrestrial and freshwater effects where possible. Riparian planting, revegetation and restoration of native vegetation is also proposed and has been designed to provide a contiguous tract of forest between Kaarearea Paa SEA_T_5349 and sider SEA_T_5323 to significantly improve the extent, quality and connectivity of local indigenous biodiversity and habitats. The natural character of the significant ecological areas to the east and north of the site will be protected by largely avoiding activities in these areas, pest control within the SAL landholdings, and in perpetuity by covenants.

Relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga

On the basis of the assessment undertaken and the information received as at the date of preparing this application, the proposal recognises the relationship of Māori with their ancestral lands and water and is consistent with section 6(e). Further consultation is underway and will be ongoing to better understand how this relationship can be recognised and provided for.

Protection of historic heritage from inappropriate subdivision, use, and development

As discussed above, the extent of archaeological areas R12/778 and R12/723 will be fenced off prior to the commencement of construction works to protect these sites from damage. Topsoil stripping of R12/724 must be supervised by a suitably qualified archaeologist in order to record any remains or features of the post-1900s domestic/farming activities.

11.3.2 Section 7 – Other Matters

1 Section 7 of the RMA sets out other matters to which particular regard must be had when exercising functions and powers under the RMA. Of particular relevance to this proposal are:

- (a) Kaitiakitanga;⁵⁹
- (aa) The ethic of stewardship;⁶⁰

⁵⁶ Section 6(c) of the RMA.

⁵⁷ Section 6(e) of the RMA.

⁵⁸ Section 6(f) of the RMA.

⁵⁹ Section 7(a) of the RMA.

⁶⁰ Section 7(aa) of the RMA.

- (b) The efficient use and development of natural and physical resources;⁶¹
- (c) The maintenance and enhancement of amenity values;⁶²
- (d) Intrinsic values of ecosystems;⁶³
- (f) Maintenance and enhancement of the quality of the environment;⁶⁴ and
- (g) Any finite characteristics of natural and physical resources.⁶⁵

Having regard to these matters, the following points are noted:

- SAL is investigating how the project can provide for Tangata Whenua kaitiaki to exercise kaitiakitanga. As the consultation and engagement continues these opportunities can become fully developed and encapsulated in conditions and through other means, such as a Cultural Management Plan, which Tangata Whenua have expressed a desire to include as part of the project. This is further discussed in section 9 of the AEE.
- Amenity values and the quality of the environment will be managed through conditions of consent and Management Plans. The Sutton Block quarry operation is not easily visible off-site, other than to specified receivers as identified through the landscape and visual report. Landscaping works progressively will ensure that the landform is screened within the existing environment and over time a rehabilitation plan will be able to ensure that the site is consistent with the landscape character and amenity of the surrounding area. This is discussed in section 9 of the AEE.
- Quarry operations are controlled through various Management Plans, including the QMP to ensure that the quality of the environment is maintained and enhanced.
- The site is already operating as an existing quarry and there is significant investment of quarry infrastructure at the site. Therefore, the Sutton Block expansion is an efficient use of an existing physical resource, located close to the Auckland market, and does not require the establishment of an entire new quarry operation, as would development of a brand new greenfields quarry site. The close proximity of the Sutton Block to the Auckland market allows the extraction of the rock resource and its delivery to the market to be undertaken efficiently.
- The Sutton Block is located on a site where aggregate is in situ and it has been zoned for this purpose under the AUP, recognising the locational constraint of this resource. The resource is not able to be replicated naturally elsewhere.

In summary, it is considered that the proposal has had regard to the provisions of section 7 of the Act.

Overall, the project is considered to be consistent with the purpose and relevant principles of the RMA.

11.3.3 Section 8 Treaty of Waitangi

While assessment of section 8 of the RMA is not strictly required under the FTAA, the project has taken the principles of the Treaty of Waitangi into account, particularly through extensive consultation with mana whenua over an extended period of time. This consultation has resulted in the Project moving away from Kaarearea Paa and avoiding modification of this waahi tapu site.

⁶¹ Section 7(b) of the RMA.

⁶² Section 7(c) of the RMA.

⁶³ Section 7(d) of the RMA.

⁶⁴ Section 7(f) of the RMA.

⁶⁵ Section 7(g) of the RMA.

11.4 Alternative methods for discharges - Sections 105 and 107 of the RMA

Sections 105 and 107 of the RMA are relevant to applications for discharges under section 15 of the Act.

Section 105 sets out additional matters which must be considered by a consent authority when considering an application for a discharge permit. Section 105(1) states:

- (1) *If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to—*
 - (a) *the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and*
 - (b) *the applicant's reasons for the proposed choice; and*
 - (c) *any possible alternative methods of discharge, including discharge into any other receiving environment.*

The matters identified in sections 105(1) have been addressed throughout this report. In particular, Section 3 which describes the receiving environments and Section 9 which assesses the effects on the environment.

11.4.1 Types of discharges

Discharge permits are being sought for diversion and discharge of stormwater, diversion and discharge of groundwater and discharges to air. Detailed consideration has been given to methods for addressing any potential adverse effects of these discharges, and appropriate methods have been adopted (including through design and construction methods) to ensure effects are appropriately managed. Further details are presented in the Air Quality Assessment (Technical Report K, Volume 2), Groundwater & Surface Water Effects Assessment (Technical Report L, Volume 2) and ESCAR (Technical Report R, Volume 2).

Stormwater and groundwater discharges

While a range of options have been considered in relation to the diversion and discharge of stormwater the selected option takes into account topographical and space constraints. It also allows for the additional processing of stormwater from within the Sutton Block Pit sump to be treated via the Drury Quarry water management system prior to being discharged if necessary. In any case, discharges during construction and operational stages of the quarry will be in accordance with best practice, as reflected in Council technical publications GD01 and GD05 and in Technical Report L and will not give rise to any of the effects identified above.

Alternative methods and discharge locations for groundwater discharges were considered including locations outside the wider SAL landholdings. The proposed stream augmentation was considered the best practicable option as it will ensure streams are supplemented close to the location of predicted loss in stream base flows, within SAL landholdings and will not result in any temperature or pH change.

Erosion and sediment control

The initial establishment and construction works will be undertaken in accordance with the Erosion and Sediment Control Assessment Report (Technical Report R, Volume 2), which includes an ESCP, as well as on-going monitoring throughout the LOQ. The monitoring will provide feedback to enable an iterative staged management approach to be used and allows for the required maintenance or improvements to control measures to be undertaken immediately. Additional controls or measures will be used where there is a greater risk of sediment discharges and/ or monitoring indicates that

additional controls are required. Providing an iterative staged management approach is considered to be above the basic industry standard for best practice.

The alternative options would be less than the best standard and as such were not considered.

Discharges to air

The applicant proposes to implement best practice management of discharges to air, including meeting the requirements of the NES-AQ. The NES-AQ includes an assessment criterion for PM₁₀. A new DMP will be prepared to cover the Sutton Block expansion. It will draw on the existing knowledge and operational measures in the existing Drury Quarry DMP. The DMP outlines the dust mitigation measures put in place to minimise dust emissions (refer to Section 6.2.1 and DMP). Additionally, the extensive network of dust monitors employed around the Sutton Block would ensure early detection, minimising the duration of any dust event. Other alternative options, which are not being considered, would be less than the best standard. The existing air discharge consent is also subject to a review condition, which will allow for consideration of alternatives over the life of the operations.

11.4.2 Section 107 of the RMA

Section 107(1) restricts the granting of discharge permits in certain circumstances, namely if, after reasonable mixing the contaminant or water discharged (either by itself or in combination with other contaminants or water) is likely to give rise to any of the following effects in the receiving waters:

- The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
- Any conspicuous change in the colour or visual clarity;
- Any emission of objectionable odour;
- The rendering of fresh water unsuitable for consumption by farm animals; and
- Any significant adverse effects on aquatic life.

As described in section 9 of the AEE, the discharge of water and contaminants to water or to land in circumstances where it may reach water will not give rise to any of the effects listed above after reasonable mixing. Section 107 does not create an impediment to the granting of the necessary consents under the AUP.

11.4.3 Summary

As described in this section, a range of alternatives methods and locations for discharges of groundwater, stormwater and air discharges have been considered prior to arriving at the project as it is described in this application.

12 Proposed conditions of consent

In accordance with Schedule 5, Clause 5(1)(k), SAL propose a suite of key draft conditions (Appendix I).

Mitigation measures are recommended throughout the specialist reports and in the AEE above to ensure adverse effects are appropriately avoided, remedied or mitigated, or off-set. In some instances, these involve the preparation of management plans at a stage when further details of the construction method have been determined. The conditions proposed by the applicant capture the key mitigation measures and management plans addressed in the specialist reports and assessment of effects. These key conditions are intended to support the conclusions in the specialist assessments, and to provide certainty to The Panel and Auckland Council for key issues. These are key conditions only, with further conditions to be added throughout the consent process. The conditions have been structured broadly by specialist area and organised to ensure they are clear for operational staff to implement.

13 Conclusion

This AEE report has been prepared on behalf of SAL to accompany a substantive application to the EPA for the development and operation of the Sutton Block expansion, north of the existing Drury Quarry, under section 42(1) of the FTAA.

Aggregate is a foundational building material and is a fundamental component of concrete, essential for delivering infrastructure and development projects that provide significant regional and national benefits.

Approval of the Sutton Block will enable approximately 240 million tonnes of additional high-quality aggregate to supply the Auckland Region over a 50-year period. This will ensure a continuous aggregate supply to the market, providing an essential resource to the Auckland region. The Sutton Block is located in close proximity to various regionally significant projects that are underway or have secured funding. The proximity of this resource also provides economic benefits derived from reduced transportation requirements.

The proposal involves an initial construction stage, including the construction of road infrastructure to establish haul road access, overburden removal and establishment of the Northern Bund; supporting ESC infrastructure, and construction of a conveyor belt connecting the Sutton Block pit to the existing Drury Quarry FOH area. The second and third stages of work reflect the initial pit development, which begins with the removal of additional overburden material and the creation of stockpiles. Stages 2 to 4 predominantly see the progressive widening of the pit. The final stage of work (Stage 5) reflects the quarry pit over a 50-year period and predominantly when the pit will be progressively deepened. At different stages throughout the duration of the project, the following works will also be undertaken: stream diversion, stream reclamation, wetland reclamation, vegetation removal, groundwater diversion and associated discharges, stormwater diversion and discharges, mitigation and offset.

The proposed works require consent as a non-complying activity overall under the Auckland Unitary Plan, however as set out under the FTAA it is not subject to section 104(D) of the RMA.

This AEE report draws the following conclusions:

- The Sutton Block project is consistent with and supports the purpose of the FTAA, which is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits;
- The works are consistent with Part 2, 3 and 6 of the Resource Management Act 1991;
- A number of NES and NPS are relevant to this proposal and have been assessed in Section 11. It is considered, taking into account the mitigation and offsetting programme of works that the project is not inconsistent with these.
- The works are directly supported by objectives and policies of the Auckland Unitary Plan, particularly around development of identified quarry resource and opportunities for environmental improvement through offset and are considered not contrary to the remaining relevant objectives and policies in the Auckland Unitary Plan;
- The proposal will have significant positive economic benefits by securing a future supply of high-quality aggregate in Auckland, which will enable and support Auckland's population growth and development supporting the future well-being of Auckland.
- The proposal has the potential to have minor or less than minor effects on terrestrial ecology, air quality, groundwater, erosion and sedimentation, ground contamination, archaeology, noise, vibration, traffic and landscape, and more than minor effects on freshwater ecology. Residual terrestrial and freshwater effects are proposed to be addressed through a

comprehensive ecological offset package which is designed to achieve a net gain in ecological values.

- A set of proposed consent conditions have provided in Appendix I.

14 Applicability

This report has been prepared in accordance with Tonkin & Taylor Ltd's letter of engagement dated 14 June 2023.

This report has been prepared for the exclusive use of our client Stevenson Aggregates Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

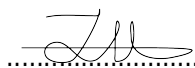
We understand and agree that Stevenson Aggregates Limited will submit this report as part of an application for resource consent and that a Panel as the consenting authority will use this report for the purpose of assessing that application.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:



Czar Questin
Planner



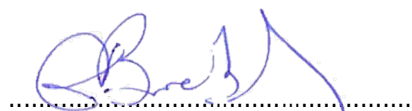
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Authorised for Tonkin & Taylor Ltd by:



Andrea Brabant
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4-Apr-25

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Appendix A Application Form

Appendix B Landowners and occupiers

Appendix C Permitted Activity Assessment

Appendix D AEE drawing set

Appendix E Quarry locations map

Appendix F Consultation documentation

Appendix G Cultural Value Assessments

Appendix H Assessment of objectives and policies

Appendix I Proposed key conditions of consent

Appendix J Quarry Management Plan

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