DRURY QUARRY EXPANSION

OVERVIEW OF TANGATA WHENUA ENGAGEMENT PART 2

Appendix 3 - Letter from Auckland Council and maps dated October 2022

0 40 80 160 Meters

Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information.

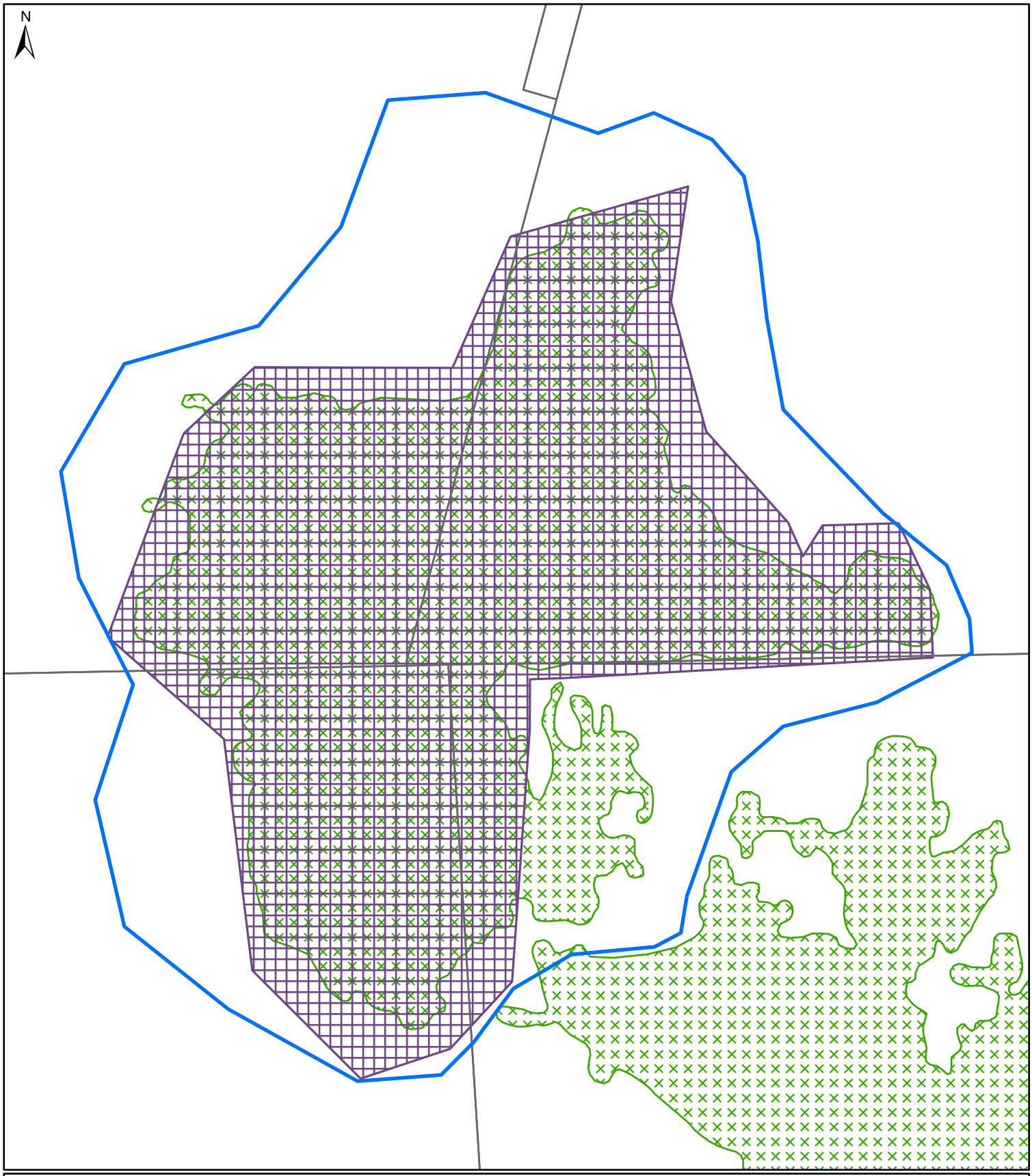
Tranche 2 - Sites of Significance to Mana Whenua

Site Name - Karearea Pa

Site ID - 000275

Auckland Council
Te Kaunihera o Tāmaki Makaurau
Plans and Places

Tranche 2 - nominated sites extent



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Tranche 2 - Sites of Significance to Mana Whenua

Site Name - Karearea Pa

Site ID - 000275

Auckland Council
Te Kaunihera o Tāmaki Makaurau
Plans and Places

Tranche 2 - nominated sites extent

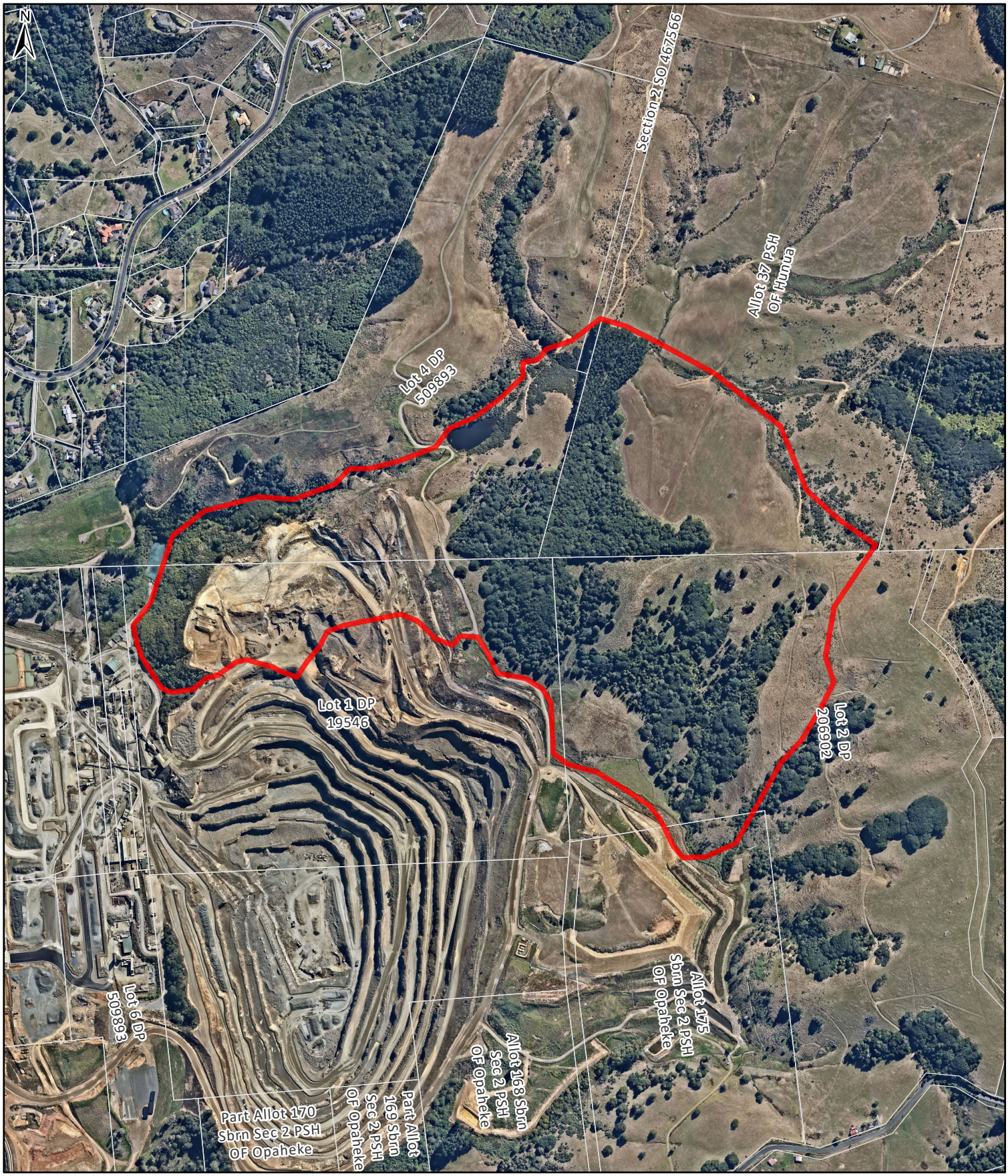
Unitary Plan Management layers

Historic Heritage Overlay Extent of Place [rcp/dp]

Significant Ecological Areas Overlay

Terrestrial [rp/dp]

Appendix 4 - Maps from Auckland Council from November 2022



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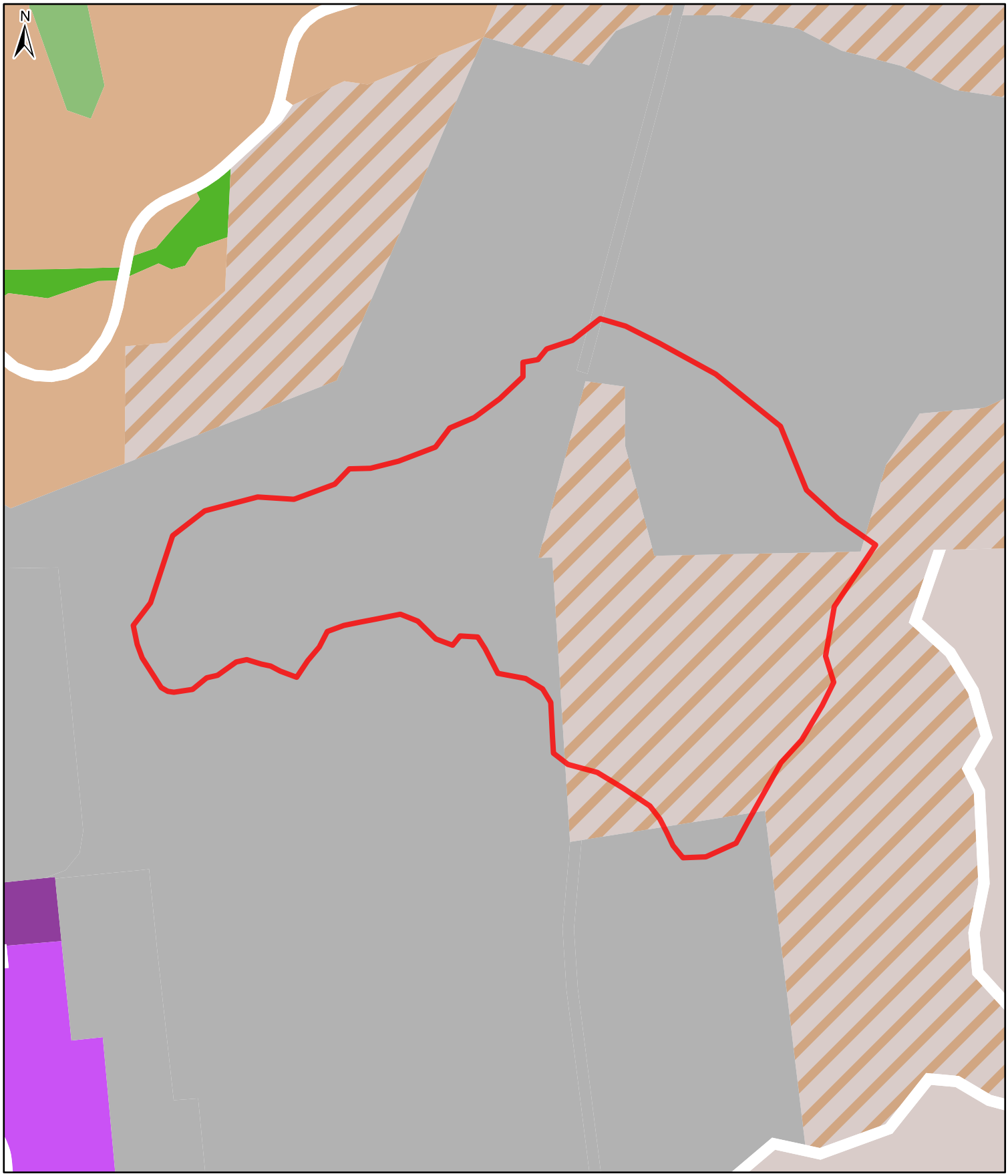
Tranche 2 - Sites of Significance to Mana Whenua

Site Name - Karearea Pa
Site ID - 275

Auckland Council
Te Kaunihera o Tāmaki Makaurau
Plans and Places

Tranche 2 - nominated sites extent



0 385 770 1,540 Meters

Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information.

Tranche 2 - Sites of Significance to Mana Whenua

Site Name - Karearea Pa
Site ID - 275

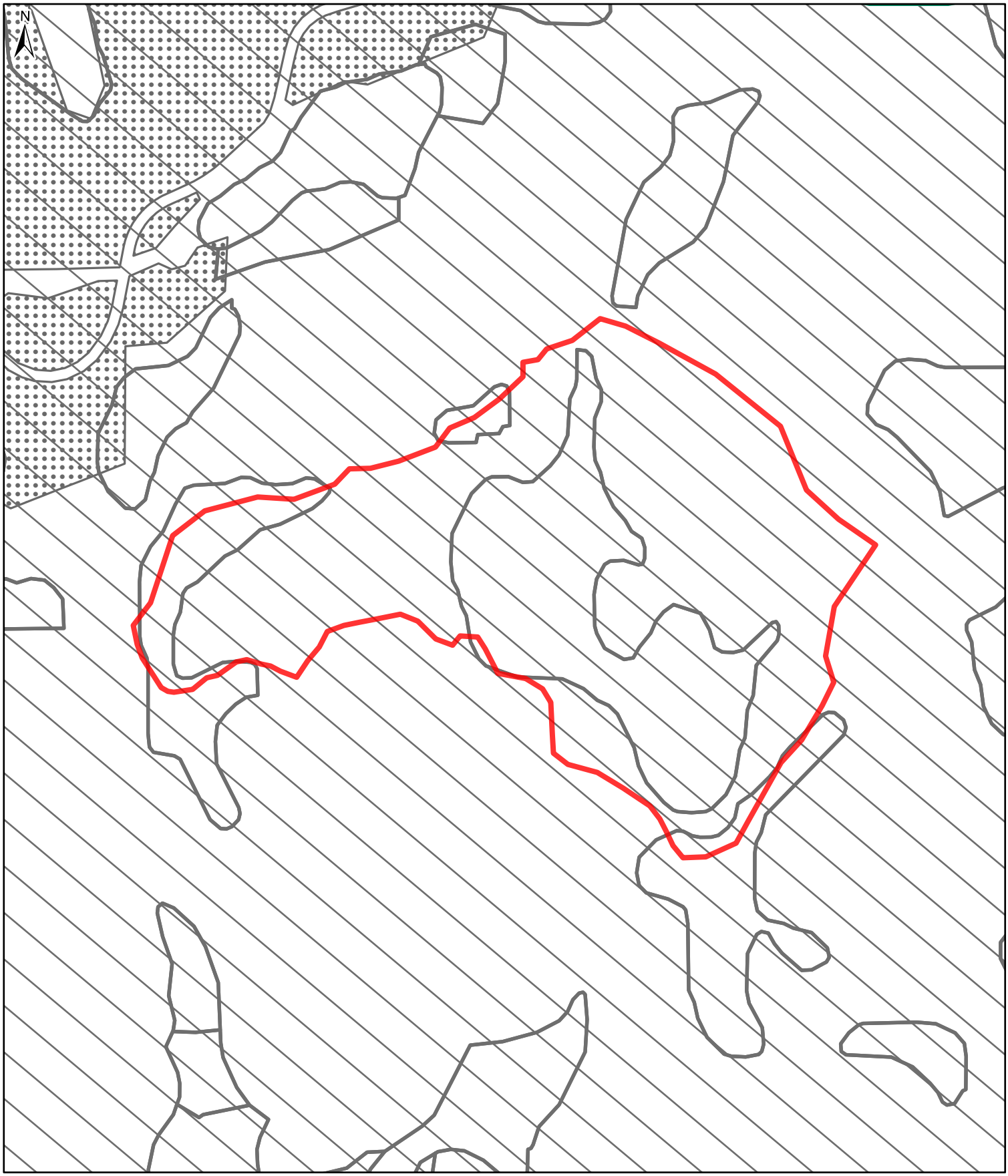
Auckland Council
Te Kaunihera o Tāmaki Makaurau
Plans and Places

Tranche 2 - nominated sites extent

Unitary Plan Zones

Rural - Mixed Rural Zone

Special Purpose Zone



0 385 770 1,540 Meters

Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information.

Tranche 2 - Sites of Significance to Mana Whenua

Site Name - Karearea Pa
Site ID - 275

Auckland Council
Te Kaunihera o Tāmaki Makaurau
Plans and Places

Tranche 2 - nominated sites extent
Outstanding Natural Landscapes Overlay
Macroinvertebrate Community Index
Subdivision Variation Control

Path: U:\CPO\RLP\FC\LUP\GIS 0072\Unitary Plan\Plan Changes\Sites of Significance Tranche 2\3. Workspace\Tranche 2 -Map series.aprx

Appendix 5 – Initial pit plans March 2022

WELCOME

DRURY QUARRY COMMUNITY INFORMATION

BUILDING BLOCKS OF AUCKLAND

The next 30 years are going to be transformational for Auckland. The population is set to surpass two million before 2040, meaning we will need to build more houses and better transport infrastructure like railways and safer roads. By 2048, the city's population is predicted to grow to 2.3 million with official city estimates predicting that we could need to build 300,000 more homes before 2048.

There are also big infrastructure projects needed to keep Auckland moving, while keeping emissions low. City Rail Link will substantially increase rail capacity, and allow more people to take public transport, by creating an underground railway system. The Auckland Light Rail project will enable tens of thousands of new houses to be built by creating a high capacity transport network that stretches from the central city to Māngere.

Aggregate is the key material needed to make sure those new houses, townhouses, apartments, roads, cycleways and infrastructure projects are built.

THE

Every kilometre of State Highway uses between

14,000 - 20,000

tonnes of aggregate.

The average sealed suburban road requires

4,000

tonnes of aggregate per kilometre.

Each new house requires

250

tonnes of aggregate.

The aggregates from Stevenson Drury Quarry are currently being supplied to the Papakura to Drury four laning project and is found in the concrete used in local and Auckland wide projects.

How will we keep construction affordable as our city grows? The cost of aggregate doubles every 30 kilometres it is transported. Therefore keeping aggregate local will help to keep the costs of aggregates down. Right now Auckland has a deficit of aggregate. It consumes more aggregate than it produces, so a lot of aggregate has to be transported from as far away as Huntly.

The Stevenson Drury Quarry is one of the major sources of aggregate within Auckland, and we need to ensure we have an aggregate source well into the future. We have identified an opportunity to expand aggregate extraction in the northern part of our site. This will mean we can continue working out of our existing operation rather than finding a whole new source of aggregate in Auckland, or carting aggregate from long distances away.

The changing face of Drury

Drury is changing rapidly with major housing and economic development activity in progress. There are plans for a state-of-the-art 51-hectare Drury town centre, and the Drury South Crossing development is expected to attract 6,900 jobs and facilitate an additional 12,200 jobs in the region.

Drury - Opāheke area is expected to accommodate **60,000 more people and 34,000 people** in the Pukekohe - Paerata area. This a combined total of more than the current population of Palmerston North.

This will create a need for approximately 34,500 new houses around Drury and Pukekohe over the next 30 years.

LIFECYCLE OF A QUARRY

Aggregate extraction can only take place where aggregate is found naturally and in close proximity to where it is used, in order to minimise the environmental effects and costs of transporting product from the pit to the construction site.

As a quarry can be in operation for up to a century, quarry staff carefully manage and monitor to mitigate environmental impacts and operate responsibly.

ABOUT STEVENSON DRURY QUARRY

Stevenson Drury Quarry is proudly New Zealand owned and operated and has been part of the Drury community for over 80 years.

Stevenson Drury Quarry employs more than 200 people, across the quarry, workshop, concrete plant, laboratory, transportation and office. It has a culture built on loyalty, determination, and a strong community focus.

These values have created a long-standing history in the Auckland region. Now a division of Fulton Hogan, Stevenson Aggregates is still delivering high-quality aggregates and concrete throughout New Zealand.

TWO YEAR PLAN

TWO YEAR PLAN:
Create the road infrastructure, establish access, overburden removal, and begin ecological mitigation.

2

TEN YEAR PLAN

TEN YEAR PLAN:
This is indicative as it could move west or east depending on the aggregate needs of Auckland.

LIFE OF QUARRY PLAN

LIFE OF QUARRY PLAN:
Based on current demand estimates, this pit will provide 30 -40 years of aggregate supply to Auckland.

THE PROPOSAL

Proposed bunding and overburden removal

Further investigation is required to determine where overburden will go and whether bunding will occur.

Quarry Traffic Movements

Truck movements are dependent on market demand for aggregate. Currently, there are around 800 truck loads on a busy day, and 500-700 truck loads on an average day. In the coming years, with other quarries shutting down and an increased demand for aggregate as construction ramps up in a post-covid environment, we expect a natural increase to 1200-1400 truck loads per day.

Noise Levels

The Stevenson Drury Quarry currently operates with lowered noise on evening and weekends, with peak activity occurring during day time hours. This will continue, and noise monitoring equipment will be in place across the quarry to monitor compliance.

Current Ecological Assessment

Stevenson Drury Quarry has committed to continue ongoing protection of Ballards Cone in partnership with Ngāti Tamaoho. Ballards Cone is an ancient pa site (also known as “Old Maketu Pa”) located near the current pit and the future quarry site. It is also identified in the Auckland Unitary Plan (operative in part) as a Historic Heritage Overlay Extent of Place, and Significant Ecological Area

The future quarry site is currently in pasture utilised predominantly for grazing. There is some native vegetation which will need to be cleared. There are also small areas of land with wetland features which will need to be cleared (subject to pending central government legislative changes). Our ecologists are assessing the extent of ecological values and potential loss and will assist us in determining how we address these matters.

Quarry traffic movements

800
truck loads on a busy day

500-700
truck loads on an average day

we can expect a natural increase to

1,200-1,400
truck loads per day

TIMELINE

1948
Stevenson Company buys Drury Quarry

1960
Work begins on Auckland Airport

1966
Auckland Airport opens

2007
Northern area rezoned to provide for quarrying activity

2008
KiwiRail is formed

2016
Work starts on the City Rail Link

2021-22
Stevenson begins planning for quarry in the northern part of the site and engages with local community

2022
Government announces $14b light rail network for Auckland

2024
City Rail Link due to be complete

2025-30
Initial works due to begin in the northern part of the site

2042-47
Current pit due to close

2048
Auckland's population projected to hit 2.37 million

100 years since the Stevenson Company bought the quarry

Hamilton to Auckland passenger service begins

ENVIRONMENT

ECOLOGICAL RESTORATION AT DRURY QUARRY

Over the past five years, Stevenson Aggregates have delivered a number of programmes to foster ecological restoration across the Drury Quarry site. These programmes are part of our commitment to protect, restore and create indigenous habitat. Stevenson Drury Quarry works closely with Envoco, an ecological consultancy, to implement and monitor our programmes.

Tree planting

Stevenson Aggregates has planted approximately 85,500 eco sourced native seedlings and is in the fourth year of an 8-year-old ecological restoration programme. The scale of the programme is significant, and once completed more than 9 hectares will be under managed planting, much of it along riparian edges.

Planting proceeds in two stages: pioneer and enrichment. The pioneer stage involves planting fast-growing, light-dependent and hardy species. The enrichment stage occurs after the pioneer plants have grown enough to provide some shade and leaf litter to more sensitive forest species (usually after a few years), and includes species representative of local ecosystem types, eg taraire, kahikatea, matai, nikau and puriri.

The planting connects existing forest fragments, and provide critical habitat for native lizards, birds and insects. Over time as plantings mature, new species will appear via bird and wind dispersal.

Pest plant and animal control

Pest plant control is also a key focus. Working with Envoco, Stevenson Aggregates has removed weed infestations over large areas prior to planting and carries out ongoing control in planting areas and forest fragments. Pampas grass, privet, woolly nightshade and gorse are heavy seeding, fast growing plant that can easily outcompete native vegetation if not contained.

Pest control, through fence planting and pest containment and eradication, is a significant focus of the ecological restoration work. As an indication of scale, between June 2019 and June 2021 Envoco caught 992 pest animals. Hedgehogs, mustelids, rats and possums pose a serious threat to native wildlife and plants, and are controlled via trapping and poison baits. The team has also deployed live-capture traps for feral cats, and bait stations targeting rabbits and hares. There has been an increase in observations of native bird species, such as kererū and tui, and of native seedling germination, demonstrating the impact of pest control in improving the local ecosystem.

Landscape Buffer

The noise bund is an important landscape buffer between quarry works and neighbouring properties that is aimed at reducing noise and dust. It also creates an ecological link for native wildlife. The western aspect of the bund is highly visible from the entrance of Stevenson Drury Quarry and is well maintained for its amenity and ecological values.

CARBON CURE

PLANET EARTH.
ONE CONCRETE REASON WE'RE REDUCING OUR CARBON.

How to reduce emissions from concrete? Stevenson Concrete searched the globe... and came up with a game-changer! Our new Stevenson CarbonCure technology replaces a portion of the cement with injected, captured CO2, reducing carbon emissions.

Concrete presents a dilemma for New Zealand and Stevenson. It's the most abundant man-made material in the world. It's used everywhere in construction because of its longevity, strength and durability.

2021 life couldn't exist without it.

But cement in concrete is also a greenhouse gas emitter. It's responsible for 8% of the world's CO2 emissions - more than global aviation (pre-Covid).

Our dilemma at Stevenson: how to reduce emissions from concrete? We searched the globe... and came up with a game-changer!

Stevenson are the first concrete producer to bring CarbonCure to the market in New Zealand. CarbonCure is a 2015 technology, proven around the world. It replaces a portion of the cement with injected, captured CO2. This reduces carbon emissions. The concrete remains as strong and tough as it was before.

It works like a carbon sink. The CO2 is a by-product of another industry. It's sent to us in pressurised tanks. We replace part of the cement with it, meaning there's a dual, positive effect: sequestering of CO2, and subsequent reduction of a component that emits.

Now there's an idea that's set in – well – concrete!

15kgs

carbon saved on every cubic metre of concrete

604kgs

carbon saved on every new house

22,500,000kgs

Auckland's potential carbon savings with CarbonCure

CARBON CURE™

"Along with a number of other carbon-decreasing initiatives we are using, this technology is going to change the way New Zealand builds houses, footpaths, roads, pipes, and thousands of other man-made, everyday objects. Stevenson has brought it into the New Zealand mainstream, just as this technology is used in countries like Singapore, North America and parts of Europe."

Anthony Bitossi,
General Manager Stevenson Concrete.

1. CO2 produced by local oil refineries is collected, purified and transported by BOC to Stevenson Concrete where it is stored in a pressurised tank.
2. A CarbonCure valve box is connected to the CO2 tank and automatically injects a precise dosage of CO2 into the concrete during mixing.
3. The CO2 reacts with the cement's calcium ions to form calcium carbonate. This is embedded in the concrete, increasing its strength while eliminating the CO2.

While there's much less carbon, there's no change to performance.

All fresh properties including set-time, slump, workability, pumpability, air content, temperature, and finishing are unaffected; as are hardened properties, including pH, freeze-thaw, density, colour, texture, and durability.

ENVIRONMENT

WAINGARO QUARRY

AWARD WINNING RESTORATION PROJECT SURGING WITH INDIGENOUS WILDLIFE

Fifteen years ago a quarry extension prompted a restoration that not only created an award winning wetland environment for our indigenous species, but a legacy for future generations. We check in with the team at Waingaro Quarry and update on their progress.

> **"We wanted to take this site above and beyond the minimum rehabilitation requirements."**
>
> Allan McDonald, Stevenson Waingaro Quarry Manager.

A special place in the Waikato, the Hakarimata Range is one of a succession of ranges that form the western boundary of the Waikato Basin. Sandstone, siltstone and greywacke have strongly folded, faulted and been overlaid by other sedimentary rocks to form the range and adjacent land.

The range is dominated by lowland broadleaf and podocarp forest, and lies in a transition zone between northern kauri forest and southern beech forest. Here, indigenous plants and animals of all three forest types create a highly diverse zone which is also the largest remaining example of lowland forest that once dominated the Waikato Basin.

The 2009 Waingaro Quarry extension required removal of bush and modification of a high-value stream, an important habitat for native fish including giant kōkopu, eels and whitebait. To minimise the visual impact on the nearby Ngāruawahia township, a gully was to be filled, leaving a 35 metre high bund, 250 metres long by 250 metres wide. Wetlands were designed as a final water polishing pond for quarry runoff, allowing the site to stay within its discharge standards.

By all accounts, the exercise wasn't a major engineering task. The team, however, had other ideas. "We wanted to take this site above and beyond the minimum rehabilitation requirements," says Allan McDonald, Stevenson Waingaro Quarry Manager.

To provide a passage for the fish a 300mm culvert was installed. With an outlet 7 metres above the existing stream, the culvert design and installation was challenging and a series of rock pools and riffles were constructed.

As part of a wider enhancement project, the team planted 8,500 eco-sourced indigenous plants which are now well-established. They also implemented a programme to control pests including rats, possums and stoats. (It's estimated that 70% of New Zealand's indigenous birds and bats do not reach fledgling age due to predation by introduced animals.)

"Ten years on there's been a resurgence in wildlife," says Allan. "We're seeing birds in much bigger numbers. Monitoring shows that Tui numbers have more than doubled".

Quarry staff have monitored the fish life since the wetlands' inception to ensure the culvert is not only providing an easy and accessible fish passage, but a very liveable habitat for the kōkopu and other fish species. The data is positive, showing an increase in both size and population of the native fish species who are travelling upstream.

Perhaps most encouraging however is the long-tailed bat, or pekapeka. In danger of extinction the quarry predator control program has seen the local population stabilise, with the pekapeka visiting the stream and wetlands at night to feed.

The team willingly share their knowledge and experience with others on a biodiversity journey, and local ecologist Gerry Kessels regularly shows the restoration to clients and stakeholders.

"True off-set ecological restoration is not easy", says Gerry. "It's not just a matter of throwing money at the task. It requires expertise, practical experience, logistical organisation, monitoring, contingency planning and time, lots of time."

"That is exactly the approach the team used during the forest, wetland and stream restoration process at Waingaro. The result is now plain to see, with key threatened fish species utilising the stream and the nationally critically endangered long-tailed bat still foraging and roosting in the area," adds Gerry.

The restoration project won the Aggregate and Quarry Association (AQA) Mimico Environmental Excellence award in 2011.

Appendix 6 - Final Life of Quarry Pit Plan December 2023


419500 mE
420000 mE
420500 mE
421000 mE
774000 mN
773500 mN
773000 mN
N
Scale: 1:5000@ A3
0
50
100
150
200
250
300

Appendix 7 – Memo and maps outlining stage 5 changes (October 2024_

Sutton Block – Stage 5

MEMO

FROM: Jo Young, Consents Manager

DATE: 29 October 2024

Purpose of this memorandum

The purpose of this memorandum is to provide a summary of the key changes between Stage 4 and Stage 5 of the Sutton Block project. This should be read with the following two maps: *"Stage 4 (old pit extent) and stage 5 (revised pit extent)"* and *"stage 4 – stage 5 comparison".*

Background context

The Sutton Block pit was originally proposed to be developed in four stages over a 50-year period, with 'Stage 4' being the final stage (full extent). Stevenson now has a fifth stage, expanding the pit footprint over the same 50- year period.

Key changes between Stage 4 and Stage 5:

The key changes between Stage 4 and Stage 5 are summarised below:

Pit footprint:

- Stages 1-4 have not changed.
- Stage 5, a new stage, will result in a 20-ha expansion of the Sutton Block pit extent. Stage 4 footprint is 88ha and Stage 5 footprint is 108 ha.
- Stage 5 will involve the removal of the northern bund.
- No changes to the pit proximity to Kaarearea paa. A 13ha buffer from the quarry extent to Kaarearea paa remains unchanged.
- No changes to the pit depth (-60 RL) from Stage 4 and 5.

Vegetation removal:

- In total, the native vegetation loss is approximately 16.73 ha.
- Stage 4 will result in a loss of approximately 10.12 ha of native vegetation.
- Stage 5 will result in an additional loss of approximately 6.61 ha of vegetation (3ha of broadleaf podocarp forest and 3.61 ha of kanuka forest).

Vegetation mitigation:

- To mitigate and offset the removal of 16.73 ha of vegetation, approximately 140 ha of restoration will be undertaken, consisting of 70 ha of new planting and 70 ha of enhancement planting, including pest control.
- Stage 5 results in an increase of 29.52 ha of planting.
- Currently exploring the feasibility of undertaking vegetation planting on Ngā Motu o Hingaia. This is also a change to the Project as a result of Stage 5.

Stream loss:

- The total proposed stream loss is approximately 3,374 m.
- Stage 4 will result in a loss of approximately 2,643 m of stream length.
- Stage 5 will result in an additional loss of approximately 731 m of stream length. Under Stage 4, the stream was initially planned to be partially removed and diverted around its southern side of the pit. However, the revised plan for Stage 5 will lead to the complete loss of this stream.

Stream mitigation:

- To mitigate and offset the total stream loss, approximately 938m of existing stream riparian planting within the Drury Quarry land holdings will be undertaken. This is proposed as part of the Stage 5 expansion.
- An additional 2,643 m of stream enhancement at the Tuakau Site will be undertaken. This was proposed as part of Stage 4 and has not been changed.

Wetland loss:

- Stage 4 will result in a loss of approximately 1.87 ha.
- No additional wetland loss is anticipated as part of Stage 5. Note, that this is subject to the findings of the Ecologist's final site inspections currently underway.

Wetland mitigation:

- To mitigate and offset the total wetland loss, approximately 4.04 ha of wetland restoration, including the creation of wetland habitat is proposed within the Drury Quarry land holdings and at the Tuakau Site. This was proposed as part of Stage 4 and has not been changed.

Archaeology:

- No recorded archaeological sites were located within the Stage 4 Sutton Block pit footprint.
- Stage 5 will see the removal of one recorded NZAA site reference R12/724 (plants, fence, stonework, earthworks – Farmstead). This site relates to post-1900 activities and potentially might be the site of a farmstead, dating from the 1860s. A revised archaeological assessment will be undertaken to consider the effects.

Groundwater:

- Stage 4 proposed lowest groundwater dewatering level for the Sutton Block pit was -60 RL and a maximum groundwater diversion rate of 19,183 m 3/d. There is no change to the pit depth or, at this stage the groundwater diversion rate as a result of Stage 5. A revised groundwater assessment is currently being undertaken.
- Stage 4 predicted worst-case scenario zone of influence extends from 4.4 km (Stage 2) to 7.5 km (Stage 4).
- Stage 5 will result in a 50m increase in the worst-case scenario zone of influence. This is a very small increase that is not predicted to result in any additional drawdown or stream depletion effects.

STEVENSON
Boffa Miskell

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0 100 200 m
1:6,000 @ A3

Data Sources: Stevenson Aggregates (Aerials), LINZ (Aerials), BML

Projection: NZGD 2000 New Zealand Transverse Mercator

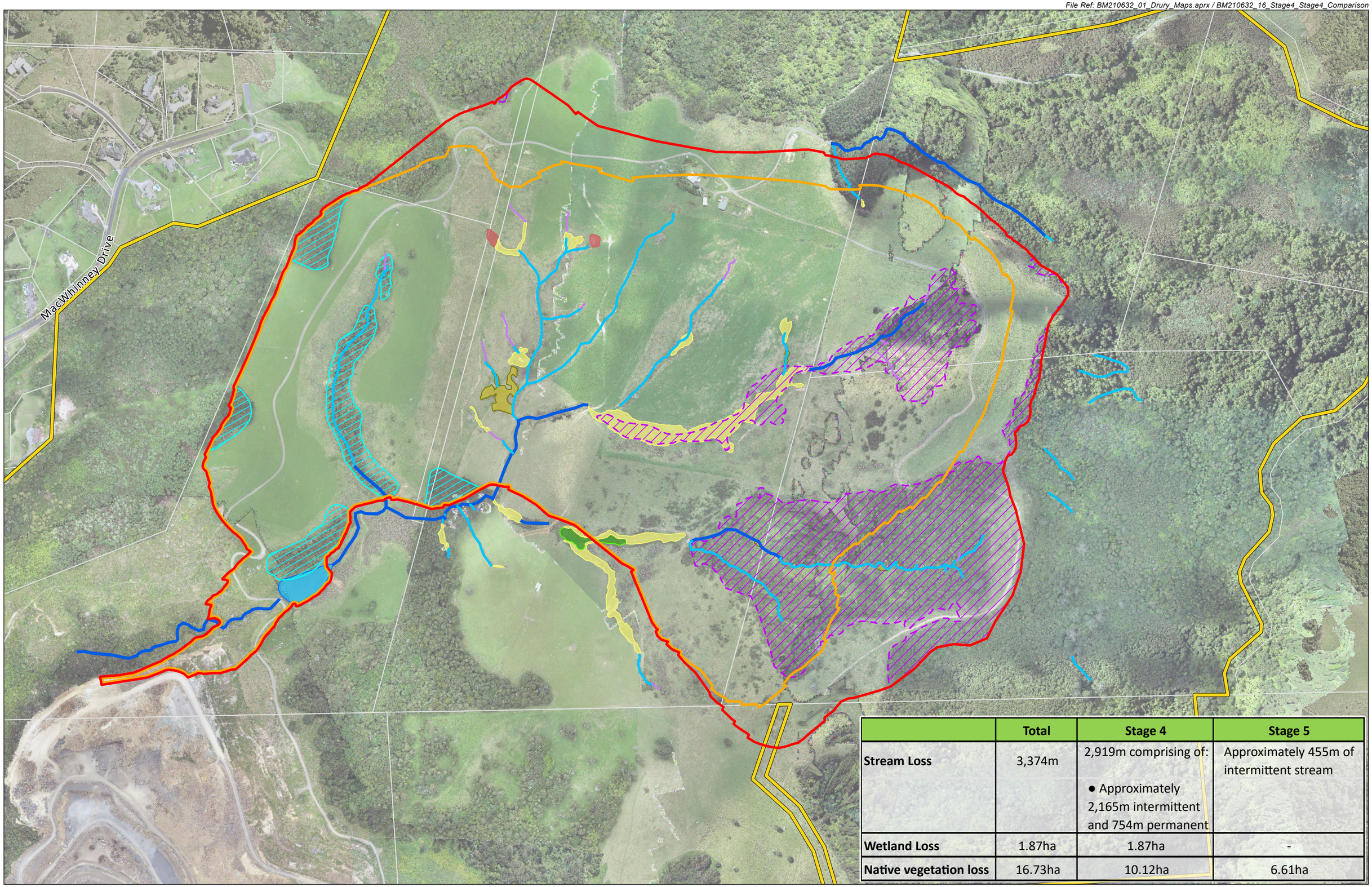
LEGEND
- SAL Land Holdings
- Stage 5 life of quarry footprint approx. 108 ha
- Stage 4 footprint approx. 88 ha
- Land Parcels

DRURY QUARRY

Stage 4 (old pit extent) and Stage 5 (revised pit extent)

Date: 15 October 2024 | Revision: 0

Plan prepared by Boffa Miskell Limited
Project Manager: Sandeep.Gangar@boffamiskell.co.nz | Drawn: SGa | Checked: JUr



	Total	Stage 4	Stage 5
Stream Loss	3,374m	2,919m comprising of: ● Approximately 2,165m intermittent and 754m permanent	Approximately 455m of intermittent stream
Wetland Loss	1.87ha	1.87ha	-
Native vegetation loss	16.73ha	10.12ha	6.61ha

STEVENSON
Boffa Miskell

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0 100 200 m
1:6,000 @ A3

Data Sources: Stevenson Aggregates (Aerials), LINZ (Aerials), BML

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- SAL Land Holdings
- Stage 5 life of quarry footprint approx. 108 ha
- Stage 4 footprint approx. 88 ha
- SEA Vegetation loss
- Non-SEA Vegetation loss
- Exotic Wetland
- Constructed Pond
- Raupo Wetland
- Constructed Wetland
- Herbaceous Wetland
- Permanent stream
- Intermittent stream
- Ephemeral
- Land Parcels

DRURY QUARRY

Stage 4 - Stage 5 Comparison

Date: 25 October 2024 | Revision: 0

Plan prepared by Boffa Miskell Limited

Project Manager: Sandeep.Gangar@boffamiskell.co.nz | Drawn: SGa | Checked: JUr

Appendix 8 – Memo and maps outlining stage 5 changes (February 2025)

Sutton Block – Stage 5

MEMO

FROM: Jo Young, Consents Manager

DATE: 17 February 2025

Purpose of this memorandum

The purpose of this memorandum is to provide a summary of the key changes between Stage 4 and Stage 5 of the Sutton Block project. This should be read with the following two maps: *"Stage 4 (old pit extent) and stage 5 (revised pit extent)"* and *"stage 4 – stage 5 comparison".*

Background context

The Sutton Block pit was originally proposed to be developed in four stages over a 50-year period, with 'Stage 4' being the final stage (full extent). Stevenson now has a fifth stage, expanding the pit footprint over the same 50- year period.

Key changes between Stage 4 and Stage 5:

The key changes between Stage 4 and Stage 5 are summarised below:

Pit footprint:

- Stages 1-4 have not changed.
- Stage 5, a new stage, would result in a 20-ha expansion of the Sutton Block pit extent. Stage 4 footprint is 88ha and Stage 5 footprint is 108 ha.
- Stage 5 will involve the removal of the northern bund.
- No changes to the pit proximity to Kaarearea paa. A 13ha buffer from the quarry extent to Kaarearea paa remains unchanged.
- No changes to the pit depth (-60 RL) from Stage 4 and 5.
- Avoids the Outstanding Natural Landscape (ONL) overlay to the north.

Vegetation removal:

- In total, the native vegetation loss is approximately 16.78 ha.
- Stage 4 would result in a loss of approximately 10.12 ha of native vegetation.
- Stage 5 would result in an additional loss of approximately 6.66 ha of vegetation (3ha of broadleaf podocarp forest and 3.66 ha of kanuka forest).

Vegetation mitigation:

- To mitigate and offset the removal of 16.78 ha of vegetation, approximately 170 ha of restoration will be undertaken, consisting of 62 ha of new planting and 108 ha of native forest enhancement planting, including pest control.
- Stage 5 results in an increase of approximately 30 ha of planting.
- A total of 5ha of Kanuka and ten groups of Totara Trees (a total of 113 trees) are proposed to be planted on Ngā Motu o Hingaia. This is also a change to the Project as a result of Stage 5.

- A total of 887 relict trees are to be planted to replace 130 large relict trees proposed to be removed.

Stream loss:

- The total proposed stream loss is approximately 3,341 m.
- Stage 4 will result in a loss of approximately 2,643 m of stream length.
- Stage 5 will result in an additional loss of approximately 731 m of stream length. Under Stage 4, the stream was initially planned to be partially removed and diverted around its southern side of the pit. However, the revised plan for Stage 5 will result in the complete loss of this stream.

Stream mitigation:

- To mitigate and offset the total stream loss, approximately 1,053m of existing stream riparian planting within the Drury Quarry land holdings will be undertaken. This is proposed as part of the Stage 5 expansion.
- An additional 2,289 m of stream enhancement at the Tuakau Site will be undertaken. This was proposed as part of Stage 4 and has not been changed.

Wetland loss:

- Stage 4 would result in a loss of approximately 1.88 ha.
  No additional wetland loss is proposed as part of Stage 5.

Wetland mitigation:

- To mitigate and offset the total wetland loss, approximately 4.04 ha of wetland restoration, including the creation of wetland habitat is proposed within the Drury Quarry land holdings and at the Tuakau Site. This was proposed as part of Stage 4 and has not been changed.

Archaeology:

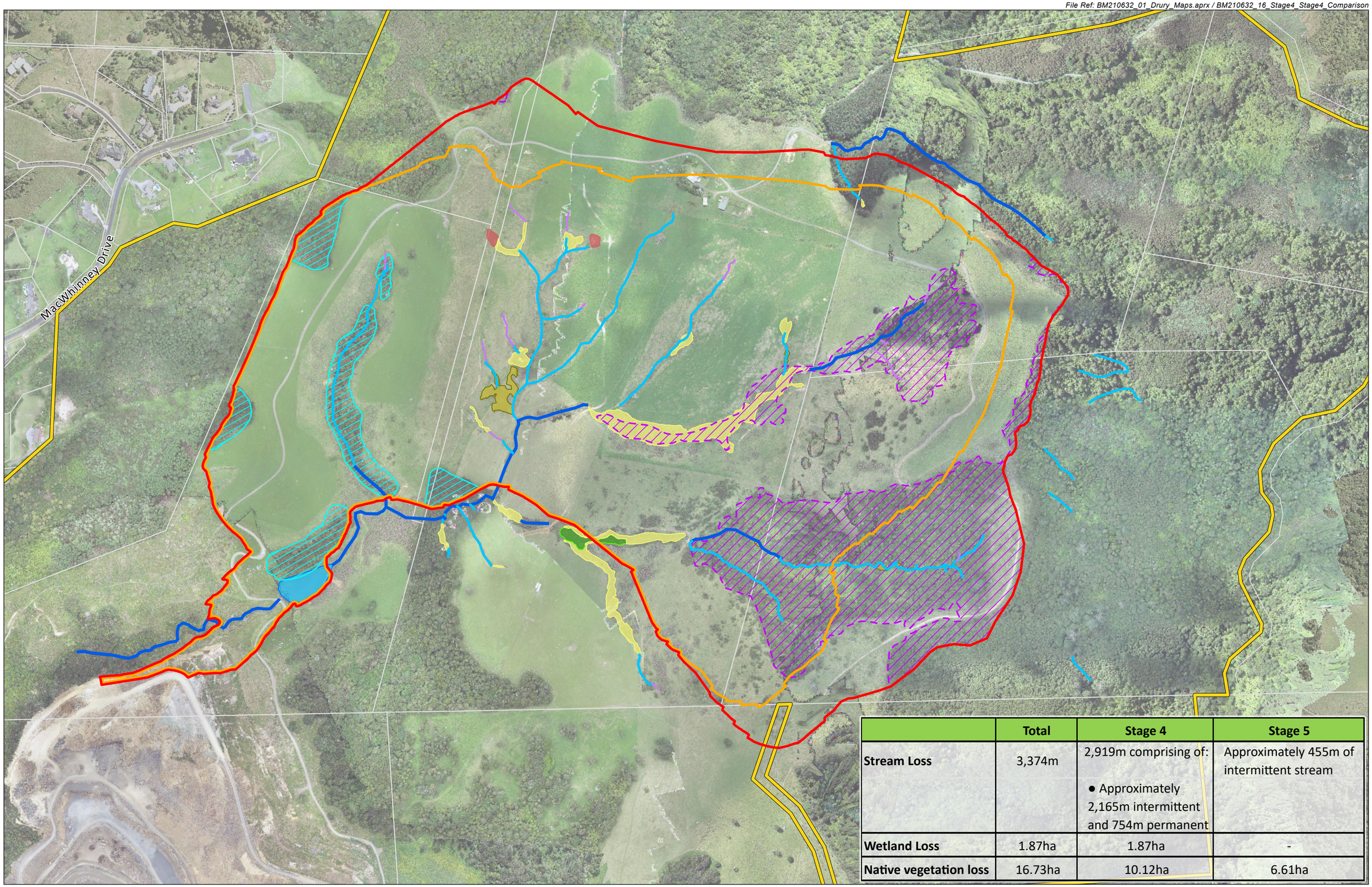
- No recorded archaeological sites were located within the Stage 4 Sutton Block pit footprint.
- Stage 5 would see the removal of one recorded NZAA site reference R12/724 (plants, fence, stonework, earthworks – Farmstead). This site relates to post-1900 activities and potentially might be the site of a farmstead, dating from the 1860s. A revised archaeological assessment has been undertaken to consider the effects.

Landscape and visual amenity:

- Mitigation planting of indigenous species is proposed around the lower flanks of Kaarearea Paa to connect with the existing planting and proposed ecological mitigation planting package. This will assist to visually and physically Kaarearea Paa to the surrounding landscape predominant ridges.
- Viewing audiences will be affected throughout the life of the project for different durations. To mitigate effects;
  - A 15 m wide planting buffer will be established in the west (exotic and native).
  - A 5 m wide planting buffer will be established between the toe of the northern bund and ONL until the bund is removed at Stage 5 (exotic, supplemented by native planting within the ONL which will remain after the bund is removed).
  - The eastern ridge will be lowered during Stage 5, therefore a range of indigenous trees will be interplanted near the crest of the newly formed ridge (proximate to the pit edge).
- Where exotic species are proposed for screening, these will be limited to one or two rows and supplemented with eco-sourced native trees.

Groundwater:

- Stage 4 proposed lowest groundwater dewatering level for the Sutton Block pit was -60 RL and a maximum groundwater diversion rate of 19,183 m 3/d. There is no change to the pit depth or, at this stage the groundwater diversion rate as a result of Stage 5. A revised groundwater assessment is currently being undertaken.
- Stage 4 predicted worst-case scenario zone of influence extends from 4.4 km (Stage 2) to 7.5 km (Stage 4).
- Stage 5 would result in a 50m increase in the worst-case scenario zone of influence. This is a very small increase that is not predicted to result in any additional drawdown or stream depletion effects.



	Total	Stage 4	Stage 5
Stream Loss	3,374m	2,919m comprising of: ● Approximately 2,165m intermittent and 754m permanent	Approximately 455m of intermittent stream
Wetland Loss	1.87ha	1.87ha	-
Native vegetation loss	16.73ha	10.12ha	6.61ha

STEVENSON
Boffa Miskell

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0 100 200 m
1:6,000 @ A3

Data Sources: Stevenson Aggregates (Aerials), LINZ (Aerials), BML

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- SAL Land Holdings
- Stage 5 life of quarry footprint approx. 108 ha
- Stage 4 footprint approx. 88 ha
- SEA Vegetation loss
- Non-SEA Vegetation loss
- Exotic Wetland
- Constructed Pond
- Raupo Wetland
- Constructed Wetland
- Herbaceous Wetland
- Permanent stream
- Intermittent stream
- Ephemeral
- Land Parcels

DRURY QUARRY

Stage 4 - Stage 5 Comparison

Date: 25 October 2024 | Revision: 0

Plan prepared by Boffa Miskell Limited

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