

Proposed Sutton Block, Drury Quarry

1:9 Ecology Documents Guide and Overview of Effects and Management Package

for: Stevenson Aggregates Limited





DOCUMENT CONTROL AND REVISION RECORD

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Package. Report for Stevenson Aggregates Limited pp 18.

Cover Illustration: View across parts of the proposed Sutton Block.

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EXECUTIVE SUMMARY

Stevenson Aggregate Limited (SAL) is proposing to develop a new pit within their existing Drury Quarry site, called the "Sutton Block". The Sutton Block is located to the northeast of the existing pit. The development of the Sutton Block will involve the staged development of an area of approximately 108 ha over an indicative 50 year timeframe.

This document provides a summary of the ecology related aspects of the project and lists the key documents provided, along with a summary of the content and findings of each report or plan. The ecological impacts are assessed for terrestrial and freshwater ecosystems, including fauna values. A comprehensive ecological management plan is provided for minimising these impacts. Where necessary, the offsetting for all significant residual effects has been modelled to develop appropriate actions. The actions required to address these significant residual effects have been fully developed through a series of Net Gain Delivery Plans for forest planting, forest enhancement (pest and weed control), wetland planting and riparian planting.

Expansion of Drury Quarry into the Sutton Block will require the removal of 16.78 ha of indigenous terrestrial vegetation and fauna habitat. Residual effects are proposed to be addressed through biodiversity offset and compensation actions that include a total of 62 ha of revegetation and 108 hectares native forest enhancement through mammalian predator and pest control.

The Sutton Block will also result in stream loss and wetland loss over a fifty-year period, equating to 3,341 lineal metres of stream loss and 1.88 ha of wetland loss. Offset for the loss of aquatic habitats is proposed, with 3.3km of stream to be enhanced with riparian planting and fencing and 4.04 ha of wetland will be restored, including creation of wetland habitat.

Actual and potential ecological impacts have been assessed and management actions, in accordance with the Effects Management Hierarchy are presented.

Overall, the proposal impacts a highly modified and predominantly open area of farmland that supports degraded forest fragments with few at-risk fauna. The proposed ecological management and offset package will result in significant restoration of the Drury Quarry property, whereby at least six fragments of mature podocarp and broadleaved forests will be reconnected and enhanced within the immediate landscape. These actions are part of a cohesive strategy, interconnected with multiple other restoration activities that have been initiated on site. Further to these onsite actions, restoration of Drury Islands (Ngā Motu o Hingaia) will add biodiversity gains to another ongoing restoration project, and following consultation outcomes.

Set out in Table 1 of this Summary Report is a tabular summary of the terrestrial and freshwater values assessed as part of the Project. It provides a conclusion on the level of effect, following actions undertaking to manage impacts to low or very low levels, or identifies where offset has been provided to achieve an overall net gain outcome



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1 INTRODUCTION

Drury Quarry is in Drury, Auckland Region, and has been in operation for over 80 years. Drury Quarry is a greywacke hard rock quarry supplying concrete, asphalt and roading aggregate to the Auckland market. The existing Drury Quarry pit is located within the wider landholdings owned by SAL which encompasses an area of approximately 562ha. This landholding includes quarry activities, a clean fill, farmland and large swathes of native vegetation.

Based on current demand estimates, the existing pit will provide approximately 20 years of aggregate supply to Auckland. To continue to provide a local supply of aggregate resource SAL proposes to develop a new pit within the existing site, called the "Sutton Block". The Sutton Block pit has been designed to provide approximately 240 million Tonnes of additional aggregate to supply the market.

The Sutton Block is located to the northeast of the existing pit. The development of the Sutton Block will involve the staged development of an area of approximately 108 ha to a maximum pit depth of approximately RL -60 m. The overall site layout, including staging plans, is shown on drawings SSQ_23_404, rev: 02 in Appendix C attached to the Assessment of Environmental Effects (AEE) report. 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) activities such as the weigh bridge, processing plant(s), storage bins and stockpile area, the lamella, staff facilities etc.

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.

Overall, the proposal will result in the direct loss of 16.78 ha of fragmented and degraded vegetation and habitats. Following ecological management, including fauna-specific and buffer planting, significant (moderate and higher) residual effects are expected following permanent loss of mature forest and habitats. A biodiversity offset would provide for 63 ha of revegetation (most of which would be planted in advance) and 108 ha of enhancement pest and weed control of existing forest, set strategically within a landscape where it will reconnect multiple mature forest fragments and habitats, including three existing Significant Ecological Areas totalling some 680.11 ha of continuous indigenous forest and habitat.



Table 1Summary of the value, magnitude of effect and level of effect for each of the assessed ecological components during the 5 indicative stages of pit development. Highlighted cells are residual effects that are addressed in the REAR-TE and REAR-SW

	Ecological Value	Indicative Stage 1			Indicative Stage 2			Indicative Stage 3			Indicative Stage 4			Indicative Stage 5		
Ecological Component		Magnitude of Effect	Level of Effect	Level of effect following management actions	Magnitude of Effect	Level of Effect	Level of effect following management actions	Magnitude of Effect	Level of Effect	Level of effect following management actions	Magnitude of Effect	Level of Effect	Level of effect following management actions	Magnitude of Effect	Level of Effect	Level of effect following management actions
Rock Forest (RF)	High	High	Very high	Net Gain	None	None	-									
Taraire, tawa, podocarp Forest (WF9)	Moderate	Moderate	Moderate	Net Gain												
Kānuka Forest (VS2)	Moderate	None	None	-	None	None	-	None	None		Low	Low	Very Low	Low	Low	Very Low
Native trees amongst pasture	Low	None	None	-	Low	Very low	Very low									
Exotic Forest	Negligible	Negligible	Very Low		Low	Very Low	Very Low									
Exotic Scrub	Negligible	Negligible	Very Low		Negligible	Very Low	Very Low	None	None	-	Negligible	Very Low	Very Low	Negligible	Very Low	Very Low
Exotic grassland	Low	Low	Very Low		Low	Very Low	Very Low									
Invertebrates	Low	Low	Very Low		Low	Very Low	Very Low									
Lizards	Moderate	low	Low	Low	Low	Low	Low	Negligible	Very Low	Very Low	Low	Low	Low	Low	Low	Low
Birds	Moderate	Low	Low	Very Low												
Bats	Moderate	Moderate	Moderate*	Low	Moderate	Moderate*	Low	Negligible	Very Low	Very Low	Moderate	Moderate*	Low	Moderate	Moderate*	Low
Stream 1	Moderate	None	None	-	None	None	-	None	None	-	Very High	High	Net Gain	None	None	-
Stream 1b	Low	None	None	-	None	None	-	None	None	-	Very High	Moderate	Net Gain	None	None	-
Stream 2 (headwaters)	Moderate	None	None	-	Very High	High	Net Gain									
Stream 2 (upper)	Moderate	None	None	-	None	None	-	None	None	-	Very High	High	Net Gain	None	None	-
Stream 2 (lower)	Low	None	None	-	None	None	-	Low	Low	Low	Low	Low	Low	None	None	-
Stream 2b	Moderate	None	None	-	None	None	-	None	None	-	Very High	High	Net Gain	None	None	-
Stream 3	Very Low	None	None	-	Negligible	Very Low	Low	None	None	-	None	None		None	None	-
Stream 4	Moderate	Moderate	Moderate	Low	Moderate	Moderate	Low	Moderate	Moderate	Low	None	None	-	None	None	-
Stream 5	Moderate	Very High	High	Net Gain	Very High	High	Net Gain	None	None	-	None	None	-	None	None	-
Stream 6	Low/Very Low	Very High	Moderate	Net Gain	None	None	-									
Stream 7	Very Low	None	None	-	None	None	-	Very High	Low	Net Gain	None	None	-	None	None	-
Stream 9	Low	Very High	Moderate	Net Gain	None	None	-									
Wetland 1a-1c	Moderate/Low	None	None	-	None	None	-	High	Moderate	Net Gain	Very High	High / Moderate	Net Gain	None	None	-
Wetland 2a north	Moderate	None	None	-	None	None	-	None	None	-	High	Moderate	Net Gain	None	None	-
Wetland 2a south	Moderate / Low	None	None	-	None	None	-	None	None	-	Low	Low	Low	None	None	-
Wetland 2b	Low	None	None	-	None	None	-	None	None	-	Low	Very low	Low	None	None	-
Wetland 3	Low	Negligible	Very Low	Very Low	None	None	-									
Wetland 6a-6d	Low	None	None	-	Very High	Moderate	Net Gain	None	None	-	None	None	-	None	None	-
Wetland 7a-7d	Low	None	None	-	Very High	Moderate	Net Gain	Very High	Moderate	Net Gain	None	None	-	None	None	-
Wetland 8	Low	Negligible	Very Low	Very Low	None	None	-									
Wetland 9	Low	None	None	-	None	None	-	None	None	-	Very High	Moderate	Net Gain	None	None	

^{*}Assessment is precautionary because bats have not been recorded at Sutton Block

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2 ECOLOGY DOCUMENTS

As part of the Sutton Block pit expansion, a full suite of ecology assessments, reports and plans have been developed (Table 2). A summary of each document, including its objectives and key findings are provided in this section. This table is provided at the start of each ecology document with the relevant document highlighted to improve navigation. This document is 1 of a series of 9 ecology documents (E1:9).

Table 2. Documents prepared as part of this project

Document name (abbreviated name)	Aspects covered							
E1:9 Ecology Documents Guide and Summary	Summary of the whole project and guidance for navigating documents.							
Ecological Impact and Management								
E2:9 Ecological Impact Assessment (EcIA)	Assessment of ecological values and impacts of the proposed Sutton Block on terrestrial and freshwater ecosystems, including regenerating and mature forest fragments, water courses and wetlands. Fauna values include common native invertebrates and birds, At Risk pipit, copper skinks, longfin eel and (potentially) threatened long-tailed bats. Recommendations are provided for avoiding, managing, offsetting and compensating for significant residual adverse effects.							
E3:9 Ecological Management Plan (EMP)	Management of ecological impacts in accordance with the effects management hierarchy, prior to and during and following construction. Specific impacts and values addressed in this Plan include: a) Management of Vegetation Removal b) Avifauna Management Plan c) Long-Tailed Bats Management Plan d) Native Lizard Management Plan e) Edge Effects Management Plan f) Native Freshwater Fauna Management Plan g) Sutton Block Riparian Planting Plan							
Residual Effects Analysis Reports (REAR)								
E4:9 REAR: Terrestrial Ecology (REAR-TE)	Residual effects on terrestrial ecosystems and fauna							
E5:9 REAR: Stream and Wetland Loss (REAR-SW)	Residual effects on freshwater ecosystems							
Net Gain Delivery Plans (NGDP)								
E6:9 NGDP: Planting Plan (NGDP:PP)	Terrestrial offset planting							
E7:9 NGDP: Pest and Weed Control (NGDP:PWC)	Terrestrial offset pest and weed control							
E8:9 NGDP: Wetland Planting (NGDP:WP)	Freshwater offset planting of wetlands.							
E9:9 NGDP: Riparian Planting (NGDP:RP)	Freshwater offset planting of streams.							



2.1 Ecological Impact Assessment (EcIA)

The purpose of the EcIA is to evaluate the terrestrial and freshwater ecological features within the Sutton Block and provide an assessment of the expected and potential effects of the proposed new pit, including construction and operation, on those values.

For terrestrial values, 16.78 ha of indigenous vegetation and fauna habitat would be removed to accommodate the new pit and associated infrastructure (Figure 1). Of this, 14.25 ha (84.9%) is within a Significant Ecological Area (SEA) overlay. Three different ecosystem types would be affected: Taraire, tawa podocarp forest (7.33 ha), Kanuka scrub/forest (8.8 ha) and Rock Forest (0.65 ha). The botanical values of the site are moderate to high. Areas of Rock Forest have high values and areas of Taraire, Tawa, Podocarp Forest and Kānuka Forest have moderate values. No Nationally Threatened plants were recorded within the Sutton Block. No threatened fauna were recorded, however At-Risk copper skink (*Oligosoma aeneum*), At-Risk New Zealand pipit (*Anthus novaeseelandiae*), and At-Risk longfin eel (*Anguilla dieffenbachii*) were recorded.

For Freshwater ecosystems, aquatic habitats on the site comprised streams and wetlands (Figure 2). The final pit will result in 115m of stream diversion and 128 m of stream creation (within the footprint of the current upper dam pond). In total 3,341 m of stream length and 1.88 ha of wetland areas would be removed over the approximately 50-year life of the pit.

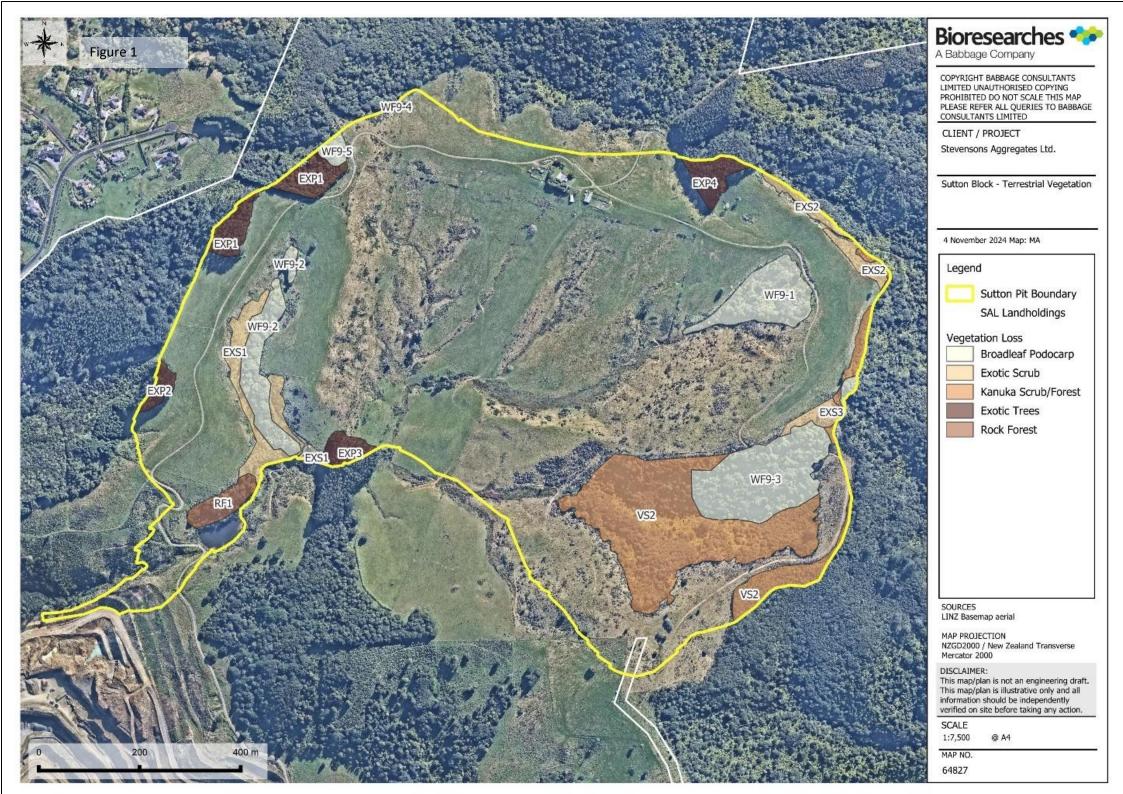
Based on the outcomes of this Ecological Impact Assessment, a suite of ecological management plans has been recommended to minimise expected adverse effects, and significant residual effects are further addressed in offset and compensation plans for loss of streams, wetlands and terrestrial ecosystems.

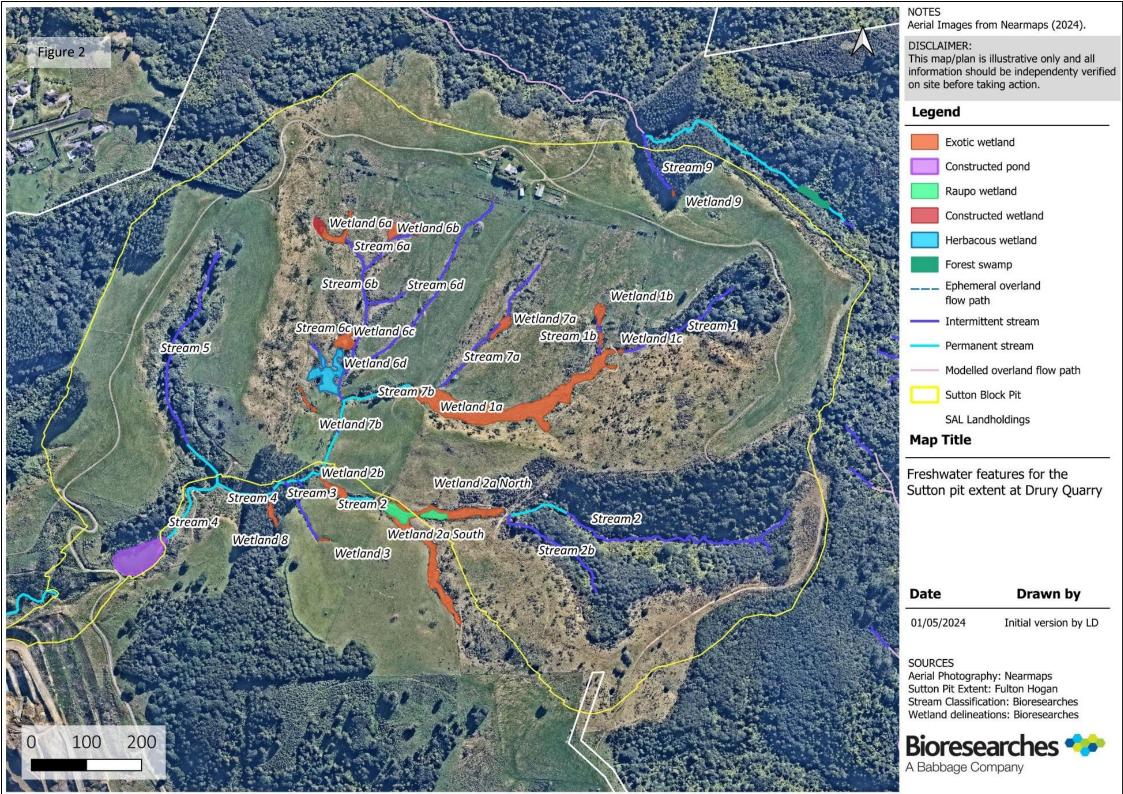
2.2 Ecological Management Plan (EMP)

This EMP encompasses a suite of management plans which will come into effect in the event of Stevensons obtaining resource consents for the development and operation of the Sutton Block. The purpose of the EMP is to avoid and minimise the potential effects on native biodiversity during development of the Sutton Block. The EMP sets out procedures for how adverse effects on ecological values will be minimised and managed, including:

- Management of Vegetation Removal
- Avifauna Management Plan
- Long-Tailed Bats Management Plan
- Native Lizard Management Plan
- Edge Effects Management Plan
- Native Freshwater Fauna Management Plan
- Sutton Block Riparian Planting Plan

Figure 1 (following pages). Terrestrial features at Drury Quarry, proposed Sutton Block Pit extent. Figure 2 (following pages). Freshwater features at Drury Quarry, proposed Sutton Block Pit extent.







2.3 Residual Effects Analysis Report: Terrestrial Ecology (REAR-TE)

The Residual Effects Analysis Report (REAR) for Terrestrial ecology is developed to address any residual effects that remain after actions undertaken to avoid, minimise and remedy effects (as identified in the EMP). Significant Residual adverse effects were assessed as being associated with the permanent loss of three indigenous ecosystem types: Broadleaved podocarp forest (7.33 ha), Kanuka scrub/forest (8.8 ha) and Rock Forest (0.65 ha).

The REAR-TE details methods, explanations and biodiversity attributes of these ecosystems, as input to biodiversity offset accounting models (BOAM). The BOAMs predicted gains from restoration actions over a total of 62 ha of revegetation and 108 hectares native forest enhancement through mammalian predator and pest control (Figure 3). The offset sites selected are primarily *in situ*, in the immediate area surrounding the existing and proposed pits, on the Drury Quarry property. Five hectares of the revegetation planting will occur at the Drury Islands (Ngā Motu o Hingaia) site. Additional contingency planting and enhancement is available at the Tuakau site owned by SAL, should it be required.

Overall, this outcome will result in significant restoration of the Drury Quarry property, whereby at least six fragments of mature podocarp and broadleaved forests will be reconnected and enhanced within the immediate landscape (Figure 3). These actions are part of a cohesive strategy, incorporating other restoration activities on site. Further, restoration of Drury Islands (Ngā Motu o Hingaia) will add biodiversity gains to another ongoing restoration project. The overall outcome for the loss of 16.78 ha of vegetation will be a significant biodiversity gain, with 62 ha of revegetation, 108 of pest and weed control of existing forest and reconnection multiple forest fragments, including 3 existing SEAs (680.11 ha).

2.4 Residual Effects Analysis Report: Stream and Wetland Loss (REAR-SW)

The Residual Effects Analysis Report (REAR) for Stream and Wetland Loss is developed to address residual effects that remain after minimising and mitigation actions, following the RMA hierarchy. In such cases, offsetting or compensation may be required. As the expansion of quarry will include the removal of natural wetlands, and permanent and intermittent streams, the loss of these aquatic habitats was assessed as a significant residual adverse effect requiring offset or compensation.

Expansion of Drury Quarry into the Sutton Block will result in stream loss and wetland loss over a fifty-year period, equating to 3,341 lineal metres of stream loss and 1.88 ha of wetland loss.

Offset for the loss of aquatic habitats is proposed, using the SEV / ECR methodology for streams, and wetland restoration based upon the primary attributes of the wetlands (in accordance with nationally and regionally accepted reference documents), a quantum of bed area and this was sense-checked using the Biodiversity Compensation Monel the (BCM). Aquatic restoration sites will be located on streams and wetlands at the Drury Quarry site (Figure 5) and the Stevenson Tuakau Site (Figure 4), located approximately 16 km south-east of the quarry. Stream enhancements, including riparian planting, addition of habitat (boulders, root wads), removal of culverts, partial restoration of native fish passage, and habitat creation are proposed as part of the offset package; plus, restoration of wetland habitats. At the Drury Quarry offset site and Tuakau Site, 3.3km of stream will be enhanced with riparian planting and fencing; culverts removed or replaced; a flood gate will either be removed or modified to allow for fish passage; and 4.04 ha of wetland will be restored, including creation of wetland habitat.



The restoration and enhancement of the degraded aquatic habitats will provide for a positive aquatic ecological benefit resulting in an overall net gain, with habitat creation, biodiversity gains, and restore connectivity to existing habitats and restoration habitats over extensive areas of both catchments.

2.5 NGDP: Planting Plan (NGDP:PP)

The purpose of the Net Gain Delivery Plans (NGDP): Forest Planting is to set out the site-specific revegetation plans to achieve the quantum and type of planting required to provide the modelled biodiversity offset for loss of native vegetation within the Sutton Block project area.

The NGDP: Forest Planting sets out the rationale for the revegetation of 62.32ha of Taraire tawa podocarp forest (WF9), rock forest (WF7.2) and kanuka scrub/forest (VS2) as part of the proposed biodiversity offset for the Sutton Pit Project (Figure 3). The offset planting will deliver the modelled net gain through a two-phase planting programme that aims to establish a young forest with the key species composition and diversity found in the ecosystems being lost. The plan includes methods for pest and weed control and long-term maintenance of the planting areas. Ongoing management and monitoring will occur over 20 - 30 years to ensure the projected biodiversity goals are achieved. Individual mature native trees that occur as isolated specimens or small groups across the site have also been accounted for as part of the BOAM. They will be offset through replacement planting at suitable sites as set out in this report.

The reforestation at Drury Quarry, will protect important habitats for native fauna and establish a large area of new native vegetation encircling the southern side of the proposed Sutton Pit Project. It represents a significant improvement in the extent, quality and connectivity of local indigenous biodiversity and habitats.

2.6 NGDP: Pest and Weed Control (NGDP:PWC)

The purpose of NGDP: Forest Enhancement is to set out site-specific enhancement actions to achieve the modelled ecological enhancement required to offset loss of native vegetation within the Sutton Pit project area. The REAR: Terrestrial Ecology sets out the rationale for the enhancement of 108.35ha of existing forest at the SAL site as part of the proposed biodiversity offset for the Sutton Block Pit (Figure 3).

Existing tracts of native forest that currently receive no control of pest mammalian predators or feral ungulate browsers will receive pest and weed control to reduce pest animal numbers and weeds to low levels. Control of pests and weeds will provide immediate habitat enhancement for native fauna and flora. These enhancement actions are designed to account for the time lag between loss of native habitats within the Project footprint and the eventual replacement of those habitat values by restoration planting.

The NGDP: Forest Enhancement describes best-practice methods for undertaking the required enhancement actions. The required record-keeping and long-term monitoring to support these actions and ensure the modelled biodiversity gains are achieved are set out and described, as are contingency actions to be implemented should biodiversity gains fall short of those predicted by the model.

2.7 NGDP: Wetland Planting (NGDP:WP)

The purpose of the NGDP: Wetland Planting is to offset the loss of wetland habitat within the Sutton Block expansion area. In total, 18,758 m² of wetland habitat will be lost over the course of the pit expansion. Approximately 4 ha of wetlands have been designed and proposed for planting at the Tuakau offset site, with



an offset ratio of 2:1. The restoration and enhancement of the degraded aquatic habitats within the Tuakau offset site (Figure 4) will provide positive aquatic ecological benefit, habitat creation, and biodiversity gains.

2.8 NGDP: Riparian Planting (NGDP:RP)

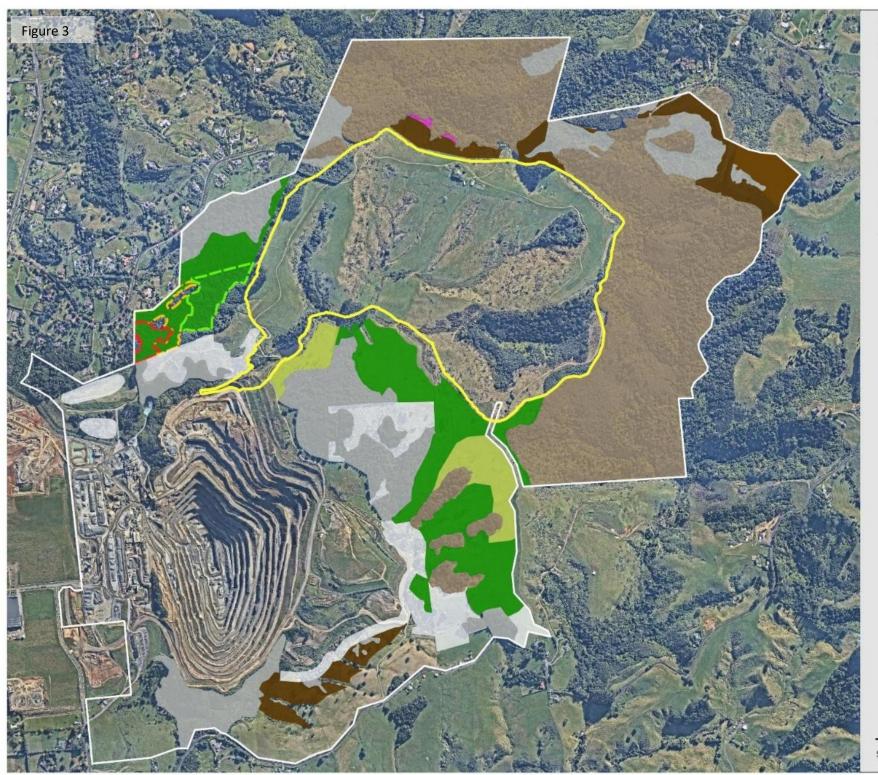
The purpose of the NGDP: Riparian Planting is to offset the loss of stream habitat within the Sutton Block expansion area (Figure 5). In total, 3,341 m of stream length will be lost over the 50 year course of the pit expansion.

To offset this loss, 1,052 m of stream length has been proposed for riparian planting within Drury Quarry property. In addition, 2,289 m of stream length has been proposed for riparian planting at the Tuakau offset site. The restoration and enhancement of the degraded aquatic habitats will provide a positive aquatic ecological benefit, habitat creation, and biodiversity gains.

Figure 3 (Following page). Residual effects actions for the proposed Sutton Block. Offset actions were determined by the REAR-TE and are covered by NGDP:PP and NGDP:PWC.

Figure 4. Potential stream and wetland offset sites at the Tuakau Site. Required stream length and wetland planting areas determined by the REARSW, with delivery information provided in the NGDP:WP.

Figure 5. Potential stream offset sites at Drury Quarry. Required stream length determined by the REAR-SW, with delivery information provided in the NGDP:RP.



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Stevensons Aggregates Ltd.

All Planting Stages

5 February 2025

Legend

Sutton Pit Boundary

SAL Landholdings

Sutton Block Enhancement Actions (108.35 ha)

Other Drury Quarry Planting Projects

Other Native Vegetation not part

of Sutton Offset

Revegetation Planting Drury Quarry

WF9 Total.....32.00 ha

WF9 -25% Uplift of 2.31 ha

Total Restoration Planting: 0.58 ha

WF9 -50% Uplift of 3.23 ha Total Restoration Planting: 1.61 ha

WF9 -80% Uplift of 1.34 ha

Total Restoration Planting: 1.07 ha

Rock Forest......8.32 ha

VS2.....17.00 ha

Relict Tree Planting

SCALE 1:15,000 Job: 64827



Tuakau Offset Opportunities

Drury Quarry Sutton Block
Date: 10/02/25 Drawn By: CG Scale: 1:4000 @ A4

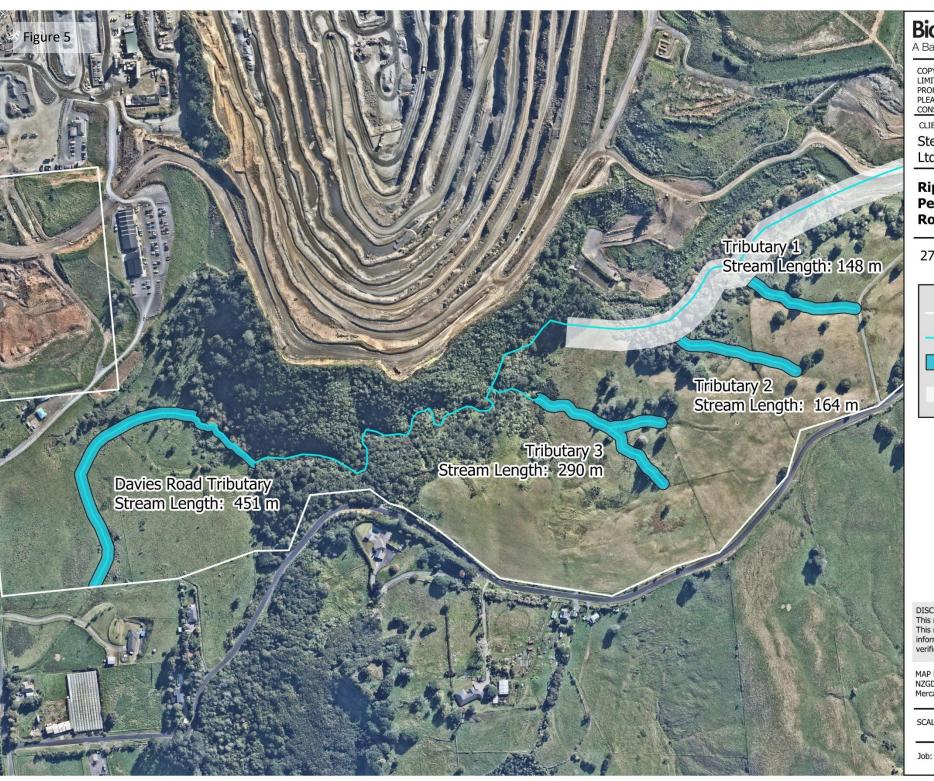
Legend

Riparian Offset Planting

Existing Kahikatea

Proposed Wetland Offset Site





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CLIENT / PROJECT

Stevensons Aggregates Ltd.

Riparian Planting Peach Hill and Davies Road

27 November 2024

SAL Landholdings

Streams

Riparian Planting 10m

> Thorburn Fill Offseting Actions

DISCLAIMER: This map/plan is not an engineering draft. This map/plan is illustrative only and all information should be independently verified on site before taking any action.

MAP PROJECTION NZGD2000 / New Zealand Transverse Mercator 2000

SCALE 1:5,000

Job: 64827



APPLICABILITY AND LIMITATIONS

Restrictions of Intended Purpose

This report has been prepared solely for the benefit of Stevenson Aggregates Limited as our client with respect to the brief. The reliance by other parties on the information or opinions contained in the report shall, without our prior review and agreement in writing, be at such party's sole risk.

Legal Interpretation

Opinions and judgements expressed herein are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions. Where opinions or judgements are to be relied on, they should be independently verified with appropriate legal advice.

Maps and Images

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