

Technical Specialist Memo – Regional Earthworks

To: Colin Hopkins – Lead Planner & Doug Fletcher – Principal Project Lead

From: Shanelle Beer Robinson – Senior Specialist, Earthworks and Streamworks

Qualifications
& Relevant
Experience:

I hold the qualification(s) of: Bachelor of Arts (majoring in Earth Science) and a Postgraduate Certificate in Public Policy (Environmental Policy) and have seven years of experience in environmental science including earthworks, streamworks and wetland assessments and environmental monitoring.
I am a full member of Environment Institute of Australia and New Zealand (EIANZ), the International Erosion and Sediment Control Association (IECA).
I have prepared expert evidence and technical assessments for resource consent applications, plan changes and fast-track applications, and have appeared as an expert witness before the consent authorities and the Environment Court.

Preparation in
Accordance
with the Code
of Conduct:

I confirm that I have read the Environment Court Practice Note 2023 – Code of Conduct for Expert Witnesses ([Code](#)), and have complied with it in the preparation of this memorandum. I also agree to follow the Code when participating in any subsequent processes, such as expert conferencing, directed by the Panel. I confirm that the opinions I have expressed are within my area of expertise and are my own, except where I have stated that I am relying on the work or evidence of others, which I have specified.

Date: 19th September 2025

1.0 APPLICATION DESCRIPTION

Application and property details

Fast-Track project name: Drury Quarry Expansion – Sutton Block

Fast-Track application number: FTAA-2503-1037 (EPA reference) + BUN60449474 (Auckland Council reference)

Site address: 121 MacWhinney Drive, Drury; 1189 Ponga Road, Drury; 2113 and Ponga Road, Papakura

2.0 Executive Summary / Principal Issues

This assessment relates to the Regional Earthworks (Chapter E11 of the AUP and Regulation 54b of the NESF) and related Streamworks matters regarding in-stream construction methodology. The freshwater ecological assessment relating to stream and wetland works have been undertaken by Andrew Rossaak.

Reasons for Consent:

Auckland Unitary Plan (AUP):

- Consent has been sought under E11.4.1(A9) for earthworks greater than 2,500m² within a Sediment Control Protection Area (Restricted Discretionary Activity).
- Additionally, consent has been sought under E11.4.3(A28) and (A30) for land disturbances greater than 5m² and 5m³ in a Significant Ecological Area (Restricted Discretionary Activity).

I consider that consent is also required under E11.4.1(A8) for earthworks greater than 2,500m² where land has a slope equal to or greater than 10 degrees (Restricted Discretionary Activity).

National Environmental Standards for Freshwater (NESF) 2020:

- Consent has been sought under Regulation 45A(2) for earthworks or land disturbance within, or within a 10m setback from, a natural inland wetland for the purpose of quarrying activities (Discretionary Activity)

The applicant has demonstrated that the effects on the environment from earthworks activities and any resulting sediment discharge can be appropriately managed and mitigated, noting that provision for Freshwater Baseline Monitoring and a Rainfall Management Plan is required prior to the commencement of works and has been recommended by way of consent condition. The ESCP submitted by Southern Skies Environmental Ltd forms part of the Sutton Block Quarry Management Plan also prepared as part of the fast-track application and I have assessed this as being in accordance with GD05, noting that final plans will be prepared prior to the commencement of works.

3.0 Documents Reviewed

- Drury Quarry – Sutton Block Expansion. Application for Resource Consent and Assessment of Environmental Effects. Prepared by Tonkin + Taylor, Version 6, dated 31/03/2025.
- Proposed Sutton Block, Drury Quarry E2:9 Ecological Impact Assessment for Stevenson Aggregates Limited, Version 3, prepared by JS Ecology & Bioresarches and dated 28 March 2025.
- Proposed Sutton Block, Drury Quarry E3:9 Ecological Management Plan for Stevenson Aggregates Limited, Version 1, prepared by JS Ecology & Bioresarches and dated 17th January 2025.
- Erosion and Sediment Control Assessment Report Drury Quarry – Sutton Block. 475 Quarry Road, Drury. Prepared for Stevenson Aggregates Limited, prepared by Southern Skies Environmental.
- Quarry Management Plan – Sutton Block. Prepared by Stevenson, Issue No 000, Dated 28/03/25.

- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Enabling Works. Drawing No. ESCP-DQSB-01, Sheet 1, Revision D, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 1. Drawing No. ESCP-DQSB-02, Sheet 2, Revision D, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 2. Drawing No. ESCP-DQSB-03, Sheet 3, Revision D, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 3. Drawing No. ESCP-DQSB-04, Sheet 4, Revision D, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 4. Drawing No. ESCP-DQSB-05, Sheet 5, Revision D, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 5. Drawing No. ESCP-DQSB-06, Sheet 6, Revision D, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 6. Drawing No. ESCP-DQSB-07, Sheet 7, Revision D, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 7. Drawing No. ESCP-DQSB-08, Sheet 8, Revision E, dated 12.02.24
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 8. Drawing No. ESCP-DQSB-09, Sheet 9, Revision E, dated 12.02.24
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Phase 9. Drawing No. ESCP-DQSB-10, Sheet 10, Revision E, dated 12.02.24
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Northern Bund. Drawing No. ESCP-DQSB-NB-01, Sheet 11, Revision C, dated 26.09.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – NW Haul Road. Drawing No. ESCP-DQSB-HR-01, Sheet 12, Revision B, dated 26.09.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Overburden Stockpile Area. Drawing No. ESCP-DQSB-OB-01, Sheet 13, Revision B, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Overburden Stockpile Area. Drawing No. ESCP-DQSB-OB-01, Sheet 13, Revision B, dated 14.12.23
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 1: Pit Plan 3-Year (Indicative). Drawing No. ESCP-DQSB-P-01, Sheet 14, Revision C, dated 12.02.24
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 2: Pit Plan 15-Year (Indicative). Drawing No. ESCP-DQSB-P-02, Sheet 15, Revision C, dated 12.02.24
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 3: Pit Plan 30-Year (Indicative). Drawing No. ESCP-DQSB-P-03, Sheet 16, Revision C, dated 12.02.24
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 4: Pit Plan 40-Year (Indicative). Drawing No. ESCP-DQSB-P-04, Sheet 17, Revision C, dated 17.10.24
- Drury Quarry – Sutton Block Erosion and Sediment Control Plan – Stage 5: Final Pit Plan. Drawing No. ESCP-DQSB-P-05, Sheet 18, Revision A, dated 17.10.24.
- General Conditions – Drury Quarry Sutton Block. Version dated: 12 August 2025 (Provided after panel appointment).

4.0 Specialist Assessment

Regional Earthworks

The application is supported from a regional earthworks perspective as the applicant has demonstrated that the effects on the environment regarding sediment discharge will be appropriately managed and mitigated.

I undertook a site visit on the 28th July 2025 alongside other council specialists, consultants and the Stevenson team.

Proposal:

Sutton Block, comprising approximately 108ha, located on the north-eastern part of site is currently used as grazing pasture. The existing pit will provide approximately 20 years of additional aggregate supply and in order to continue supply (additional 240 million tonnes of aggregate), the development of a new pit called “Sutton Block” is proposed.

Sutton Block will operate as a separate quarry pit to the existing pit, although will be serviced by the existing ancillary site infrastructure and facilities.

There are two main stream systems associated with the Quarry:

1. Quarry Stream in the front of the quarry; and
2. Peach Hill stream behind the quarry.

To enable the development of Sutton Block, the project will include the establishment of a haul road access and infrastructure, overburden removal, stockpiles including bunding and additional supporting infrastructure.

Works are proposed to be undertaken in stages:

- Stage 1 including the infrastructure establishment including roading and installation of ESC devices, overburden removal, stockpiles and bunding is said to take approximately 3 years.
- Stage 2 is the 15-year plan with the proposed commencement of quarrying activities with an indicative staging plan stating this will start in the east (however, the applicant has stated this depends on market demand). Expansion of the pit will be incremental with internal pit roads constructed. Stage 2 will also involve stream diversion and wetland reclamation.
- Stage 3 is the 30-year plan, where the works will generally include the same activities as Stage 2, over a longer time frame and expansion of the pit.
- Stage 4 is the 40-year plan, where works will include quarry expansion to the east and the south with the same activities to occur as previous stages.
- Stage 5 is the life of the quarry plan, over a 50-year period. This final stage will reflect the quarry pit full extent with the progressive deepening to a maximum depth of 60mRL1.

Assessment:

The applicant has provided a series of draft and indicative erosion and sediment control plans, prepared in general accordance with GD05.

The current quarry operation includes a water management system that has been recently upgraded and includes a lamella (a type of sedimentation tank that separates solid particles from liquid using included plates) and filter press, discharging to a clean water pond. This system is stated to have significant extra capacity to accommodate the Sutton Block pit. A series of automated and manual pumps move water around the site and all pumped water is treated before being discharged off site.

The highest risk works from an earthworks perspective and potential sediment discharges relate to the initial Stage 1 works over a 3-year period where overburden material will be removed, stockpiles and bunds formed, and stream diversion/wetland reclamation is to occur. Given the overburden material is proposed to be sold off as fill, and that there is unknown demand for fill and potential that material cannot be sold offsite, it is proposed that the material will be placed in a designated overburden disposal area along the northern site boundary. It is expected the overburden may be in place for 10-15 years (see Figure 1 for location). Unlike the Quarry works which discharge to either Quarry Stream or Peach Stream, the northern bund works would discharge in a northerly direction towards Waihoihoi Stream and a Significant Ecological Area (SEA_T_5323). It was raised during the s67 process that the overburden area as shown in Figure 1 appears to potentially encroach on the SEA boundary. Although consent is sought for the SEA encroachment in the middle of the site, it is unclear whether there is a proposed set-back from the northern SEA and whether this encroachment is necessary.

The enabling work also includes the removal of a weir and the construction of a new stream channel around the left bank of the dam footprint to discharge into the culvert at the crossing. This is required as a Sediment Retention Pond will be constructed where the dam/pond currently exists. As raised in the s67 process, there was no standalone streamworks methodology prepared as part of the application to understand how works would be undertaken in accordance with GD05. However, I note that the specific details can be provided as part of an updated ESCP as requested by the applicant. Per standard approach for in-stream works, I also considered it necessary that a streamworks management plan is prepared prior to works commencing and a consent condition relating to this has been included below.

It was queried through the s67 process as to why an Adaptive Management Plan (AMP) had not been prepared in support of the Erosion and Sediment Control Plans. However, from the response received, it is noted that the “highest risk” works over the first 3-year period, is limited to 2-4 hectares of open area. However, I consider that given the long-term duration of works (50+ years), the number of impacts to receiving environments including stream diversions and wetland reclamations and ongoing pumping/discharge to receiving environments downstream, it would be beneficial to understand the baseline conditions of freshwater environments and implement responses to any rainfall events which exceed >25mm in 24 hours or >15mm in an hour. As such, conditions relating to freshwater baseline monitoring and rainfall response have been included below in lieu of the typical full set of AMP conditions. I note that the applicant provided rainfall monitoring and the inclusion of a rain gauge as part of their proposed consent conditions. I support the use of a rain gauge and monitoring on site.

5.0 Section 67 Information Gap

I have identified that there are no section 67 information gaps.

6.0 Recommendation

The regional earthworks assessment does not identify any reasons to withhold consent and the aspects of this proposal considered by this memo could be granted consent, subject to recommended conditions, for the following reasons:

1. The sensitivity of the receiving environment to the adverse effects of potential sediment discharges will not be compromised given the nature of the proposed works and the implementation of suitable designs, control technologies and appropriate on-site management techniques.
2. Subject to the imposition of consent conditions including the requirement for baseline monitoring of the receiving environment and rainfall monitoring, I consider that the effects on the aquatic receiving environment will be appropriately managed and mitigated.

I consider it appropriate to recommend a suite of consent conditions including a finalised ESCP, a Rainfall Monitoring Plan, the monitoring and maintenance of erosion and sediment controls, freshwater baseline reporting, seasonal restrictions and progressive stabilisation of the site. The inclusion of these conditions is consistent with similar earthworks operations granted consent for in the Auckland Region, and the wider site, and will ensure that the effects of the proposed works will be appropriately managed.

7.0 Proposed Conditions

Draft Conditions provided by the applicant on 12 August 2025:

21. Prior to the commencement of earthworks activity on the subject site, a finalised Erosion and Sediment Control Plan (ESCP) must be prepared in accordance with GD05, by a suitably qualified and experienced person and submitted to council for certification. No earthworks activity on the site must occur until Council has certified that the ESCP meets the requirements of GD05. The SESCPs ESCP must include: (a) Drawings showing location and quantities of earthworks, contour information, catchment boundaries and erosion and sediment controls (location, dimensions, capacity);	I suggest that the condition is in line with wording from Auckland Council's Condition Manual and other regional earthworks proposals across Auckland. Advice note added for compliance purposes and due to the long duration of works.
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(b) Supporting calculations for erosion and sediment controls; (c) Details of construction methods to be employed, including timing and duration; (d) Dewatering and pumping methodology; (e) Details of the proposed water treatment devices; (f) A programme for managing exposed areas, including progressive stabilisation considerations and maximum open areas; (g) Roles and responsibilities under the SESP and identification of those holding roles, including the suitably qualified person; and (h) Monitoring, maintenance and record-keeping requirements. (i) The consent holder must keep records detailing: (j) The monitoring undertaken; (k) The erosion and sediment controls that require maintenance; and (l) The time when the maintenance was completed. <u>Advice Note:</u> In the event that minor amendments to the ESCP are required, any such amendments must be limited to the scope of this consent. Any amendments which affect the performance of the ESCP may require an application to be made in accordance with section 127 of the RMA. Any minor amendments must be provided to the Council prior to implementation to confirm that they are within the scope of this consent.		
<u>23.</u> Prior to the commencement of earthworks activity on the subject site, a finalised Chemical Treatment Management Plan must be prepared in accordance with GD05 and submitted to council for certification. Earthworks activities must not commence until certification is provided by Council that the ChTMP meets the requirements of GD05, and the measures referred to in the plan have been put in place. The ChTMP must include: (a) Specific design details of the chemical treatment system for the	I suggest that the condition is in line with wording from Auckland Council's Condition Manual and other regional earthworks proposals across Auckland.	

Project's SRP and DEB; (b) Monitoring, maintenance (including post-storm) and contingency programme (including a record sheet); (c) Bench testing results, including testing and analysis of both chemical and organic flocculants; (d) Details of optimum dosage (including assumptions); (e) Results of initial chemical or organic treatment trial; (f) A spill contingency plan; and 18.24. (g) Details of the person or bodies that will hold responsibility for operation and maintenance of the chemical treatment system and the organisational structure which will support this system.		
77. Prior to bulk earthworks commencing at the Site, the consent holder must submit to the Council 'As-Built Certification Statements', signed by a SQEP confirming that erosion and sediment controls have been constructed in accordance with the certified CESCOP required by Condition 10 for certification. Within ten (10) working days following the implementation and completion of specific erosion and sediment control works referred to in Condition 23, and prior to the commencement of the earthworks activity on the subject site, a suitably qualified and experienced person must provide written certification confirming that the erosion and sediment control measures have been constructed in accordance with GD05. Written certification must be in the form of a report or any other form acceptable to Council. Certified controls must include any Clean Water Diversions, Dirty Water Diversions, Super Silt Fences, Silt Fences, stabilised entranceways, Sediment	I suggest a complete revision of condition to ensure wording is consistent with Auckland Council Condition Manual – Earthworks Conditions to provide specific timing, certification, requirements for controls and advice note.	

Retention Ponds, Decanting Earth Bunds, any other authorised impoundment device. Information supplied if applicable, must include: • <u>Details on the contributing catchment area;</u> • <u>Size of structure;</u> • <u>Retention volume of structure (dead storage and live storage measured to the top of the primary spillway);</u> • <u>Dimensions and shape of structure;</u> • <u>Position of inlets/outlets; and</u> • <u>Stabilisation of the structure.</u> <u>Advice Note:</u> Suitable documentation for certification of erosion and sediment control devices, can be obtained in Appendix C of Auckland Council Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, June 2016, Incorporating Amendment 3 (GD05): Erosion and Sediment Control construction quality checklists.		
82. The operational effectiveness of all erosion and sediment controls required by the certified ESCP as outlined in the SESP will must be monitored and maintained in accordance with the Auckland Council Guideline Document 2016/005 Erosion and Sediment Control Guideline for Land Disturbing Activities in the Auckland Region (GD05) throughout the duration of the earthworks activity, or until the site is permanent stabilised against erosion. A record of any maintenance work must be kept and be supplied to Council on request. <u>Advice Note:</u> As a guide, maintenance of the erosion and sediment control measures required by condition (XX) should seek to ensure that the accumulated sediment be removed from sediment retention devices prior to reaching 20% of total storage capacity. Sediment removed from treatment devices should be placed on stable ground where it cannot re-enter the device or be washed into any watercourse. Where maintenance work is required to ensure the effectiveness of these erosion and sediment control measures, the record should include the date, time and details on the nature of any maintenance. The site	I suggest that the condition is in line with wording from Auckland Council's Condition Manual and other regional earthworks proposals across Auckland. Advice note added for compliance purposes and due to the long duration of works.	

manager (or equivalent) will need to ensure regular inspections of these measures, and particularly within 24 hours after any rainstorm event. Where it is identified that erosion and sediment control measure have become ineffective and maintenance is required, Council should be contacted via email at monitoring@aucklandcouncil.govt.nz.		
<u>83.</u> The following inspections and responses must be undertaken and recorded: (a) Weekly inspection: Site inspections must be undertaken by the Quarry Manager (or representative) to inspect all ESC measures, identify any maintenance or corrective actions necessary, assign timeframes for completion, and identify any devices that are not performing as anticipated through the ESCPs. (b) Pre-rain event inspection: Prior to any rainfall events <u>of 15mm in 1 hour or 25mm in a 24 hour period, excluding that cause surface water runoff</u>, inspections must be made of ESC devices, including chemical treatment systems, to ensure that they are fully functioning in preparation for the forecast event. Any maintenance will be documented and must be undertaken immediately. (c) Post-rain event inspection: Following all rainfall events <u>that cause surface water runoff of 15mm in an hour or 25mm in 24 hours</u>, inspections must be made of all ESC measures to ensure that all controls have performed as expected and to identify any maintenance requirements. All maintenance items must be documented must be undertaken immediately.	Edits to ensure that measures are in line with typical monitoring and forecasted values. Removal of the rain gauge totals used for pre and post inspections given that the rain gauge cannot determine pre-inspection requirements, only forecasting can do so.	

Rainfall measurement: Rainfall measures must be determined using an on-site rain gauge which must be appropriately maintained. ~~This gauge must be used to confirm rainfall totals for the purpose of determining when pre and post rainfall inspections under Conditions (b) and (c) are triggered.~~

Additional Earthworks Conditions:

X1. The conditions of this consent may be reviewed every two years from the date of granting pursuant to section 128 of the RMA, by giving notice pursuant to section 129 of the RMA, for the following purposes:

- a) To deal with any significant adverse effect on the environment arising or potentially arising from the exercise of the consent and which was not apparent at the time of granting the consent.
- b) In the case of earthworks, to alter monitoring requirements as a result of previous monitoring outcomes, and/or in response to changes to the environment and/or hydro-geological knowledge.
- c) To deal with any adverse effect on the environment arising or potentially arising from the exercise of this consent and in particular effects on: water quality; sediment transport; and functioning of natural ecosystems; through altering or providing specific performance standards.

X2. The conditions of this consent may be reviewed at any time, if it is found that the information made available to the Council in the application contained inaccuracies which materially are such that it is necessary to apply more appropriate conditions.

X3. The site must be progressively stabilised against erosion at all stages of the earthwork activity and must be sequenced to minimise the discharge of contaminants to groundwater or surface water, in accordance with the approved Erosion and Sediment Control Plan.

Advice Note:

Interim stabilisation measures may include

- *The use of waterproof covers, geotextiles, or mulching.*
- *Top-soiling and grassing of otherwise bare areas of earth.*

- *Aggregate or vegetative cover that has obtained a density of more than 80% of a normal pasture sward.*

It is recommended that you discuss any potential measures with Council who may be able to provide further guidance on the most appropriate approach to take. Please contact Council on monitoring@aucklandcouncil.govt.nz for more details. Alternatively, please refer to [“GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland region”](#).

X4. Immediately upon completion or abandonment of earthworks on the subject site all areas of bare earth must be permanently stabilised against erosion and temporary diversions of surface water must be removed.

Advice Note:

Diversions of surface water include clean and dirty water diversion bunds, drains, pipes or channels. Measures to stabilise against erosion may include [add or delete as necessary]:

- *The use of mulching.*
- *Top-soiling and grassing of otherwise bare areas of earth.*
- *Aggregate or vegetative cover that has obtained a density of more than 80% of a normal pasture sward.*

The on-going monitoring of these measures is the responsibility of the consent holder.

It is recommended that you discuss any potential measures with Council who will guide you on the most appropriate approach to take. Please contact Council on [insert email and/or phone number or email (monitoring@aucklandcouncil.govt.nz)] for more details. Alternatively, please refer to [“GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland region”](#)

X5. Earthworks on the subject site must not be undertaken between 01 May and 30 September in any year, without the submission of a ‘Request for winter works’ for approval to Council. All requests must be renewed annually prior to the approval expiring and no works must occur until written approval has been received from Council. All winter works will be re-assessed monthly or as required to ensure that adverse effects are not occurring in the receiving environment and approval may be revoked by Council upon written notice to the consent holder.

Advice Note

Any ‘Request for winter works’ will be assessed against criteria in line with the information required to assess a comprehensive application. Principally that will focus on the level of risk, the propensity to manage that risk with contingency planning and a ‘track record’ of good compliance with consent requirements. Each ‘Request for winter works’ submitted, should include the following:

- *Description of works proposed to be undertaken between 01 May and 30 September and the duration of those works.*

- *Details of proposed measures to prevent sediment discharge from these specific works, particularly during periods of heavy rainfall.*
- *Details of area(s) already stabilised.*
- *Revised erosion and sediment control plan detailing stabilisation to date and time line/staging boundaries showing proposed progression of stabilisation.*
- *Contact details for contractor who will undertake stabilisation of the site including date(s) expected on site.*
- *Alternatives/contingencies proposed if the contractor referred to above becomes unavailable.*
- *Details of site responsibilities, specifically who is responsible for erosion and sediment controls and stabilisation processes over the specified period.*

X6. All sediment retention ponds, decanting earth bunds and any other impoundment device required by the approved ESCP, must be chemically treated in accordance with the approved Chemical Treatment Management Plan (ChTMP). All measures required by the ChTMP must be put in place prior to commencement of the earthworks activity and be maintained for the duration of the earthworks activity.

X7. Prior to the commencement of any earthworks on the subject site, a Rainfall Monitoring Plan (RMP) must be prepared and submitted to Council for certification. Earthworks activity on the subject site must not commence until the Council has certified that the RMP satisfactorily meets the requirements below:

- a. Details of what rain gauge will be used to accurately measure rainfall events onsite (i.e. onsite rain gauge or Council monitoring reference site).
- b. Details of the chosen contractor and personnel responsible for monitoring the rain gauge and undertaking rainfall response monitoring.
- c. A regime for rainfall response monitoring that includes:
 - i. Within 12 hours following a rainfall event of 25mm+ over 24 hours, the consent holder / contractor must undertake a full assessment of all erosion and sediment control measures, photograph devices (including key sections of diversion channels / bunds and the associated discharge points to the receiving environment), and identify any maintenance and / or repair required for the devices.
 - ii. The consent holder / contractor must undertake all maintenance / repairs as soon as possible after the rain event.
 - iii. The details of the site inspection, including notes, photos and evidence confirming completion of maintenance and repairs must be submitted in the form of a written report to Council within one week of the rain event occurring.
- iv. Notification to the Council within 24 hours of any untreated/unmanaged discharge beyond the site boundary due to a breach of perimeter controls.

The rainfall monitoring & maintenance activities must be implemented for the duration of the earthworks activity in accordance with the certified RMP.

X8. A Freshwater Baseline Report must be prepared to confirm pre-construction baseline environmental conditions. The Freshwater Baseline Report must be submitted to the Council for certification at least 20 working days prior to the programmed commencement of works and must confirm pre-construction environmental conditions.

X9. The pre-construction monitoring must be undertaken by a suitably qualified and experienced freshwater ecologist for one summer and one winter period prior to commencement of Construction Works.

X10. A Freshwater Baseline Report required by Condition X7 must include as a minimum, information on the following matters:

- a. sediment quality such as description of sediment inputs, transport, substrate composition and embeddedness.
- b. water quality such as TSS and turbidity.
- c. identify the pre-construction condition of any Erosion Prone Streams against which to measure construction effects and possible mitigation measures. j

Advice Note:

Pre-construction baseline monitoring of the receiving environment must be completed prior to the earthworks commencing, to confirm pre-construction environmental conditions. The pre-construction baseline monitoring will then provide a more detailed understanding of receiving environment characteristics over a range of weather conditions and / or seasons. The details and content (methodology) of the Baseline Monitoring will be specific to each site and should be discussed with council prior to being undertaken.

Streamworks Conditions:

X1. Streamworks on the site must not be undertaken between 1 May and 30 September in any year, without the submission of a 'Request for winter works' for approval to the Council. All requests must be renewed annually prior to the approval expiring and no works must occur until written approval has been received from the Council. All winter works will be re-assessed monthly or as required to ensure that adverse effects are not occurring in the receiving environment and approval may be revoked by the Council upon written notice to the consent holder.

Advice Note:

Any request for winter works outside these periods will require information addressing the level of risk, contingency methods to manage the risk, including demonstrating that the selected contractor has established experience and record of compliance with the resource consent conditions.

Any request for 'winter works' (excluding any period to protect fish spawning habitat), should include:

- *Description of scope of works proposed for the period outside 1 May to 30 September*

- *Measures to prevent sediment discharge from the specific works, especially during periods of heavy rainfall*
- *Details of the area(s) that are already stabilised*
- *Amended stream management plan and methodology/ or erosion sediment control plan detailing stabilisation to date and time / staging boundaries with proposed progression of stabilisation / re-vegetation (and integration between any stream management plan and erosion sediment control measures);*
- *Contact details of the contractor who will undertake stabilisation of the site (including dates expected on site);*
- *Contingencies proposed if contractor above becomes unavailable*
- *Details of site responsibilities, specifically for erosion and sediment controls and stabilisation processes over period*

X2. Prior to the commencement of the streamworks activity, a finalised streamworks management plan (StMP), must be submitted to the Council for certification. The purpose of the StMP is to provide a finalised streamworks methodology and management measures that enables effects of streamworks to be managed during construction in accordance with best practice (and with a prompt to integrate with any other management plan, such as earthworks, sediment control, fish capture and relocation etc)

Streamworks activity must not commence until written certification is provided from the council.

The StMP must include as a minimum but not be limited to:

- management measures to demonstrate how erosion and sediment controls will avoid sediment or sediment laden water entering the stream in accordance with best practice;
- management of contaminants to water (e.g. hydrocarbons, construction materials);
- maintenance of fish passage during and after the streamworks;
- methodology for diverting upstream flows during the streamworks, including how sufficient flow will be maintained at all times below the site of the works to maintain in-stream biota;
- a detailed methodology for the disturbance / diversion and
- details of final streambed remediation or stabilisation upon completion of stream works

X3. All streamworks must be undertaken in accordance with the certified StMP and measures identified within the StMP must be implemented and maintained throughout the streamworks activity.

X4. All pumps used to dewater the stream(s)/wetland(s) and pond(s) must have a 3mm mesh screen to prevent fish from entering the pump.

8.0 Supporting Documents



Figure 1 - Northern Bund and Overburden Stockpile