

1.0 Technical Specialist Memo – Earthworks & Erosion and Sediment Control

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| To: | Warwick Pascoe – Premium Project Lead Celia Wong – Senior Planner, Resource Consents Louise Barclay & Jo Hart – Senior Planner, Notices of Requirement |
| From: | Matthew Byrne - Erosion & Sediment Control Consultant to Earth, Streams and Trees Team |
| Qualifications & Relevant Experience: | <p>I hold the qualifications of: Bachelor of Environmental Studies and have over 21 years of experience in the field of earthworks, streamworks and erosion and sediment control assessment, and earthworks and streamworks environmental compliance monitoring.</p> <p>I am a member of the International Erosion and Sediment Control Association (Australasia). I have prepared expert evidence and technical assessments for resource consent applications, plan changes, notices of requirement for designation and fast-track applications, and have appeared as an expert witness before consent authorities and the Environment Court on multiple occasions.</p> |
| Preparation in Accordance with the Code of Conduct: | <p>I confirm that I have read the Environment Court Practice Note 2023 – Code of Conduct for Expert Witnesses 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.</p> |
| Date: | 2 April 2026 |

2.0 APPLICATION DESCRIPTION

Application and property details

| Fast-Track project name: | North-West Rapid Transit | | | | |
|--------------------------|--|------------|-------------|-------|--|
| Application numbers: | <p>FTAA-2511-1146</p> <p>Council Resource Consent References:</p> <p>BUN60461580 LUC60461581 DIS60461582 (contamination) CST60461583 (structures) CST60461584 (disturbance of seabed (other)) CST60461585 (veg removal) WAT60461586 (groundwater) LUS60461587 (structure) LUS60461588 (works)</p> <p>Notice(s) of Requirement</p> <table border="1"><thead><tr><th>NOR number</th><th>Description</th></tr></thead><tbody><tr><td>NoR 1</td><td>Busway between Brigham Creek Rarawaru station and north of Westgate Te Waiarohia station</td></tr></tbody></table> | NOR number | Description | NoR 1 | Busway between Brigham Creek Rarawaru station and north of Westgate Te Waiarohia station |
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| NoR 1 | Busway between Brigham Creek Rarawaru station and north of Westgate Te Waiarohia station | | | | |

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| | (including stations, Park and Ride and all local road connections) |
| NoR 2 | Busway between north of Westgate Te Waiarohia station and north of Royal Road Mānutewhau station (including stations, Park and Ride and all local road connections) |
| NoR 3 | Busway between Royal Road Mānutewhau Station and Te Whau River (including all stations and local road connections) |
| NoR 4 | Brigham Creek Rarawaru station including Park and Ride |
| NoR 5 | Westgate Te Waiarohia station |
| NoR 6 | Royal Road Mānutewhau station |
| NoR 7 | Lincoln Road Wai o Pareira station |
| NoR 8 | Te Atatū Ōrangihina station |
| NoR 9 | Busway between Waterview interchange and west of Ivanhoe Road (including all stations and local road connections) |
| NoR 10 | Busway between Ivanhoe Road and Ian McKinnon Drive (including all stations and local road connections) |
| NoR 11 | Point Chevalier station |
| NoR 12 | Western Springs station |

Site address:

Generally alongside State Highway 16 between Brigham Creek and Auckland City Centre

- NWRT_Part 6_5_Property Schedule_Land within designation boundary and
- NWRT_Part 6_6_Property Schedule_Land adjacent to the designation boundary)

3.0 Executive Summary / Principal Issues

This memorandum assesses the earthworks and erosion and sediment control aspects of the North-West Rapid Transit Project, which proposes approximately 950,000 m³ of earthworks over 35ha within a corridor that adjoins multiple sensitive freshwater and coastal receiving environments. While the application acknowledges the potential for sediment generation and relies on compliance with Auckland Council Guideline Document 2016/005 (GD05) and future preparation of Erosion and Sediment Control Plans (ESCPs), it provides insufficient information at the application stage to enable a robust assessment of effects. In particular, no indicative or site-specific ESCPs have been provided, no locations of erosion and sediment controls are identified, and no earthworks staging plans, indicative or otherwise, have been submitted despite staging being relied upon as a key mitigation measure. The lack of staging detail is significant, given the scale and linear nature of the project and the likelihood of multiple concurrent work fronts being exposed at any given time. The effectiveness of erosion and sediment controls is directly dependent on staging details.

The application relies on generic, high-level commitments and defers critical matters to future plans, rather than demonstrating how GD05 compliant measures will be practically and effectively implemented, particularly in high-risk areas adjacent to streams and the coastal marine area.

Although the scale of the proposed earthworks is such that an Adaptive Management Plan (AMP) could be appropriate in principle, the AMP guidance is clear that adaptive management is intended to address residual uncertainty only after a application stage envelope of effects has been established under demonstrated GD05 compliance. That prerequisite is not met in this case.

Overall, the application does not provide sufficient certainty to conclude that earthworks effects will be adequately avoided or mitigated, and key information gaps remain that must be addressed before a meaningful consent stage assessment can be completed.

4.0 Documents Reviewed

- Te Ara Hauauru, Northwest Rapid Transit, Part 2: The Project, by NZ Transport Agency Waka Kotahi, dated 15 December 2025
- Te Ara Hauauru, Northwest Rapid Transit, Part 4: Resource Management Act 1991 Approvals, by NZ Transport Agency Waka Kotahi, dated 15 December 2025. (AEE)
- Te Ara Hauauru, Northwest Rapid Transit, Part 6_1_Indicative Design West (drawings).
- Te Ara Hauauru, Northwest Rapid Transit, Part 6_2_Indicative Design East (drawings).
- Te Ara Hauauru, Northwest Rapid Transit, Part 6_14_Assessment of Construction Stormwater Effects, dated 15 December 2025.
- Te Ara Hauauru, Northwest Rapid Transit, Part 6_15_Assessment of Ecological Effects, dated 15 December 2025.

5.0 Additional Reasons for Consent Not included in AEE (Resource Consent only)

The applicant has not identified any reasons for consent under the Auckland Unitary Plan: Operative in Part (AUP:OP). Under the AUP:OP, the following consents would be required:

- Consent for a restricted discretionary activity under rules E26.5.3.2 (A106) and (A107) as the proposal includes greater than 0.25ha (35.0ha in total) of earthworks on land with a slope equal or greater than 10 degrees (A106), and on land located within the sediment control protection area (A107).

6.0 Specialist Assessment - Resource Consent

6.1 – Proposal

The project involves the construction, operation and maintenance of new bus rapid transit (BRT) facilities alongside State Highway 16 (SH16) from the Brigham Creek Road/SH16 intersection through to Ian McKinnon Drive in the Auckland City Centre and includes seven rapid transit stations and one Park and Ride facility at Brigham Creek. The project relies on the existing bus shoulder lanes along the causeway between Te Atatu and the Waterview interchange.

6.2 – Site Description & Existing Environment

Section 8 of the applicant's AEE provides a description of the site, its surrounding environment and the various receiving environments along the length of the project. I have accepted and adopted these descriptions in my assessment below. The project has been split into two main sections, separated by the existing causeway between Te Atatu and the Waterview interchange.

Potential sediment discharges associated with earthworks proposed in the Western portion of the project will generally be overland or into the existing reticulated stormwater system, which from west to east, ultimately drain to Totara Creek, the Manutewhau Stream, the Tihema Stream, the Rarawaru Stream being a tributary of Manutewhau Stream, to an unnamed stream at Westgate Park, to Huruwharu Creek, to Wai-o-Pareira / Henderson Creek, and to the Te Whau River.

Potential sediment discharges associated with earthworks proposed in the Eastern portion of the project will also be overland or to the existing reticulated system which ultimately discharge to Oakley Creek, Meola Creek or to Motions Creek.

Runoff from the entire project will ultimately be discharged to the coastal marine area of the inner Waitemata Harbour.

6.3 - Earthworks in Brief:

- The proposal includes approximately 500,00m³ of cut and approximately 450,000m³ of fill over approximately 35ha of land. The application states that the cut volume will typically be cut to waste, and that the fill material will typically be a stabilised product (granular hardfill).
- Indicative plans showing the of areas where cut and fill is proposed have been provided, however, no estimates of either earthworks area or earthworks volume for any given area of the site have been provided.

6.4 - Assessment of Effects on the Environment - Earthworks

The potential environmental effects of the proposed earthworks are primarily associated with erosion of exposed surfaces along the corridor at the site and the subsequent sedimentation of the receiving environment, being streams and tributaries of the inner Waitemata Harbour. Sediment can degrade

aquatic values such as water quality, smother habitat for aquatic fauna within these receiving environments, and directly impact aquatic fauna by blocking their breathing apparatus.

To address these effects, the applicant has stated that the project can be constructed in accordance with Auckland Council guideline document number 5, Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, June 2016 (GD05), and best practice from an erosion and sediment control perspective. No details of how this will be achieved have been provided.

The Assessment of Ecological Effects states that a site specific erosion and sediment control plan (ESCP) will be prepared in accordance with GD05 and implemented to manage any effects of erosion and sedimentation in relation to the receiving environment (streams, wetlands, and estuaries), and that construction within streams is to be undertaken during low-flow conditions (where practicable). The term “where practicable” is noteworthy as the lack of any indicative ESCPs at high-risk locations such as those near or adjacent to streams and/or the CMA, does not allow me to assess whether it is practicable or not, to implement erosion and sediment control (ESC) measures in these areas. Further, based on my knowledge and experience, it is highly likely that the nominated earthworks contractor will encounter situations where it is not practicable to install ESC measures in accordance with GD05, and the applicant has not provided any details of what alternative controls are likely to be implemented when this situation arises.

The Assessment of Construction Stormwater Effects (ACSE) states that the risk of an elevated sediment yield from the project is low due to the overall low to moderate gradients within the project area and due to an anticipated staged delivery of the project, including progressive stabilisation of completed areas. It also states that areas of the site that have a potentially higher risk of elevated sediment yield are those areas adjacent to Hurururu Creek, Henderson Creek, Totara Creek, Meola Creek, plus three other unnamed streams within the project’s designation. It identifies that pumping of any sediment laden water from earthworks excavations presents an elevated risk of sediment yield, and also that earthworks from batter excavation activities on steeper slopes (greater than 10 degrees) may eventuate over the course of the project. No earthworks plans or ESCPs of these areas have been provided.

To address the potentially adverse effects of the earthworks, the application relies on compliance with GD05, and on conditions requiring future ESCPs, however, no ESCPs, indicative or otherwise, have been provided for any area of the site where earthworks are proposed. Further, the application also relies on staging to reduce effects but again, no staging plans, indicative or otherwise, have been provided. Where staging is relied upon to reduce erosion and sediment risks, GD05 anticipates that this staging will be sufficiently defined so that its effectiveness can be assessed, which is not the case in this instance.

I also consider the lack of any earthworks staging plans to be of particular importance as, based on my knowledge and experience, there is a high likelihood that multiple stages of earthworks will occur concurrently and the effects of this have not been adequately assessed. The ASCE notes that GD05 compliant ESCPs were implemented during construction of upgrades to Stage Highway 16 (SH16), however, the construction and/or widening of SH16 involved multiple work fronts by multiple contractors and the applicant has not commented on the potential effects of multiple work fronts. They have simply stated that the project’s construction will be staged. The omission of staging plans is significant. The effectiveness of erosion and sediment controls is directly dependent on the size, location, and sequencing of exposed areas at any given time. In the absence of staging plans, it is not possible to assess the application’s reliance on staging to justify its conclusions that the earthworks’ potential effects will be limited, temporary, or less than minor.

The application also relies heavily on the provision of GD05 compliant ESCPs ahead of earthworks commencing at any given area or stage of the project yet provides no indicative staging plans or indicative locations of ESC measures. As a result, it is not possible for me to assess whether GD05 compliant measures are feasible, whether they will be effective, or whether they will be practicable for any given area of the site as proposed.

The application defers essential information including both staging detail and erosion and sediment control layouts, to the preparation and implementation of future ESCPs prepared at the detailed design stage or prior to construction, and whilst this approach may be appropriate for construction management, it does

not allow for a robust effects assessment typically required at the consenting stage. As a result, I have been asked to accept conclusions about the scale and significance of earthworks effects without knowing any details about any proposed staging of earthworks and without knowing where ESC measures controls will be located. As such, I am unable to assess whether controls can be implemented effectively across all areas of the site, and in particular, in high-risk locations.

Throughout the application, the potential for earthworks to generate sediment and adversely affect receiving environments is acknowledged, however, the application relies on generic, high-level commitments and future processes rather than any site-specific assessments of the earthworks proposal. Overall, it does not provide sufficient information to enable a robust assessment of effects at this stage.

No indicative plans, diagrams, or mapped layouts are provided to show the location of sediment retention devices, clean-water diversions, stabilised flow paths, or controls in proximity to streams, estuaries, or other sensitive receiving environments have been provided. As a result, the application does not demonstrate how sediment-laden runoff will actually be intercepted or treated before entering downstream freshwater or marine receiving environments.

6.5 – Adaptive Management

Auckland Council's Adaptive Management Plan (AMP) guidance document is intended to apply to very large sites, typically those greater than 15ha, or to sites with particularly sensitive receiving environments. As the proposed earthworks cover 35ha and are in close proximity or in some cases, immediately adjacent to sensitive receiving environments, the proposed earthworks clearly fall within the scale where an AMP could be appropriate in principle, however, the same document is explicit that:

- adaptive management is the exception, not the norm, and,
- it is intended to address residual uncertainty after a application stage assessment has established that effects will be maintained within an acceptable envelope under full GD05 compliance.

In this case, I do not consider that the applicant has demonstrated that the potential effects of the earthworks will be maintained within an acceptable envelope, and whilst the scale of the proposed 35ha of earthworks is such that adaptive management could be appropriate in principle, it is not currently practical or appropriate to develop and implement an AMP based on the information provided.

The lack of defined staging, of any indicative ESC locations, and a clear application stage envelope of effects means that an AMP could not function as intended and would risk substituting for, rather than supplementing, best practice ESC management.

I do, however, consider that once an appropriately detailed application stage assessment has been provided, that comment from the applicant regarding preparation and implementation of whether an AMP would be appropriate or not would be helpful. For an earthworks operation of the scale proposed by the applicant, a functional AMP would require:

- Aquatic baseline monitoring of the sensitive receiving environments;
- a well-defined ESCP framework that does not solely rely on GD05 compliance;
- clear staging envelopes and maximum exposed areas;
- identified high-risk sub-catchments and representative sediment control devices; and
- an agreed understanding of expected performance under “business-as-usual” GD05 compliance.

These prerequisites are not met by the current application. As a result, any AMP prepared at this stage would be largely generic, reactive, and incapable of providing the structured “plan–do–check–revise” process set out in the AMP guidance document.

6.6 – Conclusion

In summary, I consider that critical information has been deferred to future plans rather than being used to inform the current effects assessment. Accordingly, whilst I acknowledge that ESC measures and construction staging may be achievable, the application does not provide a sufficient basis to conclude

with certainty that the effects of earthworks will be less than minor in the absence of ESCPs and earthworks staging plans, indicative or otherwise.

7.0 Section 67 Information Gap

At the time of writing this Memo I have identified the following information gaps:

- The application does not adequately assess the potential effects of earthworks because no indicative locations for erosion and sediment controls have been identified.
- Although compliance with GD05 is asserted, there is no indicative or site-specific evidence showing how that compliance will be achieved.
- While construction staging is relied upon as a key mitigation measure, no staging plans have been provided.
- The application does not provide any comment regarding the potential for implementing an AMP.

The information noted above is essential for allowing me to complete an in-depth assessment of the proposed earthworks activities. At approximately 950,000m³ across 35ha, the proposed earthworks are significant and by not providing any indicative or draft ESCPs for general earthworks, my assessment is limited to simply accepting that the applicant will adhere to best practice ESC measures.

Further, by not providing any draft or indicative ESCPs, or by identifying areas which may be low, medium, or high-risk from an earthworks and/or potential sediment discharge point of view, the applicant is proposing to effectively defer the application stage assessment of the proposed earthworks and ESC matters, to a later date following issue of consent.

8.0 Recommendation

8.1 - Provision of Information

To enable an appropriate application stage assessment of the proposed earthworks, I consider the following information must be provided:

- ESCPs based on the indicative earthworks plans provided, highlighting the proposed ESC measures for high-risk areas, including any that are immediately adjacent to sensitive streams and sensitive coastal marine areas.
- Staging plans including an indication of the proposed maximum exposed area for each stage and an indication of how many stages will be open at any one time across the entire site.
- Comment regarding the appropriateness of providing and implementing an AMP throughout the duration of earthworks.

9.0 Proposed Conditions (Resource Consent)

Appendix B of the applicant's AEE contains their proposed conditions for the resource consents required, including in particular, and specific to my assessment, earthworks and erosion and sediment control related conditions.

For the proposed earthworks and ESC measures, the applicant has proposed two (2) conditions, being:

- A condition requiring the provision of an ESCP prior to the start of construction, the purpose of which is to set out the measures to be implemented during construction to minimise erosion and the discharge of sediment beyond the boundaries of the site. The condition sets out the information which is required in the ESCP and states that the plan shall be prepared in accordance with GD05, except where otherwise provided in the remainder of the conditions.
- A condition that effectively requires an exposed area to be stabilised if it has not been earthworks for a period of more than 14-days.

I support the inclusion of a condition that requires a final ESCP for any given stage of earthworks throughout the duration of the project, however, the condition as proposed does not indicate that such a plan is required for individual stages of earthworks or for different areas (i.e., within stages) of the site where earthworks are proposed. Further, the wording used in the proposed condition is not in accordance with current best practice which avoids the term "shall" and uses "must" instead. I note that this out-of-date terminology has been proposed throughout the suite of the proposed resource consent conditions.

In general, I also support the ESCP requirements included with the condition, however, I note that some of the requirements are typically standalone conditions. For example, a standalone condition requiring provision of a Chemical Treatment Management Plan (ChTMP) for use with any certified impoundment devices is typically required, as is the inclusion of a standalone condition restricting earthworks to the Auckland Council earthworks season, being 1 October to 30 April of any year. Lastly, the ESCP requirements also indicate that methodologies for the timing, staging and sequencing of streamworks shall be included in the ESCP, and whilst provision of this information is appropriate, I consider that these details should be included with the streamworks consent for which the applicant has also applied.

The requirement to stabilise exposed earthworks areas if they have not been earthworked for a period of more than 14-days is supported, however, the applicant has not provided any assessment of why this condition has been proposed.

Regarding proposed Condition 3, which applies to all Management Plans, condition 3 (c) (i), states that minor changes to the Management Plans do not require re-certification, and that material changes do, however, regarding the proposed requirement for a final ESCP, the application does not provide any indication of what a minor or material change might be. Due to the extremely dynamic nature of earthworks and ESC matters, I do not consider this to be appropriate.

Overall, I consider that a standard suite of earthworks related conditions must be included if consent is granted, however, those conditions must be based on an appropriate assessment of effects of the proposed earthworks activities, which, for the reasons stated in Section 8 above, has not been provided.