# *INSPECTION & TEST PLAN*

| Inspection and Test Plan and Number | OP06_f01 Inspection & Test Plan Workbook | | |
|---|---|---|---|
| **Project Name** | KiwiRail – North Auckland Line Recovery – CH 128.840 | **Version:** | 2 |
| **Date:** | 23/04/24 | **Approved in RFI#:** | TBC |
| **Documents / Specifications Referenced:** | ENGEO NAL 128.840KM DETAILED DESIGN REPORT PRE-IFC ISSUE | | |

| ITP# | Work Pack Element(s) | Drawing / Specification Ref. | Specification Detail Summary | Acceptance Criteria | Test Spec & Frequency | Control Type i.e. Checksheet / IANZ Records | Hold / Witness | Internal / External | PS3 Owner | Hold / Witness | PS4 Owner Sign Off |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.0 PRE-CONSTRUCTION WORKS** | | | | | | | | | | | |
| 1.01 | Check IFC Drawings | IFC issued | Ensure latest revision is being used | Correct drawings | Prior to works, updated accordingly based on formal correspondence | Controlled IFC drawings being used – Checkpoint on QA | witness | Internal | JFC | WITNESS | ENGEO |
| 1.02 | Erosion and Sediment Control | ENGEO – Detailed Design Report - NAL CH 128.84km: Section 5 | The contractor is responsible for protecting earthworks and erosion control measures, and must develop a site-specific Environmental Control Plan (ESCP) that KiwiRail must review before construction begins. | Contractor to ensure effective erosion and sedimentation control measures shall be installed and maintained in accordance with Auckland Council Resource Consent Requirements, and the ESCP. | Before construction begins | ESCP Documentation, Photos, Daily and Weekly Audits | HOLD | Internal | JFC | HOLD | ENGEO |
| 1.03 | Environmental and Ecological Assessment | ENGEO – Detailed Design Report - NAL CH 128.84km: Section 6 | An ecologist from KiwiRail must be consulted and on-site to assess the site before and during the removal of vegetation and trees in a Significant Environmental Area (SEA). | The contractor to collaborate with the appointed ecologist from KiwiRail and adhere to the proposed controls. | Before and during the removal of vegetation and trees in a Significant Environmental Area (SEA). | Written Confirmation of the Ecologist's Instructions and Approval, Photos | HOLD | Internal | JFC | HOLD | ENGEO |
| 1.04 | Pre-start meeting | ENGEO – NAL CH 128.84km: Drawing 7 Note 2 | A pre-start meeting with Engineer and Contractor is needed to ensure understanding of construction methodology, review work plan and methodology for Geotechnical Professional, and ensure safety measures are in place. | Construction methodology agreed between Contractor and Engineer | Prior to commencement of works | RFI for Clarity and record purposes | HOLD | Internal | JFC | HOLD | ENGEO |
| **2.0 DRAINAGE WORKS** | | | | | | | | | | **ENGINEER** | |
| 2.01 | Materials | ENGEO – NAL CH 128.84km: Drawing 6 | All materials as per the design drawings | All materials comply with the drawings | Prior to use of materials on site | Dockets | HOLD | Internal | JFC | witness | ENGEO |
| 2.02 | Manhole and Pipe Bedding | ENGEO – NAL CH 128.84km: Drawing 4 | Bedding thickness min. 200mm GAP20 | Engineer to confirm GAP 20 compacted to 90% MDD or CIV of 20 with Clegg Impact Hammer (in accordance with NZS 3725:2007) | Engineer to check prior to installation of manhole and pipe | NDM and or Clegg Test Results, Photos, QA Checksheet(s), Written Confirmation of Engineer's Approval | witness | Internal | JFC | witness | ENGEO |
| 2.03 | Haunching | ENGEO – NAL CH 128.84km: Drawing 5 & Drawing 7 Note 1 | SP20 Compacted in 150mm layers to widest pipe width | Engineer to confirm SP20 compacted to at least 90% MDD | Engineer to check every 150mm thick compacted layer | NDM Test Results, Photos, QA Checksheet(s), Written Confirmation of Engineer's Approval | witness | Internal | JFC | witness | ENGEO |
| 2.04 | Culvert Trench Backfill | ENGEO – NAL CH 128.84km: Drawing 5 & Drawing 7 Note 1 | Backfill to comprise of GAP65 or geotechnically approved material in max. 200mm lifts | Engineer to confirm GAP65 or GAP40 or PAP40 or PAP 65 approved equivalent compacted to 95% MDD at interface of sub-ballast layer (in accordance with NZS 3725:2007) – for (sub-ballast refer formation items). Subballast layer to be GAP40 | Engineer to check every 200mm thick compacted layer | NDM Results, Photos, QA Checksheet(s), Written Confirmation of Engineer's Approval | witness | Internal | JFC | witness | ENGEO |

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| | | | | compacted to 98% MDD or Clegg of 30. | | | | | | | |
| 2.04b | Culvert Trench Undercut | RFI 027 | Undercut where subgrade is < 70kpa as measured by hand held shear vane | Installed per RFI 027 detail : 300mm ballast, A29 geotextile wrapped. Duragrid 30/30 or TX160 between wrap and bedding backfill. | Check Subgrade every 3 pipe lengths (approx. 7.5m) | Check sheets, photos | witness | Internal | JFC | witness | ENGEO |
| 2.04c | Wingwall Bedding | ENGEO – NAL CH 128.84km: Drawing 5 | Compacted hardfill min 200mm thk | Engineer to confirm SP20 compacted to at least 95% MDD | Engineer to check every 150mm thick compacted layer | NDM Test Results, Photos, QA Checksheet(s), Written Confirmation of Engineer's Approval | HOLD | External | JFC | witness | ENGEO |
| 2.05 | Installation | ENGEO – NAL CH 128.84km: Drawing 5 & Drawing 7 Note 2 | Drainage works to be installed in accordance with the design drawings. | Engineer to confirm that the drainage is connected as shown on the plans. | Engineer to check prior to backfill of drainage items | Photos, QA Checksheet(s), Written Confirmation of Engineer's Approval | witness | Internal | JFC | HOLD | ENGEO |
| **3.0 TRACK FORMATION** | | | | | | | | | | **ENGINEER** | |
| | | | | | | | | | | | |
| 3.01 | Structural Fill ~~(for CBR <3%)~~ | ENGEO – NAL CH 128.84km: Drawing 7, CAN-01,RFI 001 | 900mm thick structural fill (GAP65 or GAP40 or PAP40 or PAP 65 with geogrid) RFI 001 | Compaction min CIV = 25 (95% MDD) | Clegg Hammer Tests Email 8/3/24 from KH Every 250mm with 1st lift calibrated to NDM Every 20m (email 19/3/24 J Thomas) | Photos, Clegg Test Results | HOLD | Internal | JFC | REVIEW | ENGEO |
| 3.02 | Sub-ballast (~~for CBR <3%~~) | ENGEO – NAL CH 128.84km: Drawing 7, CAN-01,RFI 001 | 150mm thick sub-ballast (M4-AP40) RFI 001 | Compaction min CIV = 30 (98% MDD) | Clegg Hammer Tests Email 8/3/24 from KH Every 250mm with 1st lift calibrated to NDM Every 20m (email 19/3/24 J Thomas) | Photos, Clegg Test Results | HOLD | Internal | JFC | REVIEW | ENGEO |
| 3.03 | Construction of formation (ballast) | ENGEO – NAL CH 128.84km: Drawing 7, CAN-01,RFI 001, RFI 028 | Formation construction as per KiwiRail Standard C-ST-FO-4110 Formation and task instruction C-TI-FO-4207 | KiwiRail Standard C-ST-FO-4110 Formation and task instruction C-TI-FO-4207 for construction compliance. Ballast to be 390-410mm below top of rail | For every section of formation shown on the drawings. | Survey | witness | Internal | JFC | Hold | KiwiRail |
| **4.0 POST CONSTRUCTION** | | | | | | | | | | **ENGINEER** | |
| 4.01 | Revegetation | ENGEO – Detailed Design Report - NAL CH 128.84km: Section 7 | The slope will be revegetated using native hydroseeding, native shrub planting, or a combination of both, approved by a KiwiRail environmental scientist and ecologist. | Revegetation planting comply with KiwiRail approved corridor planting schedule 2023. | Shrubs to be approved by KiwiRail environmental scientist and ecologist before planting or seeding. | List of native shrub, Written Confirmation from KiwiRail Environmental Specialist | witness | Internal | JFC | HOLD | ENGEO |
| 4.02 | As-builts | ENGEO – Detailed Design Report - NAL CH 128.84km: Section 13 | Following the construction, ENGEO should be provided with as built documentation to append their MSQA documentation. ENGEO provided with as built documentation of the: -monitoring fence ~~-accessway~~ -drainage -rip rap to append to our MSQA documentation. | As-built approved by ENGEO & KiwiRail (subgrade, excavations, pipe inverts, wingwalls, rip rap excavations & extents, drainage string (culvert, swales etc.) completion levels | At ballast handover & at completion | KR documents: M37c & As-Built Requirements for Culvert Renewals 441048-03-CC-COM-QA-NAL-CU | Witness | Internal | JFC | HOLD | ENGEO |
| 4.03 | As built Culvert drawings | ENGEO – NAL CH 125.603 Drawing 19 | As built drawings to be provided by the contractor to detail the final construction of the remedial works including any amendments established during the construction | Engineer's & KiwiRail acceptance | At ballast handover & at completion | KR documents: M37c & As-Built Requirements for Culvert Renewals 441048-03-CC-COM-QA-NAL-CU | Witness | Internal | JFC | HOLD | ENGEO |

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**Sub-contractor ITPs (Refer to OP06_f09 ITP Index for Subcontractors)**

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Sub Activity 1 (INSERT QA SHEET NAME) | | | | | | | (ENTER SUBCONTRACTOR) | | | ENGINEER | |
| 30 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |
| 32 | | | | | | | | | | | |
| 33 | | | | | | | | | | | |
| 34 | | | | | | | | | | | |
| Sub Activity 2 (INSERT QA SHEET NAME) | | | | | | | (ENTER SUBCONTRACTOR) | | | ENGINEER | |
| 35 | | | | | | | | | | | |
| 36 | | | | | | | | | | | |
| 37 | | | | | | | | | | | |
| 38 | | | | | | | | | | | |
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**ITP Induction Sign On**

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