



Paharakeke - Stage 4

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| Project: | Revision: 1 |
| Job number: | Date: |
| Client: | |

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| Item | Activity Description | Frequency | Inspection / Test Method | Acceptance Criteria | Verifying Documents | Inspection Point | | | Date | Contractor Signature | Engineers Rep Signature |
|--|----------------------|---|---|--|---|------------------|-----------------|---------------------------------|------|----------------------|-------------------------|
| | | | | | | Sub Contractor | Head Contractor | Engineer / Client | | | |
| 1 | | | | | | | | | | | |
| Safety Plan | | Prior to works starting | Engineer to review Contractor's Plan | Meets contract requirements | NTC acknowledging Safety Plan | | | H | | | |
| | | Daily | Compliance monitored by the Contractor | Site Safety Plan is updated to reflect changes in the work place. Excavations are protected. Site Safety requirements are met. Pedestrian access is clearly defined and signage is in place. Accident reports have been completed. Compliance report is completed. | Included in weekly report | | | | | | |
| Traffic Management Plan | | Prior to works starting | Contractors TMP to be approved by the RCA (Road Controlling Authority) and a copy provided to the Engineer. | Meets contract requirements | NTC acknowledging Traffic Management Plan | | | H | | | |
| | | Daily | Compliance monitored by the Contractor | Traffic Management Plan is updated to reflect changes in work. Signage and devices are clean and set out appropriately. Detour and single lane requirements have been met. Compliance report is completed. | Included in weekly report | | | | | | |
| 2 | | | | | | | | | | | |
| Quality Plan | | Prior to works starting | Engineer to review Contractor's Plan | Meets contract requirements | NTC acknowledging Quality Plan | | | H | | | |
| Setting Out | | As works progress | Survey control report | Meets construction tolerances | Survey control report | | | | | | |
| Construction | | Weekly | Progress report | Meets programme | Included in weekly report | | | | | | |
| Traffic Management | | Weekly | Monitoring report | Safe traffic management | Included in weekly report | | | | | | |
| Site Safety | | Weekly | Monitoring report | Safe site | Included in weekly report | | | | | | |
| Water works | | As works progress and on completion | Construction reports | Meets contract requirements | Included in weekly report | | | | | | |
| Stormwater works | | As works progress and on completion | Construction reports | Meets contract requirements | Included in weekly report | | | | | | |
| Sewer works | | As works progress and on completion | Construction reports | Meets contract requirements | Included in weekly report | | | | | | |
| Earth works | | Prior to earthworks | Manhole inspection | Temporary floors kept in place | Visual inspection | | | | | | |
| | | | Service cover location | Lids marked and kept clear for use | Visual inspection | | | | | | |
| | | Prior to sub-base construction | Construction reports | Meets construction tolerances. Services covers exposed and marked. Service boxes clean and fit for use. | Included in weekly report and visual inspection | | | | | | |
| Sub-base works | | Prior to top course construction | Construction reports | Meets construction tolerances. Services covers exposed and marked. Service boxes clean and fit for use. | Included in weekly report and visual inspection | | | | | | |
| Basecourse works | | Prior to sealing or construction of kerbing and paths | Construction reports | Meets construction tolerances. Services covers exposed and marked. Service boxes clean and fit for use. | Included in weekly report and visual inspection | | | | | | |
| Sealing works | | Material tests and seal design prior to sealing. Seal reports on completion | Construction reports | Meets construction tolerances Services covers exposed and marked. Service boxes clean and fit for use | NTE including material tests and seal design | | | | | | |
| | | On completion of sealing | Inspection of service lids and covers | Temporary floors removed from all manholes | Visual inspection | | | | | | |
| Footpath, berm, kerbing and traffic island works | | As works progress | Construction reports | Meets construction tolerances. Services covers exposed and marked. Service boxes clean and fit for use. | Included in weekly report and visual inspection | | | | | | |
| Water works | | As works progress | Construction reports | Meets construction tolerances. Services covers exposed and marked. Service boxes clean and fit for use. | Included in weekly report and visual inspection | | | | | | |
| Sewer works | | As works progress | Construction reports | | | | | | | | |
| Stormwater works | | As works progress | Construction reports | | | | | | | | |
| As built information | | Completion of works Condition of Practical Completion | Levels and coordinates of nominated features in terms of datum and construction drawings. RAMM data sheets. | Horizontal +/- 50mm Vertical +/- 5mm | NTE with asbuilts in PDF and DWG | | | H (Required for issue of PC) | | | |
| 3 | | | | | | | | | | | |
| Environmental Management | | | | | | | | | | | |



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| Environmental Management Plan | | | Prior to works starting | Engineer to review Contractor's Plan | Meets contract requirements | NTC acknowledging Environmental Management Plan | | | H | | |
| Contractor's Resource consents | | | Regular monitoring during contract | Contractor to review and test | Meets consent requirements | Test records supplied on request | | | | | |
| Principal's Resource consents | | | Regular monitoring during contract | Engineer to review and audit | Meets consent requirements | | | | | | |
| Environmental risks | | | Regular monitoring during contract | Contractor to review and test | Risks identified with mitigation measures in place and implemented | Included in weekly report | | | | | |
| Water run off | | | Daily discharge checks | Visual | Silt traps in place with clear discharge down-stream to drainage systems | Visual inspection | | | | | |
| Dust and noise | | | Daily nuisance and dust check | Audio and visual | Site observation with mitigation of dust and noise nuisance | Visual inspection | | | | | |
| Fuel and oil spills | | | Daily | Visual | Site observation with spill mitigation measures in place and implemented | Visual inspection | | | | | |
| Concrete and seal cutting | | | Daily | Visual | Contaminate traps in place with clear discharge down-stream to drainage systems | Visual inspection | | | | | |
| 4 Pipe Trenches | | | | | | | | | | | |
| Qualifications of Personnel | | Refer to Specification F100 Preliminary and General | Contract Start | | Evidence of Qualification and personnel on-site. | Provide evidence where not previously provided or personnel change | | | H | | |
| Materials - Refer Section 2 | | | | | | | | | | | |
| Selected fill | | Grading, sand. Equivalent, CBR | | Lab testing | Comply with grading specification 100% pass 50mm at least 45% pass the 19mm sieve, and not more than 10% pass 425 micron sieve. CBR not less than 40 and SE of not less than 40 | Lab results to be supplied to Engineer | | | H | | |
| Ground conditions | | | | | | | | | | | |
| Firm formation level | | Bearing capacity of base | | Inspection | Bearing greater than 50 kPa | Inspection records available for review | | | | | |
| Tolerances - Refer Section 3.8.3 | | | | | | | | | | | |
| Trench excavation | | Minimum to maximum range of trench width | | Survey | Tolerance range as per section 3.9.3 | Visual inspection and measurement on site | | | | | |
| Trench excavation | | Side slope of trench wall | | Survey | Near vertical | Visual inspection | | | | | |
| Inspection and Testing - Refer Section 3.10 | | | | | | | | | | | |

| 5 | | Retaining Walls | | | | | | | | | |
|---|---|---|----------------------|----------------------|--|--|--|--|---|--|--|
| Methodology | | | | | | | | | | | |
| Review of Retaining wall construction methodology | Engineer to comment where required, on the proposed construction methodology and review aborist assessment. Refer to drawing DRG-WA-21802 (C02) | | Engineers review | Engineers acceptance | Approved CMP | | | | H | | |
| Materials | | | | | | | | | | | |
| Review Contractors supply of materials and QA documentation | Engineers rep to review QA documentation for timber piles, timber lagging, concrete and drainage backfill. Refer to drawing DRG-WA-21802 (C02) | 10 days prior to beginning work | Engineers review | Engineers acceptance | Provide evidence of material spec. | | | | H | | |
| Confirmation / approval of any alternative materials | Engineers rep to confirm acceptance of any alternative materials requested by Contractor. Refer to drawing DRG-WA-21802 (C02) | 10 days prior to beginning work | Engineers review | Engineers acceptance | Provide specs of any alternative materials | | | | H | | |
| Setout | | | | | | | | | | | |
| Site visit to approve set out of retaining wall | Engineers rep to provide site inspection report sheet with photos of set out and description of site conditions encountered and any issues relating to design. Contractor to provide survey data co-ordinates for set out of four piles at pipe crossing location. DRG-WA-21802 (C02) | Once, after excavation to founding level and following survey set out | Survey | Engineers acceptance | Site Report sheets | | | | H | | |
| Piling | | | | | | | | | | | |
| Inspection of augered pile holes | Engineers rep to witness installation of first two piles for each retaining wall and provide site visit report sheet detailing materials encountered, drill rate and any problems encountered and how they were resolved. Contractor shall record a pile log for all installed piles. This shall record the depth of hole, material encountered, comments on drill rate, if water was encountered and any temporary measures such as if pile casings were used, or any other issues that occurred and how these were resolved. DRG-WA-21802 (C02) | Once, after installation of first two piles on each side. | Engineers inspection | Engineers acceptance | Site Report sheets | | | | H | | |
| DN375 Stormwater | | | | | | | | | | | |



Inspection and Test Plan

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| Inspection of DN375mm Stormwater pipe outlet | Contractor to provide photos of the pipe outlet location showing construction process of lagging and drainage material around the pipe. DRG-WA-21802 (C02) | Throughout pipe outlet construction | Photos (Contractor) | Engineers acceptance (based on photos) | Photos | | | | H | | | |
| Retaining Walls | | | | | | | | | | | | |
| Inspection of retaining wall at OD813 wastewater pipe crossing location | Engineers rep to inspect pipe crossing location at each retaining wall prior to any drainage backfill being placed above the pipe. Engineers rep to provide site report sheet summarising inspection. DRG-WA-21802 (C02) | Once, following installation of steel pipe crossing | Engineers inspection | Engineers acceptance | Site Report sheets | | | | H | | | |
| Inspection of lagging at 50% completion. | Engineers rep to inspect lagging at 50% complete and summarise inspection in site report sheet. DRG-WA-21802 | Once following installation of lagging to 50% height | Engineers inspection | Engineers acceptance | Site Report sheets | | | | H | | | |
| Inspection of drainage installation and determining subsoil outlet location | Engineers rep to inspect drainage backfill and determine the location of the subsoil drain outlet for each wall. Engineers rep to provide site report sheet summarising inspection. DRG-WA-21802 (C02) | Once, following drainage backfill for each wall | Engineers inspection | Engineers acceptance | Site Report sheets | | | | H | | | |
| Final finished surface of site to be inspected | Engineers rep to conduct final inspection of retaining walls and provide photos with site report sheet. DRG-WA-21802 (C02) | Following retaining wall construction and all reinstatement works | Engineers inspection | Engineers acceptance | Site Report sheets | | | | H | | | |
| 6 Gravity Pipelines | | | | | | | | | | | | |
| Qualifications of Personnel | Refer to Specification F100 Preliminary and General | Contract Start | | | Provide evidence where not previously provided or personnel change | | | | H | | | |
| Materials - Refer Section 2 | | | | | | | | | | | | |
| Embedment Material | Grading | Contract Start | Lab testing | Comply with grading specification | Test results to be provided | | | | H | | | |
| Material Acceptance | Pipes and fittings | Prior to use | Inspection | Comply with Section 3 AS/NZS2566.2 | Visual inspection | | | | | | | |
| Bedding, Laying, Jointing and Manholes - Refer Section 3.3 | | | | | | | | | | | | |
| Pipe Jointing | Clean and Dry | During Jointing | Inspection | Workspace and materials clean and dry | Visual inspection | | | | | | | |
| Pipe Jointing | Completed Joints | At completion of jointing | Inspection | All fittings snug and firm no movement or leakage to Manufacturers' requirements | Visual inspection | | | | | | | |
| Joints at Manholes and other fittings | Spacing and type of joint | Prior to Backfill around Manhole | Inspection | Comply with drawings | Visual inspection | | | | | | | |
| Manhole Benching | Finish | At completion of manhole | Inspection | Smooth and minimum turbulence | Visual inspection | | | | | | | |
| Tolerances - Refer Section 3.5 | | | | | | | | | | | | |
| Horizontal Tolerances | Manholes and Structures | Set-out and Installation | Survey | +/- 100mm of design or where applicable +/- 50mm of design | Asbuilts except where re-design is necessary | | | | | | | |
| Vertical Tolerances | Invert Level | Set-out and Installation | Survey | +/- 25mm of design level | Asbuilts except where re-design is necessary | | | | | | | |
| Vertical Tolerances | Pipe Grade | Set-out and Installation | Survey | +/- 10% | Asbuilts except where re-design is necessary | | | | | | | |
| Verticality | Structures and Manholes | Installation | Measure | +/- 10mm /1m | Visual inspection and measurement on site | | | | | | | |
| Inspection and Testing - Refer Section 3.6 | | | | | | | | | | | | |
| Leakage Testing | Pipes and manholes | Completion | Low Pressure Air or hydrostatic | Holds Pressure | Test sheets from the Contract to be completed - Engineer to be present for testing | | | | H | | | |
| CCTV or Internal Inspection | Section 3.6.5 | Completion | Inspection | No significant defects | CCTV to be provided prior to Practical Completion being issued | | | | H | | | |
| Concrete works | Section 3.6.4 | Installation | Lab testing | NZS 3104 | Test results to be provided | | | | H | | | |
| 7 Pavement Construction | | | | | | | | | | | | |
| Earthworks | Set-out level and alignment | After excavation and prior to sub-base construction and/or laying filter cloth | Survey check, and string line depth check | Horizontal -20mm / + 100mm Vertical -20mm / +5mm | Survey & data sheets available for review | | | | | | | |
| Sub-base layer construction | Imported sub-base aggregate | At least 10 days prior to construction | Lab testing | NZS 4402 | Test Results - criteria should be overlayed over the results to demonstrate that the material complies | | | | H | | | |
| | Set-out level and alignment | After sub-base construction and prior to forming topping layers | Survey check, depth check | Horizontal: -20mm / + 100mm Vertical: -20mm / +5mm | Survey & data sheets available for review | | | | | | | |
| | Compaction | After sub-base construction and prior to forming topping layers | Density testing | TNZ B/2 - Clause 7 | Test results - should also show the design criteria to demonstrate that the work complies with the design | | | | H | | | |
| | Basecourse aggregate grading tests | Annual source tests, pre-delivery tests results to Engineer 10 days prior to use | NZS 4407: 1991 | TNZ M/4 - Clause 4 Table 4 (Napier River Gravels) | Test Results - criteria should be overlayed over the results to demonstrate that the material complies | | | | H | | | |



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| Basecourse layer construction | Level and alignment | After basecourse construction and prior to forming topping layers | Survey check, and string line depth check | TNZ B/2 – Clause 5 | Survey & data sheets available for review | | | | | | | |
| | Compaction | After basecourse construction and prior to forming topping layers. | Nuclear densometer density testing | TNZ B/2 – Clause 7 | Test results - should also show the design criteria to demonstrate that the work complies with the design | | | | H | | | |
| | | | Clegg impact test | Refer to Section 4 below | | | | | | | | |
| | Surface shape | After basecourse construction and prior to forming topping layers | 3m straight edge, string line check | TNZ B/2 – Clause 7 | Density and DOS Test results and Data Result Sheets, results should demonstrate they comply | | | | H | | | |
| 8 Kerb, Concrete Path & Landscape Construction | | | | | | | | | | | | |
| Earthworks | Set-out level and alignment | After excavation and prior to sub-base construction and/or laying filter cloth | Survey check, depth check | Horizontal: -20mm / +100mm Vertical: -20mm / +5mm | Survey & data sheets available for review | | | | | | | |
| Basecourse layer construction | Basecourse aggregate grading tests | Annual source tests Pre- delivery tests Results to Engineer 10 days prior to use | NZS 4407: 1991 | TNZ M/4 – Clause 4 Table 4 (Napier River Gravels) | Test Results - criteria should be overlaid over the results to demonstrate that the material complies | | | | H | | | |
| | Level and alignment | After basecourse construction and prior to forming topping layers | Survey check, depth check | TNZ B/2 – Clause 5 | Data Sheets available for review | | | | | | | |
| | Compaction | After basecourse construction and prior to forming topping layers | Nuclear densometer density testing Clegg impact test | TNZ B/2 – Clause 7 HDC Specification Pavement Construction: Section 4 | Test results to be provided to demonstrate they comply | | | | H | | | |
| | Surface shape | After basecourse construction and prior to forming topping layers | Survey check | TNZ B/2 – clause 5 | Result Sheets to demonstrate they comply | | | | H | | | |
| Kerbing | Set-out level and alignment | After base construction and prior to placement of concrete | Survey check | Horizontal: ± 20mm Vertical: ± 5mm | Survey & data sheets available for review | | | | | | | |
| Concrete Works | Section 2.1 | Prior to placement of concrete | Lab testing | NZS 3104 | Test results to be provided | | | | H | | | |
| Paths | Set-out level and alignment | After base construction and prior to placement of concrete | Survey check | Horizontal: ± 20mm Vertical: ± 5mm | Survey & data sheets available for review | | | | | | | |
| Prepping on for grassing | Set-out level and alignment | After base preparation and prior to placement of top soil | Survey check | Horizontal: ± 20mm Vertical: ± 5mm | Data Sheets available for review | | | | | | | |
| Insitu seeding and turfing | Suitability of soil | After placement of top soil and before grassing | Visual material check | Soil is free of weeds, stone and other hard materials | Visual inspection | | | | | | | |
| 9 Adjustment of Service Covers | | | | | | | | | | | | |
| Service covers and manholes in road | Level, securely fitted and clear of debris | After basecourse and prior to sealing | 3m straight edge laid on final surface | Vertical: +10mm and - 0mm Reinstatement of pavement to match adjacent levels Access and internal space is clear of debris. No rocking | Visual inspection | | | | | | | |
| | | | Visual inspection | | | | | | | | | |
| Service covers and manholes in path | Level, securely fitted and clear of debris | After basecourse construction and prior to concrete | 3m straight edge laid on final surface | Vertical: + 10mm and - 0mm | | | | | | | | |
| | | | Visual inspection | Access and internal space is clear of debris. No rocking | | | | | | | | |
| Service covers and manholes in berm | Level, securely fitted and clear of debris | After topsoil and prior to grassing | 3m straight edge laid on final surface | Vertical: + 10mm and - 0mm | | | | | | | | |
| | | | Visual inspection | Access and internal space is clear of debris. No rocking | | | | | | | | |
| 10 Surfacing Construction (Evenden Rd) | | | | | | | | | | | | |
| Surfacing Materials | Materials | Prior to surfacing | Supply of surfacing materials (chip test results, asphaltic concrete materials) | NZTA M/6: 2011 specification for sealing chip NZTA M/10: 2014 Dense Graded and Stone Mastic asphalt | Test results to be provided to demonstrate they comply | | | | H | | | |
| Surfacing Design | Design | Seal design prior to sealing. | Chip Seal Design/JMF | NZTA P/3: 1995: specification for first coat sealing NZTA M/10: 2014 Dense Graded and Stone Mastic asphalt | Design provided 48 hours prior to application | | | | H | | | |
| Sealing works | Preparedness for sealing | After sweeping and prior to sealing | Visual check | Clean aggregate mix exposed to accept binder coat | Visual inspection | | | | H | | | |
| Sealing works | Reporting | Seal reports on completion | Construction reports | Meets construction tolerances Services covers exposed and marked. Service boxes clean and fit for use | | | | | | | | |
| Sealing works | Service lids and covers | On completion of sealing | Inspection of service lids and covers | Temporary floors removed from all manholes | Visual inspection | | | | | | | |

Visual inspections: All visual inspections shall be photographed and provided as part of the weekly report