**Inspection and test plan – Bulk earthworks**

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| **Project no.** | CC0375 | | **Project name** | Hunter Power Project | | | | | | **Date** | |  |
| **Symal ITP no.** | | CC0375-ITP-001 | **Revision no.** | 3 | **Revision date** | | 26/09/2022 | **Layer thickness** |  | | | |
| **UGL ITP no.** | | |  | | | | | **SHL ITP no.** |  | | | |
| **Plant and equipment used** | | |  | | | | | | | | | |
| **Lot no.** | |  | | | | **Location (chainages, detailed description or marked up plan)** | | | | |  | |

Attach Dockets, Certificates and QA Documents to ITP

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| Contact Details | | Summary of Requirements | | | Principle Codes / Standards | | Records | |
| **Customer:**  **Construction Manager:**  **Project Engineer:**  **Quality Representative:**  Subcontractors    Surveillance / Inspection Key  **HOLD POINT (H):** Nominated point beyond which work shall not proceed without verified acceptance by nominee.  **WITNESS POINT (W):** Points at which the nominee shall be notified and invited to witness an activity, but further work may proceed without the presence of the nominee.  **REVIEW (R): Verify** by examination of documentary evidence that inspection / tests have been satisfactorily conducted.  **SURVEILLANCE (S): Continuing** evaluation of the status of methods, analysis of records and monitoring of activities on a random basis to ensure quality requirements will be met.  **VISUAL (V): 100**% Visual Inspection of work / item to ensure compliance with code / specification.  **DIMENSIONAL (D): Measurement** of critical dimensions to ensure work / item is within tolerance. | | **Process Qualifications**  **Traceability:**  Material:  Alloy Verification  Heat Treatment:  Pressure Testing  Consumable:  NDT:  Welder ID:  WPS:  Electrical:  Instruments  **Heat Treatment:**  **Dimensional Control:**  **Testing (NDT):**  **Acceptance Specification:**  **Pressure Testing:**  **Elect. / Instrumentation:**  Notes: | | | **Client Specifications**  HPP-AEC-CIV-GN-GEN-SPT-0161\_0 QUALITY (CONSTRUCTION)  HPP-AEC-CIV-RO-ROD-SPT-1112\_A EARTHWORKS (ROADWAYS)  HPP-AEC-CIV-DD-ESC-SPT-1102\_0 CONTROL OF EROSION AND SEDIMENTATION  **Engineering Procedures / WI** | | **(MDR Insert as marked )**   * Inspect Release Certs. * Deviations/Concessions * Material Certificates * Conformance Certificate * Welding Records * Welder Qual. Register * NDT Reports * Report on Repairs * Heat Treatment Records * Dimensional Records * Non-Conformance Rpts * Pressure Test Records * Drawings & Data Sheets * Misc Verification Records * Electrical Test Sheets | |
| Prepared by: | Steven Lee | | Date : 26/9/22 | Approved By: Joshua Fisicaro | | Date : 26/9/22 | |  |

|  |  | |  |  |  | **Verify of acceptance by** | | | | | | **Remarks / record (eg. test frequency, reports, certificates, checklist etc)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | |  |  |  | **Symal** | | **UGL** | | **SHL** | |
| **Item no.** | **Activity** | | **Ref docs** | **Acceptance criteria** | **Acceptance** | **Key** | **Sign date** | **Key** | **Sign date** | **Key** | **Sign date** |
| **1.0 Preliminaries** | | | | | | | | | | | | |
| **1.1** | Documentation | | Issued drawings / Site copy drawings | Check that you have the latest site and engineering drawings BEFORE starting each task/set of tasks. | Yes  No  N/A | S |  | S |  |  |  |  |
| **1.2** | Lot Traceability | | Spec. 0161 Quality [Cl 7.2] | Prepare a lot map for traceability of the work area | Yes  No  N/A | S |  | S |  |  |  | Lot map |
| **1.3** | Survey set-out | | Spec. 1112 Earthworks (Roadways) [Cl 2.2] | Has the work area been set out as per the drawings? | Yes  No  N/A | S |  | S |  |  |  |  |
| **1.4** | Establishment of stockpile sites | | Spec. 1112 Earthworks (Roadways) [Cl 4.1] | Approval to use any stockpile sites not shown on drawings.  **Notice: 3 working days before stockpiling**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **1.5** | Excavation material classification | | Spec. 1112 Earthworks (Roadways) [Cl 4.7] | Ensure that excavated material is separated as follows:  Topsoil  Embankment Material  Unsuitable Material | Yes  No  N/A | S |  | S |  |  |  |  |
| **1.6** | Fill Material Conformance | | Spec. 1112 Earthworks (Roadways) | Fill Material to be free of roots, clay, topsoil, steel and organic material. Use primarily Site-won cuttings and supplement with imported material if necessary.  CBR to be > 3% | Yes  No  N/A | S |  | S |  |  |  | Material Test Reports |
| **1.7** | Water management | | Spec. 1102 Control of erosion and sedimentation [Cl 3.7] | Where necessary, have batters been rounded and catch drains constructed to allow for potential surface runoff during the course of excavation? | Yes  No  N/A | S |  | S |  |  |  |  |
|  | Is the area in **cut / fill / both?**  If in **cut** proceed to step 2.0 and strike out section 3.0.  If in **fill** please strike out section 2.0 and proceed to section 3.0  If in **both** proceed to step 2.0 as well as section 3.0 | | | | | | | | | | | |
| **2.0 Bulk earthworks – cut** | | | | | | | | | | | | |
| **2.1** | Subgrade preparation | | Spec. 1112 Earthworks (Roadways) [Cl 4.1, 4.3] | Has the cut surface been trimmed to an even surface free from lose material and within tolerance of +/- 50mm from design floor level? | Yes  No  N/A | S |  | S |  |  |  |  |
| **2.2** | Unsuitable material removal | | Spec. 1112 Earthworks (Roadways) [Cl 4.3, 4.6] | Any Unsuitable material to be removed as directed by the superintendent  **Notice: Progressive**  **WITNESS POINT** | Yes  No  N/A | **W** |  | **W** |  |  |  |  |
| **2.3** | Unsuitable material floor inspection | | Spec. 1112 Earthworks (Roadways) [Cl 4.3, 4.6] | Floor of excavation to be inspected to determine sufficient depth of unsuitable material has been removed  **Notice: Prior to Backfilling**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **2.4** | CBR Testing | | Spec. 1112 Earthworks (Roadways) [Cl 4.3] | Prior to ripping, test the CBR of the material in the cut floor to ensure it is > 3% | Yes  No  N/A | **S** |  | **S** |  |  |  | Test reports |
| **2.5** | Ripping Cut Floor  (Not required if foundation is in stabilised remediation pad) | | Spec. 1112 Earthworks (Roadways) [Cl 4.3] | Has the floor of cuttings been adequately ripped to a min. depth of 200mm?  The max. dimension for any particles in the ripped or loosened zone not to exceed 150mm.  Ripped material to be presented for inspection.  **Notice: Before recompacting commences**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **2.6** | Re-Compaction | | Spec. 1112 Earthworks (Roadways) [Cl 4.3, 4.13] | Re-compact the ripped floor to achieving a relative compaction of 97%  If unsuitable replacement has occurred, compact the replacement layers to 92% and the design cutting floor to 97%  **Notice: Prior to placing subsequent layers**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  | Test reports |
| **2.7** | Proof Roll – Subgrade  (Not required if foundation is in stabilised remediation pad) | | Spec. 1112 Earthworks (Roadways) [Cl 4.13, 7.1] | Does the layer withstand proof rolling without visible deformation or springing?  **Notice: 2 working days before next activity**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **3.0 Bulk earthworks - fill** | | | | | | | | | | | | |
| **3.1** | Foundation Preparation  (Not required if foundation is in stabilised remediation pad) | | Spec. 1112 Earthworks (Roadways) [Cl 4.7] | Grade and level the area, adjust the moisture content and compact the top 200mm to 97% relative compaction | Yes  No  N/A | **S** |  | **S** |  |  |  | Test reports |
| **3.2** | Foundation Inspection & Unsuitable Removal | | Spec. 1112 Earthworks (Roadways) [Cl 4.6, 4.7] | Embankment foundation to be inspected by the superintendent. Any Unsuitable material to be removed as directed.  **Notice: 1 working day before next activity**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **3.3** | Unsuitable Material Floor Inspection | | Spec. 1112 Earthworks (Roadways) [Cl 4.6, 4.7] | Floor of excavation to be inspected to determine sufficient depth of unsuitable material has been removed  **Notice: Prior to Backfilling**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **3.4** | Proof Roll – Subgrade  (Not required if foundation is in stabilised remediation pad) | | Spec. 1112 Earthworks (Roadways) [Cl 4.13, 7.1] | Does the layer withstand proof rolling without visible deformation or springing?  **Notice: 2 working days before next activity**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **3.5** | Fill Placement | | Spec. 1112 Earthworks (Roadways) [Cl 4.8, 4.10] | Has fill been placed in maximum 200mm compacted layer thickness?  *(Approval required to increase compacted later thickness to 300mm)*  *Note: Maximum fill layer thickness adjacent to structures 150mm)* | Yes  No  N/A | S |  | S |  |  |  | Delivery dockets  (if imported) |
| **3.6** | Moisture Content | | Spec. 1112 Earthworks (Roadways) [Cl 4.13, 7.1] | Is the moisture content within the range of 60% to 90% of optimum moisture content for all fill layers | Yes  No  N/A | S |  | S |  |  |  | Test reports |
| **3.7** | Compaction (General) | | Spec. 1112 Earthworks (Roadways) [Cl 4.13, 7.1]  Spec. 0161 Quality (Construction) [Cl 7.2] | Compact any material used for unsuitable replacement, general fill (>1.5m deep), verges and medians to a relative compaction > 92% | Yes  No  N/A | S |  | S |  |  |  | Test reports |
| **3.8** | Compaction (Selected Material Zone) | | Spec. 1112 Earthworks (Roadways) [Cl 4.13, 7.1]  Spec. 0161 Quality (Construction) [Cl 7.2] | Compact any material used for shallow embankments, Select Fill or behind kerbs to a relative compaction > 97% | Yes  No  N/A | S |  | S |  |  |  | Test reports |
| **3.9** | Compaction (Fill adjacent to structures) | | Spec. 1112 Earthworks (Roadways) [Cl 4.10, 4.13] | Compact all material adjacent to structures to achieve a relative compaction of 92% (up to 1.5m from top of pavement) or 97% (within 1.5m of top of pavement)? | Yes  No  N/A | S |  | S |  |  |  | Test reports |
| **3.10** | Material Conformance (Fill adjacent to structures) | | Spec. 1112 Earthworks (Roadways) [Cl 4.10, 4.13] | Backfill material granular and not exceeding 50mm particle size  Plasticity index in between 2 & 12 | Yes  No  N/A | S |  | S |  |  |  | Test reports |
| **3.11** | Proof Roll / Select Material Zone Inspection | | Spec. 1112 Earthworks (Roadways) [Cl 4.13] | After trimming & compaction, present the top layer of SMZ for inspection.  Does the layer withstand proof rolling without visible deformation or springing?  **Notice: 2 working days before next activity**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  |  |  |  |
| **4.0 Bulk earthworks - other** | | | | | | | | | | | | |
| **4.1** | Batters | | Spec. 1112 Earthworks (Roadways) [Cl 4.4] | Provide batter slopes as shown on the drawings. Clean the cut faces of any loose or unstable batters as the excavation proceeds | Yes  No  N/A | S |  | S |  |  |  |  |
| **4.2** | Cut to Fill Transitions | | Spec. 1112 Earthworks (Roadways) [Cl 4.5] | Excavate a terrace as per the figure in Cl 4.5 for the width of the SMZ to a depth of 900mm below the cutting floor  **Notice: 1 working days before excavating terrace**  **HOLD POINT** | Yes  No  N/A | **W** |  | **W** |  |  |  |  |
| **5.0 Conformance check** | | | | | | | | | | | | |
| **5.1** | Width and alignment | | Drawings | Has the pavement been constructed at the correct width and alignment as detailed in the construction drawings? | Yes  No  N/A | S |  | S |  |  |  |  |
| **5.2** | Level Conformance – Top of Embankments | | Spec. 1112 Earthworks (Roadways) [Cl 4.8, 5]  Drawings | Trimmed top of embankment to be within the range -40mm to +10mm from design levels | Yes  No  N/A | S |  | S |  |  |  | As built report |
|  |  | **Comments**: | | | | | | | | | |  |
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| **Acceptance of works:** | | | | | | |
| Symal Infrastructure representative name | |  |  | Symal Infrastructure representative signature | |  |
| UGL representative name |  | |  | UGL representative signature |  | |
| SHL representative name |  | |  | SHL representative signature |  | |

**Inspection Checklist Report**

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| **Project no.** | CC0375 | **Project name** | Hunter Power Project | | **Date** |  |
| **Symal ITP no.** | CC0375-ITP-001 | | | | | |
| **UGL ITP no.** |  | | **SHL ITP no.** | |  | |
| **Symal Lot no.** |  | | | | **Symal Sub Lot no.** |  |
| **Location (chainages, detailed description or marked up plan)** | | | |  | | |

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|  | | **Verify of acceptance by** | | | | | | | | | **Remarks / records** |
|  | | **Symal** | | | **UGL** | | | **SHL** | | |
| **ID No.** | **Activity to be verified** | **ITP Step No.** | **Items conforms?** | | | **NCR / Test Report No.** | | **Key** | | **Sign Date** | **Key** | | **Sign Date** | **Key** | | **Sign Date** |  | |
| Yes | No | NA |
| 1. | Documentation | 1.1 |  |  |  |  | | S | |  | S | |  |  | |  |  | |
| 2. | Determine lot size | 1.2 |  |  |  |  | | S | |  | S | |  |  | |  | Lot map | |
| 3. | Survey set-out | 1.3 |  |  |  |  | |  | |  |  | |  |  | |  |  | |
| 4. | Establishment of stockpile sites  **HOLD POINT** | 1.4 |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| 5. | Excavation material classification | 1.5 |  |  |  |  | | S | |  | S | |  |  | |  |  | |
| 6. | Fill material classification | 1.6 |  |  |  |  | | S | |  | S | |  |  | |  |  | |
| 7. | Water management | 1.7 |  |  |  |  | | S | |  | S | |  |  | |  | Material conformance certificate | |
| **Bulk Earthworks - Cut** | | | | | | | | | | | | | | | | | | |
| 8. | Subgrade preparation | 2.1 |  |  |  |  | | S | |  | S | |  |  | |  |  | |
| 9. | Unsuitable material  **HOLD POINT** | 2.2 |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| 10. | Rip and re-compact  **HOLD POINT** | 2.3 |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| 11. | Compaction | 2.4 |  |  |  |  | | S | |  | S | |  |  | |  | Test reports | |
| 12. | Subgrade preparation  **HOLD POINT** | 2.5 |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| 13. | Unsuitable material treated  **HOLD POINT** | 2.5a |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| **Bulk Earthworks - Fill** | | | | | | | | | | | | | | | | | | |
| 14. | Stripped surface - test rolling  **HOLD POINT** | 3.1 |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| 15. | Unsuitable material treated  **HOLD POINT** | 3.1a |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| 16. | Preparation of surface | 3.2 |  |  |  |  | | S | |  | S | |  |  | |  |  | |
| 17. | Material properties testing | 3.3 |  |  |  |  | | S | |  | S | |  |  | |  | Test report | |
| 18. | Fill Placement | 3.4 |  |  |  |  | | S | |  | S | |  |  | |  | Delivery dockets | |
| 19. | Moisture | 3.5 |  |  |  |  | | S | |  | S | |  |  | |  | Test reports | |
| 20. | Compaction (General) | 3.6 |  |  |  |  | | S | |  | S | |  |  | |  | Test reports | |
| 21. | Compaction (Selected Material Zone) | 3.7 |  |  |  |  | | S | |  | S | |  |  | |  | Test reports | |
| 22. | Compaction (Fill adjacent to bridges, wingwalls, retaining wall, and culverts) | 3.8 |  |  |  |  | | S | |  | S | |  |  | |  | Test reports | |
| 23. | Fill layer – test rolling (underside of SMZ and completion of SMZ)  **HOLD POINT** | 3.9 |  |  |  |  | | **H** | |  | **H** | |  |  | |  |  | |
| 24. | Width and alignment | 4.1 |  |  |  |  | | S | |  | S | |  |  | |  |  | |
| 25. | Subgrade level and shape | 4.2 |  |  |  |  | | S | |  | S | |  |  | |  | As built report | |

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| I certify that this Lot conforms to the requirements of the design and specifications; that all associated NCRs have been closed out: and all survey, conformance testing and inspections have been undertaken in accordance with the specified requirements. | | | | |
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| **Symal Representative** |  | **Signature** |  | **Date** |
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|  |  |  |  |  |
| **UGL Representative** |  | **Signature** |  | **Date** |
|  | | | | |
|  |  |  |  |  |
| **SHL Representative** |  | **Signature** |  | **Date** |
| **Comments:** | | | | |
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