# Inspection and Test Plan (ITP) 006: EC – Embankment Construction (Rev – 0)

Tethys Dam Construction (Senex Energy 900343)
RSA Contractors Pty Ltd
Lot Description: _____ Commencement Date: _____

## Abbreviations

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Third Party | TP | RSA Contractors | RSA | Nominated Project Personnel | NPP | Principle Contractor | PC |
| Surveyor | SUR | RPEQ | RPEQ | Supervisor | SUP | Inspect | INS |
| Test | TST | Project Engineer | PE | Witness Point | WP | Hold Point | HP |
| Visual | VIS | Check | CHK | Written | WRI | Monitor | M |
| Milestone | MST | Review | R | | | | |

| Inspection and Test Plan Details | | | | | | | Contractor | | | Client | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | **Inspection Activity** | **Work By** | **Standard / Spec** | **Criteria** | **Frequency** | **Record** | **Resp** | **Type** | **Signoff** | **Resp** | **Type** | **Signoff** |
| 01 | **Lot Identification** | Contractor | Clause 3.5 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Location of Works identified in accordance with project technical specification | 1/Lot | ITP Verification Checklist/Lot Map | RSA | Check | | Senex | Check | |
| 02 | Lot Identification – Lot Plan | Contractor | Clause 3.5 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Lot Plan submitted to the Superintendent 5 days prior to the commencement of the Work (if required) | Prior to commencement | ITP Verification Checklist / Lot Plan | RSA | Hold Point | | Senex | Hold Point | |
| 03 | **Underlying Lot Conforms** | Contractor | Clause 9.6 of OPS-TETW-CS-SPE-001 IFC Rev 0 | The Superintendent shall inspect the results of the testing of each layer in each lot of material for conformance with the Specification. | 1/Lot | ITP Verification Checklist/Lot Map | RSA | Hold Point | | Senex | Hold Point | |
| 04 | **Placement of General Fill – Outer Zone and Inner Zone** | Contractor | Clause 9.4 of OPS-TETW-CS-SPE-001 IFC Rev 0<br>Clause 9.6 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Outer Zone and Inner zone earth fill to be placed, moisture conditioned and compacted generally in layers not exceeding 300mm thickness in line with RSA construction methodology.<br><br>Any existing surfaces to be lightly scarified and moisture conditioned prior to placement of subsequent layer to provide sufficient bond and prevent lamination.<br><br>Overfill to outer edges of embankment to allow for trim back to design surface<br><br>Completed under Level 2 Testing | Each Lot | ITP Verification Checklist/Lot Map | RSA | Check | | Senex | Witness Point | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | **Inspection Activity** | **Work By** | **Standard / Spec** | **Criteria** | **Frequency** | **Record** | **Resp** | **Type** | **Signoff** | **Resp** | **Type** | **Signoff** |
| 05 | **Placement of Select Fill (if required)** | Contractor | Clause 9.4 of OPS-TETW-CS-SPE-001 IFC Rev 0<br>Clause 9.6 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Select Fill shall comprise clay-rich soils sourced from the excavation of the dam and onsite borrow areas that conform to the geotechnical properties specified in Table 8 of OPS-TETW-CS-SPE-001 IFC Rev 0<br><br>Select fill to be placed, moisture conditioned and compacted generally in layers not exceeding 300mm thickness.<br><br>The final surface shall be prepared with a smooth drum roller to create a smooth surface immediately prior to the deployment of the geomembrane material<br><br>Finished surface to be free of all stones or other objects with potential to puncture liner.<br><br>Completed under Level 2 Testing | 1 / Lot | ITP Verification Checklist/Lot Map | RSA | Check | | Senex | Witness Point | |
| 06 | **Testing – Outler Layer Density and Moisture** | Contractor | Table 10 & 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Testing in line with Table 10 & 11 of OPS-TETW-CS-SPE-001 IFC Rev 0<br><br>(See below) | 1 / 500m3 | ITP Verification Checklist / Report | RSA | Check | | Senex | Witness Point | |
| 07 | **Testing – Outler Layer Material Quality** | Contractor | Table 6 and 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Testing in line with Table 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 material for Outer Zone Conforming to properties provided in Table 6<br><br>(See below) | See Criteria | ITP Verification Checklist / Report | RSA | Check | | Senex | Witness Point | |
| 08 | **Testing – Inner Layer Density and Moisture** | Contractor | Table 10 & 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Testing in line with Table 10 & 11 of OPS-TETW-CS-SPE-001 IFC Rev 0<br><br>(See below) | 1 / 500m3 | ITP Verification Checklist / Report | RSA | Check | | Senex | Witness Point | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09 | **Testing – Inner Layer Material Quality** | Contractor | Table 7 and 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Testing in line with Table 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 material for Inner Zone Conforming to properties provided in Table 7<br><br>(See below) | See Criteria | ITP Verification Checklist / Report | RSA | Check | | Senex | Witness Point | |
| 10 | **Testing – Select Fill Density and Moisture** | Contractor | Table 10 & 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Testing in line with Table 10 & 11 of OPS-TETW-CS-SPE-001 IFC Rev 0<br><br>(See below) | 1 / 500m3 | ITP Verification Checklist / Report | RSA | Check | | Senex | Witness Point | |
| 11 | **Testing – Select Fill Material Quality** | Contractor | Table 7 and 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 | Testing in line with Table 11 of OPS-TETW-CS-SPE-001 IFC Rev 0 material for Inner Zone Conforming to properties provided in Table 8<br><br>(See below) | See Criteria | ITP Verification Checklist / Report | RSA | Check | | Senex | Witness Point | |
| 12 | **Rework / Repairs to fill (if required)** | Contractor | Clause 9.4 of OPS-TETW-CS-SPE-001 IFC Rev 0 | The Superintendent shall approve the extent of all repairs to damage, eroded, cracked or otherwise non-conforming materials and also the finish product of the repairs.<br>• If the moisture content is within plus or minus 1% of the range, the Contractor may scarify that layer or area and add moisture, or work the clay to dry out as appropriate, re-compact, and present for retesting.<br>• If the moisture content is drier than 1% of the specified range, the layer shall be removed and reworked to a satisfactory condition before it is reused.<br>• If the dry density ratio is within 3% of the specified requirement additional compaction using a roller may be performed to increase the density and the layer, then presented for re-testing.<br>• If the dry density ratio is more than 3% below the specified requirement, the layer shall be removed and be replaced to achieve specification.<br><br>Retesting (if required) in line with requirements of the Zone being repaired. | As required | ITP Verification Checklist/Lot Map | RSA | Hold Point | | Senex | Hold Point | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | **Survey – Progress** | Contractor | Clause 3.6 of OPS-TETW-CS-SPE-001 IFC Rev 0 | The Contractor shall submit to the Superintendent 25%, 50% and 75% embankment fill placement completion surveys within 48 hours days of each milestone achievement. | 25%, 50%, 75% | Survey | RSA | Check | | Senex | Hold Point | |
| 13 | **As-constructed Survey** | Contractor | Clause 3.4 of OPS-TETW-CS-SPE-001 IFC Rev 0<br>Clause 20.2.4 of OPS-TETW-CS-SPE-001 IFC Rev 0 | After all work, or parts of work requiring survey acceptance has been completed, a final survey of all elements of the work shall be performed and submitted to the CQA Engineer for review and acceptance.<br><br><u>Tolerances</u><br>• Embankment Crest<br>  ○ **-0 / +200mm**<br>• Liner Subgrade<br>  ○ **-20 / +50mm**<br>• Final Liner Subgrade Grader<br>  ○ **Within 1/20$^{th}$ specified grade**<br>• Emergency Spillway (invert)<br>  ○ **-20 / +20mm**<br>• Extraction Pipework<br>  ○ **±50mm** | 1/Lot | Survey | RSA | Hold Point | | Senex | Hold Point | |

Notes:

1. HILF test method (AS 1289.5.7.1) may replace Standard Compaction test method specified provided conditions of Section 9.5 OPS-TETW-CS-SPE-001 IFC Rev 0 are satisfied.

| Test Details | | | Normal Testing Level | | | Required Result(s) |
|---|---|---|---|---|---|---|
| **General Fill Outer Zone** | | | | | | |
| **Item** | **Test** | **Description** | **Max Lot Size** | **Min Test Frequency** | **Min No of tests** | **Criteria** |
| 01 | AS 1289 2.1.1<br>AS 1289 5.1.1<br>AS 1289 5.4.1<br>AS 1289 5.8.1 | Standard Moisture Content and Dry density ratio | | 1/500 m3 | 1 Test per Every Layer per Lot | -2% dry to +2% wet OMC MDD 98%<br>Refer Note 1 |
| 02 | AS 1289 3.6.1 | Particle size | | 1/1000m3 | 1 Test per Every Layer per Lot | Passing 75mm 100%<br>Passing 19mm 80% - 100%<br>Passing 2.36mm 30% - 100%<br>Passing 0.075mm 15%-80% |
| 03 | AS 1289 3.3.1 | Plasticity Index | | 1/1000m3 | 1 Test per Every Second Layer per Lot | 10 to 40 |
| 04 | AS 1289 3.2.2 | Liquid Limit | | 1/1000m3 | 1 Test per Every Second Layer per Lot | 20 to 60 |
| 05 | AS 1289 3.8.1 | Emerson class | | | 5 Test evenly distributed around the Dam | 2 |
| 06 | AS 1289 4.1.1 | Organic content | | | As per Superintendent recommendation | |

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| Test Details | | | Normal Testing Level | | | Required Result(s) |
|---|---|---|---|---|---|---|
| **General Fill Inner Zone** | | | | | | |
| **Item** | **Test** | **Description** | **Max Lot Size** | **Min Test Frequency** | **Min No of tests** | **Criteria** |
| 01 | AS 1289 2.1.1<br>AS 1289 5.1.1<br>AS 1289 5.4.1<br>AS 1289 5.8.1 | Standard Moisture Content and Dry density ratio | | 1/500 m3 | 1 Test per Every Layer per Lot | -1% dry to +2% wet OMC MDD 98%<br>Refer Note 1 |
| 02 | AS 1289 3.6.1 | Particle size | | 1/3000m3 | | Passing 75mm 100%<br>Passing 19mm 80% - 100%<br>Passing 2.36mm 30% - 100%<br>Passing 0.075mm 15%-100% |
| 03 | AS 1289 3.3.1 | Plasticity Index | | 1/3000m3 | | 10 to 50 |
| 04 | AS 1289 3.2.2 | Liquid Limit | | 1/3000m3 | | 20 to 70 |
| 05 | AS 1289 3.8.1 | Emerson class | | | 5 Test evenly distributed around the Dam | 2 |
| 06 | AS 1289 4.1.1 | Organic content | | | As per Superintendent recommendation | |

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| Test Details | | | Normal Testing Level | | | Required Result(s) |
|---|---|---|---|---|---|---|
| **Select Fill** | | | | | | |
| **Item** | **Test** | **Description** | **Max Lot Size** | **Min Test Frequency** | **Min No of tests** | **Criteria** |
| 01 | AS 1289 2.1.1<br>AS 1289 5.1.1<br>AS 1289 5.4.1<br>AS 1289 5.8.1 | Standard Moisture Content and Dry density ratio | | 1/500 m3 | 1 Test per Every Layer per Lot | -1% dry to +2% wet OMC MDD 98%<br>Refer Note 1 |
| 02 | AS 1289 3.6.1 | Particle size | | 1/1000m3 | | Passing 2.36mm 100%<br>Passing 0.075mm 35%-100% |
| 03 | AS 1289 3.3.1 | Plasticity Index | | 1/1000m3 | | 10 to 50 |
| 04 | AS 1289 3.2.2 | Liquid Limit | | 1/1000m3 | | 20 to 70 |
| 05 | AS 1289 3.8.1 | Emerson class | | | | |
| 06 | AS 1289 4.1.1 | Organic content | | | As per Superintendent recommendation | |

**Built in accordance with this document:** Signed _____ Position _____ Date _____

**Test results received. Lot conforms to Specification:** Signed _____ Position_____ Date _____

## Document Status

| Revision Status | Responsible Person | Signed | Dated | Revision |
|---|---|---|---|---|
| **Draft By:** | Sean Parsons | | 28/06/2024 | Draft Rev A |
| **Reviewed By:** | Sean Parsons | | 28/06/2024 | Rev 0 |
| **Submitted By:** | Sean Parsons | | 28/06/2024 | Rev 0 |
| **Approved By:** | Sean Parsons | | 28/06/2024 | Rev 0 |