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**Newdale Pitches**

**Earthworks Specification**

**Volume 1**

**REVISION 0 – February 2025**

**EARTHWORKS OVERVIEW**

The main drawings for these works are as listed below:

1. Drawing SG155 Earthworks & Facility Design – Rev 7 – Drawing No. **SG155-GEO-007** (A1) entitled ‘General Arrangement’.
2. Drawing SG155 Earthworks & Facility Design – Rev 7 – Drawing No. **SG155-GEO-008** (A1) entitled ‘Proposed 132mAoD Reduction Earthworks’
3. Drawing SG155 Earthworks & Facility Design – Rev 7 – Drawing No. **SG155-GEO-009** (A1) entitled ‘Proposed Final Earthworks’
4. Drawing SG155 Earthworks & Facility Design – Rev 7 – Drawing No. **SG155-GEO-010** (A1) entitled ‘Proposed Cross Sections’
5. Drawing SG155 Earthworks & Facility Design – Rev 7 – Drawing No. **SG155-GEO-011** (A1) entitled ‘Topsoil Strip’
6. Drawing SG155 Earthworks & Faciltiy Design – Rev 7 - drawing No. **SG155- GEO-012** (A1) entitled ‘Setting Out Drawing’.
7. Excel spreadsheet – SG155 – Setting out Coordinates Rev.7

All key physical points of the works are presented in Drawing SG155-GEO-012 as well as the accompanying excel spreadsheet which presents precise co-ordinates for all elements of the works.

The Contractor shall remove the ‘topsoil’ across the works area including the pitches, access road, car park and edge of the lower (second) platform to the base of the organic layer to the satisfaction of the H+E Engineer. This soil is to be stockpiled on site for determination of use. It is desirable to permanently retain this soil on site for cost saving reasons although there is an expectation for the Contractor to provide a cost for disposal.

The denuded platform (with the exception of the proposed car park) is to be reduced to a level of 132mAoD and temporary slopes created at the working boundaries. This base of cut level is to be proof rolled and any soft spots replaced. There is an expectation that localised areas of geogrid will be encountered within the dig. This geogrid will be replaced at specified co-ordinates with “10m by 10m” areas of geogrid placed at up to 4 locations.

It is expected that the majority of the site won materials will be defined as Class 2 and will be suitable for re-compaction to an end product specification of 95% Relative Density (RD). This shall extend beyond the existing slope to the north of the Phase site and an area of reinforced embankment constructed using biaxial geogrids. This geogrid shall be placed at 600mm lifts and extents as per the construction drawings.

The boundary between the engineered platform and the proposed Car Park to the east shall be immediately east of the proposed pavilion as per the setting out co-ordinatrs. The car park levels (post topsoil strip) shall be reduced (lowered) to accommodate the car park construction as per the specified construction detail. The car park shall be completed as part of the works.

The access road and footpath shall be constructed as per the drawings and specified build. The lower (most northerly) ‘bay’ of the swale shall be cleared of topsoil, vegetation and soft spots and shall be infilled with the road construction. To ensure the correct fall of the existing pipe under the access road coupled with the pipe extension (to go beneath the swale backfill), it is required that the existing pipe is removed and a single length of longer new pipe be buried to connect the pond and swale below the site access point. This pipe should be like for like in diameter. The reasoning behind this is to give a minimum 2m distance between the proposed road and the pond to the north. The attenuated volume lost to the swale infill shall be gained by extending the pond area to the west as per the drawing and co-ordinates.

Drainage drawings and drainage details included in the pack have been presented to aid in pricing, however, the final drainage layout will be amended and the revised drawings presented shortly.

A net zero ‘muck balance’ is anticipated, however, in the event that additional Class 2 materials are required to complete the works, this material should be imported from Old Park Campus (OPC). The materials in stockpile at this site are Council owned and were specifically selected to be suitable for engineering use as general fill. The BoQ for the series 600 works includes the possible importation of 3,000m3 of this soil. TWC are in discussions with the QP for OPC to arrange the legal paperwork to allow this to go forward should it be needed. It is advised that he Contractor visit OPC to assess the requirements. These may include the vegetation strip of the stockpile. The stockpile will be subject to the same testing requirements as the site won fill.

The Client has requested a start on site in March this year as part of the planning process and requirements to release the Phoenix School playing pitches for development. We need to carefully consider what we can offer the Client as ‘starter works’ and how this would tie in with the greater programme of works. It is anticipated that works that should be considered are as follows:

1. Construction of the access route including the localised infilling of the swale and replacement of the drainage pipe between swale and pond. This would include the excavation of the pond extension.
2. Ecology will become a major constraint shortly therefore the stripping of the ‘topsoil’ within the working area (i.e. Phase 1 plus edge of platform 2 to construct the reinforced embankment and allow working room).

**EARTHWORKS SPECIFICATION**

The Contract for the works shall be the HSC19 Contract. The Specification shall be the 'Specification for Highway Works', published by The Stationary Office as Volume 1 of the Manual of Contract Documents for Highway Works.

Although the ‘good practice’ expectations for the project works are as set out in the HSC19 contract, certain key points of the earthworks scheme are set out below. These are……

**Temporary drainage**

The Contractor shall be responsible for the temporary drainage of the Works. He shall carry out his operations so that water shall not stand on the Site, save for attenuation features. All excavations shall be kept free of water and the Contractor shall arrange for the immediate removal and control of water shed onto the earthworks or completed formation or any other intermediate stage of the permanent Works.

It will be necessary to manage surface water run-off from the Site as the re-profiling takes place. As the ground profile will be changing continuously, it will be necessary to adjust any drainage to suit. The surface of the area being remediated will be devoid of any plant life (as this will have been stripped off) such that it will be necessary to provide some attenuation of flows before discharge from the Site. Consideration will also have to be given to removal of suspended solids which are likely to be carried along with any run-off from the bare earth surface.

The Contractor shall ensure that any run-off from operational areas does not pollute the works areas. To this end, appropriate temporary bunds and ditches may be required to control run off out of the works.

Water shall only be discharged into existing sewer systems following successful application by the Contractor for a Temporary Discharge Consent from Severn Trent Water Ltd. The Contractor shall not allow water on the Site to become polluted by his method of working.

Sewers exists within the west and north of the Site. It is proposed that the permanent surface water drainage system will discharge to this existing sewer. Should the Contractor wish to use this outfall within his temporary drainage works he should liaise directly with Severn Trent Water complying with the necessary permits and consents for such outfall. No discharge will take place until the Project Manager is satisfied that the procedures have been followed and he confirms this in writing to the Contractor.

On no account will any unauthorised discharge be permitted to leave the Site without prior written consent from Telford & Wrekin Council or the Project Manager in consultation with Severn Trent Water. Contravention of this clause which results in any action by Severn Trent Water against Telford & Wrekin Council will be regarded with the utmost seriousness.

All temporary and permanent drainage works shall be kept free of silt and waste for the duration of the Contract period.

**As-built documentation**

Prior to the Completion Date the Contractor shall prepare As-Built engineering drawings, survey drawings, manufacturers' drawings, photographs, instruction manuals samples and any other relevant drawings and documents incorporating all changes made during the performance of the Contract so that they form a true and accurate record of what has actually been supplied or provided. Drawings shall be provided in AutoCAD and PDF format.

The Contractor shall also ensure that the Health and Safety File is updated and submitted in accordance with the current Construction (Design and Management) Regulations.

To accompany the drawings and documents the Contractor shall provide a Schedule of As-Built Drawings and Documents and, where applicable, shall indicate that each drawing or document has been certified “As-Built”. The Schedule and As-Built Drawings and Documents shall be completed and provided to the Project Manager prior to the issue of the Certificate of Completion.

**Environmental Requirements**

It will be the Contractor’s responsibility to familiarise themselves with the environmental and ecological documentation for the site and to ensure compliance with the recommendations in those reports. It is worth nothing that the reports provided were prepared for a full site development scheme rather than a Phase 1 only scheme.

**Existing Ground Levels**

It is the responsibility of the Contractor to be satisfied that the existing survey information is a true representation of the existing ground levels.

**Method Statements**

It is a requirement of the Contract that detailed method statements shall be supplied by the Contractor for activities including but not limited to the following:

i) General sequence of phasing of the earthworks.

ii) Proposed plant and labour.

iii) Temporary drainage - dealing with surface water, groundwater / leachate. iv) Temporary haul routes.

v) Stockpiles and temporary slope stability.

vi) Site clearance – removal and treatment of tree stumps.

vii) Replacement of geogrids above recorded location of mine shafts.

viii) Earthworks compliance testing – geotechnical and contamination monitoring, sampling and laboratory analysis.

ix) Environmental management of the Works

It is expected that the method statements will include detailed plans and calculations to demonstrate the safety and efficiency of the proposed methods of working.

**Earthworks Classification**

The Contractor will be responsible for classifying and determining acceptability of all earthworks materials in accordance with Specification of Highway Works Tables 6/1, 6/2, 6/3, 6/4 and 6/5. No unacceptable material shall be incorporated into the Works unless specifically approved by the Project Manager. The definitions of earthworks materials shall apply as set out in Series 600 and include the definitions of ‘Suitable Material’ and ‘Unsuitable Material’.

It is anticipated that the majority of the site-won fill will be Class 2. The end product requirement is a minimum of 95% RD. If encountered, other suitable fill may be incorporated into the Works by agreement with the Project Manager subject to the classification and compliance testing being acceptable.

Control testing will be required on the excavated materials at source to;

* Provide an ongoing characterisation of the materials as the works proceed.
* Demonstrate the general acceptability of the excavated materials for incorporation in the Works.

The re-compacted material needs to comply with a 95% end product requirement within all of the proposed earthworks.

**Earthworks Testing and Frequency at Source**

Although testing has already been carried out on the soils within the site, as set out in the Ground Conditions Report (GCR) prepared by H+E, there is an expectation that sampling, testing and classification will be on-going throughout the works to ensure compliance. The on-going design and testing to be carried out should include but not be limited to:

* PSD tests to assess materials Class as per Series 600 Table 6/2.
* Compaction testing to assess MDD, OMC and moisture window of acceptability.
* Atterberg Limits to assess material characteristics.

A comprehensive programme of material testing is to be implemented by the Contractor. The Contractor shall allow for the appropriate items for testing scheduled herein. Where test certificates are identified, these shall be produced prior to incorporation within the Works. The bullet points below details the testing and frequency of tests which shall be carried out by the Contractor at source. A UKAS accredited laboratory sampling and test report or certificate is required. The frequency of testing is given for general guidance and is only indicative of the frequency that may be appropriate however the expectation is that this is a minimum number for both ‘Classification’ at source testing and ‘Compliance’ testing. Where materials are known to be marginal or if initial test results show them to be such, the frequency of testing may be increased (at the discretion of the Engineer). Conversely where material properties are consistently in excess of specified minimum requirements or well below specified maximum limits, then the frequency of testing may be reduced (at the discretion of the Engineer). Testing must be carried out to comply with Eurocode 7 / BS1377.

**Earthworks Testing and Frequency for Compliance**

Tests shall be carried out by the Contractor as materials are being places to ensure compliance with the end product target specification.

* Hand Shear Vanes of placed and compacted fill.
* In-situ density testing to include core cutting, sand replacement tests and nuclear gauge.

All in-situ compliance testing to be compared with target results and all compliance failures reported to the project manager with a remedial plan.

Given the expected excavated and compacted volume of Circa 38,000m3 of soils, the following testing is required. H+E would need to discuss this with the chosen contractor. This list is not exhaustive and the selected contractor may offer alternative or additional testing.

|  |  |  |
| --- | --- | --- |
| **Classification Testing Requirements (for site won and imported)** | | |
| **Type** | **Frequency** | **Per** |
| Compaction Curve (Proctor – 2.5kg) | 1 | 2,000m3 |
| PSD | 1 | 2,000m3 |
| MC | 1 | 250m3 |
| SOM / LOI | 1 | 1,000m3 |

|  |  |  |
| --- | --- | --- |
| **Compliance Testing Requirements** | | |
| **Type** | **Frequency** | **Per** |
| In-situ (SRT) with MC% | 1 | 1,000m3 |
| NDG Test (BD, DD, MC) | 1 | 250m3 |
| SRT (to calibrate SRT’s) | 1 | 1,000m3 |
|  |  |  |

**Acceptable Earthworks Material**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Acceptable Earthworks Material – Classification and Compaction Requirements** | | | | | | | | | |
| **Class** | **Material** | **Use** | **Permitted constituents** | **Property** | | **Test defined** | **Lower Limit** | **Upper Limit** | **Compaction Requirements** |
| 2A  2B  2C | 2A Wet  Cohesive  Material  2B Dry Cohesive Material  2C Stoney Cohesive Material | General  Fill | Any material or  combination of materials other than Chalk excluding U1A / U1B / U2A | 1 | Grading | BS:1377: Part 2 |  |  | Class 2  Compaction to 95% MDD (2.5Kg)  Plate Bearing: Bearing Capacity 100kPa & Settlement <15mm |
| 2 | Plastic Limit  (PL) | BS:1377: Part 2 |  |  |
| 3 | Plasticity Index | BS:1377: Part 2 |  |  |
| 4 | MC | BS:1377: Part 2 | 6 | 17 |
| 5 | MCV | Clause 632 | 7 | 15 |
| 6 | Undrained shear strength of remoulded material | Clause 633 | 50kPa |  |
| 7 | Contamination | Refer to Newdale GCR |  |  |

**Processing of Class U1A/U1B Material and requirements for Class U2**

Material designated as Class U1A unacceptable material identified visually on site or following testing on site shall be, wherever possible, processed to meet the requirements for Class 2 general fill. If processing of Class U1A is not possible or desirable it shall be disposed of off-site at a suitable licensed waste facility after consultation with the Project Manager.

Class U1B and Class U2 material, if encountered, shall only be disposed of after further site specific risk assessment by the Overseeing Organisation and consultation with the Project Manager.

**Excavation and Filling – General Requirements**

The Contractor will ensure that no material is allowed to roll outside the Site boundary.

The Contractor shall employ only that plant which is suited to the materials to be handled. He shall not at any time use any plant which damages or reduces the natural strength of the materials in its in-situ state or during handling and placing or in its final compacted state. He shall not permit suitable materials to become unsuitable by his method of working.

Where excavation reveals a combination of suitable and unsuitable materials, the Contractor shall excavate in a manner such that, where required, suitable materials are excavated separately.

The Contractor shall ensure that no vertical or unstable face is left at any time such that it might cause danger or damage to any persons or property or to the stability of any temporary or permanent works.

Should the Contractor wish to use any excavated surface for the general movement of constructional plant, measures to protect the surface of the areas shall be agreed with the Project Manager.

Unexpected putrescible or contaminated materials, exposed during excavation shall be highlighted to the Project Manager who shall instruct on further testing required, assessment and re-use/disposal options.

Where filling is on slopes (i.e. against perimeter of excavation and at reinforced section of works) benches shall be cut into the existing slope surface prior to the addition of any fill material. The material shall be placed and compacted on these benches in horizontal layers. Any deviations from this proposed method shall be agreed in writing with the Project Manager before being executed.

Materials deemed unsuitable for incorporation into the Works shall be stockpiled separately and assessed by the engineer. Some minor processing of soils may be practical to render them suitable for inclusion in the Works. This could include the mechanical removal of oversized boulders or pockets of organic materials. This should be the primary approach wherever possible to avoid the transporting of ‘waste’ to a licensed waste disposal facility. Under no circumstances shall suitable materials be compromised by mixing with unsuitable materials.

**Filling and Compaction to Specified Requirements**

All fill materials shall be placed and compacted as soon as practicable after excavation or delivery to the area of deposition in layers. Filling shall be carried out so that levels are approached simultaneously over the whole of any section of the work including the reinforced embankment. The Contractor shall control and direct construction traffic uniformly over the full extent of the fill area and damage to compacted areas shall be made good by the Contractor.

Should the Contractor wish to use any filled area for the general movement of construction plant, measures to protect the Works shall be agreed with the Engineer. Any damage to compacted areas shall be made good by the Contractor.

The Contractor may wish to carry out a compaction trials which, if successful, should become part of the permanent work.

**Discussed Mine-workings and Mineshafts**

The site lies within an area of historic mining and there are 4 recorded mine-entries within the Phase 1 site. As part of the previous earthworks scheme, it was agreed with the Coal Authority that geogrid be placed over the recorded positions of the mine-entries. If this geogrid is disturbed during the reduced dig to 132mAoD, H+E will provide the co-ordinates for the shafts so that the geogrid can be replaced at the correct locations at the base of dig. The geogrid shall be 10m by 10m at each location centred on the shaft co-ordinate.

Mine-workings crown hole collapse and mineshaft collapse are deemed a very low to negligible risk within the site. However, in the event that a localised collapse does occur, the hole or affected area should be surrounded by a temporary ‘Herras’ type fencing (not less than 2m high), the perimeter of which shall be not less than 4m from the edge of any ground settlement related to the shaft, and at a distance to be agreed with the Project Manager. The Contractor shall provide a warning notice board around the fenced area warning of the presence of a mineshaft. The fencing and warning boards shall be maintained in good order at all times until permanent treatment works take place.