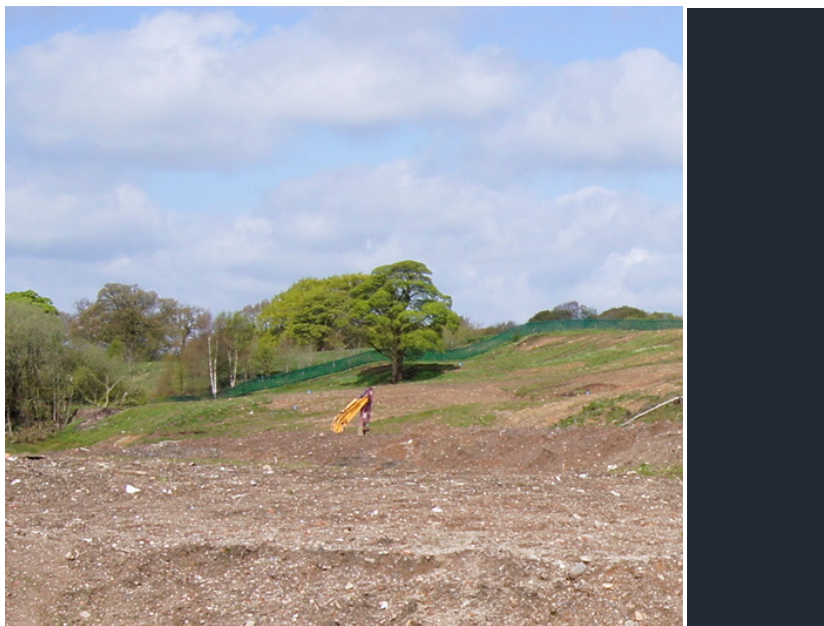


## **Blackburn Waterside Regeneration Ltd**

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### **Livesey Branch Road, Blackburn Earthworks Specification**

**November 2019**



## Revision Schedule

Livesey Branch Road, Blackburn

## Eathworks Specification

November 2019

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## **CONTENTS**

<b>1</b>	<b>SITE INFORMATION</b>	<b>2</b>
1.1	Site Description	2
1.2	Ground Information	2
<b>2</b>	<b>WORKS INFORMATION</b>	<b>3</b>
2.1	Purpose of Works	3
2.2	General Specification	3
2.3	British Standards	3
2.4	Personnel and Relevant Experience	3
2.5	Records of the Works	3
2.6	Tests and Testing Facilities	4
2.7	Existing Made Ground	4
2.8	Stockpiled/Imported Materials	5
2.9	Compaction	5
2.10	Bearing Capacity	7
2.11	Testing Frequency	7
2.12	Temporary Drainage	7
2.13	Weather Conditions	7
2.14	Noise Control and Nuisance	8
2.15	Health & Safety	8
2.16	Licences and Permits	8
2.17	Sequence of Works	8

## **1 SITE INFORMATION**

### **1.1 Site Description**

The site comprises the former SAPPI Paper Mills (Star Mill and Sun Mill) at Star Drive, Livesey Branch Road, Feniscowles, Blackburn, BB2 5HX. As shown on the Drawings, the site runs from Moulden Brow/Preston Old Road in the west to Livesey Branch Road in the east. The site consists of a central area of former industrial buildings, now demolished, with open fields to the east and two reservoirs, the Sun to the west and Mill Lodge to the south. The total land area is 26.8 ha.

### **1.2 Ground Information**

Reference should be made to the following documents:

- E3P – Former Sappi Works, Feniscowles, Blackburn – Remediation Contractor Works – September 2016, together with all Previous Reports cited therein (Section 1.4).
- Capita – Sappi Site near Feniscowles – Slope Stability Assessment of Southwest Facing Slopes – June 2018, together with all Surveys Undertaken cited therein (Section 3).

## **2 WORKS INFORMATION**

### **2.1 Purpose of Works**

The Employer proposes to redevelop the site for residential use. The proposals require an earthworks operation to create suitable platforms for housing development with formation levels as shown on the Drawings.

### **2.2 General Specification**

The General Specification shall be the current edition of the Specification for Highway Works (SHW) published by The Stationery Office, with particular reference to Series 600 Earthworks.

### **2.3 British Standards**

All materials and workmanship used shall comply with the latest British Standards where applicable unless the description shall specifically deviate from these standards, and shall be fit for their intended use and shall be compatible with the other materials with which they are intended to function. Any proprietary materials shall be used strictly in accordance with the manufacturer's specification and requirements.

### **2.4 Personnel and Relevant Experience**

Prior to commencement of the works, the Contractor shall provide a list of the key personnel he proposes to employ together with a resume of their experience and qualifications. The list of key personnel shall include the name of a full-time Contractor's Agent or representative.

### **2.5 Records of the Works**

The following records shall be made on sheets with an agreed layout. Two copies of each record signed by the Contractor shall be delivered to the Supervisor's office by the following stated times:

<b>Record</b>	<b>Frequency</b>	<b>Time for Delivery</b>
• Labour, plant and equipment.	Weekly	Noon of the following Monday.
• Progress report and monitoring results	Monthly	Last working day of the month.

Results of all records, tests, instrument measurements and calibrations made during the Contract shall be supplied to the Supervisor at times or intervals to be agreed unless specified. The Contractor shall provide the Supervisor with a list of samples taken for

laboratory testing (both soil and groundwater) on each day. In particular, records shall be kept and delivered to the Supervisor for:

- All materials imported to the site;
- All materials disposed of off site, including all waste transfer notes;
- Final ground levels.

The Contractor shall keep the following earthworks records on a daily basis:

- Quantity of each type of material excavated and deposited,
- Layer thicknesses,
- Compaction plant used,
- Number of passes for each type of material,
- Obstructions, delays and weather conditions, and
- Plant and personnel on site.

The Contractor shall present these records to the Supervisor each week.

## **2.6 Tests and Testing Facilities**

Before the work begins on site, a list of quality control tests, the facilities and equipment to be used and the names of independent testing laboratories for these and all other tests called for by the Specification shall be submitted to the Supervisor. The list shall be based on the various testing and frequency requirements contained in the Specification. All testing equipment shall be calibrated and re-calibrated at regular intervals by a NAMAS accredited organisation and calibration certificates shall be provided upon request.

## **2.7 Existing Made Ground**

The Contractor shall excavate the existing Made Ground as shown on the Drawings and process it to create an acceptable fill material. During excavation, the Contractor shall inform the Supervisor whenever it is apparent that original ground has been reached. Care shall be taken to maintain stable side slopes to all excavations and not to disturb or damage the utility services crossing the site. Suitable stand-off distances and depths from these services shall be agreed with the Supervisor.

All excavated Made Ground shall be passed through a series of crushers to reduce it to a maximum size of 75mm and screened and re-mixed so as to create an acceptable fill material generally according with Class 6F2 of Table 6/1 of the Specification. All hard materials from buried structures and foundations shall be processed separately and stockpiled for use as a hardcore surface layer. The created acceptable fill material shall be placed in the void formed by the excavation in suitable layers and compacted in accordance with the Specification. Any unacceptable material shall be disposed of off-site.

## **2.8 Stockpiled/Imported Materials**

The site levels shall be raised to final formation levels by placing and compacting acceptable fill. Acceptable fill shall be either taken from stockpiles on site or from the Contractor's own source. Preference shall be given to the stockpiles with the Contractor's own source only being used if there is no acceptable material available from the stockpiles. General fill from the Contractor's own source shall comply with Class 6F2 of Table 6/1 of the Specification. The Contractor shall excavate the stockpiled material and place and compact it over the replaced processed made ground fill.

## **2.9 Compaction**

Filling and compaction shall be carried in such a manner as to achieve the site contours shown on the Drawings. Compacted backfilled material shall achieve a minimum relative density of 95% for all layers placed, which will be verified by sand replacement tests and Nuclear Test Gauge (NTG).

Particular attention shall be given to:

- a) Classification of materials according to their physical and engineering properties including examination of the field characteristics of the materials and the carrying out of laboratory tests in accordance with the British Standard BS 1377:1990, in order that the materials can be placed into one or more of the categories identified in SHW Table 6/1, generally Class 6F2.
- b) Types and methods of operation of compaction plant to be used, the condition of the plant provided, the appropriate layer thickness and the number of passes required to meet the stipulated objectives as outlined in SHW Table 6/4.
- c) Control of water and site activities such that damage to compacted materials is avoided.

Prior to commencement of compaction works, field trials shall be undertaken with the plant proposed for the compaction operations and sampling and testing of the earthworks materials shall be carried out to establish the required degree of application for the compaction plant approved by the Supervisor. SHW Series 600 Tables 6/1 and 6/4 shall be used to determine acceptable methods of compaction for materials to be placed on the Site. The results of the field trials and laboratory testing will be used by the Supervisor to determine the acceptability limits of the fill materials.

Should the source or the nature of the fill material change significantly for whatever reason, further compaction trials and laboratory testing will be required to establish new compaction parameters. No filling and compaction within the permanent works shall be carried out until

the results of the laboratory and field trials are known and the acceptability limits of the fill materials have been established.

The Supervisor's approval of all areas of prepared formation shall be obtained by the Contractor prior to the commencement of any filling operations. All areas of the Site shall be surveyed and levelled by the Contractor before any material is deposited and at the final completion of compaction works. The Contractor shall so arrange his work as to allow the Supervisor the opportunity to carry out such surveys himself or to check any survey performed by the Contractor.

Before the placing of any fill, the natural ground shall be compacted by the number of passes of the compaction plant appropriate to the classification of the natural ground, assuming a layer 125mm in thickness. All fill shall be spread in uniform horizontal layers of the requisite thickness and shall be compacted as soon as possible after deposition by approved compaction plant. Earthmoving equipment shall not be accepted as suitable compaction plant but where possible it shall be routed across the Site to give a uniform compactive effort.

Any necessary adjustments to the natural moisture content of the material to be compacted will be made in order to comply with the acceptability limits of the fill materials. The necessary adjustments shall be made by either water sprinkling and/or materials selection and mixing techniques prior to compaction.

Special care shall be taken around the margin of the fill to ensure that these areas are properly compacted. If necessary, special compaction machinery shall be used but in no case will a lower standard of compaction be accepted. Each area of compacted backfill shall be properly integrated with adjacent or previously backfilled areas. The weathered, loose or partially compacted material accumulated on the side slopes of such areas shall be removed and replaced with suitably layered and compacted materials.

The backfilling and compaction works will be supervised and monitored by the Supervisor to ensure compliance with the Specification. The monitoring will involve field measurement of the density and moisture content of the fill materials using an approved nuclear density/moisture test gauge on all layers placed. The results so obtained in the field will be monitored as necessary by sand replacement tests, moisture content determination, laboratory compaction tests and other laboratory tests carried out in accordance with British Standards.

The Supervisor may direct that certain areas be subject to final re-grading and levelling, such as in areas which, due to prevailing site traffic, have been affected by the concentrated passage of site vehicles.



### 2.10 Bearing Capacity

In addition to the achievement of 95% relative density on each of the layers of fill, a bearing capacity of at least 120 kN/m<sup>2</sup> shall be achieved on the final surface level as measured by plate bearing tests. Any areas which fail to achieve this figure shall be re-excavated and re-compacted until they comply.

### 2.11 Testing Frequency

The following in-situ and laboratory testing of the compacted earthworks materials shall be carried out.

TEST	FREQUENCY OF TEST
Nuclear Density Gauge Tests	1 test/50m <sup>3</sup> /material type
Moisture Content	1 test/250m <sup>3</sup> /material type
Specific Gravity	1 test/2,000m <sup>3</sup> /material type
Moisture/Density Relationship (2.5kg)	1 test/2,000m <sup>3</sup> /material type
Sand Replacement Density	1 test/2,000m <sup>3</sup> /material type
Particle Size Distribution	1 test/2,000m <sup>3</sup> /material type
Plate Bearing Tests	1 test/500m <sup>2</sup> of final surface area
CBR Testing for Hardcore (if required)	1 test/2,000m <sup>3</sup> /material type

### 2.12 Temporary Drainage

An adequate fall shall be maintained on the compacted fill surface at all times so that surface water may be shed rapidly. If any ponding or surface erosion shall occur, the Contractor shall, at his own expense, immediately take steps to remedy the situation. Water ponding as a result of any run-off or from any cause shall be allowed only to such a depth and extent as may from time to time meet with the approval of the Supervisor. The method of disposal of ponded water shall be approved by the Supervisor.

### 2.13 Weather Conditions

Tipping, spreading and compacting shall cease when conditions are such that the mechanical plant which is tipping, spreading or compacting shall, in the opinion of the Supervisor, start to damage the already deposited and compacted material and cause the surface to deteriorate. These operations shall only re-commence by agreement with the Supervisor. In the event of the work being suspended by prolonged wet weather, filling operations shall not be resumed until the surface has drained and inspections have shown it still to be in a satisfactory state of compaction. If considered necessary, re-excavation and/or further compaction shall take place to restore the surface to its previous condition

before any new fill is deposited. Records shall be kept of the periods when work is disrupted by adverse weather.

#### **2.14 Noise Control and Nuisance**

The Contractor shall during the course of the Contract take every precaution to prevent nuisance in the form of noise, dust and water from occurring. In organising the operations to be carried out within the Site, the Contractor shall take into consideration the nuisance effect of his proposals and employ any economically viable means to reduce such effects as necessary. The Contractor shall undertake background noise, air and dust monitoring prior to the commencement of the works as well as monitoring throughout the entire duration of the works, all as agreed by the Supervisor.

#### **2.15 Health & Safety**

The Contractor's attention is drawn to all appropriate Health and Safety legislation, guidance and advice including:

- *The Health and Safety at Work etc. Act 1974 (HASAWA)*
- *The Management of Health and Safety at Work Regulations 1999 & 2006 (MHSR Regs.)*
- *The Control of Substances Hazardous to Health Regulations 2002 (COSHH Regs.)*
- *The Construction (Design and Management) Regulations 2015 (CDM)*
- *The Noise at Work Regulations 2005*

The Contractor shall ensure that all personnel follow a signing in/out procedure when entering or leaving the Site. The Contractor shall ensure that all personnel attend a site safety induction before commencing work on Site.

Construction workers will be likely to come into contact with contaminated soil via dermal contact and possible ingestion and shall take all suitable precautions including the wearing of appropriate PPE.

#### **2.16 Licences and Permits**

The Contractor shall obtain all relevant licences and permits from the relevant authorities to carry out the works. This shall include all mobile plant licences, discharge licences and abstraction licences. All costs shall be borne by the Contractor.

#### **2.17 Sequence of Works**

The Contractor shall ensure that the works are carried out in a manner which ensures the proper reclamation of the Site. The sequence of works shall be agreed in advance with the Project Manager and shall be carried out in accordance with the agreed programme.