

## **Overall Works Plan (Construction Programme Commentary)**

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### **1.1. Introduction**

The Contractor has developed a Construction Programme as part of Schedule 3 (Service Delivery Plans) of the Contract which includes details of all elements of the Works in accordance with paragraph 4.1.1 of Schedule 2 (Output Specification) of the Contract.

The Construction Programme has been designed to maximise build speed whilst still maintaining the highest levels of quality, safety and value for money throughout the Project.

The Contractor will carry out the Works in accordance with, and within the specified timetables set out in, the Construction Programme in accordance with paragraph 4.1.3 of Schedule 2 (Output Specification) of the Contract.

The Construction Programme will be co-ordinated to monitor the progress of Works and will be the key driver for the construction of the Facility. Every activity will be driven by the Construction Programme from sign-off to delivery of information and dates for placing orders with Sub-Contractors. This co-ordinated approach will ensure that decisions are made in a timely manner and that the Facility is delivered and relevant activities take place in the timeframes and dates specified in Schedule 8 (Key Dates) of the Contract.

The Construction Programme will be a live and reviewable document that will be updated by the Contractor as Works progress. In accordance with paragraph 4.1.2 of Schedule 2 (Output Specification) of the Contract, the Contractor will submit the Construction Programme and any subsequent amendment of it to the Authority within seven (7) Business Days of its amendment and adoption in relation to the Works.

#### **1.1.1. Project management structure for the delivery of the Works**

For detail regarding the project management structure please refer to section 1.1.2 of WDP3 (Works).

During the pre-construction phase, the Contractor will develop the construction team and inform them of the Construction Programme and early activities to ensure that all early Site activities are fully planned and that the Contractor is prepared.

#### **1.1.2. Relevant Legislation**

The Contractor recognises and shall adhere to its common law and statutory duties of care under the Health and Safety at Work Act 1974, which requires employers to provide a safe place of work, safe access and egress, safe plant and Equipment, information, instruction, training and a competent workforce.

In addition the Contractor shall adhere to specific Legislation relevant for the Works Period, which is in accordance with paragraphs 2.2.4 and 17.1 of Schedule 2 (Output Specification) of the Contract, including, but not limited to, those listed below.

- CDM Regulations
- Control of Asbestos Regulations 2012
- Control of Substances Hazardous to Health Regulations 2002 (CoSHH)
- Control of Noise at Work Regulations 2005

- Control of Vibration at Work Regulations 2005
- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
- Provision and Use of Work Equipment Regulations 1998, and as amended by the Health and Safety (Miscellaneous Amendments) Regulations 2002
- RIDDOR
- Work at Height Regulations 2005, amended 2007
- Workplace (Health, Safety and Welfare) Regulations 1992, and as amended by the Health and Safety (Miscellaneous Amendments) Regulations 2002

## **1.2. Details of the proposed Construction Programme**

The Construction Programme sets out the sequence and dates of the principal operations from Financial Close to Services Commencement and identifies the critical path.

The Construction Programme identifies the pre-construction activities, including those Works necessary to discharge any conditions precedent from the Planning Permission.

The programme commences with a notice to proceed to the Construction Sub-Contractor to commence a two month mobilisation period followed by the detailed design and procurement processes. Pre-orders will be issued on those items of Equipment and fixed installation with the longest procurement period and which are critical to the completion of the Project. These will include the turbine, transformers, boiler, flue gas package and air cooled condenser. The application for connection to the grid will also be made at this time.

The civils works will commence with the establishment of the Site including setting up of offices and welfare facilities and securing the Site with fencing.

The installation of the boiler plant will be critical to the timely completion of the Project and the construction sequence has been programmed to ensure that the boiler plant installation commences at the earliest possible date.

Construction of the Waste bunker and the boiler hall basement and basement roof precede the commencement of boiler plant installation and so earthworks and piling is programmed to commence in these areas first. A two-stage earthworks operation is required with the first stage prior to piling consisting of bulk earthworks including the provision of a piling mat. The second stage will include formation of a contiguous piled basement retaining structure followed by the removal of earth to form the Waste bunker. The Waste bunker superstructure is a large reinforced concrete structure with supporting fins and slabs and is planned to be slip-formed or formed using traditional formwork panels.

The initial stages of the boiler plant installation will require access for the installation of heavy plant components and to enable this to proceed in an efficient manner, it is proposed to phase the erection of the steel frame and building envelope. The civils contractor will vacate this area during the installation of the heavy components returning to complete the envelope to enable completion of insulation, instrumentation and cabling in a water proof environment.

Commissioning will then be critical over a seven (7) month period to achieve Services Commencement. Commissioning will be subdivided into 'Cold Commissioning' and 'Hot



Commissioning' and various tests will need to be satisfied for final acceptance (see WDP 4 (Commissioning) for further information).

The Incinerator Bottom Ash (IBA) treatment building is programmed to have its foundations and the ground slab installed then in order to provide additional lay-down, storage and component assembly space, the superstructure is deferred until the heavy boiler installation is complete.

All of the above items are shown in more detail on the Construction Programme in Part 3 of Schedule 3 (Service Delivery Plan) of the Contract.

### 1.3. Long lead-in procurements

- 1.3.1. Following notice to proceed and mobilisation, orders will be placed for the items of plant which require long procurement periods, such as the main boiler, the turbine and transformer. Other procurement activities

A number of stages of preparation of Works have been undertaken in order to fulfil statutory requirements and assist in further planning of the Works.

Pre-construction activities will have included the activities in Table OWP.1.

<p>Desktop investigation works</p> <ul style="list-style-type: none"> <li>Review historical and archaeological records</li> <li>Review of potential unexploded ordnance</li> <li>Review existing geotechnical information, bore holes</li> <li>Statutory services searches</li> </ul>	<p>Development of management plans</p> <ul style="list-style-type: none"> <li>Project management plan</li> <li>Construction phase Health and Safety plan</li> <li>Waste minimisation plan</li> <li>Site logistics and traffic management plan</li> </ul>
<p>Stakeholder consultation and notices</p> <ul style="list-style-type: none"> <li>Local community</li> <li>The Authority</li> <li>Emergency services</li> <li>Environment Agency</li> <li>Statutory services authorities</li> <li>Health and Safety Executive</li> <li>Local Wildlife Trust</li> <li>Natural England</li> <li>English Heritage</li> <li>Highways Agency</li> <li>CABE</li> </ul>	<p>Survey works</p> <ul style="list-style-type: none"> <li>Statutory services detection scanning</li> <li>Ground probing radar survey (statutory services and ordnance)</li> <li>Detailed visual survey</li> <li>Topographical survey</li> <li>Ground investigation surveys and bore holes</li> <li>Ecological habitat survey (including badgers, bats, newts, voles, birds)</li> <li>Contamination and asbestos survey</li> <li>Drain survey (CCTV)</li> <li>Water monitoring on local watercourse</li> <li>Existing noise monitoring and survey (day and night)</li> </ul>

*Table OWP.1 - Pre-construction activities*

In accordance with the findings of the ecological habitat survey, early Site activities prior to the Planned Works Commencement Date will be undertaken in order to protect wildlife on and around the Site.

If during any further environmental assessments, including Site investigation surveys, any contamination or result that would impede construction progress is found prior to the Planned Works Commencement Date, appropriate measures will be taken.

**1.4. Programme monitoring**

The Contractor will ensure that established reporting procedures are put in place to monitor the progress of Sub-Contractors in relation to their respective roles.

All appointed Sub-Contractors will operate under the Construction Sub-Contractor's Integrated Management System (IMS). Method Statements, milestones and key performance indicators (KPIs) will be agreed in advance with all Sub-Contractors and will be used as a basis for monitoring performance and continual improvements.

The Contractor will hold formal monthly meetings with all major Sub-Contractors, which will include a performance review against KPIs and the timetable. In addition less formal meetings will be held on an ongoing basis with all members of the supply chain. This ongoing working relationship will ensure that the Contractor is kept fully aware of day to day issues.

The Contractor will operate a "traffic light" based control procedure to monitor all Sub-Contractor activity in relation to the Project. Sub-Contractors whose activities could potentially delay the Project will be put on amber alert and be subject to escalated monitoring, reporting and supervisory procedures until the risk of delay has been mitigated.

The Contractor will produce and provide a Monthly Construction Progress Report to the Authority, utilising drop-line progress monitoring as an indication of Site progress, in order to ensure that the progress of the Project is kept on track.

Internal monitoring procedures that will be implemented by the Contractor following commencement of the Works will include:

- a daily update via a Site diary;
- a weekly update and progress report;
- a monthly update and progress report and a progress "S" curve analysis;
- progress meeting with the Authority in accordance with MS 5E (Contract Communications Plan);
- weekly/fortnightly/monthly (as required) specialist Contractor/Sub-Contractor meetings;
- monthly risk register reviews;
- all meetings will be minuted, with action points, and then reported on;
- preparation of rolling short-term programmes; and
- forward planning and process mapping.



## **1.5. Construction contingency**

### **1.5.1. Target construction programme**

Prior to commencement of the Works a target construction programme will be developed by the Contractor. The target construction programme will be developed from the Construction Programme by targeting earlier completions and build into the programme buffers and contingency.

The target construction programme will become the key driver for management of the Works and internal monitoring and reporting will be to this programme. Usage of contingency will be monitored and reported by the Contractor to the Authority and actions taken in order to minimise its use, with particular focus on the critical path items summarised below:

- earthworks and piling for the Waste bunker;
- earthworks and piling for the boiler hall basement;
- below ground structures for the Waste bunker;
- above ground structure of the Waste bunker;
- below ground structure of the boiler hall basement;
- installation of the boiler and associated plant;
- erection of the boiler hall steel frame, roofing and cladding;
- completion of boiler insulation, instrumentation and controls;
- building services installation in the boiler hall; and
- commissioning.

The design process will produce work package designs which will be required in order to commence Sub-Contractor procurement.

Procurement of materials and Sub-Contracts will be managed and monitored regularly by the Contractor and any slippage against the target construction programme will be reviewed and actions instigated to prevent the delay affecting construction.

Short term programmes and visual programmes will also be prepared by the Site management team, together with Sub-Contractors, in order to increase the understanding of the Works and focus resources in the key areas. These programmes will be made available to the Authority for inspection on request.

Reporting procedures will be in place to monitor the progress of Sub-Contractors.

The Contractor will produce for the Authority, detailed monthly Project reviews and weekly headline reports utilising drop-line progress monitoring as an indication of Site progress.

### **1.5.2. Contingency arrangements**

Contingency arrangements will be developed prior to the Works commencing to enable corrective actions to be taken without delay. These contingency arrangements may include:

- increasing resources;

- rescheduling of the Works;
- longer working hours;
- employing additional supply chain companies to support particular trades; and
- sourcing alternative manufacturers of materials in the case of material shortage.

Any rescheduling or re-programming of the Works will be incorporated into the Construction Programme and the Contractor will provide this to the Authority in accordance with paragraph 4.1.2 of Schedule 2 (Output Specification) of the Contract.

The Contractor shall produce a Construction Delay Contingency Plan in accordance with paragraph 6.9.2 of Schedule 2 (Output Specification) of the Contract and will provide this to the Authority. The Construction Delay Contingency Plan will include:

- contingency arrangements as set out above to improve Project progress against the Construction Programme;
- the monitoring of progress against the target construction programme;
- the critical activities on which the plan is focused; and
- regular reporting.

#### 1.5.3. Risk and slippage management

The Contractor shall ensure that any slippage in the Construction Programme will be identified and dealt with promptly and the criticality of the slippage shall be assessed by the Contractor. An action plan shall be put in place in order to recover time lost and to ensure that the target construction programme is maintained.

In the event that an element of the Works slips, the Sub-Contractor(s) will be contacted by the Contractor and a course of action agreed so as to have minimal effect on any ongoing operations.

Regular meetings will be convened with the supply chain and short and long-term actions required to ensure the Works are completed to programme.

The Contractor shall develop a risk register, which is considered fundamental to mitigating any delay to the Project, and its development will be critical as the Works progress. The risk register will also be a standing agenda item at monthly progress meetings.