OUTWOODS NR 1 SERVICE RESERVOIR – RECONSTRUCTION

PRE - CONSTRUCTION METHOD STATEMENT
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Introduction
This Construction Method Statement (CMS) has been prepared to support the planning application for the reconstruction of Outwoods Nr1 Service Reservoir.

Location: Reservoir Road, Outwoods, Burton upon Trent DE14 2BP
NGR: SK 2286 2405

The works briefly comprises the demolition of an existing Victorian brick service reservoir and the design and construction of a new reinforced concrete service reservoir (nominal capacity 18,000 m\(^3\) non Statutory Reservoir under the existing Reservoirs Act 1975) together with new integral valve house.

The tendering stage and appointment of principle Design and Construct Contractor is not yet completed.

Indicative Scope of work items includes:

Design
Traditional in-situ reinforced concrete reservoir construction, with 2 equal compartments, to SSW Performance Specification based upon Euro codes.

Demolition
Existing Victorian reservoir built 1882 (capacity 18,230 m\(^3\)) is brick construction with barrel vaulted roof supported on cast iron columns and wrought iron beams with mass concrete floor slab.

Excavation
To formation level for foundations, under drains, pipework and drainage as required.

Construction
Foundations, walls and columns, roof and floor slabs, division walls, valve house, backfill and formation of earth embankments.

M&E
Supply and Installation of Pipework, valves, NRV’s, actuators, electrical panels, LED lighting. Security doors to valve house, SS Submarine access doors to tank, ventilation ducts, SS handrails, galvanised steel walkways/stairways.

Drainage
Roof drainage, roadway drainage, reservoir overflow and scour drain connections.

Roadways
Access road to be extended and turning/parking area to be provided at valve house.
Landscaping
Profiled reservoir earth embankments to be grass seeded, gravel to the roof, tree planting for site screening.

Testing and Commissioning
Final pipework connections, flushing, cleaning, drop testing, sampling.

Challenges for Construction Team identified
Very steep public access roadway shared with residents and a Primary School and Nursery at a busy road junction. Working safely within an existing confined operational site. Maintaining good relationship with school and neighbouring residents.

The scheme will provide potable water storage serving customers in the Burton water supply zone for the next 80 – 100 years.

General
This Construction Method Statement (CMS) sets out proposed measures to minimise and mitigate construction impact on the neighbouring community and objectives for the management of the site during the construction phase.

The CMS will remain under review during all stages of the project and certain areas of operation will be the subject of specialist considerations. The Principal contractor and CDM Co-ordinator will be appointed for the whole construction phase including Design and commissioning. More specific and detailed method statements and risk assessments relating to these operations will be provided at a later stage as the project proceeds. These additional method statements and risk assessments will comply with the requirements of the relevant regulatory bodies and will be prepared by the specific contractors involved. Risk assessments and method statements carried out by Contractors will be submitted to SSW and appropriate measures taken to mitigate any risks to employees, contractors and public in accordance with The Construction (Design and Management) Regulations 2007 requirements.

Planning & Programme
The overall Project programme including design, demolition and construction is estimated to be completed within approximately 18 months. The Principal contractor will prepare a computerbased programme using Microsoft Project planning and project management software or similar. The project management system will analyse critical path and produce bar chart programmes that can incorporate design, design reviews, procurement, equipment/material orders, deliveries and site installation period as part of standard procedures. The construction programme will be monitored, tracked and updated on a regular basis and any corrective action applied as necessary.

Site Investigation
A topographical survey has been carried out to confirm the existing site levels, extent of any existing services and the condition of the existing environs. Services have been plotted on drawings and a photographic record taken, which will be maintained as a record throughout the stages of the contract. Geotechnical investigation has also been carried out to determine detailed ground conditions to support the
reservoir and foundation design. The geotechnical investigation has not identified any significant problems with construction of the reservoir foundations. At this stage, it is not envisaged that any specialist groundworks will be required as part of the reservoir construction work.

Notification of the project commencement will be issued to all Statutory Authorities, including CDM notification to HSE, advising them of the construction works and advising them of the proposed programme of works.

A phase 1 Environmental habitat site survey has been completed and will be submitted as part of the planning application.

Site Logistics
The way in which the site is established and managed is critical to the success of the project. The Principal contractor will be responsible for preparation of a site access plan identifying areas for unloading, storage of materials and waste, vehicle parking, accommodation and messing facilities etc. Methods of unloading using crane and/or fork lift plant will also be detailed showing methods of lifting and horizontal material movement facilities during the construction period. Loading towers will be erected adjacent to the external elevation for the forklift truck to transfer materials to the roof level. Mobile elevating platforms will be utilized, where conventional scaffolding is unsuitable, to provide access and erection of various elements.

Site Management
The site management for the project will comprise a permanent full time site based Project Manager who will lead the site team and administer the contract. The Project Manager will be assisted and supported by various site based construction Management personnel, responsible for the management and supervision of the site-based operations. The site team will be supported and assisted by additional office based staff including environmental, planning, temporary works, health and safety managers and the Project CDM Co-ordinator.

Security and Site Establishment
Heras fencing or plywood hoarding or will be erected on the site boundary with Reservoir Road to secure it during the contract period. Additionally, Heras fencing will secure the work area inside the site boundary. The working area will be within the existing site boundary and areas of site will remain fully operational and visited by SSW staff throughout the construction period. Site office and welfare facilities will be established. Temporary site accommodation and welfare will comprise of the Project Managers office, Meeting and Induction room, Welfare facilities and will be erected on hard standing within the contractor's working area. Further accommodation for subcontractors will be sited as required and the meeting room will be available for the Client's representatives when visiting the site.

Personnel Safety Inductions
All personnel will be inducted prior to gaining access to the site. They will be informed of the specific site rules required in the preliminaries relating to this project as well as South Staffs Water site rules for contractors, health and safety policy and their own companies risk assessments and method statements.
Site Access and Deliveries
Vehicular and pedestrian access to the site compound will be from Reservoir Road. Delivery vehicles will be provided with directions onto the site and be required to turn off engines to avoid nuisance upon arrival. No parking on street in Reservoir Road will be permitted. A delivery vehicle lay-by and wash down area will be provided at the entrance of the site compound.

Site access and deliveries must be avoided during the busy Shobnall Primary School set down and pick up times (08:35 – 09:15 and 15:10 – 15:50hrs). Consideration must also be given to Tiddlywinks Nursery at the junction of Reservoir Road and Shobnall Road whose opening hours are Monday to Friday 07:30–18:30hrs and parents drop off and collect children at various times between opening hours.

Delivery constraints will be identified to all suppliers and trade contractors. Deliveries of materials, plant and equipment will be strictly controlled and co-ordinated to prevent congestion and disruption to traffic using Reservoir Road and Shobnall Road junction.

Signage
Adequate signage will be installed such that vehicle deliveries and access to the site are clearly defined within the general site geographical area. A main construction signboard will be positioned in agreement with SSW. Site signage will be provided within the curtilage of the site as necessary to advise operatives/visitors and delivery staff of safety requirements within the confines of the site and where to report on arrival. Such signage will include:
- Accommodation / Access requirements
- Speed Limits
- Overhead / Underground Services
- Safety Helmet, high visibility work wear and footwear requirements
- Noise and any requirements for ear protection
- Danger Construction Site, etc.

Movement and Lifting of Materials
Crane and Hoisting provisions will be as detailed within specific risk assessment and method statements. All vehicle movements and deliveries will be subject to the control of the Principal contractor. The storage of materials on site will be kept to an absolute minimum and therefore deliveries scheduling will be carried out to ensure supply is on a 'just in time' basis only.

All concrete and screed deliveries are anticipated as 'ready mixed' and will be delivered to site in appropriate vehicles. Concrete and screed placement techniques will be changed and adapted to suit the location and suitability of the equipment for its placement.

Storage and Handling
The contractor’s site area will provide the storage area for all plant and materials delivered to site. More vulnerable materials/equipment will be stored in the secure containers, or programmed on to site to be incorporated directly into the construction.
Waste Management
A waste strategy will be developed during the pre-commencement period. The Principal contractor will produce a Site Waste Management Plans (SWMP) for this Project with the objective of working towards better understanding waste management so the volume of waste to be disposed is reduced and segregation enables as much as possible to be recycled.

Scaffolding
Conventional scaffolding, where required, will be independent with boarded lifts to suit thenature, location and type of the particular operations. All scaffolding will be securely tied to the structure and will include suitable ladder access. Scaffolding will be provided, erected and maintained in accordance with all current statutory regulations. Suitable guard railing will be utilised to prevent falling from unprotected edges of the excavations, upper floors and staircases as applicable. No person other than certified competent scaffold erectors will be permitted to erect, alter, adapt or dismantle any conventional scaffolding.

Temporary Services
Power supply will be provided by a generator or temporary power supply from the existing pumphouse. 110v power tools will be utilised throughout construction. Water will be provided direct from the mains system for use in the welfare facilities. Fax, telephone lines and an electronic data transfer line will be provided to the site offices as required by the Contractor.

Dust and Debris
The site will be kept clean and tidy at all times and will comply with any statutory requirements. Particular attention will be given to preventing the contamination of adjoining roadways and existing water courses. Wheel washing of HGV's leaving site and roadsweeping will be carried out as required.

Noise Control
Management of noise pollution and vibration control will be given a high priority. Where the works are in close proximity of occupied buildings the Contractor will ensure that targeted acceptable levels of noise are adhered to as well as statutory levels or any imposed by the Environmental Health Officers.

Safety
Management and execution of the project will be fully compliant with therequirements of the Construction Design and Management Regulations 2007 and Principal contractor and an independent CDM Co-ordinator will be appointed throughout construction from commencement of the Design stage to commissioning and handover. The Health and Safety file will be maintained and available throughout the construction phase. All contractors will be required to provide safety policies, plans and method statements and will be assessed prior to order placement on all aspects of safety, health and welfare. All contractor and subcontractor employees shall be checked for competency and complete a Health and Safety Site Induction before commencement of any work on site. The site will be subject to independent site safety checks, inspection and reports by our independent site safety inspectors and advisors.
Construction

General
The Principal contractor will produce a master programme indicating proposed timing and sequencing of operations necessary to achieve project completion.

Initial Work
Prior to the commencement of the project works, the preliminary Health and Safety Plan will be prepared. This plan will be progressively refined and developed as other specialist sub contractors are appointed, and more specific and detailed methods, techniques and requirements are established. The Contractor’s offices and welfare facilities will be set-up within the contractor’s site designated work area. The temporary hoarding and fencing will be erected around the site before work commences and maintained throughout the Project.

Demolition
Any asbestos material in the existing reservoir, identified by survey before commencement, will be removed by a specialist sub-contractor before the building is demolished. Operatives will be provided with appropriate personal protective equipment to prevent injury from dust and abrasion. Noise and dust generated by the demolition works will be confined within the contractor’s site area. All the demolition works will be undertaken by a specialist subcontractor. Temporary screens or dust protection at existing door openings will be provided within the existing retained areas to prevent the contamination of surrounding areas.

Groundworks
Demolition of existing structure, excavation for the foundation base slab and under drains will be undertaken by tracked excavators. Construction of under-drain system will be followed by preparation for construction and placement of reinforced concrete base slab. This will involve construction of blinding layer and erection of reinforcement matting. The ground floor slab will then be cast in structural concrete once the under drainage has been completed and tested.

Structure
It is anticipated that the contractor will use heavy articulated cranes to place shuttering and steel reinforcement to the wall and roof structural elements. These will be cast using reinforced concrete either skipped or pumped into position. Walls will be cast progressively in suitable height lifts, from floor slab level up to full height. Reinforced concrete columns, internal to the reservoir structure, may be precast and located in place via the crane system. A mobile crane is likely to be used to erect the steel staircases, hoist equipment valves and pipework into the valve house structure.

Valve house - Mechanical / Electrical Services
A detailed fabrication, delivery and installation schedule will be prepared by the Mechanical and Electrical contractor, upon instructions to proceed, to ensure compliance with the overall contract programme. Builders work required for the new services will be defined at this stage for inclusion on the
structural engineer’s construction drawings. Installation of light fittings, smoke/heat detectors and intruder alarm systems will be co-ordinated with other works. Key dates for power and watersupplies to be available within the building will be identified on the programme. Testing and commissioning of specialist systems will be carried out by the specialist systems supplier/installer and test certificates will be issued.

**External Works**
The hard and soft landscaping will be undertaken once the building envelopes have been completed all access scaffolding has been removed.

**Project Reporting**
The following will be tabled for discussion at each internal site meeting;
The status and progress recorded against the contract programme. Current updated Construction Programme with, if necessary, actions for bringing works into line with the Construction programme. Weekly labour and plant returns. A rolling schedule of approvals of all Design, Detailing and Materials yet to be approved. This schedule will be updated on a weekly basis. A schedule of materials and projects manufactured off site, with status of percentage manufactured and anticipated delivery dates.

**Cleaning, Testing, disinfection and Commissioning**
Following construction works roof water testing, cleaning, drop testing, disinfection and commissioning will be carried out in accordance with SSW, DWI and CESWI specifications and procedures.

**Handover Documentation and Client Training**
In parallel with the construction phases, the handover of the project to SSW operational staff will require development of H&S, operational and technical information and procedures by the contractor and SSW project team.

**Contract Administration and Handovers**
Throughout the contract, the Principal contractor will maintain the updated, tracked and monitored Construction Programme for the works. In order to ensure that the programme is adhered to, the Principal contractor will hold regular on-site progress meetings with sub-contractors. At these meetings, other issues such as quality and safety will be discussed in detail to ensure that they fully comply with the contract requirements. Prior to handover of sections of works, the Principal contractor will carry out their own snagging of the works, with the aim of minimum defects at practical completion. As built drawings, commissioning records and operation and maintenance manuals will be prepared and issued prior to completion of the works.