# Victoria Quarter, Barnet

## Scope: Earthworks | Remediation | Groundwater Treatment | BIM

**One Housing Group**

**£16.3m**

John F Hunt Regeneration (JFHR) acted as design and build remediation and civils contractor on the 2.2 hectare former gas works site. The scope of work included:

- Demolition
- Removal of flytipped and unprocessed materials
- Picking of asbestos containing materials and segregation of waste streams prior to disposal / recycling.
- Remediation - soils and groundwater
- Construction of a 10,000 sqm basement
- 530m of contiguous piling
- Enabling works and preparation of site infrastructure including road, drainage, foul water pipework, attenuation tanks and telecommunications
- Repairs and relining to a deep surface water culvert running 8 metres below the site
- Major gas main diversion
- Re-use of site processed materials for capping layers
- Ecology
- Service installation and diversions
- Construction of 0.5km of adoptable highway
- Construction of temporary road to maintain 24hr access for third parties
- BIM

### Earthworks

The scope included the remediation of gasworks impacted soils and groundwater. Earthworks were undertaken to a significant depth across the site, which included deep obstruction removal. Works were planned and delivered using our own in-house resources.

The overall cut and fill volumes on the site were circa 110,000m$^3$. Approx. 46,000m$^3$ of surplus soils were removed from site, which was driven by the requirement to excavate and construct deep basements. 61,000m$^3$ of the overall excavation volume was determined to be potentially contaminated and was subject to selective excavation, sorting and classification in accordance with the remedial strategy. Approx. 24,500m$^3$ of this material subsequently underwent treatment utilising bioremediation and soil stabilisation / solidification techniques. All the treated soils were retained on site and re-engineered in accordance with the agreed Earthworks Strategy.

Given the former site use and the requirement to excavate and construct deep basements, earthworks were undertaken to significant depths. For example, the excavation associated with the former gasholder (40m diameter) was extended to an average depth of 16m from ground level, extending to 20m from ground level locally. Given the site history, impacted soils were noted to depths up to 15m bgl.

Due to the size of the site and requirement to create deep basements, an open cut method was implemented to achieve the required cut. Temporary works were restricted to the utilisation of a safe angle of repose. In some locations a long-reach excavator was utilised to excavate the lowest foundations, utilising localised sheet piling cofferdams.

Due to the complexity of the site, strong and open communication was required throughout. This included the client, professional advisors (Environmental Consultants), nearby residents, National Grid, Cadent, Network Rail, Thames Water, the local authority (several departments), and the Environment Agency.

### Remediation

An Outline Remediation Strategy was written by the Environmental Consultant; as part of the scope of works, JFHR were required to develop the outline strategy and gain full regulatory approval. One example of innovation that we successfully implemented was in our response to asbestos in soils, which was found to be more significant / widespread than initially expected based on previous Site Investigation.

Our operational team implemented the required Health and Safety measures on site, whilst our technical team assessed the potential risks to site workers and future site users. As a result of our work, JFHR were able to renegotiate the target criteria for safe reuse of asbestos in soils. All asbestos impacted soils were retained on site at depth.

### Groundwater Management

We established and operated a controlled and carefully managed water treatment plant on site to collect and treat water prior to discharge into sewer, in accordance with the requirements and approval of Thames Water.

The system was used to treat rainwater and recovered water from dewatering, excavation and treatment activities and separate dense and light NAPL from the inflow by gravity in a NAPL separator whilst a secondary stage of activated carbon filtration removed the dissolved phase components prior to discharge.

Treating the NAPL on site reduced vehicle movements and cost of treating the water off-site.

### Added Value

Our robust methodology allowed us to complete infrastructure, mains diversions and surface water attenuation alongside remediation works, minimising programme implications. An innovative approach to the project scope and value engineering has resulted in significant cost savings to our client as follows:

- Our approach to relining the river improved the surface water quality and saved the client £0.5m on construction costs compared to traditional cut and cover technique
- We successfully promoted the case for increasing remediation targets for re-use of chrysotile fibre tainted soils, reducing waste
- Preparation of stabilised pile mats using OPC geotechnically enhanced load bearing properties of recovered Class 2 materials. This avoided the off-site disposal of 10,000m$^3$ of contaminated materials and replacement by recycled aggregates, which would have significantly impacted the client's budget
- We avoided removal of grossly contaminated water to off-site treatment facility by implementing a sustainable and cost-effective solution.

Successful Construction Logistics and Community Safety (CLOCS) management was pivotal to successfully undertaking the scope of works and managing engagement with the local community

Our innovative approach to improving surface water quality saved our client £0.5m in construction costs

We maximised the re-use of material on-site by implementing a Materials Management plan, saving our client money by reducing waste to landfill

By treating water in a sustainable approach on-site we minimised lorry movements and our carbon footprint