OCU

Trenchless Capability Statement

Horizontal Directional Drilling (HDD)

Trenchless Installation Specialists
Design | Planning | Consents | Construction

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Contents

1. Overview

OCU has established one of the UK's leading Trenchless Installation services where for more than 17 years OCU has invested in people, plant and specialist equipment to develop an in-house Horizontal Directional Drilling (HDD) business that operates on a national scale. Our contract portfolio incorporates work for major UK Utilities, Private Developers and Tier 1 Capital Delivery Organisations.

Our membership to the United Kingdom for the Society of Trenchless Technology (UKSTT) means we can provide fully independent Trenchless Solutions. OCU operates an Integrated Management System (IMS) accredited to ISO 9001, ISO 14001, ISO 45001, and were also the first Utility Contractor to achieve the Lloyds Assurance accreditation for HDD.

Trenchless Technology is the science of installing, repairing or renewing underground pipelines, ducts and cables using techniques that minimise or eliminate the need for excavation. The use of such techniques has been proved to reduce the cost, environmental and social impact of utility works. The field of Trenchless Technology can be divided into four main areas:-

- The location and inspection of existing buried services
- Rehabilitation techniques such as cleaning, patching and re-lining
- Replacement techniques such as pipe bursting, pipe splitting and pipe extraction
- Installation techniques such as auger boring, tunnelling, pipe-jacking, impact moling & HDD

The Benefits

Trenchless Technology utilises techniques that minimise the impacts normally associated with the conventional open-cut construction methods; offering a range of benefits as described below:-

- Reduced impact on the environment; resulting from less surface disruption which minimises the use of aggregates for pipe support and backfilling; in addition to reducing the amount of site waste
- Site safety is more effectively managed as the actual worksite and any traffic management requirements are vastly reduced
- Improved risk management with reduced exposure to normal construction risks
- Minimised excavation sizes improve the long-term sustainability of the surrounding area
- Minimised noise and construction traffic impact; commonly deemed to be the highest contributor for public inconvenience and the most common cause for complaints
- Substantially reduced costs where existing services are present or where deep excavations are required

Sector Expertise

Our HDD offering combines innovation, best practice and technological advances in trenchless solutions that sets Instalcom apart from our competitors, where we can provide clients a safe, reliable, efficient and cost-effective and total solution service offering, where:-

- OCU completes a myriad of projects through the employment of 'No-dig' solutions
- We possess leading UK design and installation competence with the flexibility to meet any requirement
- We were the first business to achieve accreditation under the Lloyds scheme for Trenchless Technology
- We work in urban environments, installing utilities and environmental wells under roads, railways, river & canals etc
- We operate a twelve-strong rig fleet, capable of installing pipelines up to 1,400mm in diameter and over 3,000m in length, with rigs ranging from 20 to 400 tonnes

OCU has completed a myriad of projects through the employment of Trenchless Technologies. We mainly work in urban environments installing Utilities and Environmental Wells under roads, railways, canals and industrial infrastructure, but are equally at home drilling under:-

- Rivers
- Archaeological sites
- Coastlines
- Contaminated land
- Environmentally sensitive areas

OCU are experienced in undertaking the role and responsibility of Principal Contractor under the CDM Regulations, where we have robust processes for compliance and co-ordination of supply chain partners and other contractors. In addition, OCU holds the Network Rail Principal Contractor Licence (PCL) which we have used to act as Principal Contractor on several projects over the years for power and telecom installations, both trackside and for works that interface with the Public Highway.

2. Our Contracts

Selection of OCU current Power Framework Contracts:-

2.1 Wessex Water

Contract Name:	Engineering and Construction Framework
Contract Duration:	4 years
Contract Start Date:	April 2020
Contract End Date:	April 2024
Contract Value:	c. £2.5m per annum; projects are tendered for on an individual basis
Geography:	All over the Wessex Water network; comprising an operational area of approximately 10,000 square kilometres. 
Brief Description:	Trenchless activities, including; Horizontal Directional Drilling, Pipe Bursting, Slip Lining, Pipe Jacking, Auger Boring, Tunnelling and Shaft Construction.

2.2 Northern Gas Networks

Contract Name:	Framework Agreement for the Provision of Horizontal Directional Drilling
Contract Duration:	4 years
Contract Start Date:	December 2020
Contract End Date:	Jan 2024
Contract Value:	c. £1.5m per annum; projects are tendered for on an individual basis
Geography:	Yorkshire, the North East (Durham and Northumberland) and northern Cumbria. 
Brief Description:	Horizontal Directional Drilling and associated activities.

2.3 National Grid Electricity Distribution
(Formerly Western Power Distribution)

Contract Name:	Framework Agreement for Guided Auger Boring
Contract Duration:	3 years (+1)
Contract Start Date:	December 2019
Contract End Date:	January 2022
Contract Value:	c. £2m per annum; projects are tendered for on an individual basis
Geography:	Midlands, Mid Wales, South Wales, South West and Peninsula. 
Brief Description:	Guided Auger Boring and associated activities.

3. Resources

Contract Management & Operations

Our dedicated HDD Director manages a highly experienced management team and drilling crews that consistently execute projects on-time and to budget, where we currently have in excess of 40 individuals that form part of the in-house trenchless installation team with an additional pool of resources for HS2 diversionary works, competent to work on Power, Telecoms, Water and Gas networks. Furthermore, this in-house capability enables seamless project integration and savings on management costs. Similarly, our in-house maintenance, servicing and engineering support teams enable improved reliability and reduced downtime. OCU currently boasts the largest privately owned collection of HDD rigs across the UK, reinforced with back-up and contingencies should more power and/or machinery resource ever be required. We continue to remain at the forefront of this technological development and have been frequently commended for innovation in, and completion of, our HDD project work.

Our highly committed workforce undergoes continual assessment and training to ensure we maintain industry competencies and expand their skill sets to meet changes in product technologies and construction methodologies etc, and by doing so OCU is able to maintain a safety record that we are very proud of. All of our depots have storage facilities that enable us to hold our own or clients' vested stocks of specialist materials, i.e., jointing accessories, cable and ducting. These facilities assist us to respond quickly to our clients' requirements. We have an extensive fleet of wholly owned and maintained plant and transport, to include our specialist HDD rigs, and a range of specialist vehicles that enables us to operate in remote and difficult locations, including the provision of reactive support and resources for clients during significant weather events.

Design & Planning

To bolster our offering, we maintain comprehensive Professional Indemnity Insurance to support HDD design capability that undertakes full project evaluation for all new drill locations, including:-

- Site Investigations
- Utility Location Mapping
- Topography and Ground Condition Surveys
- Feasibility Studies
- Environmental Impact Assessments
- Ground Settlement and Heave Calculations
- Annular Pressure, Buoyancy and Over-bend Calculations

In addition, we can undertake Technical Proposals that enable our clients to go out to tender with viable HDD designs and, offer Geotechnical Risk Assessments and pipeline stress analysis for submission of Network Rail, National Highways, Canal & Rivers Trust and National Grid consent applications.

HDD Rig Portfolio

We completed our first HDD in 2003 and since then, have greatly built on our capability and experience; now operating a twelve-strong rig fleet capable of installing pipelines up to 1,400mm in diameter and over 3,000m in length, in ground conditions ranging from sands and clays to solid rock. The table and graph below describes the type, quantity and duct/pipe measurement capability of our in-house rigs, specific to their varying tonnage:-

Type	Quantity	Capability/Capacity
20 tonne	2	up to 200mm ducts up to 250m
30 tonne	2	up to 200mm ducts up to 400m, or 300mm pipelines up to 250m
40 tonne	1	up to 200mm ducts up to 600m, or 500mm pipelines up to 300m
45 tonne	1	up to 200mm ducts up to 900m, or 600mm pipelines up to 500m
50 tonne	2	up to 200m ducts up to 950m, or 700mm pipelines up to 550m
70 tonne	2	up to 200mm ducts up to 1,000m, or 800mm pipelines up to 600m
110 tonne	1	up to 200mm ducts up to 1,400m, or 900mm pipelines up to 700m
400 tonne	1	up to 1,400mm pipelines up to 3,000m

4. Case Studies

4.1 Irish Water - Cork Lower Harbour Estuary Crossing

The Cork Lower Harbour Main Drainage Project was carried out on behalf of Irish Water and aimed to provide enhanced treatment through the development of new wastewater infrastructure; servicing the areas of Cobh, Carrigaline, Crosshaven, Passage West, Monkstown and Ringaskiddy.

The purpose of the overall project was to improve the quality of the environment for receiving waters and terrestrial areas in the project catchment, by providing a sewage collection network which complies with the requirements and standards of the Urban Wastewater Treatment Directive and the EU Water Directive. The project was split into separate individual contracts, consisting of a new Wastewater Treatment Plant (WwTP), 15 new pumping stations, the upgrading of 4 existing pumping stations, approximately 30km of new sewers and an Estuary Crossing. The scope of works is summarised below:-

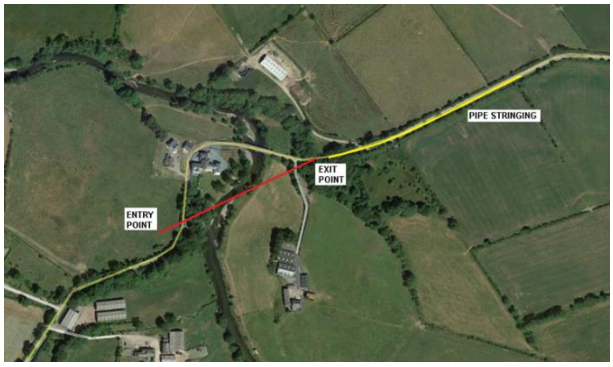
- 2 no. 500mm OD SDR 9 estuary crossing pipelines; approximately 1.1km long and each installed under the River Lee estuary using Horizontal Directional Drilling
- 2 no. 500mm OD SDR 17 rising main pipelines
- A discharge chamber to facilitate connection to the existing sewer network
- Utility diversions to divert all existing OHL's into a fully ducted underground system
- The final value of the project was c£13m



To comply with the Urban Wastewater Treatment Directive, Irish Water in partnership with Cork County Council, planned to end the discharge of raw sewage into Cork Harbour by transferring 20,000 wheelie bins of waste a day from Cobh Town, under the River Lee Estuary, to a new treatment works at Shanbally before discharge to sea. Ecological and Archaeological surveys were undertaken, and pre-condition inspections of all adjoining infrastructure, including a dived survey of the riverbed, were carried out. Noise and Vibration assessments were undertaken. Some additional site investigation boreholes at entry and exit were sunk to confirm contamination risks, and a water supply bore was drilled in Cork Docks to provide water for the HDD operation. A bridge was constructed over the Glen Burn at Exit to provide access to the Exit Side working area. OCU achieved all project KPI's during the course of the works and exceeded 98% on the client's monthly audits. The project exceeded 80,000 manhours with no reportable accidents or incidents.

4.2 United Utilities - West Cumbria Supply Scheme

OCU were contracted to design and install, by HDD, a new water pipeline beneath the River Cocker at Southwaite Bridge in Cumbria for United Utilities (UU). The installation comprised 216 metres of 355mm diameter SDR-11 polyethylene pipeline. The project was part of a larger scheme to refurbish local water infrastructure following the construction of the West Cumbria Supply Scheme between Thirlmere and Williamsgate. A feasibility study was undertaken with OCU managing the topographic surveys, intrusive site investigation and existing utility verification. A bore profile was developed to cross the Southwaite Road, the former Mill Race, the River Cocker and the access to Lowfield Farm before exiting in the Southwaite Road carriageway adjacent to an existing pipeline. The site lies within the English Lake District World Heritage Site and the Lake District National Park. The River Cocker is part of the River Derwent and Tributaries SSSI, and The River Derwent and Bassenthwaite Lake SAC, with particular sensitivity to red squirrels, lapwing and curlew. An Environment Agency B10 Flood Defence Consent was negotiated for the works. OCU mobilised one of their Midi drilling rigs and hook-lift based drilling fluid mixing and recycling systems, to maintain the fluid rheology at a high viscosity to stabilise the bore, but at a low shear strength to minimise annular pressures.



The gravel, cobble and boulder ground conditions were particularly onerous and the environmental sensitivity of the river paramount. At one stage during the works we had more ecologists on site than drillers. The bore was successfully completed to the satisfaction of the clients and overseeing authorities in an 18-day operation, with minimal impact to the river and no health and safety incidents encountered.

4.3 DŴR CYMRU Welsh Water - Brynmoelddu

The Brynmoelddu project was part of DCWW's overall Water Mains renewals and replacement scheme that is still ongoing. The Scope of Work included the replacement of the existing asbestos cement (AC) main by Pipe Bursting installation with 1,120m of 63mm medium density polyethylene (MDPE) pipe. The Main civils works were as follows:-

- Connect New Services
- Connections, Valves and couplings
- Backfilling and Reinstatement

All works were carried out and constructed with full compliance to the 7th edition of Civil Engineering Specification for the Water Industry (CESWI) and version 2 of the CS501A DCWW Civils Specification. After initial mobilisation and preliminary works occurred, construction activities were split between 5 stages of activity, as below:-

Activity 1: Mains Connection and Valve Complex

- Under pressure connections; including excavation, backfilling and reinstatement
- Attendance of a specialist subcontractor for under pressure connections and flow stops, including lifting and positioning
- Mains connections in the field, verge or unmade ground – new branch and SV complex
- Installation of new in-line air valves and nominal bore of main

Activity 2, 3 & 4: Pipe Bursting Activities with 63mm of MDPE pipe

- Pipe cracking and bursting
- Extra / over for excavation, backfilling and reinstatement of pits for pipe cracking and bursting in fields
- Extra / over for erection and dismantling of stock proof fencing, gates and stiles around pits
- Installation and renewal of communication pipe
- Temporary laying of overland mains including the installation and removal of service transfer
- Filling, Swabbing and Pressure testing the mains
- Chlorination of mains

Activity 5: Valve Complex

- Mains connections in field, verge and unmade ground.
- New branch and SV complex (8-12 parts) including excavation, backfilling and reinstatement

Once pressure testing and chlorination procedures were carried out, OCU was responsible for carrying out the commissioning and handover of the newly pipe burst main. OCU provided pressure test and chlorination results, Fusion Data, R1 details and 'as built/as constructed' drawings on completion, in conjunction with the Health and Safety file. These included pipe locations and depths, joint reference numbers for butt welded PE, stop taps, ground conditions and other pertinent utility information.

5. Financials

The OCU Group turnover exceeds £300m per annum and our Trenchless business successfully delivers complex major projects in excess of £10m along with multiple schemes within framework contracts typically generating over £100m per annum. Detailed report and account information is available and can be provided on request.

6. Insurances

Insurance cover held by OCU is renewed on 1st March annually by our brokers UK & Ireland includes [but is not limited to]:-

- Contractor's all risks: £25m
- Employers liability: £10m
- Professional indemnity: <£10m
- Public liability and products: £20m

Full details of this and other specialist insurance cover held by OCU are available on request.

7. Assurances

Rail Sector

- Network Rail Principal Contractor Licence Holder
- Railway Group Standards (RSSB), Company Standards (Network Rail) and National Hazard Directory - Direct online access
- Network Rail's Possession Planning System (PPS) - Direct online access
- OCU also employs a number of Contractor's Responsible Engineers (CREs) for both design and installation roles

8. Project Management Office (PMO)

Project Controls & Planning

OCU employs dedicated and experienced Project Planners within our PMO with cross-matrix responsibilities for both the individual project teams and the planning function. The planning process is embedded into the organisation from Tender stage through to project completion in an integrative manner involving all stakeholders. It is closely linked to meeting both internal and client requirements in terms of Programme Management and Project Control. Supporting the process, Primavera is the standard planning software for the organisation, providing robust time and resource management for each individual project. Furthermore, the portfolios of project programmes are managed using the Enterprise functionality allowing the organisation to provide the ultimate service across the board. With P6 also being used extensively throughout the rail industry, our capability and experience allows close integration with the client in turn contributing to overall success. The following tools and techniques are used and incorporated into the process:-

- Work Breakdown Structure
- Critical Path Analysis
- Earned Value Analysis
- Resource/Cost Loading
- Programme Configuration Control

9. Design

OCU has experienced of utilising BIM/CAD and we are fully conversant in the following CAD applications:-

- Cable System Design CYMCAP
- Bentley Microstation V8i - Full 3D/BIM capability
- Bentley Building Electrical (3D/BIM)
- Bentley Building Mechanical (3D/BIM)
- Bentley Acosim (3D/BIM)
- AutoCAD Revit (3D/BIM)
- Cad Duct
- Projectwise Management System (Bentley)

10. Memberships

- British Quality Foundation
- BSI Standards Membership
- Building Services Research and Information Association (BSRIA)
- COMIT (Construction Opportunities for Mobile IT)
- Constructing Excellence
- Constructionline
- CompeteFor
- Council of Registered Gas Installers (CORGI)
- Electrical Contractors' Association
- Engineering Construction Industry Training Board
- Heating and Ventilating Contractors Association (HVCA)
- Institute of Customer Service
- Institution of Electrical Engineers
- Joint Industry Board
- National Inspection Council for Electrical Installation (NICEIC)
- SELECT
- United Kingdom for the Society of Trenchless Technology (UKSTT)
- UK Green Building Council

- CIBSE Patron

In addition, OCU has a number of employees that are Chartered Members/Members of the following professional bodies and regularly attend their meetings as part of their on-going Continuing Professional Development (CPD):-

- Association for Project Management (APM)
- Chartered Institute of Building (CIOB)
- Institute of Civil Engineering (ICE)
- Chartered Institute of Purchasing & Supply
- Chartered Institution of Highways and Transportation
- Institution of Occupational Safety & Health
- Institute of Engineering and Technology IET
- Chartered Institute of Building Service Engineers CIBSE
- Chartered Management Institute (CMI)

11. Sustainability

ECO Sustainability Strategy

ECO - Building Sustainable Infrastructure for future Generations

Environment	Communities	Operations
		
Reducing Impact	Enhancing Lives	Working Viably

ECO is the OCU Sustainability Strategy based upon 3 Pillars encompassing Environment to reduce the impact of our operations on the planet, Communities to enhance the lives of our employees and local communities in which we operate & Operations to ensure that we work efficiently and innovate to continually improve for a sustainable future. Each of these pillars is supported by 3 strategic objectives aligned with the guiding principles of the United Nations Sustainability Development Goals.

Environment - Reducing our Impact					
Reducing Emissions		*Preventing Damage*		*Conserving Natural Resources*	
	Reduction of Greenhouse Gas emissions towards Government targets of Carbon net Zero by 2050.		Avoiding detrimental activities to Land, Water, Heritage, and Eco-systems. Reducing use of Hazardous materials.		Monitoring and reducing water usage. Protecting & Enhancing Natural Resources.

Communities - Enhancing Lives					
Valuing & developing our workforce		*Ensuring personal Wellbeing*		*Supporting Communities*	
	Paying a Living Wage. Ensuring Equality & Diversity in our workforce. Training & Development of our workforce.		Ensuring the Health & Safety of our workforce and those who may be affected by our operations. Protecting Human Rights in our supply chain.		Providing local Jobs for local people. Using Local Suppliers. Adding value through Volunteering, Charitable Work & Donations.
Operations - Working Viably					
Reducing Waste		*Encouraging Innovation*		*Collaborating with Stakeholders*	
	Zero avoidable waste to Landfill.		Identification and Development of sustainable solutions.		Working with Clients and Supply Chain to achieve common goals.

12. Supply Chain Management

The key role for our procurement activities is to create a sustained competitive edge for OCU by managing the acquisition of all externally supplied resources upon which the business depends both now and in the future. The Senior Leadership Team believes that applying best – practice methods to the process of selecting and managing our suppliers is a major contributor to our long – term business success. This will be seen in better solutions for our clients, faster deployment of innovation, low total costs, lower risk and enhanced contribution to our goals. The Procurement Team is responsible for ensuring best value is achieved for OCU, this applies to goods and services associated with operational or overhead spend. To ensure we consistently achieve best value: we operate an approved supplier list, agree T&C's and pricing, work with internal stakeholders to review and monitor supplier performance, carry out audits on suppliers, continually review potential new products and sources of supply. We work across many different departments and recognise that each has their own exacting needs and demands from the supply chain, we provide specialist support, advice and expertise to Project Managers. Our Supply Chain Management Teams are MCIPS qualified and utilise accepted best practice to drive innovation and achieve a differentiation from our supply base. We also aggregate our spend portfolio group-wide in order to leverage the market more effectively, this ensures we are maximising our utilisation of optimum suppliers and delivering best value throughout the project cycle. All projects are allocated a procurement lead prior to design commencement (or pre-commencement where the client has already undertaken the design) this individual's responsibility is to develop the project procurement strategy and ensure we achieve the best commercial and technological results for the project.

Key projects are allocated procurement resource who will be site based as appropriate to ensure a consistent approach OCU's procurement procedures are cascaded from group level and utilise best practice from across industry to ensure we achieve differentiation from our supply chain, as well as effectively protecting the interests of ourselves and our clients. The OCU Procurement Teams are actively involved with the construction planning process to ensure timely deliveries of key materials (especially those sitting on the critical path). At the initial programme development stage the procurement lead is responsible for the issuing of manufacturers lead-in times to the project planner, these are then incorporated into the baseline construction programme. At all stages through the project this document is utilised as the key tool to ensure the procurement and expediting of materials is undertaken as timely and efficiently as possible. These key dates will also include any commissioning/erection periods as required.

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Coverage:

With depots strategically located throughout the UK, OCU can offer a Nationwide Service

Sectors:

OCU offers infrastructure services across the following sectors:

- Power
- Energy Transition
- Water & Wastewater
- Telecoms
- Rail
- Trenchless