4 September 2024

CEO
Environment and Resources Authority

Your ref: PA/03309/24

Our ref: WSC 1888/22

Dear CEO,

EIA Screening – Project Description Statement

Tracking number: **PA/03309/24**

Location: **Various areas from Sant Antnin Treatment Plant, Triq San Leonardu Xghajra, Zabbar, Triq Wied il-Ghajn, Zabbar, Triq Sant`Antnin, Marsascala**

Proposal: **Proposed distribution network for new water (polished second class water) from Sant Antnin Sewage Treatment Plant to Bidni, San Anard and Xghajra reservoirs and to Ta`Barkat Sewage Treatment Plant through a combination of mostly horizontal directional drilling (trenchless work) and trenching with HDPE pipes**

Reference is made to requirements regarding the EIA Screening for the above-mentioned application.

Details of the person wishing to carry out the development

The WSC CEO details are as follows:

Mr. Karl Cilia

ID. No: 0431390M

Tel No: 80076400

A Brief description of the project and its general objectives.

The project is a continuation of the distribution of highly treated water (which is being polished in Ta` Barkat Plant in Xghajra) from Sant Antnin Plant in M`Scala to 3 reservoirs owned by the Water Services Corporation, namely Bidni, San Anard and Xghajra reservoirs.

This is another phase following three previously approved projects which are:

1. Construction of the Ta` Barkat Polishing Plant at Xghajra (ref. PA 03644/13) where the treated sewage is treated further. 9,600 cubic metres of water per day are expected to be produced from this site.
2. The transmission of treated water from Ta` Barkat to Sant Antnin Plant through a trenchless micro-tunnel system (ref. PA/03649/13).
3. The transmission of treated water from Sant Antnin Treatment Plant (MScala) to Belebel, Tas-Silg and Misrah Strejnu (Zejtun) (ref. PA/06032/17)

These projects, which were EU funded, have been completed. The next phase is the delivery of this water into the nearby reservoirs for further spreading of this water, termed New Water, for industrial and agricultural use.

Another aim is to move towards a "net zero" impact on the natural water cycle, whereby the volumes of water that are being abstracted will be returned, directly or indirectly, through the implementation of a number of measures, including the production and delivery of this new water.

The objectives of this action include:

1. To form part of an improved water supply through this new distribution network to deliver around 7 million cubic metres annually (from all three plants in Malta and Gozo) for unconventional use.
2. Improved water sustainability through the encouragement to substitute the use of groundwater by delivering good water quality water to strategic communal distribution points.
3. Improved efficiency in the distribution of unconventional water.

The Project – Choice of Technology

The basic aim of this project is to distribute this new water by pumping from Sant Antnin Plant to the three existing reservoirs mentioned above.

Most of this project will be carried out through horizontal directional drilling (**HDD**) and only parts will be carried out through normal top excavation. This technology has already been used successfully and extensively by the WSC (refer to approved PA 2290/12).

The choice of HDD is considered as the best solution for this purpose basically due to environmental considerations, and due to the decrease of traffic problems due to reduced road works. HDD is basically a trenchless system where pipes are pulled from one node to another through a pre-reamed bore below ground level. The pipes that will be used will be 350 mm inner diameter high density polyethylene (**HDPE**) a material capable of bending to a curve for the parabolic route from one node to another. Each pipe will be welded to make the whole pipe system leak-proof. The welding which is done on site for each pipe takes around 45 minutes to complete and must be designed to withstand the future pulling of the pipe inside the drilled bore from one node to another.

Top excavation (cut and fill type) will be utilized for parts of the project,

Equipment Set-Up

In some of the nodes (explained in further detail below) a drill rig is off-loaded and positioned over the bore centerline in close proximity behind the entry point to allow for the carriage height and entry angle, which will be around twenty degrees or less. A pit is to be constructed over each entry point node with normal excavation equipment.

The Node locations were chosen meticulously to be the least disruptive to traffic.

Pilot Bore and Tracking

Prior to drilling, the drilling fluids will be mixed and sufficient quantities made available to complete the pilot bore, pre-reaming and reaming passes. When the drill rig is properly set up, anchored and drilling fluids mixed, the pilot bore will be initiated, where the temporary entry pit will facilitate entry of the bit at the proper angle and helps contain drilling fluids.

The pilot bore will be drilled along the planned alignment from entry to exit, with the fewest bends that are possible to minimize pullback problems. The drill head is steered in a curve before turning another upward curve to the exit point at the other node. The two pits constructed in node entry and exit will contain the drilling fluids and entry of the pipe or cable during pullback operations.

The type of drill bit used will vary depending on ground conditions, whether the ground is soft soil, clay or rock.

The drill head is tracked by monitoring an electromagnetic signal transmitted from the transmitter mounted in the drill head to the receiver at the surface. The drill locator determines the drill head location and calculated depth, drill head inclination and provides the tracking information to the driller or for the drill rig operator for steering. It may sometimes be necessary to pull the drill head back to adjust steering response and achieve desired corrections.

The surface will be closely monitored for inadvertent drilling fluid returns. Any fluids and mud will be promptly cleaned up. Re-pumping of the mud fluid will be transported to the mud tank on site to avoid spillage.

At the completion of the pilot bore, the drill bit, transmitter and steering tool will be removed in preparation for the reaming process.

Reaming and pullback of pipes – Sequence and Position of Nodes

The choice of HDD is considered as the best solution for this purpose basically due to environmental considerations, and due to the decrease of traffic problems due to reduced road works. HDD is basically a trenchless system where pipes are pulled from one node to another through a pre-reamed bore below ground level. The pipes that will be used will be 350 mm inner diameter high density polyethylene (**HDPE**) a material capable of bending to a curve for the parabolic route from one node to another. Each pipe will be welded to make the whole pipe system leak-proof. The weld which is done on site for each pipe takes around 45 minutes to complete and must be designed to withstand the pulling of the pipe inside the drilled bore from one node to another.

The pilot bore will be enlarged through a back-reaming process. A reamer hole- opener will be attached to the drill pipe which is pressurized. The reamer is then rotated and pulled back through the pilot bore to enlarge the bore in one or more reaming processes as is necessary until a bore for 450 mm diameter is reached.

The product pipe is ready to be installed.

A pulling head will be attached to the product pipe and a swivel attached between the reamer and the pulling head to prevent rotation of pipe. Rollers and a crane will be necessary to support pipe prior to insertion. Pullback between two nodes will be tried in one go without interruption to reduce risk of becoming stuck in the bore, but it will depend on the available length of pipes for pullback and the rate of butt-fusion since the lengths between one node and the next vary.

In some working area around the nodes, the following equipment will be needed:

- Driller / reamer with control cab
- Power Unit and generator
- Equipment tanks
- Truck/crane
- HDPE pipe fusion area
- Mud tank and pumps

The area around each node chosen should be sufficient to include all the materials and equipment needed. All the nodes have been chosen to ensure that accessibility and manoeuvrability is possible whenever the equipment/materials are shifted on the location.

The length of the welded HDPE pipes between the three reservoirs and Sant Antnin Plant will be around 2.75 km through a Horizontal Directional Drilling technique and 190 m in normal trenching. The Points of reference for each site, called Nodes are as follows:

- Node A near Sant Antnin Plant
- Node B near Bidni reservoir
- Node C near San Anard reservoir
- Node D near road to entrance to Ta Barkat Sewage Treatment Plant
- Node E near Hofra (or Xghajra) reservoir

The Node locations were chosen meticulously to be the least disruptive to traffic.

The part between A to B will be connected through HDD.

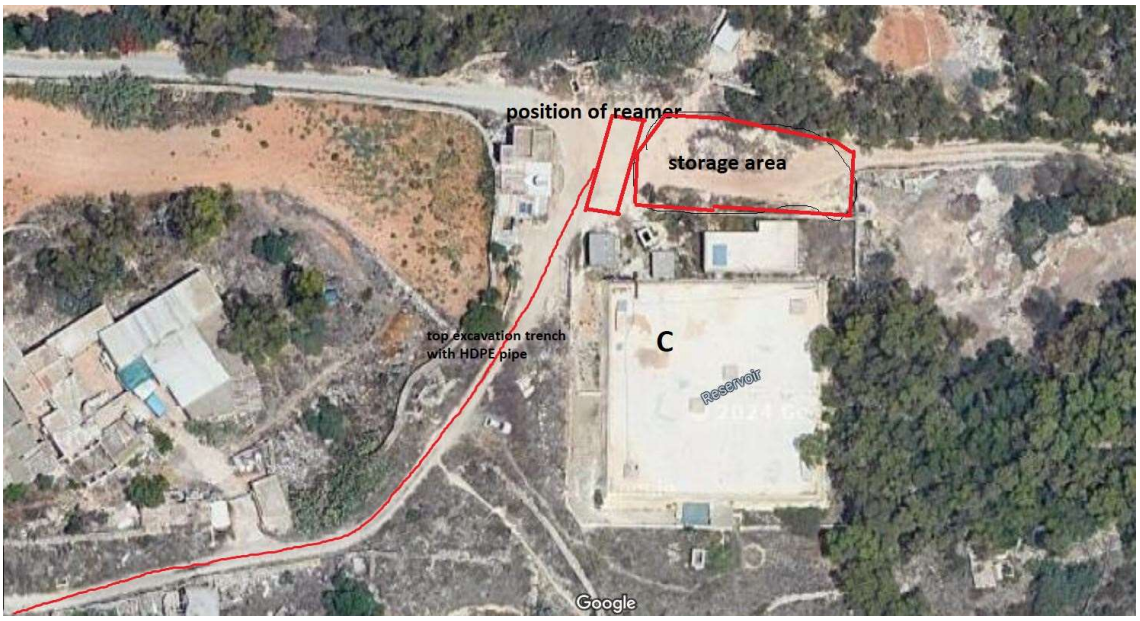
The initial drilling will start from A, which is adjacent to the SASTP, an area which will be enclosed. The reaming/drilling will be through this area where the drilling will reach Node B from this spot.

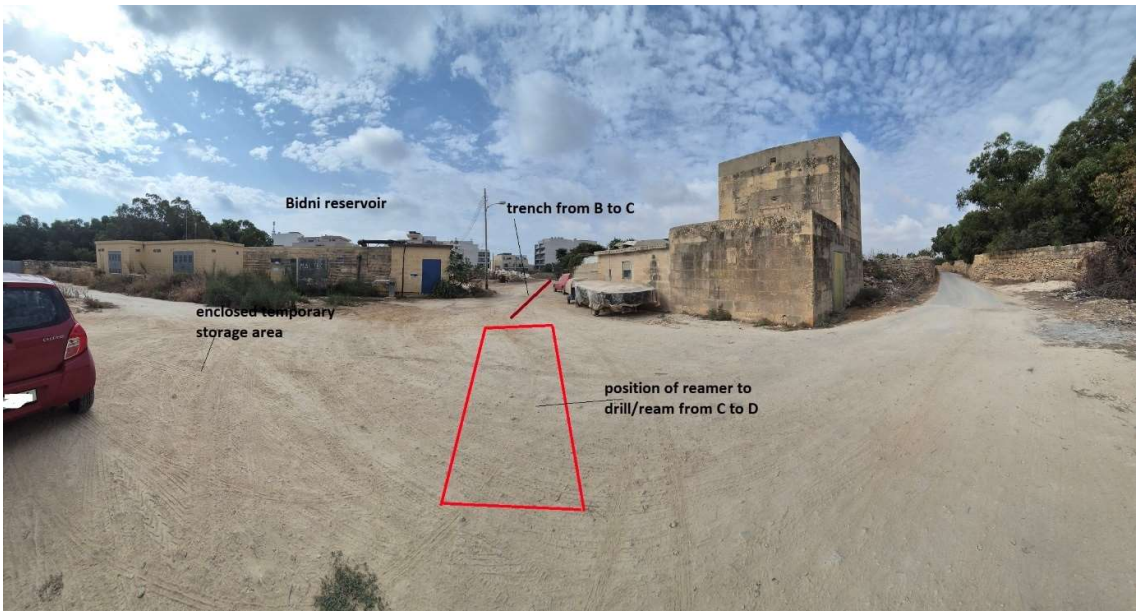
The HDPE pipes will be welded on site and placed on rollers in the SASTP plant as shown below. The reamer will be positioned on Node B where these pipes will be pulled from A to B.

Part B to C will be trenched. The same material for pipes will be used. Each Node will be connected manually, where an underground manhole is formed in hollow concrete blocks with concrete infill. This will be roofed over, and a manhole cover is fixed for future entry and maintenance.

The function of the reamer at Node B will only be necessary when pipes are pulled from A to B. The work area for only a couple of weeks will be the reamer itself and a generator. Normally the pullback process takes only a couple of days. The jointing of pipes will take place through an underground manhole excavated below Node B. A clearer route for the part A-B-C is shown above and below.

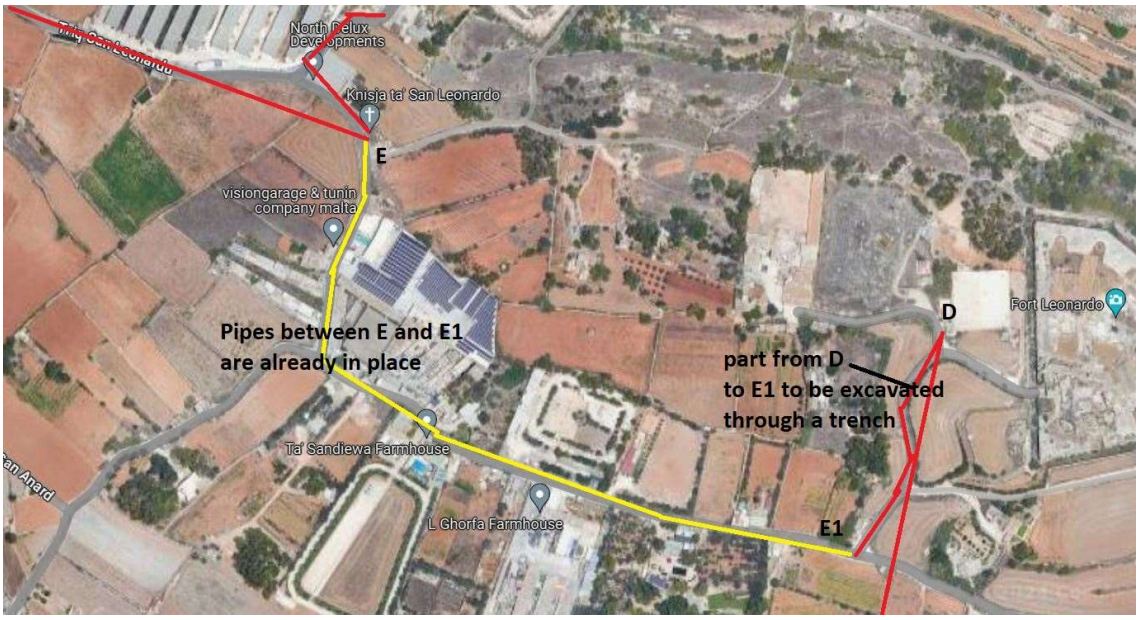
Each Node will be connected through an underground manhole, where a system of valves and connections will be fixed, so that a complete system is connected and can be controlled. The underground manhole will be carried out in hollow concrete blockwork with concrete infill. A steel manhole cover will be placed at ground level for future access and maintenance.





After the drilling and reaming is complete, the welded pipes will be placed in the area near C (Bidni Area). The reamer will be placed in Node D near San Anard Reservoir where the pipes will be pulled from C to D.

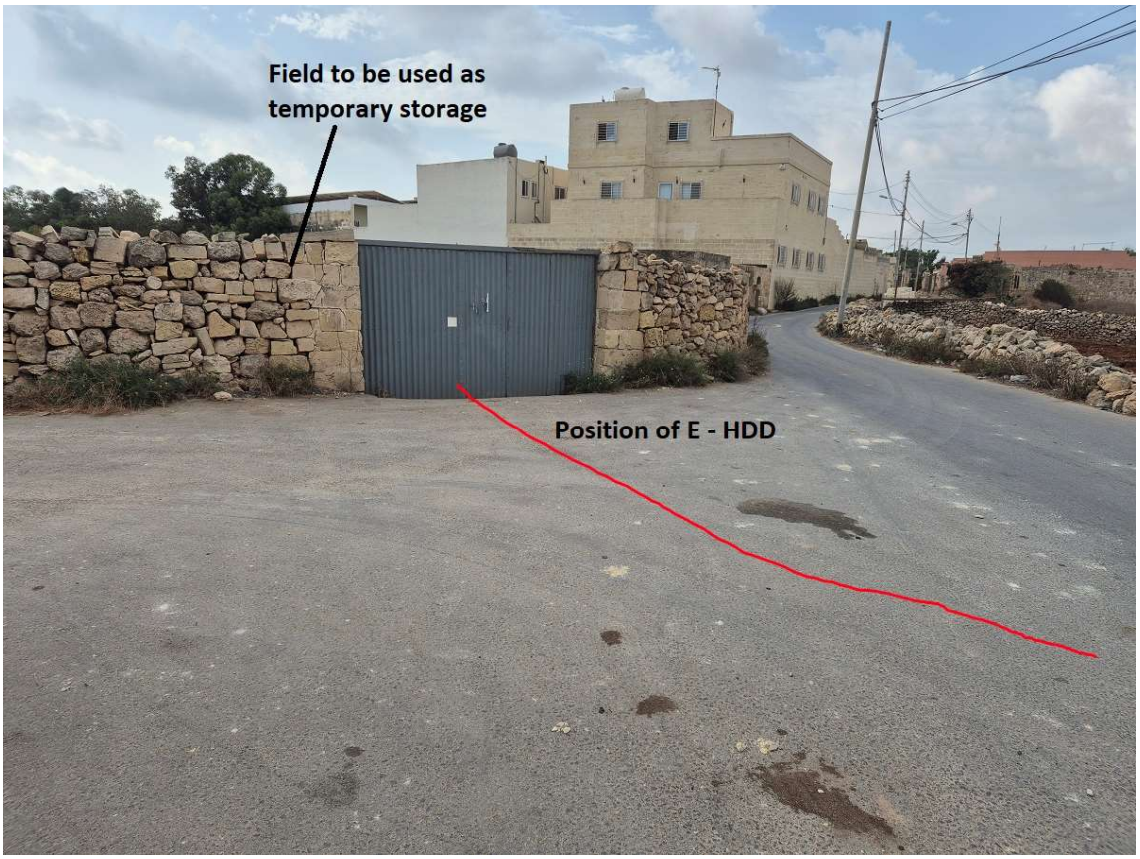
The part between E and E1 has already been carried out through top excavation (refer to PA 1103/18). There will be a trench excavation to lay the pipes between D and E1 and some connections between the new and the older pipes at D and E respectively (in the roads).



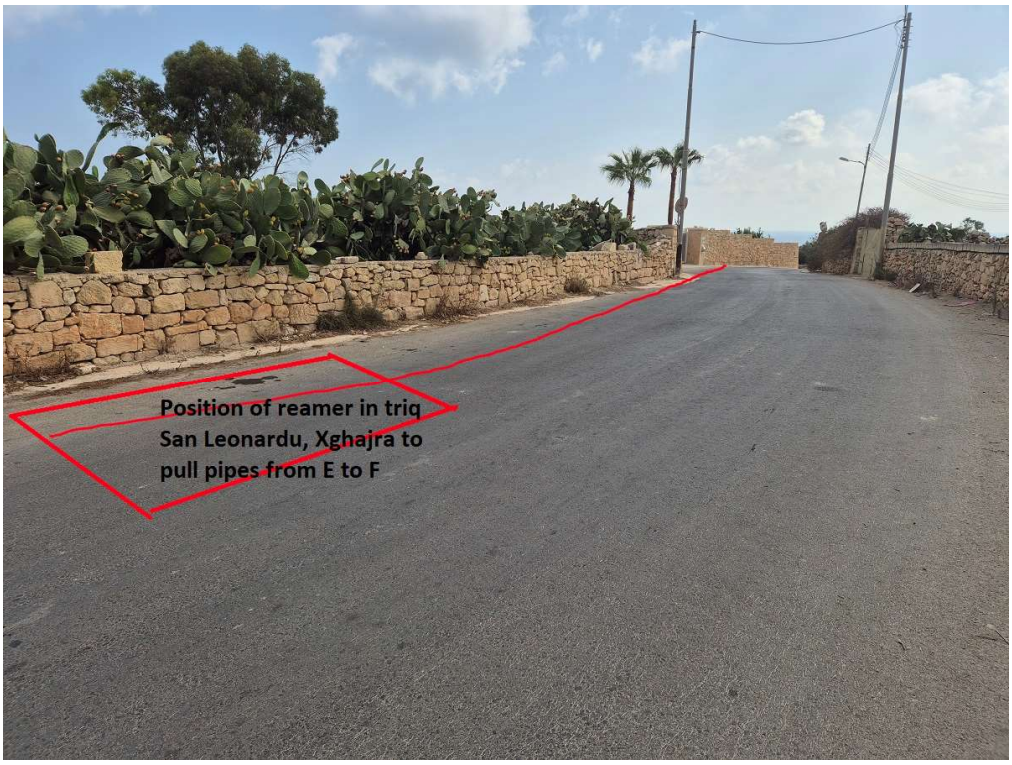
The field near E will only be used during the HDD process only for placing of reamer and equipment. It will be reverted to its original state once all the works are ready.

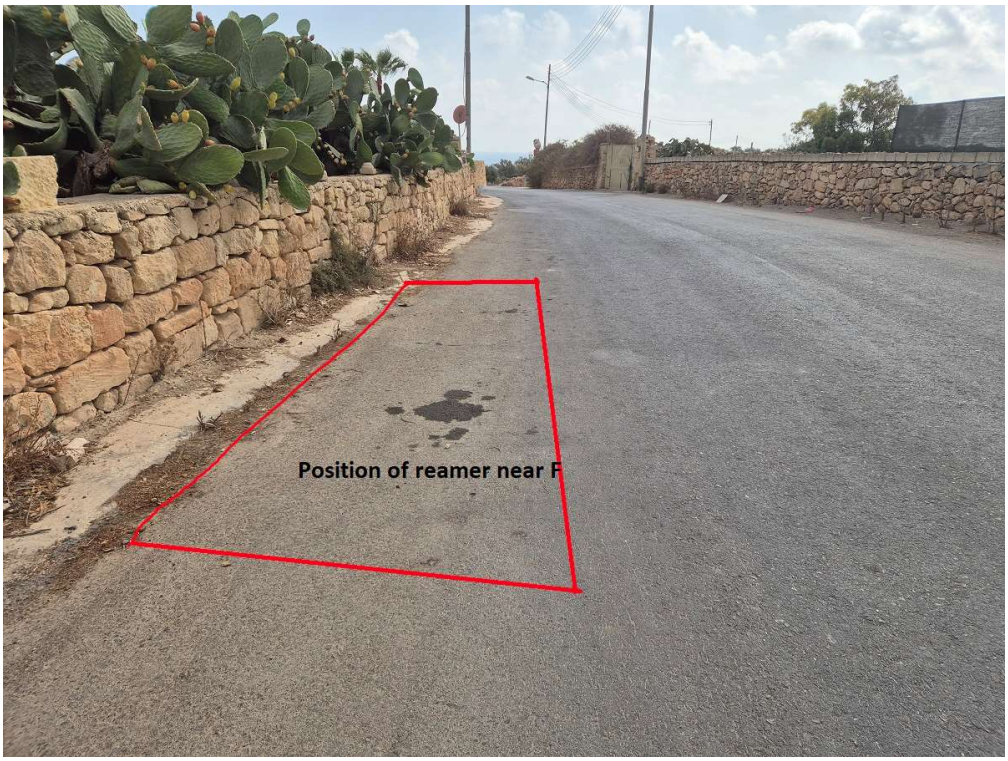
The part to be used as temporary storage is shown below.

From E to F will be carried out through HDD. Other excavations will be through a trench. Pipes will be pulled from E to F.



Position of reamer to pull the pipes from e to F near Hofra reservoir is shown below.





Protection Measures

Only small stretches will be excavated, and mostly in streets that are not travelled, so there will be no major traffic impact. The rest will be carried out through a bore below existing land as shown.

Signs will be placed in adjoining streets, following liaison with Transport Malta, indicating where the work area is and its extent. Traffic deviation is only needed near Hofra reservoir (near F) and only one lane, and only for a short time since the pulling is done in a couple of days.

There will also be considerable use of land owned by WSC where the reamers and pipes will be placed.

Some of the nodes, as indicated in the images above, will need an area of around 40 square metres as working space to include the equipment and machinery. Part or parts of the surrounding fields may be used temporarily for storage purposes. Any rubble walls that may be damaged will be reconstructed to their former state. Similarly, any soil that may be disturbed will be reinstated to its original state. No trees will be touched or interfered with.

The pipes can all be welded through underground pits under each node and valves installed below ground levels. They will all be accessed through a manhole cover.

reamer on site in previous similar projects

materials and equipment on each node

image of pit for each node

HDPE pipe welding on site before they are pulled through the bore

Number of persons to be employed

Normally the persons involved are:

1 Drilling expert inside the cabin

1 person taking care of the reamer

4 to 5 persons on site taking care of pipes and rods

Bowser to fill tank with water every week

Health and Safety official to visit at least twice per week.

This project is EU Fundes

Kindly be guided accordingly.

Perit Mario Balzan