Felindre 66” Mains

Overview:

Site Location:	>> Felindre Water Treatment Works, Swansea
Client:	>> Dwr Cymru Welsh Water
Contract Value:	>> £392,601.00
Project Duration:	>> 31 Weeks

Welsh Water had identified a leak of their 66” dia outlet water main from the treatment works. Our scope of work was to sink a sheet piled cofferdam and excavate and expose the twin 66” mains at the identified leak position. The leaking main was then to be repaired using a “repair encapsulation collar” while the main was still live. Having installed the 8m cofferdam and exposed the twin 66” mains, it was discovered that the 66” mains were not leaking. After further investigations by DCWW it appeared that the water entering the cofferdam was final treated water and could only be coming from a 300mm dia cast main that was branching off the 66” main nearby. We were then instructed to excavate to investigate if this 300mm main was leaking. The main was found to be leaking and a repair was carried out under a shut down.

As we had carried out the cofferdam installation to expose the twin mains, DCWW thought they would use this opportunity to install a cross connection between the 66” mains. DCWW were required to clean out part of the underground water storage reservoirs and the new cross connection between the 66” mains was required so they could isolate a section of the storage reservoir tank. We were instructed to procure the necessary 1000mm dia knife valves and butterfly valve to enable the cross connection to be made. These valves were ordered and took 12 to 14 weeks from order to delivery to site. We were required to pull off site for approx. 4 weeks while awaiting delivery of the knife valves to site.

The 1000mm dia cross connection was carried out by installing under pressure tee’s onto the 66” steel mains. To prove the strength and thickness of the twin steel mains an NDT (non-destructive test) was carried out to confirm that the mains were in a satisfactory condition to allow the cross connection to be installed. The under pressure tee’s were installed by UTS Engineering Ltd. The cross connection pipework was site measured and fabricated by UTS Engineering Ltd. and installed by Lewis. Pre-cast MH sections were then installed over the cross connection valve to provide future access. The cofferdam was then backfilled and the frames and sheet piles extracted.

Following completion of the cross connection works, we commenced the refurbishment of the lagoon land drainage system. The existing land drainage was silted up and was visibly damaged in several areas. A new land drain system was installed including catch pits. The new land drain system was connected to the existing outfall MH so that any water that did not soak away into the ground, via the new drainage system, could outfall via the outfall MH into the off-site drainage. The installation of the new soak away system prevented any surface water run off onto the public highway.

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- To carry out tree and shrub clearance in front of the old lagoons
- To undertake a thorough survey and CAT scan of the area to determine the position of any buried services in the vicinity of our work before the ground investigation and civil works begins on site.
- To undertake ground investigation (boreholes) in the location of the 66” water mains in front of the existing water meter chambers to determine ground conditions which will be required to confirm the method of temporary works for the proposed coffer dam construction.
- To test the water in the lagoons (redundant) for the signs of any contamination before they are drained down (DCWW scientist to carryout)
- To drain down by means of over pumping the lagoons (redundant) in front of the existing water metre chamber.
- To set up site in the form of a site compound, welfare units and material storage area.
- To excavate and construct a Coffer Dam (approximate dimensions 8mx6mx8.5m in accordance with the approved and checked temporary works design.
- To set up a ground dewatering system to deal with any ground and leaking water.
- To locate and effect the repair to the 66” water main (method cannot be decided until such time we know the extent and location of the leak).
- To undertake NDT testing on the 66” water mains
- To install interconnecting pipe work and isolation valves between the 2 x No 66” water mains
- To construct a 3 sided reinforced concrete chamber and roof slab in front of the existing water metre chamber
- To construct and install new land drainage in front of the Reed Beds to control ground water run off and to stop water running onto main road alongside the works.

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