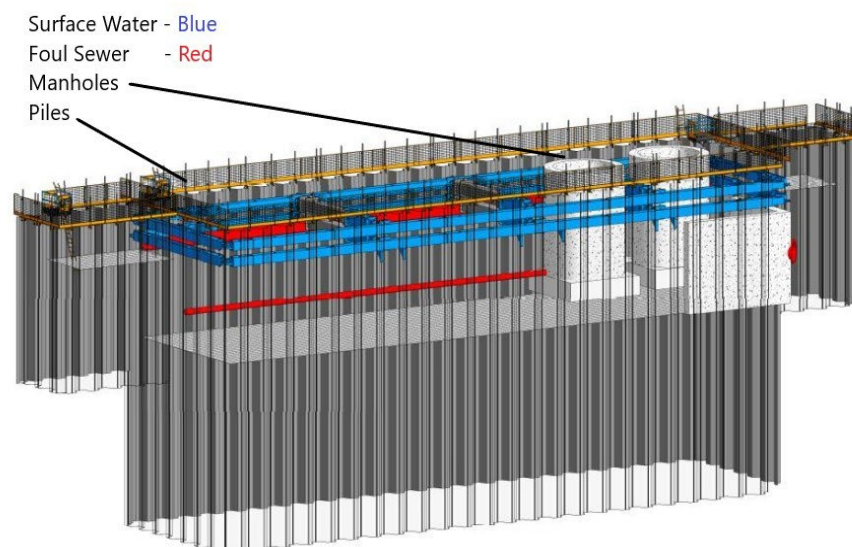




Taking care of your environment

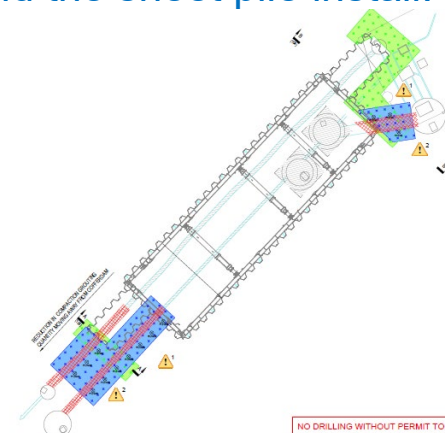
Proposed Intervention



Drawing details 30m of waste water pipe and surface water pipe to be replaced, as well as two manholes. Specialist sub-contractors and equipment will be used as a result of the poor, sandy ground conditions and high water table within the work area.

• Site Preparation

- Surface water pipe diversion – completed.
- A 700mm thick crane pad will be constructed to enable the crawler crane to operate safely – partially complete.
- Storage areas and excavator pads will also be installed – completed
- Ground to be lowered within the work site by 1.5m to aid the sheet pile install.



• Grouting

- Specialist contractors Geobear engaged and product procured for delivery early November.
- Compaction grouting around pipes to help prevent settlement.
- Permeation grouting to reduce water ingress at areas where openings are present and preferential flow has been identified.

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• Sheet Pile Installation

- Sheets will be installed one-by-one, using a hydraulic press (a vibrationless system) to carefully push them into the ground. The decision was taken to use this method to try and minimise noise and vibration as much as possible during this phase of the construction.
- A crane will feed the piles into the press.
- An impact hammer will be required for obstructions or to break friction between joins. This will only be used as and when required and using low impact.



• Ground Water Removal

- Contractors WJ UK engaged.
- Ground water will be extracted from the isolated work area (within the cofferdam) to enable access for the works to be carried out, and for the safety of our workers.
- This will help prevent any impact on land outwith the isolated work area.
- 10 large boreholes and 14 smaller boreholes will enable ground water removal.

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• Management of Flows

- A temporary bypass was installed below the ground water table to enable the surface water pipe to be diverted.
- The foul water diversion is required for a shorter duration and will be over-pumped from the midfield manhole.
- Flows will be managed and a CCTV survey will be carried out upstream once the foul system is lowered.

• Excavation / Demolition works

- Initially the ground will be excavated by a further 1.5m.
- A 30t excavator will dig from the surface level, with a smaller excavator inside.
- Manholes will be demolished as excavation progresses.
- Handrails will be constructed around the top of the excavation, with ladders for workforce in the corners.
- Once final depth has been reached, a staircase will be constructed.
- There will be general construction noise associated with these activities.

• Replacement Pipes / Manholes and Backfill

- New manhole bases will be constructed.
- Replacement pipework will be connected to existing pipework.
- Backfill will be either excavated material (subject to material and compaction testing) or imported.
- Manhole rings will be extended as the backfill progresses.
- Ground will be built up to surface pipe.
- Surface water pipe will be extended using small cofferdams to north and south.
- Area will be backfilled to existing ground level; ground water removal will cease and over pumping will be switched off.

• Final reinstatement plan has been agreed with the council, for them to return the ground to a suitable condition for future use.

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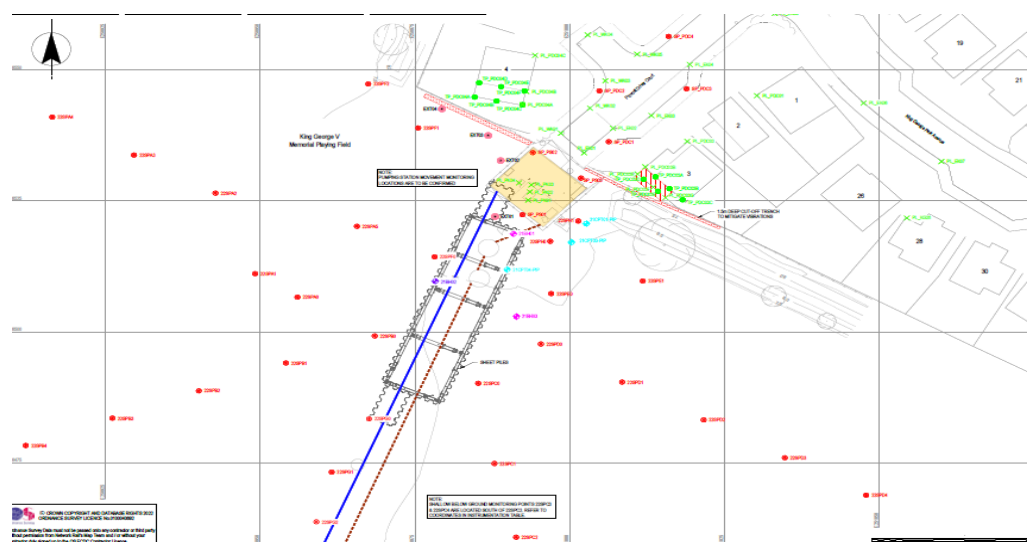
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• Monitoring Strategy

- Monitoring of settlement required throughout construction works will take place in the following areas.
 - Playing Fields
 - Provost Driver Court, pumping station and houses
 - Works area
- Red, Amber, Green alert system of trigger levels.
- Monitoring of ground water table level.
- Vibration and Noise monitoring methods – cut off trenches installed, hydraulic press as detailed before and minimising tracking of plant. Noise level monitors and vibration monitors have also be installed throughout the construction footprint.



• Estimated Project Timescales

- Project estimated to take around 14 months from point of main works starting.
- As with any project of this nature, unforeseen circumstances can affect timescales. Any changes will be communicated at the earliest opportunity.
- Indicative timeline below;

Activity	Month														
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Pre-Construction	█														
Site Preparation			█												
Grouting Works			█				█								
Sheet Pile Install				█	█	█	█								
De-Watering and Test								█	█	█					
Excavation										█	█				
New Foul Install											█	█	█		
New Surface Install												█	█	█	
De-mobilise														█	█
Monitoring	█														

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