



Surface Water Management Plan
Manox, Miles Platting

Reference: 13-887-R9
Date: January 2021



REMEDIATION AND CONSTRUCTION PHASE SURFACE WATER MANAGEMENT PLAN

Former Manox Works
Coleshill Street
Miles Platting
Manchester
M40 8HH

Prepared for:



Report Ref: 13-887-R9
Date Issued: January 2021

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EXECUTIVE SUMMARY

Site Address	Land north of Coleshill Street, Miles Platting, Manchester, M40 7LE
Grid Reference	N 386202, E 399393
Site Area	Manox Zone (approximately 3.0 ha) / Zone 5W (approximately 1.3 ha) Zone 7 (approximately 2.0 ha).
Background	E3P has been instructed by Engie to prepare a Remediation and Construction Phase Surface Water Management Plan for the proposed residential development at the former Manox site and surrounding zones. This report has been prepared to address Condition 32 within the Manchester City Council Planning Approval (ref: 125596/FO/2019). Item 32 requires the preparation and submission of a strategy that will prevent any pollution to the Rochdale Canal during the construction period.
Current Site Use	The sector of the site immediately adjacent to the Rochdale Canal comprises an elongated vacant parcel of land and all structures have now been demolished. The site is primarily surfaced by concrete hard standing. Dense scrubland is present throughout the south western and eastern parts of the site. The site has several stockpiles comprising demolition rubble and fly tipped material. The canal boundary is currently formed by a partially dilapidated predominantly brick wall that will be removed and replaced with new structural retaining structures.
Proposed Development	Manchester City Council has granted planning permission for a <i>housing-led mixed use redevelopment comprising: a maximum of 410 new dwellings (Class C3); and comprising Class E (maximum floorspace 744 sq.m GIA in total); recreation open space and landscaping; and associated access off Hulme Hall Lane, Varley Street and Iron Street, infrastructure provision and car parking.</i>
Synopsis of Permanent Surface Water Drainage System	The surface water system will flow by gravity towards two existing combined sewerage networks in the north east and south. The majority of the stormwater attenuation will be stored within the pipe network. The Surface Water Management Plan does not include outfall of surface water to the Rochdale Canal.
Synopsis of Temporary Surface Water Risk to Rochdale Canal	Prior to the commencement of works at the northern boundary, all historical conduits linking the site and the canal (drains etc.) will be identified and sealed. The initial phase of enabling works will remove the historical wall, installation temporary water retention measures prior to the construction of a permanent sheet piled wall along the length of the site boundary with the canal. The construction of a new permanent physical barrier at a very early stage of remediation will ensure no potential for surface water egress to the canal. The controls and mitigation measures set out herein will ensure protection prior to and during the installation of the permanent sheet piled wall. A temporary discharge consent to the Uniter Utilities foul sewer will be obtained to facilitate removal of surface waters during remediation and construction until the permanent infrastructure is installed.



RECOMMENDED SURFACE WATER MANAGEMENT DURING CONSTRUCTION

ACTION	MITIGATION
Sign up for Flood Warnings	To provide warning of occasions when increased rainfall will contribute to higher surface water levels, therefore dewatering may need to be prevented and limited and all waters will enter the appropriate discharge mechanism to the temporary discharge to foul sewer.
Inspect remediation landform at north boundary to the Rochdale Canal and ensure continuance of gravity flow to the south bund to prevent surface water flow off-site to the Rochdale Canal.	The existing topography north the post remediated level will fall southwards away from the canal boundary, therefore if this is inspected and maintained, the potential for any off-site flow is impeded.
Install catch trench and 0.50 m bund in the temporary state post removal of the existing canal boundary retaining wall prior to and during the installation of the new sheet pile retaining wall. Where practicable, the earth bund should be installed leaving a 5m easement from the canal. A bund and trench (depth to be typically minimum of 250 mm) should and mounded at the toe of the temporary embankment (where possible) to catch surface water run-off as a last point of interception prior to entering the receiving water body.	Precautionary measure to provide protection to Rochdale Canal from suspended solids and other dissolved phase pollutants within surface water emission from the construction site in the event of extreme rainfall. During periods of prolonged rainfall, the bund and catch trench is to be monitored for signs of 'over topping'. In extreme events a sump should be formed to catch the water and allow suspended solids to settle prior to controlled disposal to the agreed outfall by either gravity 'grip' or pumping. A silt fence is not considered appropriate due to the brownfield nature of the site with potentially dissolved phase pollutants being allowed to enter the Rochdale Canal.
Provide temporary discharge point to existing combined foul sewer prior to the construction of the main surface water point of connection. This could be either gravity flow, providing the flow can be shut off as required or pumped. A filtration system should be employed to ensure all waters leaving the site are clean and free of visible pollutant impact. Straw bales are to be deployed at the point of discharge and at any other location where it is practicable to intercept the waters and provide a filtration point.	Initial discharge of surface water from site. Frequent visual inspections and monitoring will be undertaken to prevent pollution entering surface water. Monitoring of water discharged to the drain or the existing surface water outfall on a monthly basis during all works to dewater excavations to demonstrate the waters are free from suspended solids and other pollutants.
Provide filtration measures as either straw bales or gulley socks in the newly constructed surface water infrastructure for the duration of construction works.	These measures will limit the potential for suspended solids and other pollutants to enter the combined foul sewer.



ACTION	MITIGATION
Instigate 'tool-box' talks and watching brief to all construction operatives. The brief will be to monitor the potential presence of any pollutants entering the surface water (either by overland flow or main drainage network). Throughout the remediation phase, a specialist environmental consultant will routinely monitor the bunds and catch gullies to ensure effectiveness and in the event of surface water egress implement corrective action.	If a pollutant enters a surface water (overland flow or main drainage network) however it is notified by a site operative. Mitigation measures can be implemented to limit the intercept the pollution prior to entering the receiving water and to limit the volume of flow.
Surface water monitoring of the canal will be instigated on a bi-weekly basis. Samples will be collected by the supervising environmental consultant from a point immediately adjacent to the site to ensure no significant deterioration in the canal water quality.	In the event increased pollution levels are observed, additional mitigation and control measures can be implemented.
Management of stockpiles to ensure the toe or the base are at a minimum 5.0m from boundary with the canal to limit surface water run-off. Stockpiles to be sealed and well compacted.	Careful management of stockpile locations and sealing of material will limit the potential for run-off of surface waters with suspended solids that has the significant potential to enter the surface water system.
Temporary pumping of standing surface water across the site may be required, particularly in low spots. Surface water to be discharged to foul sewer.	To prevent standing water across the site and improve working conditions. Water with visual discoloration indicating suspended solid to be pumped to a settling pond to ensure all silts drop from suspension and the water is certified as clean prior to entering the surface water system or receiving water.



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1. INTRODUCTION

1.1. BACKGROUND

E3P has been instructed by Engie to prepare a Remediation and Construction Phase Surface Water Management Plan (SWMP) for the proposed residential development at the site located at the former Manox site and surrounding zones.

This report has been prepared to provide sufficient information to ensure satisfaction of Condition 32 within Planning Permission 125596/FO/2019.

32) Prior to the development hereby approved commencing on site, a method statement giving details of specific above ground measures to be taken to prevent any pollution of the Rochdale Canal (include the provision of a suitable canal protection buffer such as a geotextile membrane) during the construction period, shall be submitted to and approved in writing by the City Council as local planning authority.

Any excavated materials stored in temporary stockpiles should be located away from the canal to prevent contaminated water run-off and the amount of exposed ground and stockpiles minimised. The specific measures to prevent any pollution of the Rochdale Canal during the construction period, hereby approved shall be implemented in full before the development commences.

1.2. PROPOSED DEVELOPMENT

Engie intend to construct a residential development comprising 410 low rise residential dwellings with associated gardens, public open space, estate roads and infrastructure. Drawing 13-887-002 (Appendix III) identifies the proposed development layout and Figure 1.1 provides a snapshot of this.

Manchester City Council has granted planning permission for housing-led mixed use redevelopment comprising: a maximum of 410 new dwellings (Class C3); and comprising Class E (maximum floorspace 744 sq.m GIA in total); recreation open space and landscaping; and associated access off Hulme Hall Lane, Varley Street and Iron Street, infrastructure provision and car parking.

FIGURE 1.1 SNAPSHOT OF PROPOSED DEVELOPMENT



1.3. OBJECTIVES

The objectives of the SWMP are as follows:

- ✿ Review site plans, geology, hydrogeology, site sensitivity, floodplain issues in order to complete a SWMP and meet planning condition 32.
- ✿ Assess the implications of any potential environmental risks, liabilities and constraints associated with the management of surface water.
- ✿ Ensure that surface water quality, and quantity, is managed throughout the construction phase to mitigate impacts off site.
- ✿ Advise on surface water monitoring and emergency mitigation measures, should these be required.
- ✿ Ensure a site operating procedure that prevents the placement of stockpiled material within a position that could represent an increased risk of surface water run-off to the canal.

1.4. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.5. SOURCES OF INFORMATION

Background information was sought from the following sources:

- ✿ Envirocheck Search;
- ✿ On-line planning records held by Manchester City Council (MCC);
- ✿ Consultations with representatives of MCC and Canal & Rivers Trust; and,
- ✿ E3P Contaminated Land Site Characterisation Report (ref: 13-887-R4) dated July 2020 and E3P Outline Remediation Strategy (13-887-R5) dated October 2020.

1.6. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.



2. SITE SETTING

2.1. SITE DETAILS

TABLE 2.1 SITE DETAILS

Site Address	Land north of Coleshill Street, Miles Platting, Manchester, M40 7LE
National Grid Reference	N 386202, E 399393
Site Area	✳ Manox Zone (approximately 3.0 ha) ✳ Zone 5W (approximately 1.3 ha) ✳ Zone 7 (approximately 2.0 ha)

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location plan is presented in Appendix III as Drawing 13-648-001.

2.2. CURRENT SITE USE

E3P has undertaken a site walkover of the entire site and a description of the key findings is summarised in Table 2.2. It should be noted that the SWMP is prepared with particular attention to the risk posed to the Rochdale Canal which is immediately north of the area referred to as the Manox Sector.

TABLE 2.2 SITE DESCRIPTION

Occupancy/Use	Previously the site was subdivided into three discrete parcels to represent the differing prior land uses. The parcels are referred to as Manox Zone, Zone 5W and Zone 7. Zones 5W and 7 will only be detailed as a reference, this report pertains to the Manox site only. Manox Site The site comprises an elongated vacant parcel of land and all structures have now been demolished. The site is primarily surfaced by concrete hard standing. Dense scrubland is present throughout the south western and eastern parts of the site. The site is surfaced by several stockpiles comprising demolition rubble and fly tipped material. Zone 5W The site is a rectangular shaped parcel of land which is currently vacant and has no structures present. The centre and western sector of the site are surfaced by hard standing, overgrown vegetation and trees. The east of the site is predominantly surfaced by long grasses. Trees border the periphery of the site. Zone 7 The site is a roughly rectangular shaped parcel of land. The east of the site is currently used as a recreational area by the public and is surfaced by grassland. The west of the site is surfaced by gravel and is used by Stobart Rail as a storage compound. Trees border the periphery of the site.
Structures	A historical retaining wall runs the entire length of the north (Manox) boundary adjoining the canal towpath. Atop of this retaining wall is a boundary wall that is ~1.50 above the site level as indicated in Plate 2.1 & 2.2 (below).



	Plate 2.1 – Existing Structure  Approximate site level. Full wall to be removed and replaced Plate 2.2 – Existing Structure  Approximate site level. Full wall to be removed and replaced The height of the existing retaining wall falls from the northeast to northwest boundary (adjoining the canal). In the northwest corner the site elevation is below that of the canal.				
Topography	North East Site level ~61 m AOD Canal Towpath ~58.8 m AOD Centre North Site level ~59.3 m AOD Canal Towpath ~58.3 m AOD North West Site level ~57.6 m AOD Canal Towpath ~58.2 m AOD				
Surface Cover (%)	<table> <tr> <td>Buildings:</td><td>0%</td></tr> </table>	Buildings:	0%		
Buildings:	0%				
Manox	<table> <tr> <td>Hardstand:</td><td>90%</td></tr> <tr> <td>Soft cover:</td><td>10%</td></tr> </table>	Hardstand:	90%	Soft cover:	10%
Hardstand:	90%				
Soft cover:	10%				
Hazardous Material Storage	No Above Ground Storage Tanks (ASTs) or Underground Storage Tank (USTs) were observed at the site. Due to the previously developed nature of the site, it is likely hazardous materials storage will have occurred on the site.				



Asbestos-Containing Material (ACM)	No evidence of ACM was noted across the site during the site walkover. Phase 2 ground investigation reports for the site indicate the presence of asbestos in fibre some areas of the site, but no ACM in materials.
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3. PROGRAMME OF WORKS AND GUIDANCE

3.1. SYNOPSIS OF LAND REMEDIATION WORKS – ADJACENT TO CANAL

The northern sector of the subject site referred to as the Manox Area (immediately adjacent to the Canal) will be the subject of highly specialised, site specific remediation works that will seek to identify the extent of gross pollution considered to be primary and secondary sources and the subsequent implementation of the 'remediation train' which will facilitate treatment of materials in accordance with the detailed methodologies, protocols and site specific assessment criteria to be agreed with Manchester City Council and the EA.

Treatment areas will be subject to EA licensing and will be managed in such a way so as to ensure no surface water run-off from these areas.

Remediation works within the Manox sector will be the subject of either a Standard Rules No. 27 Mobile Plant Treatment of Soils or a Bespoke Permit for the Mobile Plant Treatment of Soils. The deployment of the appropriate permit will be the responsibility of the approved specialist contractor.

At this time, the final detailed Remediation Method Statement for the treatment of impacted soil and groundwater within the Manox Sector is yet to be fully defined. This is due to the requirement for further intrusive ground investigation to refine the site CSM and define the full extent the impact and remediation requirements.

However, the design of the remediation works will ensure full consideration of the requirements of this surface water management plan to ensure no risk to the Rochdale Canal.

A generalised overview of the remediation works to be completed within the Manox sector (adjacent to the Canal) is presented below.

The E3P Remediation Options Appraisal which informs the 'Outline Remediation Strategy' is as follows:

- ✳ Undertake suitable pilot study / treatment trial to determine the appropriate methodology and chemical composition of suitable methods for the solidification and stabilisation of the primary contaminants of concern;
- ✳ Agree and deploy the appropriate Environmental Permit for the treatment of soil and groundwater using mobile plant;
- ✳ Establish site 'Remediation Treatment Train', this will be the mobile plant and accompanying site protocols that will accept and treat differing material types and subsequent validation testing to facilitate safe and sustainable re-use of material;
- ✳ Identify, decommission and remove all conduits such as drainage infrastructure considered to provide a preferential contamination migration pathway;
- ✳ Identify and remove all areas of 'primary' contamination impact defined as:



- Separate phase liquid coal tar within historic structure;
- Visible chemical (Cyanide, Arsenic & Lead) impact within Made Ground;
- Identify localised areas of separate phase liquid coal tar impact (surface spillage);
- ✳ Control and removal of impacted perched waters confined by historical structures and variable Made Ground during demolition and removal of relict structures;
- ✳ Extract material from the northern boundary (adjacent to the canal) proven to represent an off-site migration risk and add to the remediation treatment train;
- ✳ Place clean naturally occurring material at the northern site boundary / interface with canal tow path;
- ✳ Install sheet piled impermeable barrier to the entirety of the northern boundary in accordance with the design to be agreed by all stakeholders;
- ✳ Undertake extensive excavation works to remove 'secondary' cyanide (salt) and metalloid impact within the Made Ground across the Manox sector. Material to enter the 'Treatment Train' to ensure solidification and stabilisation as required to ensure compliance with site remediation criteria;
- ✳ Lift sort and process all anthropogenic material (Made Ground) across the entirety of the Manox sector;
- ✳ Treatment and control of any impacted perched waters during the excavation process; and,
- ✳ Replacement of materials that have been subject to treatment and demonstrated compliance with the remediation criteria in accordance with the geotechnical design specification and developed site CSM.

3.2. SYNOPSIS OF MAIN CONSTRUCTION WORKS

Prior to the commencement of the main construction phase of works, the new physical barrier to the canal in the form of a sheet piled retaining wall will be fully constructed and complete. Ground levels generally fall away from the canal to the south, therefore subject to the completion of these works in the agreed programme the risk to the canal is dramatically reduced.

The construction phase will incorporate the commencement of the roads and sewers with the point of discharge being the existing foul sewerage networks, constructed at the project outset. Where the surface water pipes are constructed and not connected to the point of discharge, temporary pumping will be instigated to ensure outflow at the agreed discharge rate to the foul sewer.

At this time, there is no topsoil or vegetation acting as surface cover on the site. As such, precipitation will fall directly on the Made Ground deposits.

Some infiltration may theoretically be achieved in this material. Certainly, the absence of topsoil will result in the need to manage a higher volume of surface water runoff.

With the exception of material in the area along the line of the new drains on the northern canal boundary, surface water management measures must be in place prior to the commencement of construction works.



Furthermore, any material stripped will need to be placed in stockpiles in an area agreed with the contractor, ideally in a location on site where it can remain undisturbed until needed. Stockpiles must not be placed along the line of the drains that transect the site or along the northern boundary as this could influence the ability to effectively manage runoff to the canal.

Whilst this report deals specifically with surface water management, it is recommended that the construction phase contractor follows good environmental practice to minimise spillages and leakages with reference, but not limited to the following documents:

- ✿ CIRIA C502- Environmental Good Practice on Site
- ✿ EA Pollution Prevention Guidelines
 - PPG6 - Working at Construction and Demolition Sites
 - PPG2 – Above Ground Oil Storage Tank
 - PPG7 – The Safe Operation Of Refuelling Activities
 - PPG21 – Incident Response Planning

E3P are aware that some of the EA PPG documents have been withdrawn from the gov.uk website. However, PPGs provided a summary of current UK guidance and the principles are still relevant and provide a useful, concise overview. E3P would still recommend reference to these in the first instance, via the national archive. The relevant links are provided on the new EA pages.



4. SURFACE WATER MANAGEMENT DURING CONSTRUCTION

E3P have provided details of the proposed surface water management scheme that is to be applied on the site during development works. These are summarised in Table 4.1 and include the programme of works.



TABLE 4.1 SURFACE WATER MANAGEMENT SCHEME

	Action	Mitigation
1	Dismantle existing boundary and retaining wall: The Canal towpath will be closed prior to the commencement of the controlled dismantling of the existing boundary wall (entire northern boundary) and the retaining wall (north and central boundary). Materials from the dismantling process will be cast onto the site and then assessed for pollution impact and subject to the appropriate treatment and management at the appropriate distance from the canal.	The completion of the works in a controlled manner with a canal towpath closure will ensure no materials enter the canal.
2	Install earth bund along length of northern boundary to canal, site side from, the towpath. Once the wall is removed, a temporary slope will be graded along the portion of the boundary where the site is higher in elevation to the canal. At this point a risk is present in terms of the surface water run-off and ingress to the canal. A small bund and catch trench will be formed at the crest (top) of the slope to direct any surface water backing to the site and ensure it is collected and dealt with in the correct manner. A second, final line point of interception will be formed at the toe of the slope adjacent to the site boundary to ensure should there be any breach surface water is intercepted. In the temporary condition, the use of geotextiles (silt fences) is not considered a robust mitigation measure given the potential for dissolved phase metalloid and salt concentrations that would simply pass through such a feature. Cross sections detailing the generalised current situation and temporary situation are detailed within E3P drawings 13-887-046 and 047 within Appendix III. The bund will be installed at the location as depicted within the E3P drawing 13-648-002 to be constructed in a temporary situation using low permeability clay to be ~500 mm in height. The bund should be installed leaving a 5 m easement from the path. A trench (depth typically minimum of 250 mm) should be excavated along the line of the bund.	Precautionary measure to provide protection to the canal in the event of extreme rainfall and direct water flow into the receiving watercourse.



	Action	Mitigation
3	Maintain Existing Embankment. The existing topography in the northwest sector rises above the development site limiting the potential for surface water egress from construction works. A watching brief should be implemented to maintain this throughout the works.	Precautionary measure to provide protection to the river in the event of extreme rainfall and direct water flow into the receiving watercourse.
4	Provide temporary discharge point to drain. This could be either gravity flow, providing the flow can be shut off as required or pumped. Discharges filtered water to foul sewer.	Final discharge of surface water from site. Frequent visual inspections and monitoring will be undertaken to prevent pollution entering surface water.
5	Installation of Permanent Sheet Pile Wall. One of the key features of the site remediation works is the construction and installation of a physical barrier between the site and the adjacent canal. At the outset of remediation works, a sheet piled wall to be 'keyed' into the underlying natural low permeability clay will be constructed. This feature will form a physical barrier all but removing the potential for surface water run-off to the canal during construction phase. Surface water egress will be controlled by the temporary measures as discussed above and detailed within E3P drawing 13-887-047 during the temporary works.	Once complete, a barrier is present limiting potential for surface water egress to the canal.
6	Temporary pumping of standing surface water across the site may be required, particularly in low spots.	To prevent standing water across the site and improve working conditions.
7	Provide temporary discharge point to existing combined foul sewer prior to the construction of the main surface water point of connection. This could be either gravity flow, providing the flow can be shut off as required or pumped. A filtration system should be employed using to ensure all waters leaving the site are clean and free of visible pollutant impact. Straw bales are to be deployed at the point of discharge and at any other location where it is practicable to intercept the waters and provide a filtration point.	Initial discharge of surface water from site. Frequent visual inspections and monitoring will be undertaken to prevent pollution entering surface water. Monitoring of water discharged to the drain or the existing surface water outfall on a monthly basis during all works to dewater excavations to demonstrate the waters are free from suspended solids and other pollutants.
8	Provide filtration measures as either straw bales or gulley socks in the newly constructed surface water infrastructure for the duration of construction works.	These measures will limit the potential for suspended solids and other pollutants to enter the combined foul sewer.



	Action	Mitigation
9	Instigate 'tool-box' talks and watching brief to all construction operatives. The brief will be to monitor the potential presence of any pollutants entering the surface water (either by overland flow or main drainage network). Throughout the remediation phase, a specialist environmental consultant will routinely monitor the bunds and catch gullies to ensure effectiveness and in the event of surface water egress implement corrective action.	If a pollutant enters a surface water (overland flow or main drainage network) however it is notified by a site operative. Mitigation measures can be implemented to limit the intercept the pollution prior to entering the receiving water and to limit the volume of flow.
10	Surface water monitoring of the canal will be instigated on a bi-weekly basis. Samples will be collected by the supervising environmental engineer from a point immediately adjacent to the site to ensure no significant deterioration in the canal water quality.	In the event increased pollution levels are observed, additional mitigation and control measures can be implemented.
11	Management of stockpiles to ensure the toe or the base are as a minimum 5.00 m from boundary with the canal to limit surface water run-off. Stockpiles to be sealed and well compacted.	Careful management of stockpile locations and sealing of material will limit the potential for run-off of surface waters with suspended solids that has the significant potential to enter the surface water system.
12	Temporary pumping of standing surface water across the site may be required, particularly in low spots. Surface water to be discharged to foul sewer.	To prevent standing water across the site and improve working conditions. Water with visual discoloration indicating suspended solid to be pumped to a settling pond to ensure all silts drop from suspension and the water is certified as clean prior to entering the surface water system or receiving water.



5. MONITORING

Monitoring the surface water management system is critical and can provide early indication of potential problems, allowing these to be addressed before they escalate, allowing silt to be discharge to the surface water.

Monitoring must include:

- ✳ Weather forecasting;
- ✳ Visual inspections of systems; and
- ✳ Active sampling of water.

Whilst ultimately, the responsibility will lie with the Principal Contractor, the role can be delegated providing the delegate is well briefed with an appropriate toolbox talk and can demonstrate an understanding of the different aspects of this surface water management plan. A record of all appropriate training should be kept on site.

5.1. WEATHER FORECASTING

The Principal Contractor or alternative delegate must review a reliable 7-day predicted forecast at the start of each week. The meteorological office provides a useful short and long term forecast based on a network of weather stations. This can be found at <https://www.metoffice.gov.uk>.

A copy of weekly forecast should be displayed in the site office.

Where heavy rain or persistent rain is forecast, consideration must be given to the available capacity in the attenuation pond, to prevent overflowing. If extended periods of rain have already occurred, capacity in the attenuation pond may present a concern and a decision should be made if emergency measures will be required (See Section 7).

5.2. VISUAL INSPECTIONS

The surface water management infrastructure should be visually inspected at the start of each working day and at the end of the last working day of each week. Early identification and repair are critical in preventing silt entering the surface water.

Inspection locations should include, but not be limited to:

- ✳ Walk along the line of earth bund and catch trench, check for damage / unstable sections;
- ✳ Visual inspection and photograph all discharges points within the boundary;
- ✳ Visual inspection and photograph of the drainage ditches at each entry and exit point on the site; and,
- ✳ Visual inspection of whole site for areas of standing water that is not draining into foul drainage.

Discharge water and water within the main catchment drain may be slightly discoloured but should be clear. If discharge is placed in a clear bottle, a label should be easily read when paced behind the bottle. Cloudy water is usually due to suspended solids. Any potentially cloudy water discharge from site is likely to require active sampling and should be reported to the Principal Contractor.



Each inspection should be recorded and a copy held in the site office for a period of two weeks. An electronic copy should be retained for the duration of the project. A suggested record sheet is included in Appendix V of this report.

5.3. ACTIVE SAMPLING

It is recommended that a baseline sample be obtained of the water, prior to any works occurring on site. Then, water samples are to be taken routinely at least twice a month, to provide evidence that the surface water management system is operating effectively. The baseline data should be scheduled for a full range of contaminants to include heavy metals, total petroleum hydrocarbons, speciated PAHs and semi-volatile and volatile organic compounds.

Additional samples could be taken from drains discharging into main drains from adjacent land if there is evidence of discolouration or suspended solids.

Samples should be scheduled for suspended solids; the target concentration can be initially assumed as the Environmental Quality Standard (EQS) of 25 mg/l. This value is highly conservative, and exceedance of this value should not be considered a pollution incident, simply an indication further mitigation measures may be required.



6. EMERGENCY PROCEDURES

6.1. MAXIMUM CAPACITY OF THE ON-SITE BUNDS

In the event of heavy or sustained rainfall, the catch pits and bunding is at risk of not operating appropriately and may overflow or overtop system, preventing effective settlement. If operating at close to maximum capacity, extra temporary storage will be implemented by means of a secondary holding area.

Secondary holding areas would ideally intercept drainage upgradient of the existing attenuation. This is likely to be a temporary excavation / pond. However, if this is not feasible, a temporary holding area should be situated in a location suitable to allow excess surface water to be pumped to it for storage.

A road tanker will be used to remove excess water from site should this be absolutely necessary, to prevent silty water entering the drain and subsequently entering the river catchment.

6.2. HIGH SUSPENDED SOLIDS IN DISCHARGE

If visual inspection or active sampling identified elevated suspended solids in the discharge water from the settling pond, secondary treatment should be considered.

It is recommended that sustainable options including the use of straw bales as a filtration medium would be the optimal solution.

6.3. SPILLAGE OF FUEL OR ANY POTENTIALLY HAZARDOUS LIQUID

In the event of a significant spill or fuel of any hazardous liquid, the site should have at least one person who is trained and competent to use spill response equipment. **Significant effort should be made to ensure the spillage does not enter the surface water management system.**

The Principal Contractor should ensure that all site personnel are made aware of the content and requirements of the spill response plan. Records to verify that this training has been provided should be retained in the site office for the duration of the project.

The following steps should be made to manage a hazardous spill on site:

- ✿ Assess release area.
- ✿ Isolate spilt materials.
- ✿ Contain spilt materials.
- ✿ Absorb spilt materials.
- ✿ Dispose of waste materials.
- ✿ Reorder spill response materials.

Reference should be made to the Publication Prevention Guideline: Incident Response Planning PPG21. If contamination does enter the surface water management system, discharge to the drain should cease immediately and advice should be sought from a suitably qualified geoenvironmental consultant, such as E3P.

Depending on the significance of contamination, water in the attenuation pond may require tankering from site and remediation works undertaken.



END OF REPORT



APPENDIX I

LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the Client as indicated in Section 1.3.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.



APPENDIX II

GLOSSARY

TERMS

ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
CA	Coal Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SWMP	Surface water management plan
FFL	Finished floor level	SVOC	Semi-volatile organic compound
GAC	General assessment criteria	TPH	Total and speciated petroleum hydrocarbon
GL	Ground level	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GSV	Gas screening value	UKWIR	United Kingdom Water Infrastructure Risk
HCV	Health criteria value	UST	Underground storage tank
ICSM	Initial conceptual site model	VCC	Vibro-concrete column
LEL	Lower explosive limit	VOC	Volatile organic compound
LMRL	Lower method reporting limit	VRSC	Vibro-replacement stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	VSC	Vibro-stone columns
MCV	Moisture condition value	WHO	World Health Organisation
MIBK	Methyl isobutyl ketone	WRAP	Waste and Resources Action Programme



m	Metres	WTE	Water table elevation
km	Kilometres	ppm	Parts per million
% v/v	Percent volume in air	mg/m³	Milligram per metre cubed
mb	Millibars (atmospheric pressure)	m bgl bgl	Metres below ground level
l/hr	Litres per hour	m bcl	Metre below cover level
µg/l	Micrograms per litre (parts per billion)	mAOD	Metres above ordnance datum (sea level)
ppb	Parts per billion	kN/m²	Kilonewtons per metre squared
mg/kg	Milligrams per kilogram (parts per million)	µm	Micrometre

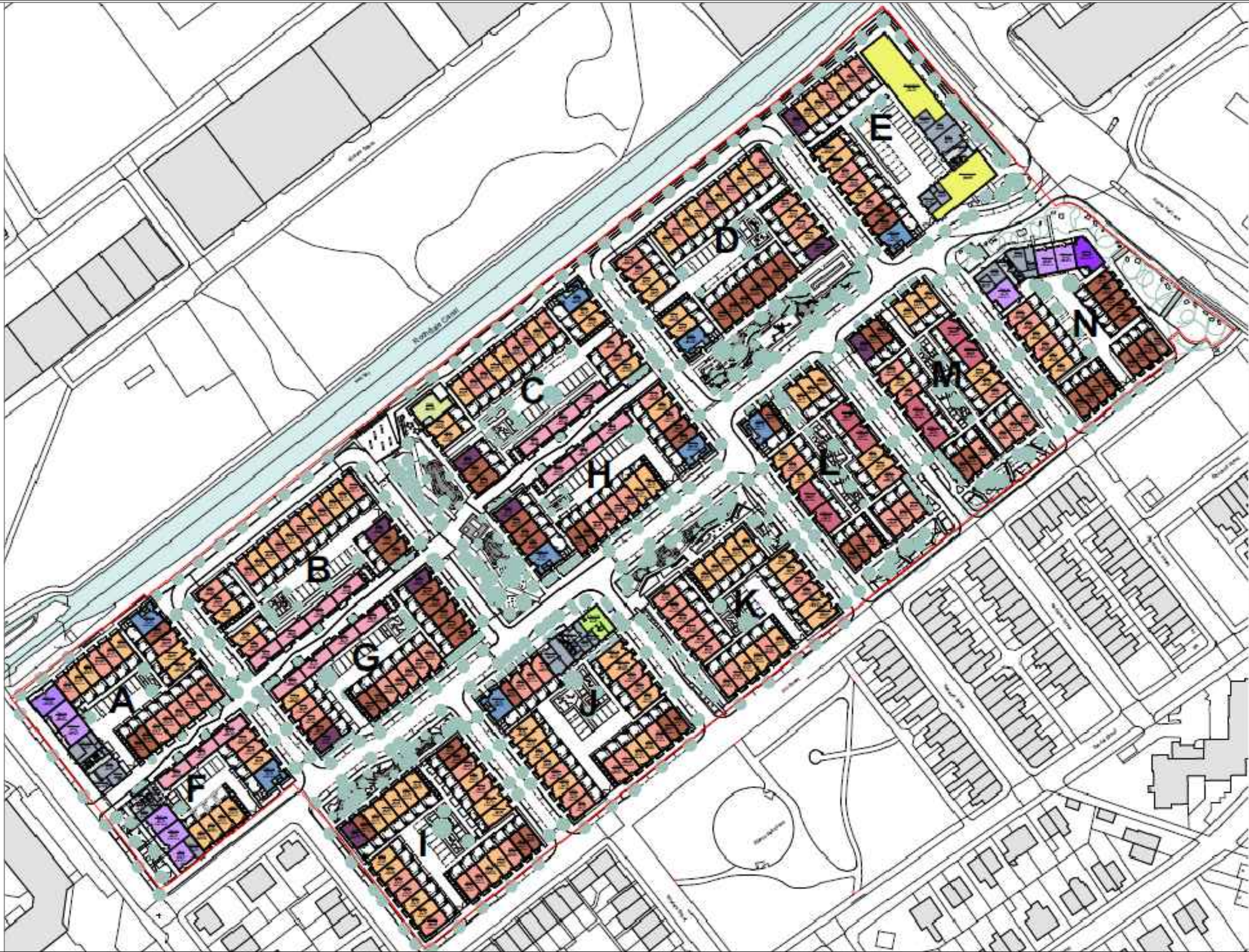


APPENDIX III

DRAWINGS



	Notes:						Client: Engie	Job No: 13-887	Date: 03.12.2020	 Environmental Engineering Partnerships Ltd City Heliport & Business Centre Eccles, Manchester, M30 7RU Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk	
								Drawing No: 001	Scale: NTS		
							Job Title: Manox	Drawing Title: Site Location Plan			The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.
	P1	-	03.12.2020	DRAFT	HM	OJ					
	Phase	Revision	Date	Issue	Drawn	Checked					



Notes:

Client:
Engie

Job No:
13-887

Date:
03.02.2020



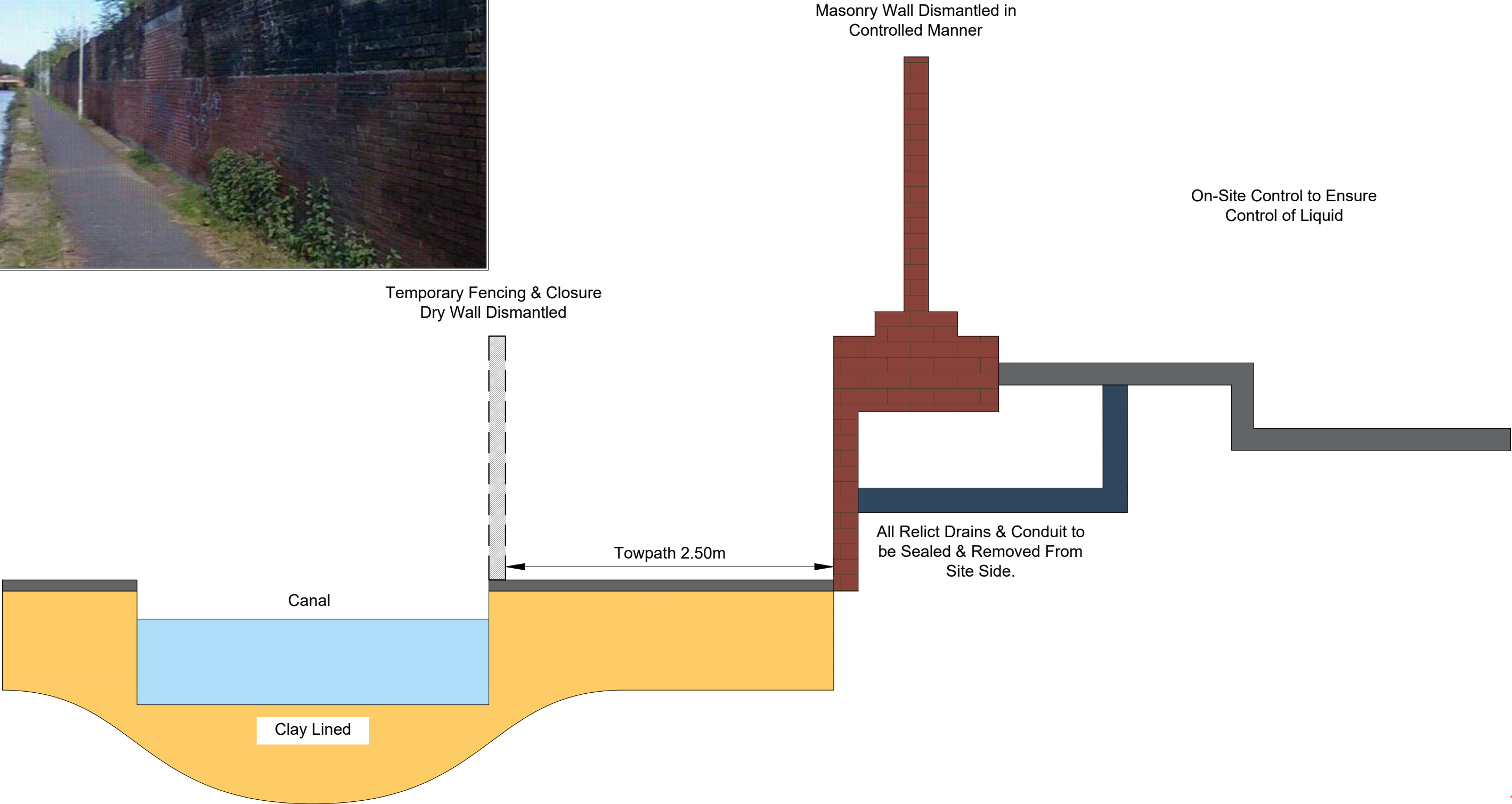
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P1	-	03.02.2020	DRAFT	LM	EM
Phase	Revision	Date	Issue	Drawn	Checked

Job Title:
Manox

Drawing Title:
Proposed
Development Plan

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- Location Symbols
- Clay Lining
 - Canal
 - Masonry Wall
 - Relict Drains
 - Temporary Fencing
 - Towpath

Notes:					
P1	-	15.12.2020	DRAFT	HM	MD
Phase	Revision	Date	Issue	Drawn	Checked

Client:	Engie
Job Title:	Manox

Job No:	13-887	Date:	15.12.2020
Drawing No:	047	Scale:	NTS
Drawing Title:	Section A-A: Current Generalised Situation		



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Former Wall Removed

Plateau Cut With Bund (0.30m)

Historical Impact Removed &
Subject to On-Site Treatment

Embankment Cut to Max 45°
(1V : 1H) to be Stable in Temp
State

1

Former Conduit
Removed

Now Interlocking Sheet Pile
Wall to be Installed at Project
Outset

Surface Water
Sampling of
Canal



- Location Symbols
- Former Wall
 - Embankment
 - Interlocking Sheet Pile

Notes:					
P1	-	15.12.2020	DRAFT	HM	MD
Phase	Revision	Date	Issue	Drawn	Checked

Client:	
Engie	
Job Title:	
Manox	

Job No:	13-887	Date:	15.12.2020
Drawing No:	048	Scale:	NTS
Drawing Title:		Section B-B	



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APPENDIX IV

PHOTOGRAPHS

PLATE 1 NORTH EAST BOUNDARY



PLATE 2 CENTRAL NORTH BOUNDARY



PLATE 3 NORTHWEST BOUNDARY



APPENDIX V

VISUAL INSPECTION

RECORD

VISUAL INSPECTION RECORD

Site	
Job Number	
Date	
Inspection Completed By	
Time Of Inspection	

INSPECTION POINT	COMMENT	PASS / FAIL
Silt Fence		
Drainage Ditches on Site		
Entry and Exit Drainage Points		
Discharge Water Quality		
Attenuation Pond		
Below Ground Storage Tanks		
Standing Water on Site		
Silt Bag / Silt Buster Condition		

Signed:

Date:



