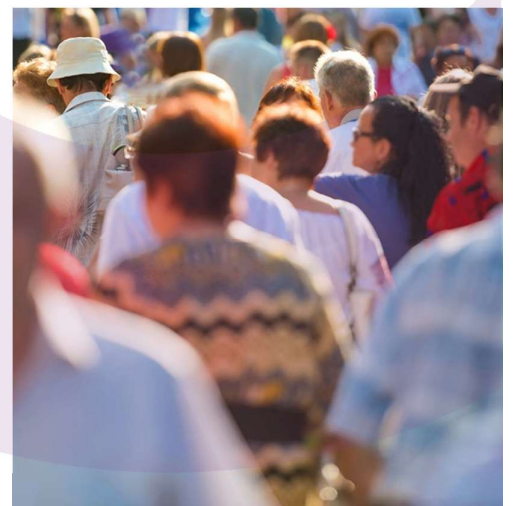
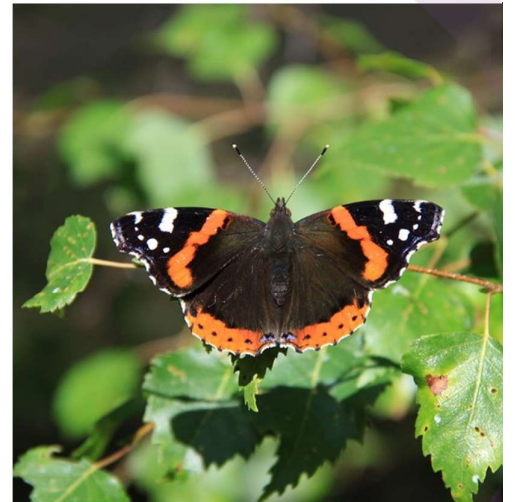




LondonEnergy Ltd

LondonEnergy, Temporary Bulky Waste Recycling Facility (TBWRF), Edmonton EcoPark

Environmental Permit
Application Site Condition Report



Report for

Tom Bateson
Sustainability and Environment Manager
London Energy Limited
EcoPark
Advent Way
Edmonton
London
N18 3AG

Main contributors

Lynne Gemmell

Issued by


.....
Lynne Gemmell

Approved by

.....
Mike Sheard

Wood Group UK Limited

Block 2, Level 1
Booths Park
Knutsford WA16 8QZ
United Kingdom
Tel +44 (0)1565 652100

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Document revisions

No.	Details	Date
1	Draft	Oct 2020
2	Final	Nov 2020

Executive summary

Purpose of this report

The purpose of this Application Site Condition Report (SCR) is to allow LondonEnergy Ltd (LEL) to obtain a new operating permit under the Environmental Permitting (England and Wales) Regulations 2016 (EPR), for a Temporary Bulky Waste Recycling Facility (TBWRF) (the installation) at the Edmonton EcoPark. The TBWRF is required to allow the continuation of key operations currently undertaken at the existing Bulky Waste Recycling Facility (BWRf) and Fuel Processing Plant (FPP) (current permit reference EPR/YPS197NR/V004) whilst the surrounding EcoPark site undergoes redevelopment works for the North London Heat and Power Project (NLHPP).

The NLHPP includes construction of a new Energy Recovery Facility (ERF) and a Resource Recovery Facility (RRF). The RRF will incorporate a new bulky waste recycling facility to replace the existing BWRf and the proposed TBWRF. The TBWRF is, therefore, only expected to be in operation for one to two years. The current BWRf installation site includes a picking line, an outdoor waste sorting area and a fuel processing plant (FPP). The TBWRF installation site is located west of the existing BWRf and FPP activities.

Relocation of the existing bulky waste facility is required to free up land in the northeast of the EcoPark so that groundworks for the construction of the new ERF can commence. Once the TBWRF becomes operational, the existing waste picking station located centrally in the north of the EcoPark will close and an offsite picking station will be utilised to serve the TBWRF, meaning that the TBWRF will be a slightly simpler facility than the current BWRf and FPP.

The TBWRF will be located on land formerly used as the in-vessel composting (IVC) plant operated by LEL and the incinerator bottom ash (IBA) plant operated by Blue Phoenix (formerly Ballast Phoenix). The IVC and IBA facilities are in decommissioning, and ground investigation works have been completed that will support the Permit Surrender applications for the IVC and IBA. Data from the ground investigations is referenced in this report as baseline data for the TBWRF. There is an agreed Remediation Strategy¹ for the northern area of the EcoPark, including the IVC and IBA areas, and during the ground preparation works to enable construction of the TBWRF, it is likely that all or the majority of the existing slab will be lifted. During these works further investigation, and, if necessary, remediation, will be completed. This information will then be added to the TBWRF Site Condition Report to provide updated baseline soil and groundwater data.

This SCR is intended to enable LEL to demonstrate that reasonable steps to protect the land and groundwater from contamination will be taken during the lifetime of the installation. The SCR is intended to be a 'live' document to be maintained from permit issue throughout the operational lifetime of the permitted installation, and then throughout subsequent decommissioning phases and clean-up activities, until the site is deemed to be in a "satisfactory state" i.e. that there are no remaining pollution risks to land or groundwater resulting from the operation of the Installation. At this point a Surrender SCR can be submitted to the Environment Agency to support an application to surrender the permit.

This Application SCR has been undertaken in general accordance with Environment Agency, H5 Site Condition Report Guidance (v3, May 2013). In accordance with the H5 guidance, Sections 1 to 3 have been completed for the permit application stage. The operator is required to maintain Sections 4 to 7 during the

¹ Wood (2020) North London Heat and Power Project, Northern Area – Options Appraisal and Remediation Strategy (NLWA Ref. NP-WOD-41AX-XXX-RP-EN-090002, Wood Ref. 39889-WOD-41-XXX-RP-O-0013).

lifetime of the installation. Sections 8 to 10 are required to be completed as part of an application to surrender the Environmental Permit. The Sections of the SCR are summarised in the table below.

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Permit Application SCR	
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Section 2	Condition of the Land at Permit Issue
Section 3	Permitted Activities
Operational Phase	
Section 4	Changes to the Activity
Section 5	Measure Taken to Protect Land
Section 6	Pollution Incidents that may have had an Impact on Land, and their Remediation.
Section 7	Soil Gas and Water Quality Monitoring
Permit Surrender SCR	
Section 8	Decommissioning and Removal of Pollution Risk
Section 9	Reference Data and Remediation (where relevant)
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Appendix D	Previous Site Investigation Exploratory Hole Logs
Appendix E	Previous Site Investigation Soil Chemical Analysis Results
Appendix F	Previous Site Investigation Groundwater Chemical Analysis Results

1. Site Details

1.1 Introduction

The purpose of this Application Site Condition Report (SCR) is to allow LondonEnergy Ltd (LEL) to obtain a new operating permit under the Environmental Permitting (England and Wales) Regulations 2016 (EPR), for a Temporary Bulky Waste Recycling Facility (TBWRF) (the installation) at the Edmonton EcoPark. The TBWRF is required to allow the continuation of key operations currently undertaken at the existing Bulky Waste Recycling Facility (BWRf) and Fuel Processing Plant (FPP) (current permit reference EPR/YPS197NR/V004) whilst the surrounding EcoPark site undergoes redevelopment works for the North London Heat and Power Project (NLHPP).

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Relocation of the bulky waste activities is required to free up land in the northeast of the EcoPark so that groundworks for the construction of the new ERF can commence. Once the TBWRF becomes operational, the existing waste picking station located centrally in the north of the EcoPark will close and an offsite picking station will be utilised to serve the TBWRF, meaning that the TBWRF will be a slightly simpler facility than the current BWRf and FPP.

The TBWRF will be located on land formerly used as the in-vessel composting (IVC) plant operated by LEL and the incinerator bottom ash (IBA) plant operated by Blue Phoenix (formerly Ballast Phoenix). The IVC and IBA facilities are in decommissioning, and ground investigation works have been completed that will support the Permit Surrender applications for the IVC and IBA. Data from the ground investigations is referenced in this report as baseline data for the TBWRF. There is an agreed Remediation Strategy² for the northern area of the EcoPark, including the IVC and IBA areas, and during the ground preparation works to enable construction of the TBWRF, it is likely that all or the majority of the existing slab will be lifted. During these works further investigation, and, if necessary, remediation, will be completed. This information will then be added to the TBWRF Site Condition Report to provide updated baseline soil and groundwater data.

This SCR is intended to enable LEL to demonstrate that reasonable steps to protect the land and groundwater from contamination will be taken during the lifetime of the installation. The SCR is intended to be a 'live' document to be maintained from permit issue throughout the operational lifetime of the permitted installation, and then throughout subsequent decommissioning phases and clean-up activities, until the site is deemed to be in a "satisfactory state" i.e. that there are no remaining pollution risks to land or groundwater resulting from the operation of the installation. At this point a Surrender SCR can be submitted to the Environment Agency to support an application to surrender the permit.

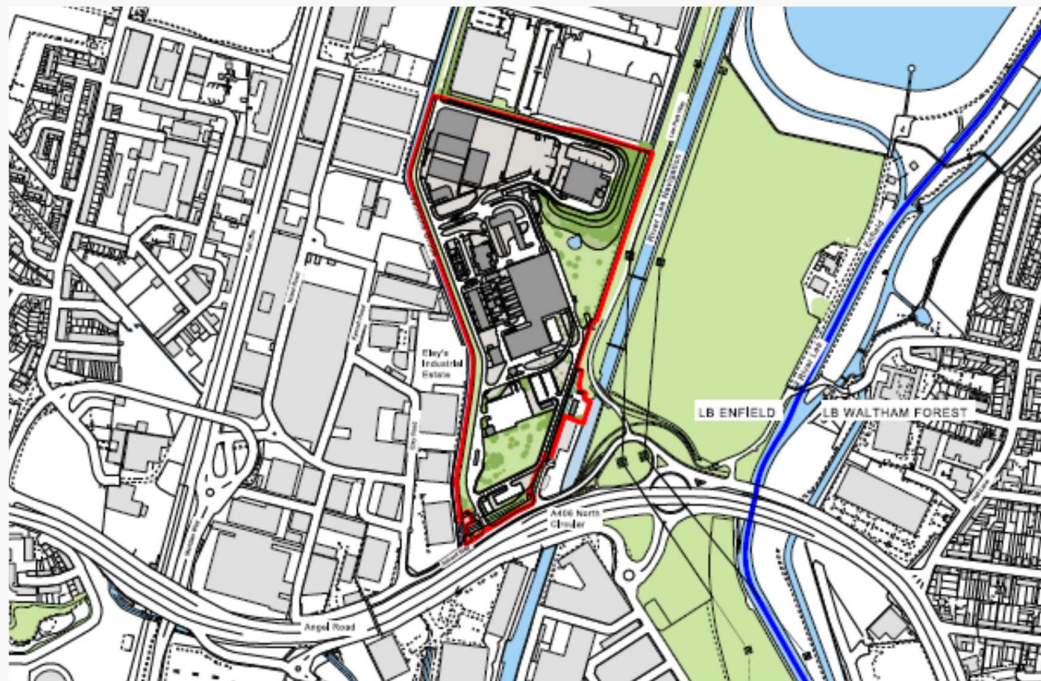
² Wood (2020) North London Heat and Power Project, Northern Area – Options Appraisal and Remediation Strategy (NLWA Ref. NP-WOD-41AX-XXX-RP-EN-090002, Wood Ref. 39889-WOD-41-XXX-RP-O-0013).

1.2 Site Details

Table 1.1 Site Details

Item	Description
Name of the applicant:	LondonEnergy Ltd
Activity address:	EcoPark Advent Way Edmonton London N18 3AG

Figure 1.1 Site Location



Key:
— EcoPark boundary

Site access and security:

The TBWRF installation site is in the northwest of the Edmonton EcoPark, which is an existing waste management complex covering around 15.6 hectares (ha). The TBWRF installation site will occupy an irregularly shaped area of approximately 1.6ha in the northwest of the EcoPark. The installation boundary for the TBWRF installation includes the former IVC facility in the northwest of the EcoPark and the former incinerator bottom ash (IBA) plant. The existing waste picking station and BWRf outdoor waste processing area are located east of the TBWRF installation site. Vehicle access to the EcoPark can be obtained from the vehicle entrance at Advent Way, which runs parallel to the A406 North Circular Road, then the TBWRF installation site can be accessed via the unnamed site access road running north through the EcoPark.

The EcoPark is enclosed by a palisade fence and its security gatehouse is permanently manned. The TBWRF installation site will benefit from these security measures and a CCTV system and 'dusk to dawn' lighting will also be installed. The TBWRF will be a discrete operation within the wider EcoPark with restricted access for authorised or approved staff only.



Item	Description
National grid reference:	535681,192839 (TQ356928)
Document reference and dates for Site Condition Report at permit application and surrender:	<p>The report reference for the Site Condition Report is: 39889-WOD-41-XXX-RP-O-0029-P01.2 , November 2020</p> <p>There is a possibility that the environmental permits currently held for the IVC and IBA will still be active when the TBWRF begins operation and the permitting of the installations will, therefore, overlap with the TBWRF. The IVC and IBA permits are as follows:</p> <ul style="list-style-type: none"> • IVC: Operator: LEL, the IVC was originally licensed under Waste Management Licence Ref. WML80714, 2005, it is currently licensed under Environmental Permit No. EPR/UP3232AC/V002 which covers the EcoPark, permit varied and consolidated in 2019. • IBA: Operator: Blue Phoenix (formerly Ballast Phoenix), Permit No. EPR/AB3938AN/V003, permit varied and consolidated in 2016). <p>The Environmental Permit Surrender Site Condition Reports for the IVC and IBA will have relevance for the TBWRF, as these reports will include details of any remediation completed for the purposes of permit surrender on the land on which the TBWRF is based (likely to take place prior to the construction of the TBWRF). As the operator is the same, LEL will have access to this information and the baseline data in the SCR for the TBWRF will be updated accordingly when new site condition information becomes available.</p>
Document references for site plans (including location and boundaries)	<p>The following figures are presented in Appendix A:</p> <ul style="list-style-type: none"> • TBWRF Installation Boundary • Plan showing indicative layout of TBWRF and indicative drainage layout

2. Condition of the Land at Permit Issue

2.1 Introduction

Information presented in this section has been obtained from sources including:

- British Geological Survey (BGS) website <https://www.bgs.ac.uk/home.html>
- Defra MAGIC Interactive Map <https://magic.defra.gov.uk/MagicMap.aspx>
- Environment Agency Flood Mapping <https://flood-map-for-planning.service.gov.uk/>
- Landmark Envirocheck® (Order ref. 33818613_1_1, 9 February 2011) (Appendix B)
- Previous site reports

2.2 Condition of the Land at Permit Issue

Table 2.1 Condition of the land at permit issue

Item	Description
Environmental Setting	
• Topography:	The installation site is generally flat and lies at an elevation of approximately 11.0m above Ordnance Datum (aOD). The finished levels of the TBWRF are not yet known and these will be dependent on the detailed design of the facility, notably the tipping area at the waste building, vehicle access routes, fire-fighting water containment measures and, the operational area drainage system.
• Surface cover:	The operational areas of the TBWRF installation site will be covered by an impermeable concrete slab. As the TBWRF will require new utilities connections, including drainage, it is anticipated that all, or the majority of, the slab will be newly constructed for the TBWRF. Access roads will be surfaced with tarmacadam.
• Geology:	<p>British Geological Survey (BGS) borehole records and regional mapping³ record the geological sequence as made ground overlying superficial deposits of alluvium (clay, silt, sand and gravel). The alluvium is underlain by the Kempton Park Gravel Member (river terrace deposits of sand and gravel, locally with lenses of silt, clay or peat) which rests on the underlying bedrock of London Clay (clay, silt and sand). The London Clay overlies the Thanet Formation (Glauconite-coated, nodular flint at base, overlain by pale yellow-brown, fine-grained sand that can be clayey and glauconitic), and below this the White Chalk Subgroup (formerly Upper and Middle Chalk).</p> <p>BGS records for boreholes extended into the chalk are available in the vicinity of the installation site, the chalk is recorded at 33m below ground level (bgl) in a borehole 430m southwest⁴, at 36.5m bgl</p>

³ BGS (2006), 1:50,000 scale solid and drift geology map, Sheet 256, North London (map can be viewed at <http://www.largeimages.bgs.ac.uk/iip/mapsportal.html?id=1001750>, March 2020)

⁴ BGS, Geology of Britain Viewer, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>, BGS ID: 794660 : BGS Reference: BGS ID: 13088726 : BGS Reference: TQ39SE454, British National Grid (27700) : 535330,192450

Item	Description			
	<p>in a borehole 220m west southwest⁵, at 43m bgl in a borehole approximately 175m northwest⁶. and at 42m bgl in a borehole approximately 560m southeast⁷.</p> <p>The northern part of the EcoPark including the TBWRF installation site, is the subject of a recent controlled water detailed quantitative risk assessment (DQRA) report⁸. The DQRA report collates information from several previous ground investigations, and the geological summary therein is also presented below for the TBWRF installation site.</p>			
	Unit	Thickness Range	Average Thickness	Description
	Made Ground	1.0 – 7.5m	2.95m	Intermixed non-contiguous anthropogenic deposits of clayey gravels, sands, clays and gravelly clays. Gravels comprise variable proportions of flint, brick, concrete, wood, plastic, ash, clinker and metal. Occasional cobble-sized obstructions of the same materials. Clay layers are often reworked alluvial deposits or London Clay fill, with no discernible pattern. Made ground described in logs as 'clay' (therefore assumed to be low permeability) is present across almost the entirety of the site.
	Alluvium	0.0 – 2.7m	1.11m	Mottled brown, orange and grey clays and sandy silty clays, with very rare flint gravel. Frequently includes pockets and beds of pseudo-fibrous to amorphous peat and organic clay.
	Kempton Park Gravel Formation	1.8 – 4.5m	3.04m	Rounded to angular fine to coarse flint and occasional quartzite and ironstone gravels, sandy gravels and sand and gravel deposits. Locally rare thin clay bands.
	London Clay	> 6m	Proven to 15m	Towards the base of the London Clay it becomes sandier and the boundary between this stratum and the underlying Harwich Group is difficult to define. The London Clay forms a laterally continuous, low permeability layer.
	Harwich Group	Not defined	Not defined	BGS describes as ⁹ : glauconitic silty or sandy clays, silts and fine- to coarse-grained glauconitic sands, some gravelly, varying to flint gravel beds.
	White Chalk Subgroup (formerly Upper and Middle Chalk)	Not defined	Not defined	Expected to lie below 30m bgl on the site,

⁵ BGS, Geology of Britain Viewer, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>, BGS ID: 794660 : BGS Reference: TQ39SE346, British National Grid (27700) : 535390,192730 viewed 31 January 2020.

⁶ BGS, Geology of Britain Viewer, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>, Log reference: BGS ID: 794529 : BGS Reference: TQ39SE215, British National Grid (27700) : 535600,193130, viewed 31 January 2020.

⁷ BGS, Geology of Britain Viewer, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>, Log reference: BGS ID: 794404 : BGS Reference: TQ39SE90, British National Grid (27700) : 536050,192370, viewed 31 January 2020.

⁸ Wood (2020), North London Heat and Power Project Northern Area - Controlled Waters Detailed Quantitative Risk Assessment (Ref. 39889-WOD-41-XXX-RP-O-0012, 7 February 2020).

⁹ BGS, <https://www.bgs.ac.uk/lexicon/lexicon.cfm?pub=HWH>

Item	Description															
<ul style="list-style-type: none"> Hydrogeology (groundwater): 	<p>The Environment Agency aquifer classifications¹⁰ relevant to the site are tabulated below along with observations of the recorded groundwater conditions onsite from previous investigations, as summarised in the controlled water DQRA (Wood, 2020)¹¹. The overall groundwater flow direction is interpreted from the site groundwater monitoring data reviewed for the DQRA as being towards the southwest, with local variations on the site.</p> <p>Groundwater vulnerability at the site is classed as low¹². The London Clay forms a laterally continuous, low permeability layer that separates shallow groundwater in the Kempton Park Gravel from deeper aquifers in the Thanet Sands and Chalk. Given that more than 6m of low permeability clay is present across the site, vertical migration of groundwater and contaminants from the Kempton Park Gravel onsite to underlying aquifers is considered unlikely.</p> <p>The TBWRF installation site and the wider EcoPark fall within an Environment Agency defined groundwater Source Protection Zone (SPZ), and the TBWRF installation site is partially within SPZ1. The SPZ relates to abstractions from the deep Chalk aquifer, the closest of which are Angel Road works, which abstracts for process water, and Coca-Cola, which abstracts for soft drink manufacture. These are both approximately 500m southwest of the site. There are also several abstractions operated by Thames Water, approximately 800m southeast (Lower Hall Lane and Chingford Mill). These form part of North London Abstraction and Recharge Scheme (NLARS), which comprises 48 boreholes in the Chalk aquifer beneath Enfield, Haringey and the Lee Valley. Water is injected into the Chalk aquifer during periods when supply is plentiful for abstraction during drought periods. This means that the NLARS boreholes are only likely to operate intermittently.</p> <p>There are no known groundwater abstractions from the shallow Kempton Park Gravel aquifer in the vicinity of the site.</p>															
	<table border="1"> <thead> <tr> <th>Stratum</th> <th>Aquifer Classification</th> <th>Understanding of groundwater depth and flow onsite from previous investigations*</th> </tr> </thead> <tbody> <tr> <td colspan="3">Shallow soil/Superficial deposits</td> </tr> <tr> <td>Made ground</td> <td>Not classified</td> <td>Groundwater has generally not been encountered in made ground. Where encountered, it was limited to isolated occurrences of perched water at elevations of between 8.3 and 11.7m aOD during monitoring. There is no evidence of a laterally continuous waterbody in made ground.</td> </tr> <tr> <td>Alluvium</td> <td>Secondary 'A' Aquifer</td> <td>During drilling of boreholes in the previous investigations, water strikes were rarely observed in this stratum, and on encountering the Kempton Park Gravel, the water level commonly rose. This indicates that the alluvium, along with overlying low permeability made ground, acts as a confining layer. Limited monitoring information is available for groundwater in the alluvium. Data from BH503A, installed in the alluvium at the existing FPP in the northwest of the EcoPark, indicated a water level of approximately 9.3m aOD and little variation over three monitoring rounds.</td> </tr> <tr> <td>Kempton Park Gravel</td> <td>Secondary 'A' Aquifer</td> <td>Groundwater levels in the Kempton Park Gravel range from 1.53m to 6.14m bgl, corresponding to</td> </tr> </tbody> </table>	Stratum	Aquifer Classification	Understanding of groundwater depth and flow onsite from previous investigations*	Shallow soil/Superficial deposits			Made ground	Not classified	Groundwater has generally not been encountered in made ground. Where encountered, it was limited to isolated occurrences of perched water at elevations of between 8.3 and 11.7m aOD during monitoring. There is no evidence of a laterally continuous waterbody in made ground.	Alluvium	Secondary 'A' Aquifer	During drilling of boreholes in the previous investigations, water strikes were rarely observed in this stratum, and on encountering the Kempton Park Gravel, the water level commonly rose. This indicates that the alluvium, along with overlying low permeability made ground, acts as a confining layer. Limited monitoring information is available for groundwater in the alluvium. Data from BH503A, installed in the alluvium at the existing FPP in the northwest of the EcoPark, indicated a water level of approximately 9.3m aOD and little variation over three monitoring rounds.	Kempton Park Gravel	Secondary 'A' Aquifer	Groundwater levels in the Kempton Park Gravel range from 1.53m to 6.14m bgl, corresponding to
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¹⁰ Defra, MAGIC interactive database, view at <https://magic.defra.gov.uk/MagicMap.aspx>, March 2020

¹¹ Wood (2020), North London Heat and Power Project Northern Area - Controlled Waters Detailed Quantitative Risk Assessment (Ref. 39889-WOD-41-XXX-RP-O-0012, 7 February 2020).

¹² Defra, MAGIC interactive database, view at <https://magic.defra.gov.uk/MagicMap.aspx>, March 2020

Item	Description		
	(KPG) Member	5.94 to 10.51m AOD at an average elevation of 8.75m AOD. The alluvium and made ground act as confining layers to the Kempton Park Gravel, as evidenced by the potentiometric surface in boreholes rising above the top of the Kempton Park Gravel and reinforced by water strike behaviour during ground investigations. Groundwater level contours for the Kempton Park Gravel for May 2019 and September 2019 indicated flow towards the southwest, with some local variations within the site. In the north of the site, groundwater contours indicated that flow from the northwest (from Salmon's Brook) and northeast converge on the centre of the site. Groundwater levels at BH106, immediately west of the current FPP building, are often anomalous, and may be impacted by local variations in geology, or potentially by silting up of the borehole or gravel pack.	
	Bedrock		
	London Clay Formation	Unproductive Strata	Not monitored to date
	Harwich Formation	Secondary 'A' Aquifer	Not monitored to date
	Lambeth Group	Secondary 'A' Aquifer	Not monitored to date
	Thanet Formation	Secondary 'A' Aquifer	Not monitored to date
	White Chalk Subgroup (formerly Upper and Middle Chalk)	Principal Aquifer	Not monitored to date
<ul style="list-style-type: none"> • Hydrology (surface water): 	<p>The site is bound to the west by Salmon's Brook which flows south and lies in the surface water catchment of Pymme's Brook. Pymme's Brook flows to the south and southwest to join the River Lee Navigation and subsequently the River Lee (also referred to as the River Lea). The catchment of Pymme's Brook is largely urban. Salmon's Brook is likely to be in hydraulic continuity with groundwater in the Kempton Park Gravels. In the north-western corner of the site, groundwater flow changes locally from being generally southwest trending to being towards the southeast, as the river changes from gaining to losing water. It is assumed that this occurs during periods of high water in Salmon's Brook but water level data for the river has not been available to confirm this.</p> <p>Enfield Ditch runs north to south approximately 220m east of the TBWRF installation site, and the River Lee Navigation runs parallel to it approximately 250m east of the TBWRF. The stretch of Enfield Ditch passing the EcoPark is usually dry. The River Lee Navigation is canalised and, therefore, is unlikely to be in hydraulic continuity with groundwater. A manmade pond is present 145m southeast of the TBWRF installation site, but this is also not in hydraulic continuity with groundwater.</p>		

Item	Description
	<p>Under the Environment Agency's Water Framework Directive (WFD) water quality monitoring scheme¹³, the TBWRF installation site is in the Thames River Basin District, London Management Catchment, and Lee Lower Rivers and Lakes Operational Catchment. The nearest monitored surface water is Pymme's and Salmon Brooks – Deepham STW to Tottenham Locks (described as a heavily modified river), the overall classification was moderate in 2019 (chemical - fail, ecological – moderate). The nearest downstream river, the River Lee, (Tottenham Locks to Bow Locks/Three Mills Lock), was classed as overall bad in 2019 (chemical – fail, ecological – bad).</p>
<ul style="list-style-type: none"> • Surface Water Drainage: 	<p>The current surface water drainage system is a combined network, collecting surface water runoff from the existing BWRF installation including adjacent road and hardstanding via gullies, the IBA and IVC areas. The surface water drainage is discharged into the Chingford foul sewer. The existing drainage network includes attenuation tanks which are pumped out to sewer (manhole at West Road) at a controlled rate. This drainage apparatus is located in the IVC site in the area which was formerly the north-western corner of the IVC building. There is a disused outfall to Salmon's Brook at the northwest corner of the EcoPark site.</p> <p>The TBWRF will have a newly constructed drainage system in which all drainage including surface water runoff will be directed to sewer, with an attenuation tank of sufficient capacity for the installation. There will be no connections to the existing drains or attenuation tanks and these items will be decommissioned/removed during the preparatory works for the TBWRF. Further information on the proposed drainage system for the TBWRF is included in Table 3.1.</p>
<ul style="list-style-type: none"> • Flooding: 	<p>The TBWRF installation site is not within an Environment Agency flood risk zone¹⁴.</p> <p>Parts of the EcoPark to the southeast of the TBWRF installation site are within Flood Zone 2, assigned to land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year. LEL has confirmed that no flood events have occurred.</p>
<ul style="list-style-type: none"> • Sensitive land uses: 	<p>Chingford Reservoirs Site of Special Scientific Interest (SSSI) is located 400m northeast of the TBWRF installation site and the site is within the SSSI Impact Risk Zone associated with Chingford Reservoirs. The SSSI designation relates to ecological conservation as the reservoirs are one of the major wintering grounds for wildfowl and wetland birds in the London area and hold nationally important numbers of some species. They also form a moult refuge for large populations of wildfowl during the late summer months. The SSSI encompasses a series of drinking water storage basins constructed on the floor of the Lee Valley during the early and middle twentieth century.</p> <p>The site is also within the SSSI Impact Risk Zone associated with Walthamstow Reservoirs SSSI, the SSSI is located approximately 2km south of the TBWRF installation site.</p> <p>The TBWRF installation site and the surrounding area is within a nitrate vulnerable zone (NVZ).</p>
<ul style="list-style-type: none"> • Surrounding land uses: 	<p>The TBWRF installation site is located in the northwest of the LEL Edmonton EcoPark and can be accessed from the main EcoPark entrance in the south of the EcoPark off Advent Way. A summary of the surrounding land uses follows:</p> <ul style="list-style-type: none"> • North: Beyond the EcoPark, the TBWRF installation site is bound to the north by an industrial estate, including the Edmonton Materials Recycling Facility. The boundary of Deephams Sewage Works is approximately 350m north of the installation site, however, historically the sewage works extended much further south and included sludge lagoons on the TBWRF installation site. • East: The picking line for the current BWRF installation (outdoor waste recycling and bulking operation area) bounds the installation site to the east, then the existing BWRF and FPP. The Enfield Ditch is located east of the FPP, beyond this is Lee Park Way road and beyond this is the River Lee Navigation.

¹³ Environment Agency, Catchment Data Explorer, viewed at: <https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3275>, October 2020.

¹⁴ Environment Agency, Flood Map for Planning <https://flood-map-for-planning.service.gov.uk/confirm-location?eastng=535475&northing=192253&placeOrPostcode=N18%203AG>

Item	Description
	<ul style="list-style-type: none"> • South: The EcoPark bounds the installation site to the south and the existing Energy from Waste (EfW) facility is located to the southeast and is still operational. • West: Salmon's Brook is located to the west of the installation site, beyond the EcoPark access road, and beyond this there are various commercial units.
Pollution history	
<ul style="list-style-type: none"> • Pollution incidents that may have affected the land: 	<p>LEL has confirmed that its monitoring data and spill records do not indicate that significant liquid spills have occurred that have significantly impacted soil or groundwater.</p>
<ul style="list-style-type: none"> • Historical land uses and associated contaminants: 	<p>Introduction</p> <p>Earliest mapping, dated 1868, shows the installation site as marshland. The installation site was first developed by around 1969 as a large sludge lagoon associated with the sewage works to the north (which dates from the 1930s). The lagoons are known to have been constructed with raised banks with bases extending down to 9.45m above Ordnance Datum (AOD).¹⁵ The EfW facility southeast of the installation site was the first part of the EcoPark to be constructed in the 1970s. Historical mapping shows the lagoon on the installation site was infilled by 1992. The current FPP facility and access road around the north of the EcoPark were constructed by 1992. Incinerator bottom ash (IBA) recycling was begun on the IBA site between 1997 and 1998. The IVC plant and the outdoor area of the existing BWRf installation west of the installation site were both constructed by 2004. The processes carried out historically at the IVC and IBA sites are summarised below.</p> <ul style="list-style-type: none"> • IVC history: Under the IVC permit, municipal green and food wastes were processed to produce compost. Below ground structures included a leachate collection tank and aeration tunnel, and three storm water attenuation tanks. The attenuation tanks are currently still in service as the surface drainage from the existing BWRf installation and other areas of the EcoPark feeds into these tanks. The leachate tank is understood to have been decommissioned. • IBA history: IBA recycling began between 1997 and 1998. Aerial photography dated 1999¹⁶ shows the TBWRf area being used for external storage and stockpiles of possible bottom ash are visible on the IBA installation site. IBA was held and sorted at the IBA facility to separate non-ferrous and ferrous metals from the ash and remove any unburnt plastics, wood and paper leaving a source of aggregate (IBAA) for use in construction applications. Ash stored in ash bays was treated by controlling its pH and screened to produce different grades of material. The treatment included allowing the IBA to dry, leachate was collected and drained into an adjacent concrete lined lagoon for settlement before being sent to the water treatment plant in the south of the EcoPark. The IBA has a sealed drainage system with a membrane beneath the concrete slab. This site has an impermeable concrete surface and a sealed drainage system flowing to a concrete lined lagoon. <p>A controlled waters DQRA¹⁷ has been completed which summarises the available data on ground and groundwater condition for the northern area of the EcoPark, including the TBWRf installation site. The DQRA identifies that hazardous substances and other potentially polluting substances are present in the groundwater underlying the TBWRf installation site.</p> <p>The potential contamination sources affecting the TBWRf installation site, including the potentially polluting substances stored and handled historically at the installation site, are summarised in the table below.</p>

¹⁵ Wood (2020), North London Heat and Power Project, Northern Area - Controlled Waters Detailed Quantitative Risk Assessment DQRA (NLWA Ref. NP-WOD-41AX-XXX-RP-EN-09000, 1Wood Ref. 39889-WOD-41-XXX-RP-O-0012).

¹⁶ Wood (2020), North London Heat and Power Project, Northern Area - Controlled Waters Detailed Quantitative Risk Assessment DQRA (NLWA Ref. NP-WOD-41AX-XXX-RP-EN-09000, 1Wood Ref. 39889-WOD-41-XXX-RP-O-0012).

¹⁷ Wood (2020), North London Heat and Power Project, Northern Area - Controlled Waters Detailed Quantitative Risk Assessment DQRA (NLWA Ref. NP-WOD-41AX-XXX-RP-EN-09000, 1Wood Ref. 39889-WOD-41-XXX-RP-O-0012).

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<ul style="list-style-type: none"> Visual/olfactory evidence of existing contamination: 	Substantial groundworks and further ground investigation will be carried out prior to the construction of the TBWRF. If excavated soils are found to be contaminated, and are to remain on site, then remediation will be carried out as required (or an appropriate offsite disposal route will be identified).																		
<ul style="list-style-type: none"> Evidence of damage to pollution prevention measures 	The TBWRF installation has not yet been constructed. The proposed pollution prevention measures for the TBWRF are discussed in Table 3.1.																		
Evidence of historical contamination (e.g. historical site investigation, assessment, remediation and verification reports):	The TBWRF installation will be located on land currently regulated under the Environmental Permitting Regulations under two permits (the current IVC permit held by LEL and current IBA permit held by Blue Phoenix, see Table 1.1). As neither of the existing permits required submission of site condition reports when operations commenced, there is no baseline data available, however ground investigation and operational environmental monitoring have been carried out over a period of at least eight years including sampling from permanent groundwater monitoring wells in the north of the EcoPark and this has not identified any contamination requiring remediation ¹⁸ . LEL has agreed with the regulator (the Environment Agency) that a risk-based approach can be applied to																		

¹⁸ Wood (2020), North London Heat and Power Project Northern Area - Controlled Waters Detailed Quantitative Risk Assessment (Ref. 39889-WOD-41-XXX-RP-O-0012, 7 February 2020).

Item	Description																												
	<p>permit surrender for the IVC and IBA. This means that remedial target criteria (RTC) have been derived and agreed with the Agency, against which soil and groundwater data can be compared to identify whether soil and groundwater pose an unacceptable risk to controlled waters, and if they do, the RTCs are used to identify areas requiring remediation.</p> <p>The current soil and groundwater data available for the TBWRF site condition is summarised below.</p>																												
Baseline soil and groundwater reference data:	<p>As described above, the northern part of the EcoPark including the TBWRF installation site, is the subject of a recent controlled water detailed quantitative risk assessment (DQRA) report¹⁹. The DQRA report collates information from a number of previous ground investigations, and presents the baseline soil and groundwater conditions at the BWRF installation site and the conceptual site model. Summary information from the DQRA is presented below for the northern area of the EcoPark, including the TBWRF installation site, with reference to specific exploratory holes on the TBWRF installation as appropriate.</p> <p>The previous exploratory holes and retained monitoring wells (monitored regularly as part of the NLHPP and intended to be kept available for future monitoring) which are either on the TBWRF installation site or in its immediate surrounding area are summarised in the table below. Figures showing the exploratory hole locations are included in Appendix C. The exploratory hole logs are in Appendix D, certificates of laboratory analysis for soils are in Appendix E and certificates of analysis are presented in Appendix F.</p> <table border="1"> <thead> <tr> <th>Exploratory hole ID²⁰</th> <th>Soil data</th> <th>Groundwater data</th> <th>Retained monitoring well</th> </tr> </thead> <tbody> <tr> <td colspan="4">Within or in proximity to current IVC installation</td> </tr> <tr> <td>BH101</td> <td>Yes</td> <td>Yes</td> <td>Yes – screening KPG</td> </tr> <tr> <td>BH102</td> <td>Yes</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>BH103</td> <td>Yes</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>BH201</td> <td>Yes</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>BH301</td> <td>Yes</td> <td>Yes</td> <td>No</td> </tr> </tbody> </table>	Exploratory hole ID ²⁰	Soil data	Groundwater data	Retained monitoring well	Within or in proximity to current IVC installation				BH101	Yes	Yes	Yes – screening KPG	BH102	Yes	Yes	No	BH103	Yes	Yes	No	BH201	Yes	Yes	No	BH301	Yes	Yes	No
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BH103	Yes	Yes	No																										
BH201	Yes	Yes	No																										
BH301	Yes	Yes	No																										

¹⁹ Wood (2020), North London Heat and Power Project Northern Area - Controlled Waters Detailed Quantitative Risk Assessment (Ref. 39889-WOD-41-XXX-RP-O-0012, 7 February 2020).

²⁰ Boreholes BH101, BH102, BH103, WS101, WS1021, WS103, WS105 logs, soil and groundwater results are in report: Entec (2011) North London Waste Authority, NLWA Waste Services Contract, ISDS Baseline Geo-environmental Site Investigation Report (Ref. 29541RR009i2).

Borehole BH201 log, soil and groundwater results are in report: Amec (2013), North London Waste Authority ISDS Baseline Geo-environmental Supplementary Site Investigation Report, 30 April 2013 (Ref. 29541RR036i3).

Boreholes BH301, BH302, BH303, BH309 logs and BH301 and BH302 are in report: Amec (2014) North London Waste Authority, Edmonton EcoPark AMEC Geotechnical Ground Investigation Report (Ref. 35180RR010i3).

Boreholes BH506, BH507, BH508, BH509, BH510, BH523, BH524, BH525, HP517, TP501, TP503, WS505, WS506, WS507, WS508, WS509, WS510, WS511, WS512, WS513, WS514, WS515 and WS503 are in report: Wood (2019), North London Waste Authority, NLHPP, Energy Recovery Facility, Phase 2 Ground Investigation Factual Report (Ref. 39889-WOD-41-XXX-RP-O-0001/ 29541RR155 RRF Phase 2 Factual Report)

Boreholes BH520, HP513, HP518 are in report: Wood (2019), North London Heat and Power Project, Energy Recovery Facility – Phase 2 Ground Investigation – Factual Report (Ref. NP-WOD-41XX-XXX-RP-EN-02_001_P01).

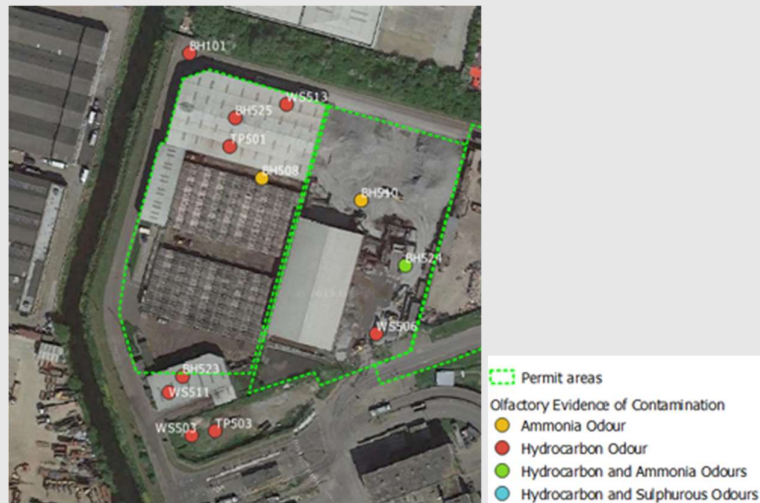
Latest groundwater monitoring results are reported for retained monitoring wells BH101, BH201, BH301 and BH309 are in report: Wood (2020) North London Heat and Power Project, Pre-Construction Baseline Water Monitoring Report (NLWA Ref. NP-WOD-XXXX-XXX-RP-EN-02_002_P04, Wood Ref. 39889-WOD-XX-XXX-RP-O-0001).

Item	Description		
BH302	Yes	Yes	Yes – screening KPG
BH303	Yes	No	No
BH309	No	No	No
BH506	Yes	Yes	No
BH507	Yes	Yes	No
BH508	Yes	No	No
BH509	Yes	Yes	No
BH520	Yes	Yes	No
BH523	Yes	Yes	No
BH525	Yes	Yes	No
WS101	Yes	Yes	No
WS102	No	No	No
WS103	No	No	No
WS105	Yes	No	No
WS503	Yes	Yes	No
WS508	No	No	No
WS509	No (BH507 was drilled through this WS)	No	No
WS510	No	No	No
WS511	Yes	No	No
WS512	Yes	No	No
WS513	Yes	No	No
WS514	Yes	No	No
WS515	Yes	No	No
TP501	Yes	No	No
TP503	No	No	No
HP517	Yes	No	No

Item	Description		
Within or in proximity to current IBA installation			
BH309	No	Yes	No
BH310	Yes	No	No
BH510	Yes	Yes	No
BH524	Yes	No	No
WS105	Yes	No	No
WS505	Yes	No	No
WS506	Yes	No	No
WS507	Yes	No	No
HP513	Yes	No	No
HP518	Yes	No	No

Summary of Soil Condition

Site investigations to date have indicated that the site is largely free from gross contamination. Some localised observations of potential contamination in soils were observed during the investigations, as shown below, relative to the current IVC and IBA Environmental Permit boundaries.



Soils were tested for a suite of organic and inorganic contaminants; the results are summarised below.

Total petroleum hydrocarbons (TPH) were detected in the majority of samples analysed, usually at trace amounts but 22 samples exceeded 1,000mg/kg of TPH. Most of the detected TPH was within the less soluble heavy end equivalent carbon bands, including aliphatic C21 – C35 and aromatic EC21 – EC35. Few samples exceeded the limit of detection (LOD) for TPH ranges below EC12. For BTEX compounds (benzene, toluene, ethylbenzene and xylene), all samples in the IVC and IBA areas had concentrations below the LOD.

Item	Description						
	Ammonium was present in both the made ground and the underlying alluvium. A comparison of ammonium concentration against depth and soil type is provided in the table below. This shows that concentrations increase with depth and were generally higher in alluvium than made ground.						
	Summary of key contaminant concentrations in soils in the Northern Area of the EcoPark						
	Contaminant	Units	No. of analyses	Limit of detection (LOD) (number of detects)	Mean¹	Maximum	Minimum
	Total TPH	mg/kg	174	10 (129)	767	21800	<10
	Total Aromatics	mg/kg	174	10 (119)	318	8800	<10
	Total Aliphatics	mg/kg	174	10 (114)	452	13000	<10
	Total phenol	mg/kg	69	0.2 (0)	<0.2	<0.2	<0.2
	Naphthalene	mg/kg	154	0.05 (21)	0.12	2.5	<0.05
	Chloride	mg/kg	60	5 (59)	511	2600	<5
	Ammonium as NH4	mg/kg	43	5 (39)	57.3	250	<0.6
	Arsenic	mg/kg	174	1 (173)	14.2	95	<1
	Cadmium	mg/kg	174	0.2 (118)	3.41	64	<0.2
	Chromium	mg/kg	174	1 (174)	45.6	220	7
	Copper	mg/kg	174	1 (174)	290	2900	3.9
	Lead	mg/kg	174	2 (174)	270	4800	4.9
	Mercury	mg/kg	174	0.3 (45)	0.76	16	<0.3
	Nickel	mg/kg	167	2 (167)	37	280	4.1
	Zinc	mg/kg	173	2 (173)	600	10000	19
	1. Where results are below the limit of detection, the mean has been calculated by assuming these values are equal to the LOD.						
	Summary of ammonium concentrations in soils in the Northern Area of the EcoPark						
	BH ID	Depth (m bgl)	Strata	Ammonium Concentrations (mg/kg)			
	BH523	0.50-0.60	Made ground	43			
	BH525	0.50-0.60	Made ground	64			
	WS515	0.65-0.70	Made ground	84			

Item	Description			
BH509	1.10-1.20	Made ground	54	
WS515	1.30-1.50	Made ground	67	
BH525	2.10-2.20	Made ground	74	
BH525	2.50-2.60	Made ground	83	
BH506	3.10-3.20	Made ground	140	
WS515	3.10-3.30	Alluvium	150	
BH523	3.30-3.40	Alluvium	130	
BH506	3.80-3.90	Alluvium	170	
BH525	4.50-4.60	Alluvium	240	
BH509	4.70-4.90	Alluvium	250	

Summary of Groundwater Results (Perched groundwater in made ground)
Groundwater samples were tested for a suite of organic and inorganic contaminants including metals, ammonium, chloride, cyanide, TPH, BTEX, polyaromatic hydrocarbons (PAH), phenol and pesticides.

Organic contamination was generally absent in the majority of samples and was not identified in perched groundwater, with the exception of phenol in BH510 and pesticides in BH523.

A total of 35 samples were tested for BTEX compounds and none recorded detectable concentrations.

TPH-CWG analysis was also undertaken on 35 samples and the light end fractions were generally absent. Aliphatics were only present in the C12 – C35 bands. Similarly, aromatic TPH compounds were only found in the EC⁸-EC³⁵ range.

BH523 (IVC area) has recorded detectable concentrations of several pesticide compounds during monitoring rounds undertaken at this location (Prometryn 0.05µg/l, Terbutryn 0.48µg/l at 0.53µg/l).

The results of analysis for inorganic substances show that ammonium is ubiquitous, and metals are also present in many locations at elevated concentrations in perched water. Chloride was present at concentrations in excess of 250mg/l in six out of eight samples. Nitrate concentrations were all below 50mg/l.

Summary of organic contaminants in perched groundwater in the Northern Area of the EcoPark

Contaminant	Units	Number of Analyses	Limit of detection (No. of detects)	Mean	Minimum	Maximum
Aliphatic >C12 - C16	µg/l	35	10 (1)	13.7	< 10	140
Aliphatic >C16 - C21	µg/l	35	10 (5)	29.2	< 10	230
Aliphatic >C21 - C35	µg/l	35	10 (6)	64.3	< 10	680

Item	Description						
	Aromatic >C8 - C10	µg/l	35	1 (1)	3.77	< 1.0	35
	Aromatic >C10 - C12	µg/l	34	10 (2)	17.8	< 10	240
	Aromatic >C12 - C16	µg/l	32	10 (4)	18.3	< 10	180
	Aromatic >C16 - C21	µg/l	35	10 (3)	18.8	< 10	190
	Aromatic >C21 - C35	µg/l	35	10 (2)	13.2	< 10	67
	Total Phenols (monohydric)	µg/l	18	10 (18)	14	< 10	500
	Naphthalene	µg/l	32	0.01 (5)	2.91	< 0.01	85
	Anthracene	µg/l	31	0.01 (7)	0.233	< 0.01	3.11
	Fluoranthene	µg/l	31	0.01 (10)	0.443	< 0.01	6.23
	Benzo(a)pyrene	µg/l	32	0.01 (4)	0.06	< 0.01	0.78
	Pesticides (various compounds)	µg/l	3	Various (1)	N/A	<0.01	0.53
Summary of inorganic contaminants in perched groundwater in the Northern Area of the EcoPark							
Contaminant	Units	Number of Analyses	Limit of detection (No. of detects)	Mean	Minimum	Maximum	
Cadmium	µg/l	35	0.02 (20)	0.227	< 0.02	1.6	
Copper	µg/l	35	0.5 (32)	50.7	0.7	1000	
Lead	µg/l	35	0.2 (27)	16.5	< 5.0	180	
Mercury	µg/l	35	0.05 (9)	0.554	< 0.05	1.51	
Nickel	µg/l	35	0.5 (32)	22.6	2.4	93	
Zinc	µg/l	35	0.5 (32)	24.4	0.9	100	
Total Cyanide	µg/l	24	10 (9)	12.4	< 10	35	

Item	Description						
	Ammoniacal Nitrogen as N	µg/l	35	15 (32)	18500	410	57000
Summary of Groundwater Results (Kempton Park Gravel)							
Organic contamination was generally absent. A total of 272 samples were tested for BTEX compounds and none recorded detectable concentrations.							
TPH-CWG analysis was also undertaken on these samples and the light end fractions were generally absent. Aliphatics were only present in the C16-C35 bands in three locations including BH507 in the IVC area. No aromatic compounds were identified.							
Phenol was the most widespread organic contaminant.							
Pesticide analysis was undertaken on 23 samples, for a variety of compounds. BH523 (IVC area) recorded detectable concentrations of several compounds in the first of three monitoring rounds undertaken at this location (i.e. Terbutryn 0.11µg/l). Subsequent samples did not report any detectable pesticides.							
A number of metals were found to be widespread in groundwater. Aluminium concentrations were highest in four boreholes within the IVC area. Cadmium, iron, nickel and zinc concentrations were highest in groundwater in upgradient boreholes as well as beneath the northern area of the EcoPark. Iron was widespread in groundwater. Its presence is an indication of reducing conditions within the aquifer. Lead was occasionally found above LOD in isolated locations but was not found consistently in any location.							
As in perched water, ammonium contamination was widespread, at concentrations that averaged 2,900µg/l and had a maximum of 8,200µg/l in upgradient samples (compared to the EQS of 770µg/l). This indicates that there is background of ammonium in the aquifer and that conditions are reducing (ammonium is the reduced form of nitrogen).							
Chloride was present at concentrations >250mg/l in 40 of 219 samples. Upgradient samples generally did not have elevated chloride concentrations with the exception of BH101 in the northwest corner of the site, adjacent to Salmon's Brook. Concentrations of nitrate were >50mg/l in two samples from BH101. This location is at the extreme north-western extent of the EcoPark, in a location where the groundwater flow direction frequently reverses as Salmon's Brook switches between gaining and losing water. As this location is upgradient of the permitted IVC/IBA areas, the nitrate is unlikely to be site derived.							
Cyanide was not present at detectable concentrations.							
Summary of organic contaminants in groundwater in KPG in the Northern Area of the EcoPark							
Contaminant	Units	Number of Analyses	Limit of detection (No. of detects)	Mean	Minimum	Maximum	
Total PAH	µg/l	276	0.16 (2)	0.209	< 0.16	6.29	
Fluoranthene	µg/l	276	0.01 (2)	0.0138	< 0.01	1.01	
Benzo(a)pyrene	µg/l	276	0.01 (2)	0.0133	< 0.01	0.63	
Aliphatic C16-C21	µg/l	272	10 (2)	10.4	< 10	89	
Aliphatic C21-C35	µg/l	271	10 (4)	13.5	< 10	590	

Item	Description						
	Total phenol	µg/l	246	10 (9)	10.4	< 10	42
	Pesticides (various compounds)	µg/l	23	0.01 (1)	N/A	<0.01	0.11 (Terbutryn)
Summary of inorganic contaminants in groundwater in KPG in the Northern Area of the EcoPark							
	Contaminant	Units	Number of Analyses	Limit of detection (No. of detects)	Mean	Minimum	Maximum
	Cadmium	µg/l	276	0.02 (50)	0.0966	< 0.02	0.8
	Copper	µg/l	276	0.5 (243)	3.25	< 0.5	18
	Iron	mg/l	188	0.004 (178)	0.633	< 0.005	7.4
	Lead	µg/l	276	0.2 (123)	1.4	< 0.2	13
	Nickel	µg/l	276	0.5 (273)	6.36	< 0.3	27
	Zinc	µg/l	276	0.5 (247)	7.57	< 0.5	130
	Ammonium as NH4	µg/l	180	15 (180)	5550	51	16000
Additional information on baseline conditions							
As noted above, there is an agreed Remediation Strategy that covers the TBWRF installation site and during the ground preparation works to enable construction of the TBWRF it is likely that all or the majority of the existing slab will be lifted. During these works further investigation, and, if necessary, remediation, will be completed. This information will then be added to the Site Condition Report to provide updated baseline soil and groundwater data.							
Supporting information:	Excerpts from the relevant previous site investigation reports referred to in this section are appended to this report as follows: <ul style="list-style-type: none"> • Exploratory hole logs (Appendix C) • Soil chemical analysis results (Appendix D) • Groundwater analysis results (Appendix E) 						

3. Permitted Activities

Table 3.1 Permitted Activities

Item	Description
Permitted activities	
<ul style="list-style-type: none"> Introduction and process overview: 	<p>The TBWRF is intended to operate for a short period (12-18 months) to serve the existing Energy from Waste (EfW) facility and replace the key functions of the existing BWRF and FPP while the land in the northeast of the EcoPark where they are located is released to enable construction of the ERF. The operations on the TBWRF will be scaled down from the current BWRF operations, as some of its current functions will be relocated offsite. Volumes and types of waste are also likely to be reduced as a result (current estimated capacity for the TBWRF is 220,000 tonnes of waste annually). The primary function of the TBWRF will be the sorting and recovery of municipal waste materials for onward distribution to suitably licenced recycling and disposal facilities.</p> <p>The permitted activities already carried out at the existing BWRF installation under Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2016 (EPR 2016) comprise:</p> <ul style="list-style-type: none"> Separation and sorting of bulky wastes for preparation as a fuel for an Energy from Waste plant, SECTION 5.4 (Disposal, recovery or a mix of disposal and recovery of non-hazardous waste) Part A (1) (a) (ii) <p>No new activities are proposed at the TBWRF.</p> <p>The main activities carried out at the TBWRF will comprise some or all the items below:</p> <ul style="list-style-type: none"> Waste reception and transfer: reception and bulking of municipal wastes (e.g. bulky waste, street cleaning, fly-tipped, highways waste, construction and demolition) and visual inspection for items unsuitable for combustion or requiring shredding; Shredder: size reduction, targeted at suitable portions of waste, residual waste, bulky waste, street cleaning, and any other oversized combustible wastes extracted from other incoming residual wastes; Third party waste transfer: reception and bulking of suitable third-party residual wastes. Minimal pre-treatment is required prior to transfer to the EfW plant, other than visual inspection for items unsuitable for combustion or requiring shredding/sorting; Organic waste transfer: for deliveries of food, mixed food/garden, kerbside green and other green waste. A separate transfer area will be utilised with dedicated drainage and odour control; Clinical waste transfer: bulking of non-hazardous clinical wastes for transfer to suitable third-party sites. This is a separate area with impermeable surfaces that can be regularly cleaned and disinfected; and Screening: sorting of unburnt and oversized ash into different fractions. <p>Plant that will operate on the site includes:</p> <ul style="list-style-type: none"> Shovel loaders and 360° excavators to sort and transfer wastes Shredder Screening equipment Bulky waste picking station (elevated cabin with bulking bays underneath) Road sweeper Containers Roll on-roll off (Ro-Ro) bulker to handle containers <p>Procedures will be in place for the regular inspection and maintenance of storage areas, including drums, vessels, hardstanding in operational areas and bunds to alert LEL to signs of damage, deterioration and leakage. Records will be kept detailing action taken and faults repaired as soon as practicable. Suitable alternative storage arrangements will be identified if a bund or other containment measure is found to be damaged/compromised.</p>
<ul style="list-style-type: none"> Site Description 	<p>The design of the TBWRF is still being finalised, however, the following elements will be present.</p>

Item	Description
	<p>The TBWRF installation will include a covered fuel preparation building, where shredding of large non-recyclables such as mattresses or furniture will take place, and also bulking of food waste, gully waste, street sweepings, mixed food and garden waste (BIOK) and residual waste for transfer to the EfW. Waste will either be prepared for incineration at the EfW or bulked and prepared for transfer to an offsite licensed facility when the EfW incinerator is closed.</p> <p>The TBWRF will have outdoor bays and waste sorting areas where waste can be stored and sorted.</p> <p>Waste types accepted at the TBWRF will include some or all of the following (which are accepted at the current BWRf): green waste, wood, fly tip, rubble, street cleaning waste, construction waste, bulky waste, tyres, infectious clinical bags and sharps, broken wheelie bins. Waste will be delivered to the site and tipped into the appropriate clearly labelled waste bays by caged vehicles and roll-on, roll-off vehicles.</p> <p>The residual waste, food waste, BIOK and shredded waste will be stored in designated clearly labelled bays within the covered fuel preparation building. The shredders will also be located within the building. The covered fuel preparation building will be entirely above ground and will be of pre-fabricated concrete construction with a plastic roof (e.g. Legato blocks with a plastic cover) and will have railway shutter doors at the tipping points to allow bioaerosol emissions to be contained during tipping.</p> <p>The process will use mechanical shovels and excavators to handle the wastes.</p> <p>The TBWRF will also include staff offices and welfare facilities, access roads and staff parking area, a vehicle repair workshop, and vehicle refuelling facilities. Waste vehicles will circulate the TBWRF using a one-way system. The vehicle refuelling area will include an above ground bulk diesel tank with further details provided below. The waste bay sizes will be based on the Environment Agency's Fire Prevention Plan guidance document.</p> <p>The installation will have a fire suppression system including a fire water tank and water cannons and a fire water run-off containment system (comprising hardstanding and kerbing). The fire water tank will be filled using the towns water supply. Water use in the TBWRF will typically be minimal, for washing down and staff amenity uses, but this usage will be low.</p>
<ul style="list-style-type: none"> • Waste handling and storage at the BWRf: 	<p>Incoming waste</p> <p>Waste delivery and waste collection vehicles will enter the TBWRF from the south via the EcoPark and once on the TBWRF they will be signposted round the one-way system.</p> <p>Waste will arrive on site from external suppliers via the weighbridge, where the total waste and vehicle will be weighed, the vehicle is then reweighed on exit from the site and the difference give the total mass of the waste deposited for processing. Some bulky waste will be via internal transfers from the EfW for additional treatment prior to being returned to the EfW. Waste will only be supplied from an approved source and the main acceptance procedure will be followed to confirm the characteristics of the waste based on the delivery notes and/or the agreed contracts.</p> <p>All vehicles will pass through an automatic number plate recognition system for access to the TBWRF that logs the registration and checks they are approved to deliver waste to the site. From the weighbridge, the incoming vehicles will be directed to the appropriate area within the TBWRF. If appropriate a banksman will direct the traffic.</p> <p>The TBWRF will receive and sort a variety of wastes to recover items for re-use, recycling, or further processing. The facility will have equipment to remove some recyclables from residual and bulky waste, and any remaining residual waste suitable for thermal treatment would be transported to the EfW for energy recovery. The facility will use push walls to assist with waste segregation.</p> <p>Collected food and garden wastes will be received and bulked for transport to composting facilities (offsite). Non-recyclable materials and non-combustible waste materials will be collected in sealed vehicles and sent for disposal to third parties offsite, where no recovery option is available.</p>

Item	Description
	<p>If clinical waste is accepted, the TBWRF will have a dedicated area for receiving non-hazardous clinical wastes, which will be bulked prior to being sent offsite to a suitable licenced treatment facility. Clinical wastes will be stored in wheelie bins, within a container.</p> <p>Waste Shredding A slow speed shredder with a hydraulic drive will be used to shred a range of oversize waste that is suitable for combustion following sorting and size reduction. After shredding, residual waste suitable for the EfW plant will be moved via bulkers to the EfW plant waste bunker. The shredder will be located inside the covered fuel preparation building on an impermeable concrete floor and shredded waste will be contained within a designated storage bay, prior to being moved via bulkers to the EfW waste bunker. The shredder will be regularly serviced in accordance with the manufacturer's guidelines and any hydraulic oil leakages will be quickly attended to, to clean up any oil and to prevent further leakage.</p>
<ul style="list-style-type: none"> <li data-bbox="266 632 440 659">• Fuels and oils 	<p>Fuel Storage/ Handling An above ground diesel storage tank will be located within a bunded refuelling area for use by waste vehicles and site vehicles. The detailed design of the facility is not known, however, it will be compliant with The Control of Pollution (Oil Storage) (England) Regulations 2001 and controls and operating procedures will be in place to prevent any spillages from reaching the drainage system. The maximum capacity required for the diesel tank is anticipated to be 20,000 litres. Depending on the detailed design and final capacity of the TBWRF, it is likely that smaller tanks will be adequate, and the tank sizes will be adjusted accordingly.</p> <p>Bulk fuel and oil/ waste oil storage and filling points will be designed and operated in accordance with UK Government guidance for oil storage²¹ and the Control of Pollution (Oil Storage) (England) Regulations 2001 (the Oil Storage Regulations). Fixed tanks will be designed to meet the appropriate British Standards (e.g. BS 5410). Tanks will be positioned and protected (e.g. using crash barriers) to minimise the risk of damage by impact by vehicles. All fuel and oil pipework will be above ground. Bunds will be impermeable to oil and water, with no pipes, valves or openings running through the bund wall. The bund will contain every part of the tank and its associated equipment. Where refuelling pumps are required these will have a valve in the feed line to prevent the tank contents emptying accidentally.</p> <p>Impermeable hardstanding will be present at all roads, refuelling and fuel storage points. The drainage system will include an oil interceptor designed to intercept fuel or oil spills, however, there will be no drains close to bulk fuel and oil storage and refuelling areas so that spills can be rapidly contained and cleaned up at surface without entering the drainage system. Spill kits will be available at refilling points.</p> <p>Vehicle Repair Workshop A vehicle repair workshop will be located within the TBWRF to enable site vehicles and waste delivery/collection vehicles to be repaired onsite as required. The facility will be a fully enclosed warehouse based on impermeable concrete hardstanding. Spill kits will be available within the warehouse and it will not have an internal drainage system.</p> <p>Storage of oils for vehicle maintenance, maintenance of non-road mobile machinery and hydraulic systems will take place in the workshop. Containers will be 205 litre drums or smaller (expected consumption of oil is <1 tonne per year). If drums are used these will be 'UN' approved and will be located on secondary containment (e.g. a drip tray) with a capacity equal to or more than one quarter of the drum it's holding, or one quarter of the combined capacity of the drums it can hold.</p>
<ul style="list-style-type: none"> <li data-bbox="266 1619 407 1646">• Chemicals 	<p>Odour Control The TWBRF will include an odour treatment facility, which is likely to use an activated carbon odour treatment system. Carbon (granulated or treated) will be stored in a steel silo (volume subject to detailed design) and the OCU vessel Maintenance of the odour treatment system, replacement of spent carbon will be carried out by suitably qualified maintenance personnel. The odour control facility will be located on impermeable concrete hardstanding and maintenance activity will be fully contained to prevent any releases to ground.</p>

²¹ <https://www.gov.uk/guidance/storing-oil-at-a-home-or-business>

Item	Description
	<p>Cleaning Chemicals</p> <p>Cleaning chemicals will be held on site for cleaning and disinfecting operational areas and for cleaning offices and welfare areas. These are expected to be held in small quantities (e.g. 15 litre drums or smaller) and will be stored in labelled lockable cupboards and handled in compliance with the Control of Substances Hazardous to Health Regulations 2002.</p>
<ul style="list-style-type: none"> • Site Drainage: 	<p>The TBWRF operational areas will be located on impermeable concrete hardstanding with a sealed drainage system discharging to the public sewer flowing to Deephams Sewage Treatment Works. The TBWRF drainage system will be designed to capture all liquid discharges, there will be no fugitive discharges to surface water or groundwater. The drainage system will be a new system designed and constructed specifically for the TBWRF operations and operational capacity (including fire water runoff capacity).</p> <p>The detailed design of the drainage is not yet known, however, the anticipated drainage arrangements are as follows:</p> <ul style="list-style-type: none"> • Surface water from the TBWRF road network and staff car park area will drain to a buried drainage system which passes through an oil interceptor before discharging to the offsite public sewer. Roof drainage will also be directed to drains discharging to public sewer. The surface water discharge rate to the sewer will be controlled by surface water drainage being directed to a new attenuation tank, which will be pumped out to sewer at a controlled rate. • Effluent from operational areas such as the covered fuel preparation building and the external waste bays will drain to a separate trade effluent drainage system and will flow through an oil interceptor before being discharged to the public sewer. • Foul drains will serve the office block and welfare facilities, and these will discharge to the public sewer via a separate connection. • Fire-fighting water in the operational areas from sprinklers, water cannons etc. will accumulate within either the building or the outside waste bays due to the site levels. Drainage in the building is likely to be fitted with a penstock valve to allow the release of surface-runoff to be controlled. This will enable fire-fighting water to be tested and pumped out to vacuum tanker for suitable disposal offsite or it may be discharged to the public sewer if in accordance with the existing trade effluent consent. <p>There will be no emissions to surface water from the TBWRF installation. The emissions to sewer will continue to be sampled periodically, in accordance with the agreed trade effluent discharge consent already in place from Thames Water for the EcoPark. As no process effluent is produced by the TBWRF, no monitoring is proposed at the point of release from the TBWRF. Any discharge will continue to be in compliance with the Thames Water Trade Effluent Consent.</p>
<ul style="list-style-type: none"> • Environmental management procedures: 	<p>LEL has a current environmental management programme that will be implemented at the TBWRF facility that is in accordance with the requirements of a formal EMS, meeting the requirements of a recognised standard and is certified to the ISO 14001:2004 Environmental Management System standard.</p> <p>The key aspects of the current environmental management programme and arrangements are:-</p> <ul style="list-style-type: none"> • Operations and maintenance: The environmental management arrangements form part of the sites Operational Management Plan (OMP) and working plans for the individual operations. These, with associated procedures, describe how the facility is operated to comply with permit conditions and avoid or minimise environmental risks and impacts from the normal running of the facility. This includes start-up and shut-down of the plant and variations in the waste composition received. The management system also includes procedures relating to waste acceptance, the inspection of environmentally critical equipment, and operational logs which support compliance with permit conditions. • Competence and training: The management system links the competency of resources to operate the processes in compliance with permit conditions to operational procedures. This addresses requirements including, defining roles and responsibilities, defining competency requirements and assessment, training needs analysis and provision, training records and register, and periodic competency and operational review and assessment.

Item	Description
	<ul style="list-style-type: none"> • Accidents, incidents and non-conformance: The safe operation of the Edmonton EcoPark, which will incorporate the TBWRF, is underpinned by the 'Safety through design' approach, applied to the design of all aspects of equipment, plant and operational plans for the facility. The approach to avoiding accidents incorporates significant mitigation measures and a comprehensive emergency plan to respond to a range of potential emergencies, should an accident occur. The current accident management plan (AMP), which is a requirement of the existing permit of the BWRF/FPP, which will form the basis of the TBWRF AMP. This forms part of the OMP and includes accidents with the potential to impact the environment and result in non-compliance with permit conditions. The emergency plans will include detailed responses to potential accident scenarios and will be linked to the induction plan for each person, and the training requirements to give operators the necessary skills to work safely. • Fire Prevention Plan: Detailed fire prevention plans will be included in the detailed design and the site's OMP and working plan. <p>A comprehensive working plan is available that covers the operations of the BWRF/FPP, this will be adapted by LEL as required for the TBWRF.</p>
Non-permitted activities undertaken:	None identified.
Document references:	<p>The following figures are presented in Appendix A:</p> <ul style="list-style-type: none"> • TBWRF Installation Boundary • Plan showing indicative layout of TBWRF and indicative drainage layout

Appendix A

Figures



NOTES:

LEGEND
— INSTALLATION BOUNDARY

P01	10/20	FIRST ISSUE	CM
REV	DATE	REVISION DESCRIPTION	DWN CHK APP

SCALES:

PURPOSE OF ISSUE: SUITABLE FOR XXXXXXXXXXXX - S0

PROJECT TITLE:
NORTH LONDON HEAT AND POWER PROJECT

DRAWING TITLE:
DRAWING TITLE 1

CLIENT:

north london

Heat and Power project

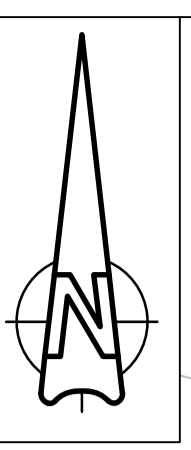
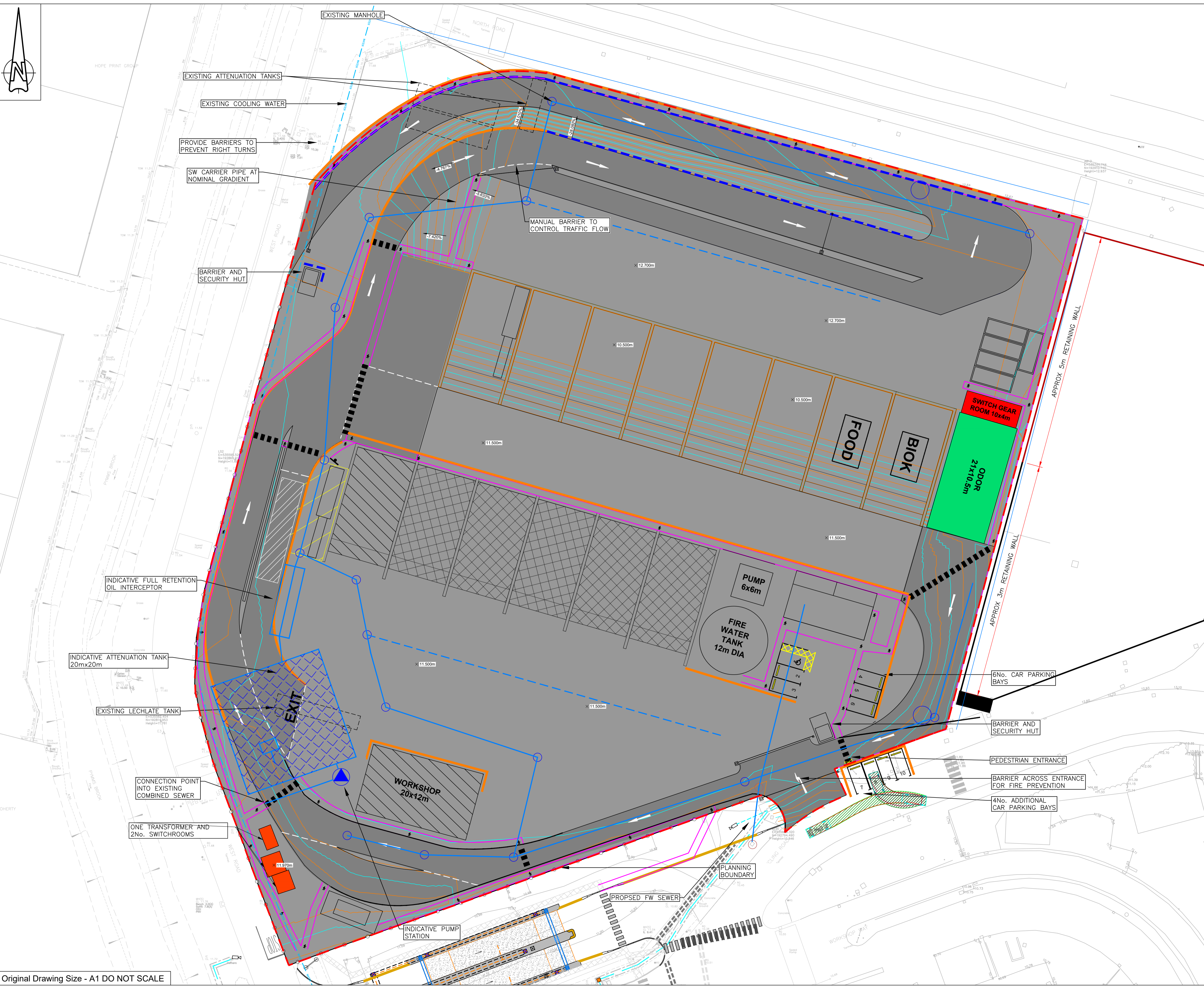
NLWA
 18 BEROL HOUSE
 25 ASHLEY ROAD
 TOTTENHAM HALE
 N17 9LJ
 TEL: (0208) 4895730

TASK ORDER NUMBER: TF-WOOD-414

FLOOR 12,
 25 CANADA SQUARE,
 LONDON
 E14 5LQ
 TEL: (0203) 2151700
 FAX: (0203) 2151701

wood.

NLWA DWG No. XXXXX-XXXX-XX-XX_XX-XX-XX-0001	REV. P01
ADVISER / CONTRACTOR DWG No. Adviser / Contractor Drawing No	



- NOTES:
1. TOPOALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 2. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.
 3. REFER TO TECHNIC'S SURVEY DATED 22/11/2018 (REFERENCE: SP 18769) FOR PAS128 QUALITY LEVELS AND SERVICE LOCATION ACCURACY. REFER TO TECHNIC'S TRIAL TRENCH SURVEY (REFERENCE: 4405-0819-01) FOR ACCURATE EXISTING SERVICE DETAILS.

- LEGEND
- PEDESTRIAN WALKWAY
 - ZEBRA CROSSING
 - HEAVY DUTY VEHICLE BARRIER
 - CONCRETE NEW JERSEY BARRIER
 - HEAVY DUTY VEHICLE BARRIER ON UPSTAND
 - CAR WHEEL STOP
 - HALF BATTERED CURB
 - PLANNING BOUNDARY
 - EXISTING COOLING WATER
 - SHREDDER PARKING AREA
 - FENCING
 - MAJOR CONTOUR
 - MINOR CONTOUR
 - PROPOSED PUMP STATION
 - PROPOSED WATER TANK
 - PROPOSED SURFACE WATER SEWER AND MANHOLE
 - PROPOSED INDICATIVE OIL INTERCEPTOR

REV	DATE	DWN	CHK	APP
REVISIONS				
P01.1	2020			

SCALES: NTS

PURPOSE OF ISSUE: Initial non-contractual code

PROJECT TITLE:
NORTH LONDON HEAT AND POWER PROJECT

DRAWING TITLE:
BWRF GENERAL ARRANGEMENT PEDESTRIAN ACCESS OPTION

CLIENT:

nlw north london **Heat and Power project**

NLWA
18 BEROL HOUSE
25 ASHLEY ROAD
TOTTENHAM HALE
N17 9LJ
TEL: (0208) 4895730

TASK ORDER NUMBER:

FLOOR 23,
25 CANADA SQUARE,
LONDON
E14 5LQ
TEL: (0203) 2151700
FAX: (0203) 2151701

wood.

NLWA DWG No.	REV. P01.1
ADVISER / CONTRACTOR DWG No. 39889-WOD-41-XXX-SK-C-1003	

Original Drawing Size - A1 DO NOT SCALE



Appendix B

Envirocheck





Appendix C

Previous Site Investigation Figures





- LEGEND:**
- Site boundary
 - Proposed building
 - Operational area boundary
- Previous Ground Investigations**
- BH Borehole
 - Trial pit
 - HD Hand dug pit
 - WS Window sample
- Phase 3 Ground Investigation**
- BH Borehole
 - Trial pit
 - HD Hand dug pit
 - WS Window sample
 - BS Additional borehole for IVC Permit Surrender
 - WS Additional window sample for IVC Permit Surrender

- NOTES:**
1. Site investigation symbols are not to scale and shown approximately 10 times their actual size.
 2. All exploratory locations within the IVC area were subject to additional chemical analysis for permit surrender purposes.

P01	22/08/2019	FIRST ISSUE	JP	OW	EG
REV	DATE		DWN	CHK	APP

SCALES: 1:600

PURPOSE OF ISSUE: FOR INFORMATION

PROJECT TITLE:
NORTH LONDON HEAT AND POWER PROJECT

DRAWING TITLE:
EXPLORATORY HOLE LOCATIONS
PHASE 3 GROUND INVESTIGATION

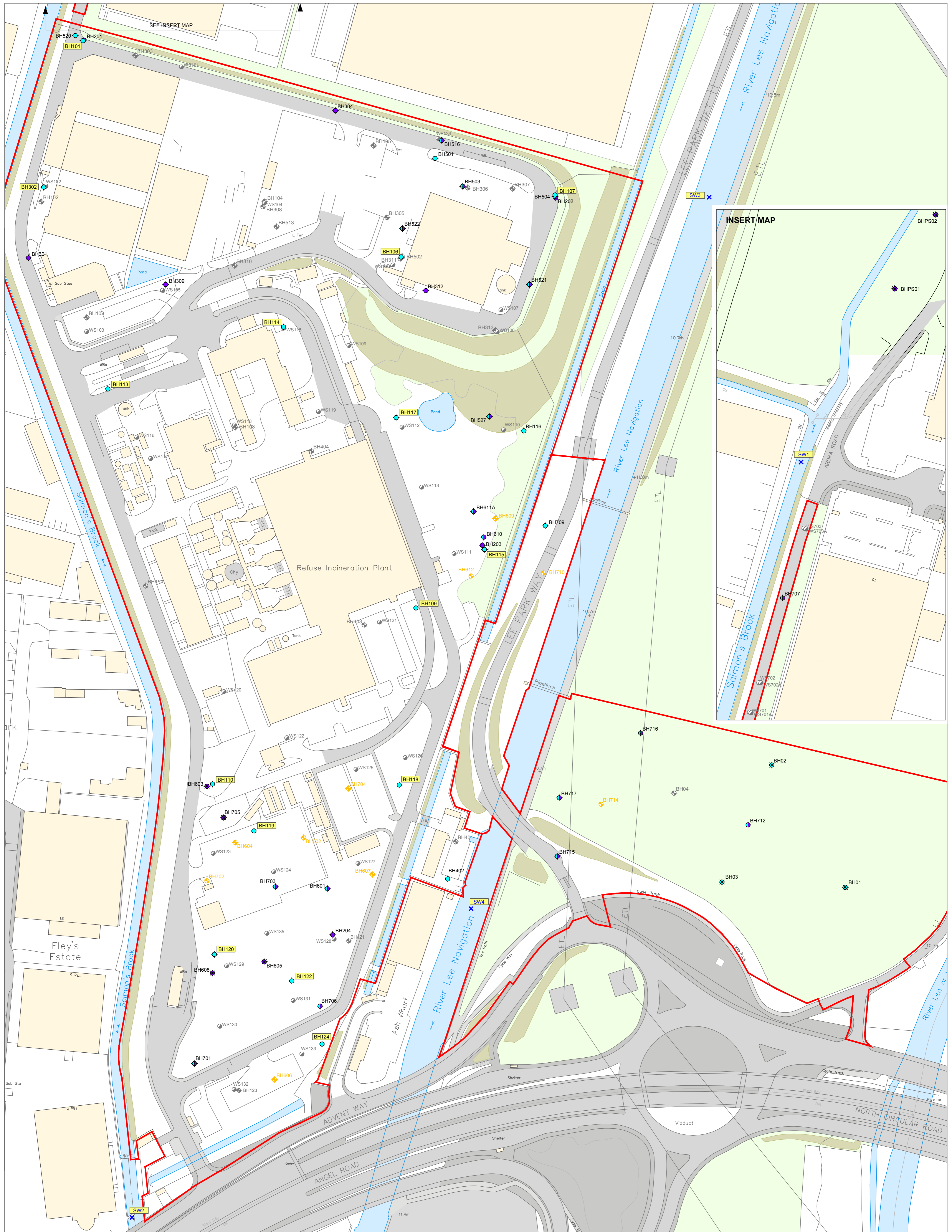
CLIENT:

 NLWA
 18 BEROL HOUSE
 25 ASHLEY ROAD
 TOTTENHAM HALE
 N17 9LJ
 TEL: (0208) 4895730

TASK ORDER NUMBER: TF-WOOD-527/539

FLOOR 12,
 25 CANADA SQUARE,
 LONDON
 E14 5LQ
 TEL: (0203) 2151700
 FAX: (0203) 2151701

NLWA DWG No. NP-WOD-41XX-XXX-DR-EN-01_001	REV. P01
ADVISER / CONTRACTOR DWG No. 39889-WOD-41-XXX-DR-O-0016	



NOTES:

	Site boundary		Gas installation
	Groundwater installation in Kempton Park Gravel		Gas installation and groundwater installation in Kempton Park Gravel
	Groundwater installation in Lambeth Group		Gas installation and groundwater installation in Lambeth Group
	Dual groundwater installation in Kempton Park Gravel and Lambeth Group		Borehole not drilled, lost, decommissioned or backfilled
	Vibrating wire piezometer		Window sample not drilled, lost, decommissioned or backfilled
			Monitoring location

PO2	2019	REMOVAL OF BH402	OW	AK	AK
REV	DATE		DWN	CHK	APP

REVISIONS

CLIENT:

 NLWA
 18 BEROL HOUSE
 25 ASHLEY ROAD
 TOTTENHAM HALE
 N17 9LJ
 TEL: (0208) 4895730

PROJECT TITLE:
 NORTH LONDON HEAT AND POWER PROJECT

TASK ORDER NUMBER: TF-WOOD-419

SCALES: 1:1000

REV	DATE	DESCRIPTION	DWN	CHK	APP
P01	01/02/2019	FIRST ISSUE	JP	OW	AK

SUITABILITY CODE: FOR INFORMATION

DRAWING TITLE:
 EXPLORATORY HOLE LOCATIONS SELECTED FOR GROUNDWATER MONITORING - EPR

FLOOR 23,
 25 CANADA SQUARE,
 LONDON
 E14 5LQ
 TEL: (0203) 2151700
 FAX: (0203) 2151701

NLWA DWG No.
 NOT APPLICABLE

REV. P02

ADVISER / CONTRACTOR DWG No.
 39889-WOD-XX-XXX-DR-O-0003

Appendix D

Previous Site Investigation Exploratory Hole Logs





Appendix E

Previous Site Investigation Soil Chemical Analysis Results





Appendix F

Previous Site Investigation Groundwater Chemical Analysis Results



wood.

