



McDonald's Pontardawe Phase 2 Ground Investigation Report

McDonald's Restaurants Limited

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EXECUTIVE SUMMARY

SITE INFORMATION AND SETTING	
Objectives	The objective of the Phase 2 Ground Investigation Report (GIR) is to update the Ground Model from the Phase 1 Desk study to identify key geo-environmental and geotechnical risks to the proposed development.
Client	McDonalds Restaurants Limited.
Site name and location	Proposed McDonalds, Tesco's Superstore, adjacent to A4067, Alltwen, Pontardawe, Neath Port Talbot, SA8 3AZ.
Proposed development	The site development proposals are understood to comprise one McDonalds unit with drive through and associated car parking spaces.
GROUND MODEL	
Desk study summary	The site is roughly rectangular in shape, measuring approximately 60m northeast to southwest by 50m northwest to southeast, with an area of approximately 0.31 ha. The site is currently a car park for the Tesco superstore to the southwest. The asphalt car park was visually in good condition with few repairs and no obvious cracking or settlement. A set of high-voltage overhead powerlines cross the site from the east corner to the west corner. In the north-easternmost car parking spaces there were a set of large manhole covers. Water could be heard flowing beneath these covers, suggesting they may be related to the drainage of the car park and could possibly relate to one of the recorded historic mine adits. Review of historical Ordnance Survey (OS) mapping indicates: • The site was recorded as 'old coal level' with spoil heaps noted on the maps indicating coal mining operations being undertaken on site. • By 1961, no buildings are noted on site with a footpath crossing through the site. Overhead power lines are shown to cross the site. • By 2009, the Tesco Superstore is visible on OS mapping and is recorded as per the layout seen in 2020. The surrounding area saw many chemical works and tin plate works, to the northeast and northwest of the site in the 1880s. However, by 1961, these operations had largely stopped and both sites have since been redeveloped. A non-specialist UXO assessment indicates a moderate bomb risk. The geology at the site consists of Made Ground over Devensian Glaciofluvial Deposits (sand and gravel), underlain in turn by bedrock geology of the Carboniferous Brithdir Member, comprising mudstone, siltstone and sandstone. The (younger) Hughes Member (sandstone), which overlies the Brithdir Member, outcrops adjacent to the south of the site. Alluvium, comprising clay, silt, sand and gravel, is mapped adjacent to the north of the site. Two coal seams are mapped to the south of the site, the Glyngwilym Coal Seam is mapped within the Brithdir Member, whereas the Hughes Coal Seam is mapped on the boundary between the Brithdir and Hughes Member. The Glyngwilym Coal Seam is approximately 0.45m thick and the Hughes Coal Seam is approximately 0.50m thick. Occasionally, the Hughes Coal Seam is shown to split into two seams, both approximately 0.5m thick, with a 2m parting between each seam. The River Tawe flows from northeast to southwest, 35m northwest of the site at an elevation approximately 10m lower than the site.
Ground and groundwater conditions encountered by investigation	The ground conditions as proven by the investigation(s) undertaken at the site comprise: • Made Ground – between 0.00m and 5.30m below ground level (bgl), comprising gravels and clays with demolition rubble, ash, and slag; over

	- Glaciofluvial Deposits – from 5.00m bgl depth unknown, comprising soft to firm light brownish grey slightly sandy slightly gravelly Clay. Sand is fine to coarse. Gravel is fine to coarse sub rounded to rounded of sandstone; over - Brithdir Member – between 4.70m bgl with depth unknown comprising weak light grey to brownish grey fine to coarse grained sandstone. Groundwater was encountered at depths between 5.60m bgl and 6.80m bgl during the investigation. Monitoring of boreholes post-fieldwork showed dry wells within the Made Ground.
GEOTECHNICAL CONCLUSIONS	
Conclusions of geotechnical assessment	Obstructions associated with historic buildings, including foundations, floor slabs and services, should be anticipated. Excavations during investigation were generally stable, although slight spalling should be expected from the Made Ground and within the sands and gravels below the water table. A easement needs to be applied to the feature/mine adit that runs through the site, this easement, should be decided by the asset owner. Water seepages into excavations are likely to be adequately controlled by sump pumping Foundations are recommended to comprise: - Raft foundations (Some or all of the Made Ground might have to be removed/replaced to allow for this option). - Piled foundations. Suspended floor slab because of depth of Made Ground. A design CBR of 3% is recommended. Soakaway drainage is considered unsuitable for this site. Design Sulfate Class - DS-4_ and ACEC Class AC-4_. Equivalent to Design Chemical Class DC-2 for a 50-year design life.
GEO-ENVIRONMENTAL CONCLUSIONS	
Conclusions of contamination Generic risk assessment	Human health: - Lead recorded in excess of the GAC in CP02. Due to hardcover of proposed development not considered a risk to end users. Controlled Waters: - Whilst exceedances of CoPC were recorded within the leachate samples it is deemed that they do not pose a risk to controlled waters based on current development proposals and no further assessment of groundwater is required. Ground gases or vapours: - Moderate risk from ground gases (high carbon dioxide and depleted oxygen) CS2 conditions apply. Radon: - The site is in a Radon Affected Area (1 to 3% of existing homes affected). Water supply pipes: - Brownfield site and the presumption in the guidance is that barrier pipe will be used. However, the investigation and assessment has indicated no significant Contaminants of Concern and as such standard pipework may be suitable for the site following negotiations with the supply company.
Proposed mitigation measures	The mitigation measures proposed to remove unacceptable risks include: - Installation of basic radon protection. - Installation of ground gas mitigation measures to comply with CS2 conditions. Verification of ground gas mitigation measures should be undertaken by a competent third-party specialist following installation of ground gas protection measures.

Waste management	Excavated Made Ground soils to be disposed of as waste, are likely to be classed as Hazardous. Some excavated Made Ground could be classified as non-hazardous, however material would have to be tested in batches to achieve this. Excavated Natural soils to be disposed of as waste, are likely to be classed as Non-Hazardous. However, further testing is required.
<i>FUTURE CONSIDERATIONS</i>	
Further work	Following the ground investigation works undertaken to date, the following further works will be required: • discussion and agreement with utility providers regarding the materials suitable for pipework; • discussions with regulatory bodies and the warranty provider regarding the conclusions of this report; • discussions with piling Contractors regarding conclusions of this report and design of the piles; • provision of geotechnical design for the Category 2 structures (earthworks, retaining, floor slabs, foundations etc.) (if a raft option is chosen); • Additional expansive slag testing maybe required if the Made Ground is going to be re-used as structural fill on site. • CCTV survey of feature/mine adit on site to determine its extent. • Discussion with relevant bodies to determine ownership and maintenance of this feature. • Materials Management Plan might be required if Made Ground is to be re-used as part of a raft foundation solution.

This Executive Summary forms part of Hydrock Consultants Limited report number 15297-HYD-XX-XX-RP-GE-1002 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In April 2020, Hydrock Consultants Limited (Hydrock) was commissioned by McDonald's Restaurants Limited (McDonald's) (the Client) to undertake a desk study (Ref:15297-HYD-XX-XX-RP-GE-1001_S2_P1 Issued 22nd May 2020) at Tesco's Superstore, adjacent to A4067, Alltwen, Pontardawe, Neath Port Talbot, SA8 3AZ. The site is currently the car park for the Tesco Superstore, 140m southwest of the site.

This Phase 1 Desk Study Ref: (15297-HYD-XX-XX-RP-GE-1001_S2_P1) recommended intrusive investigation to determine geo-environmental and geotechnical risks to the proposed development. This Phase 2 Ground Investigation report should be read in conjunction with the Phase 1 Report, with pertinent sections of the Phase 1 report repeated in this Phase 2 report for consistency.

In April 2021, Hydrock Consultants Limited (Hydrock) was commissioned by McDonald's Restaurants Limited (McDonald's) (the Client) to undertake a Phase two Ground Investigation Report (GIR) at Tesco's Superstore, adjacent to A4067, Alltwen, Pontardawe, Neath Port Talbot, SA8 3AZ. The site is currently the car park for the Tesco Superstore, 140m southwest of the site.

Hydrock understands that the proposed development is to comprise a new McDonald's Restaurant; approximately 28 parking spaces will be reallocated from the existing Tesco car park for McDonald's customers to use. A proposed development layout (Drawing: 'Proposed McD Plan'; 5029 Pontardawe; Dwg. No. 5029FEASpg5, Phase 1, Issue 6). Site feasibility plan, 6882-SA-XXXX-SK09. Site layout plan 6682-SA-XXXX-AL01 are presented in Appendix A.

The phase 2 intrusive works and reporting have been undertaken in accordance with Hydrock's proposal (Ref: McDonald's Pontardawe Geo Fee Proposal, dated 6th April 2021) and the Client's instructions to proceed (Ref: email, dated 29/04/2021).

1.2 Objectives

The works have been commissioned to support the planning application and provide initial information for design.

The objective of the Phase 2 Ground Investigation is to update the Preliminary Site Conceptual Model from the Phase 1 Ground Conditions Desk Study report and to identify key geo-environmental and geotechnical risks to the proposed development.

1.3 Scope

This report includes a Phase 2 Ground Investigation the scope of which is as follows;

- a ground investigation including trial pitting, cable percussion drilling and TRL DCP testing to:
 - obtain data on the ground and groundwater conditions of the site;
 - allow collection of samples for geotechnical and chemical laboratory analysis;
 - allow geotechnical field tests to be undertaken;
 - install gas and groundwater wells;
- gas concentration and groundwater level monitoring;
- geotechnical and chemical laboratory analysis;

- updating of the preliminary Ground Model;
- preparation of a geotechnical risk register;
- presentation of an initial geotechnical design recommendations;
- formulation of an updated Conceptual Site Model (CM), including identification of plausible pollution linkages;
- completion of a generic quantitative risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime;
- discussion of potential environmental liabilities associated with land contamination (soil, water and gas); and
- identification of outline mitigation requirements to ensure the site is 'suitable for use'.

1.4 Available information

The following have been provided to Hydrock by McDonald's for use in the preparation of this report:

- Tesco Stores Limited, 11th October 2019, 5029_Pontardawe_McD_RDG1 Approved Feasibility Pack, 5023FEASPG5 Issue 6.
- Scurr Architects, March 2020, Tesco, Gwyn's Drift Pontardawe 'Site Location Plan', on behalf of McDonald's Restaurants Limited. Dwg. No. 6682-SA-XXXX-AL01.
- Scurr Architects, November 2013, Tesco, Gwyn's Drift Pontardawe Site 'Key Site Plan', on behalf of McDonald's Restaurants Limited. Dwg. No. 6682-SK-002.

It has been assumed that the Client has commissioned or obtained assignment of the above documents and that Hydrock is entitled to full reliance upon their contents.

The following documents have been reviewed by Hydrock from the Neath Port Talbot County Borough Council Planning portal for use in the preparation of this report:

- SKM; 13th June 2008, Tesco Store, Gwyn's Drift Pontardawe Extension; Geotechnical Report Adoptable Works; Project No. SE1418,2 Issue A. Planning No. P2008/0708.
- John Grimes Partnership; Tesco Stores Limited Pontardawe; Areas of required excavation due to lead and arsenic exceedance, dated April 2005; Job No. 3920; Dwg No. 04; Planning No. P2005/0756.
- John Grimes Partnership; Tesco Stores Limited Pontardawe; Contoured surface lead concentrations, dated April 2005; Job No. 3920; Drawing No.03; Planning No. P2005/0756.

John Grimes Partnership were contacted with regards to the reports that they had compiled for the site and were able to send across a copy of their report which has been used in the preparation of Hydrock's report:

- John Grimes Partnership, Quantitative Risk Assessment for Contamination Land adjacent to A4067, Pontardawe. 28th April 2004 Job No. 3920.

Hydrock acknowledge that these documents are not assigned to the Client, and these have been used for information purposes only. No formal reliance has been placed upon their contents.

1.5 Regulatory context and guidance

The investigation work has been carried out in general compliance with recognised best practice, including (but not limited to) BS 5930:2015, BS 10175:2011+A2:2017 and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The geo-environmental section of this report is written in broad accordance with BS 10175:2011+A2:2017, 'Land Contamination: Risk Management' (LCRM, 2019) and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The methods used follow a risk-based approach, the first stage of which is a Phase 1 desk study and field reconnaissance, with the potential geo-environmental risk assessed qualitatively using the 'source-pathway-receptor contaminant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990). Potential geotechnical risks are also assessed.

Phase 2 comprises intrusive ground investigation work and testing. The factual information from Phase 1 and Phase 2 are used to develop the Conceptual Model (CM). This CM is based on a ground model of the site physical conditions and an exposure model of the possible contaminant linkages. The CM forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines. This GQRA might lead to more Detailed Quantitative Risk Assessment (DQRA).

Professional judgement is then used to evaluate the findings of the risk assessments and to provide recommendations for the development.

The geotechnical section of this report is prepared in general accordance with BS EN 1997-1+A1: 2013, BS EN 1997-2:2007 and BS 8004:2015. This report constitutes a Ground Investigation Report (GIR) as described in Part 2 of Eurocode 7 (BS EN 1997-2) (EC7). However, it is not intended to fulfil the requirements of a Geotechnical Design Report (GDR) as specified in EC7.

Where relevant the NHBC Standards (2021), have also been applied.

The geo-environmental and geotechnical aspects are discussed in separate sections. Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. Designers should take all aspects of the investigation into account.

Remaining uncertainties and recommendations for further work are listed in Section 8 and Section 9.

Reference to the details of the approach and the methodologies adopted are provided in Appendix I.

2. PHASE 1 STUDY

2.1 Introduction

Hydrock has undertaken a Phase 1 Ground Conditions Desk Study for the site in May 2020 (15927-HYD-XX-XX-RP-GE-1002_S2_P1). It is summarised below for completeness but the full report should be referred to.

2.2 Site location

The site is located at Tesco's Superstore, adjacent to A4067, Alltwen, Pontardawe, SA8 3AZ. The site is located between the A4067 and the River Tawe, within the car park of the Tesco's Superstore. The National Grid Reference of the approximate centre of the site is 272290E, 203500N.

2.3 Site description

The site is roughly rectangular in shape, measuring approximately 60m northeast to southwest by 50m northwest to southeast, with an area of approximately 0.31 ha.

The site is currently a car park for the Tesco superstore to the southwest. The asphalt car park was visually in good condition with few repairs and no obvious cracking or settlement. A set of high-voltage overhead powerlines cross the site from the east corner to the west corner. In the north-easternmost car parking spaces there were a set of large manhole covers. Water could be heard flowing beneath these covers, suggesting they may be related to the drainage of the car park and could possibly relate to one of the recorded historic mine adits.

2.4 Site history

Review of historical Ordnance Survey (OS) mapping indicates:

- The site was recorded as 'old coal level' with spoil heaps noted on the maps indicating coal mining operations being undertaken on site.
- By 1961, no buildings are noted on site with a footpath crossing through the site. Overhead power lines are shown to cross the site.
- By 2009, the Tesco Superstore is visible on OS mapping and is recorded as per the layout seen in 2020.
- The surrounding area saw many chemical works and tin plate works, to the northeast and northwest of the site in the 1880s. However, by 1961, these operations had largely stopped and both sites have since been redeveloped.

2.5 Geology

The geology at the site consists of Made Ground over Devensian Glaciofluvial Deposits (sand and gravel), underlain in turn by bedrock geology of the Carboniferous Brithdir Member, comprising mudstone, siltstone and sandstone. The (younger) Hughes Member (sandstone), which overlies the Brithdir Member, outcrops adjacent to the south of the site.

Alluvium, comprising clay, silt, sand and gravel, is mapped adjacent to the north of the site.

Two coal seams are mapped to the south of the site, the Glyngwilym Coal Seam is mapped within the Brithdir Member, whereas the Hughes Coal Seam is mapped on the boundary between the Brithdir and Hughes Member. The Glyngwilym Coal Seam is approximately 0.45m thick and the Hughes Coal Seam is

approximately 0.50m thick. Occasionally, the Hughes Coal Seam is shown to split into two seams, both approximately 0.5m thick, with a 2m parting between each seam.

A number of borehole logs from the BGS archive have been reviewed and are included in Appendix D for reference. Selected records are summarised below:

- BH59A (dated 24/04/1985), located 20m to the east of the site on the A4067 roundabout (NGR: 272349E, 203491N, 36.95m AOD), drilled to a depth of 6.00m bgl (30.95m AOD) and recorded:
 - Made Ground (ash and brick) between ground level and 1.00m bgl;
 - Hard grey Sandstone, between 1.00m and 4.00m bgl (Brithdir Member); and
 - Void (void possible workings) between 4.00m and 6.00m bgl. Void inspected by use of down the hole video camera.

Anthony Hunt Associates Limited; Ground Investigation at Gwyns Drift, Pontardawe, Structural Soils Limited; Report No. 31070, dated July 2004. Two boreholes from this ground investigation, that are relevant to the proposed McDonald's, have been summarised below:

- BH103 (dated 19/11/2003) located on the east corner of the proposed McDonald's site, drilled to a depth of 5.00m bgl (31.56m AOD), recorded: Made Ground, consisting of soft to firm black grey gravelly clay with fragments of brick and coal from ground level (36.56m AOD) to 4.70m bgl (31.86m AOD). Strong grey sandstone was recorded beneath the Made Ground, between depths of 4.70m bgl and 5.00m bgl.
- BH104 (dated 21/11/2003) located on the southern corner of proposed McDonald's site, drilled to a depth of 9m bgl (27.35m AOD), recorded: Made Ground, consisting of soft to firm ashy gravelly clay, including clinker, brick, concrete, and coal, from ground level (36.35m AOD) to 7.5m bgl (27.85m AOD). Medium dense to very dense sand and gravel (Glaciofluvial Deposits) were recorded between 7.5m bgl (27.85m AOD) and 9.00m bgl (27.35m AOD). This borehole refused within the Glaciofluvial Deposits.

2.6 Coal mining

The Coal Authority online viewer (<http://mapapps2.bgs.ac.uk/coalauthority/home.html>) indicated that two coal seams (that have been worked) outcrop to the south of the site (both within the Tesco car park, and south of the A4067) and these off-site areas have been classified as development high risk areas. It also indicated that three mine entries are located on the northeast boundary of the site (Ref: 272203-007 'Ynysfechan Outfall; 272203-008 and; 272203-014 'Ynysfechan Colliery').

A 'Consultants Coal Mining Report' was obtained from The Coal Authority and is included in Hydrock Phase 1 Desk Study Ref (15297-HYD-XX-XX-RP-GE-1001_S2_P1) The reader is referred to this for further information, but the salient details are provided below:

- There are no records of past underground mining;
- There are no probable unrecorded shallow workings;
- There are no outcrops recorded within the site boundary; and
- There are three mine adits on/or immediately adjacent to the northeast boundary; these are listed in Table 2.9, below.

Table 2.9: Mine Entries

Entry Type	Reference	Grid Reference	Treatment Description	Mineral	Location
Adit	2772203-007	272308E, 203538N	This adit was investigated by West Glamorgan County Council as part of the A4067 Swansea Valley Trunk Road Scheme in 1987. Drainage works were undertaken as part of the treatment works.	Coal	Site Boundary
Adit	272203-008	272328E, 203512N	This adit was investigated by West Glamorgan County Council as part of the A4067 Swansea Valley Trunk Road Scheme in 1987. Drainage works were undertaken as part of the treatment works.	Coal	Site Boundary
Adit	272203-014	272336E, 203545N	No Description.	Coal	Beneath Petrol Filling Station

The BGS borehole record 'BH59A' was drilled in 1985, prior to the A4067 trunk road scheme, in the vicinity of the A4067 roundabout, adjacent to the northeast of the site. This borehole located a void, between 4m and 6m below ground level, that is potentially related to one of the adits or underground working.

The elevation of the void found in BH59A between 32.95m and 30.95m, is below the elevation of the site (33/34m OD), but given that we know the site has been worked, then reprofiled, we can conclude that this void (likely working and/or adit) is associated with the old coal level beneath the site.

BH103 recorded Made Ground to a depth of 31.86m AOD on to sandstone bedrock on-site in the vicinity of the coal adits suggesting that significant reprofiling of the site has been undertaken on site and any shallow coal on site relating to the Glyngwilym seam has been removed and replaced with Made Ground.

Following the completion of the Phase 1 Desk Study, Hydrock were commissioned to enquire further about adit treatment plans. Hydrock have contacted the following Local Authority and Government bodies regarding this information, all of which have checked their archives and do not have the drawings in question. The emails are in Appendix B.

- Neath Port Talbot County Borough Council (Environmental Health Officer) Planning and Public Protection;
- Swansea Council Planning Department;
- Traffic Wales; and
- West Glamorgan Archive Service.

Hydrock also contacted Neath Port Talbot County Borough Council Planning Department, who responded by email on Thursday 7th October 2021. The planning officer had found drawings relating to the drainage plans of the construction of the A4067 and uploaded them to the planning portal.

The following drawings have been downloaded from the planning portal (planning reference P2008/0708) having been appended to **'SKM; 13th June 2008, Tesco Store, Gwyn's Drift Pontardawe Extension, Geotechnical Report Adoptable Works; Project No. SE14182; Issue A'**

- 26.1349/S.I.12 'Abandoned Coal Workings' dated 02/1985

- 26.1349/SU3 Statutory Undertakers Apparatus dated 05/1986
- 26:1349/SU/N1 Treatment of NCB. Adit Dated 11/1986
- 26.1349/D3A Drainage layout and schedules dated 11/1985
- 26/1349/D7A Drainage details sheet 3 of 3 dated 11/1986.

These drawings have been included in Appendix A for reference. These plans show that during the construction of the A4067 the Adit (Adit 007 and Adit 008) relate to the same Adit and were located and found to be discharging onto the Gwyn's drift site (proposed McDonalds Site). These adits were treated in order to maintain the stability of the A4067, the treatment in 1986 consisted of sinking two manholes MH4 and MH5 into the Adit and lining it with a 900mm diameter concrete pipe. From these drawings it is believed that Headwall S4 is the man hole covers seen in Photo 4 of the desk study photographs and within the site boundary. The Headwall S4 was the main outfall for this 900mm pipe during the construction of the A4067 and a 29m long ditch was excavated from this headwall to the River Tawe to allow the adit to drain into the River Tawe. It is unclear what happened after the construction of the Tesco Car Park and a full CCTV survey of this feature will be required and discussions regarding the responsibility of maintenance of these features will be required between parties.

The 'SKM; 13th June 2008, Tesco Store, Gwyn's Drift Pontardawe Extension, Geotechnical Report Adoptable Works; Project No. SE14182; Issue A' report references a validation report prepared by John Grimes Partnership. This validation report has not been reviewed however the risk table from this validation report was summarised in the above geotechnical report. In this risk table it states the following;

'Although the quality of the discharge was confirmed good, the possibility of cyclic changes was taken into consideration and the discharge was diverted to a new river outfall via a limestone treatment bed and aeration cascade'

This statement indicates that the mine adit has been remediated past the works undertaken by the A4067 construction and outfalls into the River Tawe via some form of treatment process. However, the location of this treatment is unknown and no verification report has been found to determine the extent of this mine adit outfall treatment.

The ground conditions described within the SKM report suggest that no coal seams were encountered beneath the site and that thick Made Ground and superficial deposits were encountered.

No planning condition was put against the Tesco development (Planning Condition P2003/0825); however, a note to the developer was put against underground mining and read as follows:

'Underground mining operations may be been prospected beneath this site and the developer is advised to seek appropriate technical advice in order to decide what precautions if any need to be taken to reduce the risk of damage from subsidence'.

To conclude; the desk study information indicates that coal seams outcrop outside of the site boundary and shallow worked coal seems are unlikely to present on-site and therefore unlikely to pose a risk to the proposed development. The main risk is related to the recorded adits, and the condition of them following construction of the A4067, and the Tesco Superstore and car park.

2.7 Hydrogeology & Hydrology

The Glaciofluvial Deposits comprise a Secondary A Aquifer and the Brithdir Member is also a Secondary A Aquifer. The site is not within a Source Protection Zone.

The River Tawe flows from northeast to southwest, 35m northwest of the site at an elevation approximately 10m lower than the site.

3. GROUND INVESTIGATIONS

3.1 Investigation rationale

The ground investigation rationale was based on the findings of the preliminary risk assessment and is summarised in Table 3.1.

For the investigation rationale of the historical investigations, please refer to the historical reports in Hydrock Phase 1 report (15297-HYD-XX-XX-RP-GE-1001_S2_P1).

Table 3.1: Investigation rationale

Location	Purpose
TP 01-04	To investigate composition of Made Ground and to allow collection of samples for contamination testing.
CP01-02	To assess deeper ground conditions and to allow SPTs to be undertaken. To allow collection of samples for geotechnical characterisation. To allow collection of samples for contamination testing. Installation of gas and groundwater monitoring wells.

3.2 Site works

The fieldwork took place between 24th August 2021 and 27th August 2021 and is summarised in Table 3.2. The approximate ground investigation locations have been positioned using a hand-held GPS and are shown on the Exploratory Hole Location Plan (Hydrock Drawing 15297-HYD-XX-XX-DR-GE-1004) in Appendix A.

The logs, including details of ground conditions, soil sampling, *in situ* testing and any installations, are also presented in Appendix B.

The weather conditions during the Hydrock fieldwork and for the previous week were sunny.

Table 3.2: Summary of site works

Activity	Method	No.	Depth Maximum (m bgl)	<i>In situ</i> tests	Notes (e.g. installations)
<i>Drilling, Pitting and Probing</i>					
Boreholes	Cable percussive	2	7.30	SPT	50mm wells with gas taps in 2 holes
Trial pits	Machine (JCB 3X)	4	2.20		
Probe	TRL dynamic cone penetrometer	2	0.75	California Bearing Ratio (CBR)	

Wells for monitoring groundwater levels and ground gas concentrations, were installed in all of the cable percussion boreholes. A summary of the monitoring well installations is presented in Table 3.3.

Table 3.3: Summary of monitoring installations

Location	Ground level (m OD)	Standpipe diameter	Screen top and base depth (m bgl)	Screen top and base elevation (m OD)	Strata targeted
CP01	33.60	50	3.00 to 5.00	30.60 to 28.60	Made Ground.
CP02	32.86	50	1.00 to 4.00	31.86 to 28.86	Made Ground

3.3 Geo-environmental testing

3.3.1 Sampling strategy and protocols

Exploratory hole positions were determined by reference to the site conditions and uncertainties identified in the Initial Conceptual Model.

No specific features were identified during the desk study as requiring targeted investigation and a reasonably even spacing was used. No specific sampling statistics or grid were utilised in this instance.

Samples were taken, stored and transported in general accordance with BS 10175:2011+A2:2017.

3.3.2 Geo-environmental monitoring

Gas monitoring boreholes have been monitored on four occasions. The results are presented in Appendix D. Monitoring is ongoing and this report will be updated on completion of the monitoring.

3.3.3 Geotechnical monitoring

No geotechnical monitoring equipment was installed during the ground investigation.

3.3.4 Geo-environmental laboratory analyses

The chemical test certificates for testing undertaken by Hydrock are provided in Appendix E. Wherever possible, UKAS and MCERTS accredited procedures have been used.

The geo-environmental tests undertaken as part of historical investigations are provided in the relevant reports in Hydrock Phase 1 report (15297-HYD-XX-XX-RP-GE-1001_S2_P1).

The geo-environmental analyses undertaken on soils are summarised in Table 3.4.

Table 3.4: Geo-environmental analyses of soils

Determinands Suite	Made Ground	Glaciofluvial Deposits	Brithdir Member
Hydrock Data			
Hydrock minimum suite of determinands for solids*	13	2	0
Speciated aliphatic and aromatic banding Total petroleum hydrocarbons by HS-GC/MS and GC/FID (Hydrock Tier 2 TPH Suite)	3	0	0
Hydrock default leachate suite	6	0	0
*Hydrock minimum soil suite comprises: As, B (water soluble), Be, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, S (elemental), Se, V, Zn, cyanide (total), sulfide, pH, asbestos fibres, speciated polynuclear aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon			

The soils chemical test data (including both Hydrock and historical data) are interpreted and assessed in Sections 6.3 and 6.4.

3.4 Geotechnical testing

3.4.1 Geotechnical laboratory testing

The geotechnical tests undertaken by Hydrock are summarised in Table 3.5 and the test certificates are provided in Appendix C. Wherever possible, UKAS accredited procedures have been used.

The geotechnical tests undertaken as part of historical investigations are provided in the relevant reports in Hydrock Phase 1 report (15297-HYD-XX-XX-RP-GE-1001_S2_P1).

Table 3.5: Summary of sample numbers for geotechnical tests

Test	Made Ground	Glaciofluvial Deposits	Brithdir Member
<i>Hydrock data</i>			
Natural moisture content	2	2	0
Atterberg limits	2	2	0
Particle size distribution wet sieve	7	3	0
Particle size distribution sedimentation	0	1	0
Sulfate and aggressive chemical environment classification for buried concrete classification (full BRE SD1 suite)	8	2	0

The geotechnical test data (including both Hydrock and historical data) are summarised in Section 4.6 and interpreted in Section 5.

4. GROUND INVESTIGATION RECORDS AND DATA

4.1 Physical ground conditions

4.1.1 Summary of strata encountered

The following presents a summary of the properties of the ground and groundwater conditions encountered, based on field observations, interpretation of the field data and laboratory test results, taking into account drilling, excavation and sampling methods, transport, handling and specimen preparation.

All relevant data from the Hydrock investigation discussed in Section 3 as well as any reliable data from previous investigations noted in Section 1.4 and discussed in Section 2 are used from this point forward.

Details of the Hydrock ground investigation works are provided in the logs in Appendix B, previous data are provided in Hydrock Phase 1 report (15297-HYD-XX-XX-RP-GE-1001_S2_P1), a summary of the ground model is presented in Table 4.1 and the individual strata are described in the sections below. Relevant cross-sections / contour plans are presented in Appendix A.

Table 4.1: Strata encountered

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Thickness (m)	Thickness (m) (average)
Surface Cover – bituminous bound pavement hardstanding	0.00	0.20	0.20	0.125
‘Sub-Base’ Made Ground	0.05	0.80	0.75	0.32
‘General Made Ground	0.20	4.70 to 5.30	5.10	4.65
Glaciofluvial Deposits	4.70 to 5.30	>X	>X	Not proven
Brithdir Member	4.70 to 7.20	>X	>X	Not proven

Asphalt was recorded in all locations with a sub base beneath. Made Ground was recorded beneath the sub-base with the depth of the Made Ground only proven in the boreholes drilled on site. Glaciofluvial deposits were encountered in both boreholes with the Brithdir Sandstone Member only encountered in CP02. The density of the sands and gravels encountered prevented the base of the Glaciofluvial deposits was not proven in CP01 due the

4.1.2 Surface covering

The site was covered with asphalt consisting of weak black macadam, 70-80% aggregate of angular fine to coarse gravel with <5% voids.

4.1.3 Made Ground

In general, there are 2 main types of Made Ground:

- ‘Sub-Base’ Made Ground, across the whole of the site to depths of between 0.05m and 0.80m, with an average thickness of 0.32m. Comprises a grey to black slightly silty/clayey sandy Gravel. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone and slag, with occasional cobble.
- ‘General’ Made Ground, across the whole of the site to depths of between 0.20m and 5.30m, with an average thickness of 4.65m. Comprises a mixture of silty and/or sandy clay, with fragments of brick, slag, glass and concrete.

Whilst slag was encountered on site within all exploratory holes the quantity and age (weathering) of the slag is not considered to pose a significant risk of expansion to the proposed development. However, if the Made Ground is to be re-used as part of earthworks on site, then additional slag expansion testing may be required in accordance with the Specification for Highways Series 600.

4.1.4 ‘Glaciofluvial Deposits’

‘Glaciofluvial Deposits’ were encountered underlying the Made Ground across the whole of the site. ‘Glaciofluvial Deposits’ were between 5.0m and 9.00m thick.,

This generally consisted of loose light greyish brown silty/clayey SAND. Sand is fine to coarse. Which progresses to a dense sandy GRAVEL at depth.

4.1.5 ‘Brithdir Member’

‘Brithdir Member’ was encountered underlying the Glaciofluvial Deposits across the site. The thickness of the strata is unknown, as the base of the unit has not been identified.

This generally consisted of weak light grey to brownish grey fine to coarse grained sandstone.

4.2 Obstructions

Obstructions were encountered in one trial pit during the investigation. These intrusive locations are summarised in Table 4.2.

Table 4.2: Obstructions encountered

Stratum	Location	Depth (m bgl)	Description
Made Ground	TP02	1.20	Brick feature.

4.3 Visual and olfactory evidence of contamination (soil)

In addition to the more common man-made constituents (ash, slag, glass, etc), described above in Section 4.1.3, a burnt charcoal odour was noted within the Made Ground in CP02 at 3.00m bgl.

4.4 Groundwater

4.4.1 Groundwater observations and levels

Groundwater encountered during the investigation is listed in Table 4.3. A groundwater observation represents the depth at which groundwater was first observed and is likely to be deeper than the actual water table level at that location.

Table 4.3: Groundwater occurrence

Stratum	Date	Location	Fieldwork		Comment
			Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
Made Ground	25/08/2021	TP04	1.0	0.7	Major groundwater inflow.
Glaciofluvial Deposits	25/08/2021	CP01	6.80	5.90	Groundwater rises in borehole.
Glaciofluvial Deposits	25/08/2021	CP02	5.60	4.80	Groundwater rises in borehole.

4.4.2 Groundwater summary

In general, the groundwater beneath the site sits within the Glaciofluvial Deposits around 5-6m bgl. There are some pockets of groundwater within the Made Ground.

4.5 Ground gases (carbon dioxide and methane)

Records from the gas monitoring boreholes are presented in Appendix D and summarised in Table 4.4.

To date four monitoring visits have been undertaken, with a no further visits to be undertaken as part of this commission. The data are assessed in Section 6.6.

Table 4.4: Range of ground gas data

Stratum	Methane (%)	Carbon dioxide (%)	Oxygen (%)	Steady flow rate (l/hr)	Comment
General Made Ground	0.3	14.7	0.1 to 2.0	0.4	4 of 4 monitoring rounds undertaken.

4.6 Geotechnical data

4.6.1 Introduction

Laboratory test results are contained in Appendix C with *in situ* test results shown on the relevant exploratory hole log or datasheet in Appendix B. The following sections summarise the main findings and provide interpretation where appropriate.

4.6.2 Plasticity

The volume change potentials in terms of BRE Digest 298 with respect to building near trees have been determined from the results of plasticity index tests on samples of soil. These are summarised in Table 4.5.

Table 4.5: Volume change potential

Stratum	No. of tests	Plasticity Index			Modified Plasticity Index			Plasticity designation	Volume Change Potential
		Min.	Max.	Av.	Min.	Max.	Av.		
Made Ground	2	17	37	27	11	27	19	Low - High	Low - Medium
Glaciofluvial Deposits	2	18	26	22	18	23	21	Intermediate	Low - Medium

Whilst the volume change potential is low-medium it is considered that due to the amount of gravel encountered in both the Made Ground and Glaciofluvial Deposits that a volume change potential of Low is more appropriate.

4.6.3 Particle size distribution

Particle Size Distribution test (PSDs) results are summarised in Table 4.6 and summary descriptions and PSD plots of the material analysed are presented in Appendix C.

Table 4.6: PSD results summary

Stratum	Depth (m)	Silt/Clay %	Sand %	Gravel %	Cobbles %	General description
Made Ground	0.30-0.50	4	12	50	34	Grey slightly silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles
Made Ground	2.00-2.45	50	32	18	0	Grey fine to coarse gravelly fine to coarse sandy SILTY/ CLAY
Made Ground	3.00-3.45	10	53	37	0	Brown silty/ clayey fine to coarse gravelly fine to coarse SAND
Made Ground	0.45-0.65	13	22	56	9	Grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles
Made Ground	1.25-1.65	19	31	44	6	Brown/ grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles
Made Ground	0.50-0.80	13	22	65	0	Grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL
Made Ground	0.80-0.90	51	35	14	0	Grey fine to coarse gravelly fine to coarse sandy SILTY/ CLAY
Glaciofluvial Deposits	6.00-6.45	49	51	0	0	Grey silty clayey fine to coarse SAND
Glaciofluvial Deposits	5.0-5.45	48	52	0	0	Grey silty/ clayey fine to coarse SAND
Glaciofluvial Deposits	5.55-5.95	4	14	82	0	Brown/ grey slightly silty/ clayey fine to coarse sandy fine to coarse GRAVEL

4.6.4 Relative density

Table 4.7 summarises information pertaining to the relative density of the granular soils according to geological stratum. Factual results are summarised for laboratory tests, field tests (e.g. SPT, CPT, dynamic probe correlation).

Table 4.7: Relative density results and derived values

Stratum	No. of tests	Method	SPT (N-value) (Range)	$\phi' (^{\circ})$
Made Ground	19	SPT – cable percussion (Peck et. al. (1967).	6 – 46	32-36
Glaciofluvial Deposits	6	SPT – cable percussion (Peck et. al. (1967).	29 – 240*	36-44

*Extrapolated SPT N value.

4.6.5 Subgrade stiffness

The subgrade stiffness (CBR) results are summarised in Table 4.8.

Table 4.8: CBR results and derived values

Stratum	No. tests	Method	CBR (%) (Range)
Made Ground	2	TRL-DCP Probe	12-47

Other TRL-DCP locations were attempted however the gravel and cobble content of the Made Ground prevented the progression of the probe.

4.6.6 Sulfate content

In accordance with BRE (Special Digest 1), the Design Sulfate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in Table 4.9. The assessment summary sheet is presented in Appendix C.

Table 4.9: Aggressive chemical environment concrete classification

Stratum	No. tests	DS	ACEC
Made Ground	8	DS-4 m	AC-4m
Glaciofluvial Deposits	2	DS-1	AC-1

5. GEOTECHNICAL ASSESSMENT

5.1 Geotechnical categorization of the proposed development

Eurocode 7, Section 2 advocates the use of geotechnical categorization of the proposed structures to establish the design requirements.

The proposed development is to comprise a low-rise commercial McDonalds restaurant with drive through; associated areas of hard landscaping and car parking. A preliminary review of the site shows a retaining wall to the north west of the site. However, due to the current position of the proposed building this retaining wall does not affect the development. Based on the drawings in Appendix A and shown on drawing 15297-HYD-XX-XX-DR-GE-1008 it is assumed that a culverted mine adit is positioned on site and acts as drainage for the A4067. Further investigation including a CCTV of this feature is required to determine its actual orientation and condition.

Based on the deep Made Ground encountered the culverted mine adit and, for the purposes of this investigation, the proposed structures have been classed as Geotechnical Category 2. For Category 2 structures, the Geotechnical Category should be re-assessed at the design stage and specific geotechnical design (in addition to this investigation), is required.

Following ground investigation and as part of the assessment provided in the following section, the preliminary geotechnical hazard identification undertaken in Appendix G has been updated.

Assessment has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The preliminary Geotechnical Risk Register following investigation is provided in Appendix G (Table J.3) and will need to be updated during future design works.

5.2 Characteristic design values

In accordance with BS EN ISO 1997-1 (EC 7), Hydrock consider the proposed structures would be classified as Category 2 structures. As part of the separate geotechnical design, the designer should determine the geotechnical design values.

Table 5.1 provides characteristic geotechnical values to assist the designer. These are based on laboratory testing, *in situ* testing and by professional judgement using published data together with knowledge and experience of the ground conditions. Care should be exercised in using these assumed soil strength parameters for any purpose beyond the scope of this report because it may be that additional sampling and testing are required for certain purposes. The reader should refer to the original test results summarised in Section 4 and provided in Appendix B and Appendix C.

Table 5.1: Characteristic geotechnical values

Parameter	Bulk unit weight kN/m ³	Effective angle of internal friction °	Effective cohesion kN/m ²	Undrained shear strength kN/m ²	Coefficient of compressibility m ² /MN	Modulus of subgrade reaction (IAN73/06) MN/m ² /m
Stratum	γ^a	$\phi'^{b,c}$	c'^d	c_u^e	m_v^f	k^g
Made Ground	19	30	0	-	-	-
Glaciofluvial Deposits	22	38	0	-	-	-

Parameter	Bulk unit weight kN/m ³	Effective angle of internal friction °	Effective cohesion kN/m ²	Undrained shear strength kN/m ²	Coefficient of compressibility m ² /MN	Modulus of subgrade reaction (IAN73/06) MN/m ² /m
Stratum	γ^a	$\phi'^{b,c}$	c'^d	c_u^e	m_v^f	k^g
a. Estimated based on the recommendations of BS 8004-2015. b. Internal friction (ϕ') values for the granular in situ material derived from SPT data following the recommendations of Peck et al., (1967). c. Internal friction (ϕ') values for the cohesive in-situ material derived from BS 8004-2015, where ϕ_{cv}' is derived from plasticity index. The use of ϕ_{cv}' in the analysis is considered to provide a conservative estimate of ϕ'. d. BS 8002:1994 Code of practice for Earth retaining structures, British Standards institution.						

Due to the limited data from the Brithdir Member no properties can be given for this stratum.

5.3 Groundwork

5.3.1 Site preparation

Buried obstructions were encountered during this investigation associated with a brick feature which could be related to the historic buildings that were on-site. Although this was only encountered in one position there is a possibility of further such obstructions being encountered.

Therefore, it is recommended that an allowance be made for breaking out obstructions, for example provision of pneumatic breakers for site plant. If underground structures cannot be removed, they will need to be surveyed in three dimensions and the new structures will need to be designed to accommodate them.

5.3.2 Groundworks

Following breaking out of hardstanding and obstructions, excavation of shallow soils should be readily undertaken by conventional plant and equipment.

Spalling of trial pit faces was noted during trial pit excavation. This was noted particularly in the Made Ground.

Random and sudden falls should be expected from the faces of near vertically sided excavations put down at the site.

Temporary trench support, or battering of excavation sides, is recommended for all excavations that are to be left open for any length of time and will be required where man entry is required. Particular attention should be paid to excavation at, or close to, site boundaries where collapse of excavation faces could have a disproportionate effect.

A risk assessment of the stability of any open excavation should be undertaken by a competent person and appropriate measures adopted to ensure safe working practice in and around open excavations. Further guidance on responsibilities and requirements for working near, and in, excavations can be obtained from the Construction Design and Management Regulations (2015); Construction Information Sheet 47: Inspections and Reports (2005) and HSG47: Avoiding Danger from Underground Services.

To ensure no loads are imposed on the sides of the excavation, spoil should not be placed immediately adjacent to the excavation. Spoil should be placed a suitable distance from the side of the excavation (as assessed by a competent person).

Based on site observations, the rate of water ingress into the proposed excavations is likely to be moderate. In these circumstances, groundwater control by sump pumping is unlikely to be sufficient. Whilst a significant inflow of perched Made Ground was encountered at TP04 the volume of water is not expected to be significant and sump pumping should be sufficient to dewater this area.

However, it should be recognised that groundwater levels may vary from those at the time of the investigation, for example in response to seasonal fluctuations and the timing of construction may dictate the extent of groundwater control required.

Any water pumped from excavations may need to be passed via settlement tanks (to reduce suspended solids) before being discharged to the sewer. Discharge consents may also be required.

5.4 Slope stability

The proposed location of the McDonalds is away from the existing retaining wall in the northwest of the site which currently supports the existing car park. The current development plans show the area closest to this retaining wall to be the drive through element of the development and therefore the loading scenario is the same as the existing car park. The retaining wall is not considered further in this report and its stability/condition should be assessed by a structural engineer.

If the location of the proposed McDonalds building changes and is moved closer to this retaining wall then further investigation and assessment may be required.

5.5 Mineworking's

Additional information relating to the drainage/construction of the A4067 was obtained from the Neath Port Talbot Council Planning department. The drawings indicated that the mine adit on site was partially lined with a 900mm concrete pipe and allowed to discharge into a 29m long ditch which then drained into the River Tawe. During the construction of the Tesco car park the SKM geotechnical report suggests that this 29m long ditch was further treated/ redeveloped into a limestone treatment bed and aeration cascade, however no validation report was located to confirm this was installed.

It is therefore recommended that a CCTV survey of the feature is undertaken, in order to:

- Determine the extent/orientation of the lined adit spatially; and
- Determine the condition of the adit.

It is expected that the large manhole covers in Photograph 4 of the Desk Study relate to the culverted mine adit within drawing (26:1349/SU/N1 Treatment of NCB. Adit Dated 11/1986). Discussions need to be held with the Local Authority and Tesco's to determine who holds ultimate responsibility for the maintenance of this feature. A no build zone/wayleave should also be attached to this feature to avoid accidental damage during construction and to allow maintenance of this feature without disrupting access to the McDonalds Restaurant. This wayleave should be specified by the owner of the drainage feature/mine adit; however experience suggests this should be at least 3m wayleave from the centre of the feature. Reference to drawing 15297-HYD-XX-XX-DR-GE-1008 in Appendix A which shows the indicative wayleave and the proposed building location. The current building location is very close to this feature/mine adit and this should be considered further following the CCTV survey of this feature.

5.6 Foundation recommendations

In accordance with EC7, BS EN 1997-1+A1 (2013), the proposed McDonalds restaurant building and associated car parking spaces are considered to be Geotechnical Category 2. As such, foundation recommendations are presented to aid development proposals only and separate geotechnical design will be required.

5.6.1 *Foundation Types*

The Made Ground is considered unsuitable in its present condition for use as founding soils on the basis of its unpredictable nature and likely deposition in an uncontrolled manner and should be fully penetrated by all new foundations or excavated, screened, processed and re-engineered to create the development platform.

On the basis of the ground conditions indicated from the current and previous investigation, the foundations will likely comprise:

- Raft foundations for the McDonalds building to sit on top of engineered fill; or
- Piled foundations for the McDonalds building in the centre of the site due to the deep Made Ground.

5.6.2 *Raft foundations*

A raft foundation might be possible with significant earthworks to stabilise the Made Ground beneath the proposed McDonalds building.

If a raft were to be considered it would be necessary to removal of some or all of the Made Ground to install an engineered fill platform for the raft to sit on. The depth of Made Ground removal would be determined during detailed design of this raft foundation. The engineered fill could consist of Class 6F structural fill. The Made Ground excavated on site may be suitable for re-use in this engineered platform however additional laboratory testing, design and assessment would be required to determine the extent of the excavation and replacement and the suitability of the Made Ground as a source material.

Whilst some of the Made Ground has been classified as hazardous it could be retained on site in areas beneath hardstanding or if geotechnically suitable beneath the building footprint.

These works would require the production of a Geotechnical Design Report and a Materials Management Plan prior to commencement.

If a raft foundation is to be considered, further ground investigation assessment targeting the proposed building footprint would be required to confirm a settlement of the raft and the extent of excavation required to limit total and differential settlement.

5.6.3 *Piled foundations*

Piled foundations are a second option for the McDonalds building as there is more than 5m of Made Ground across the site.

Depending on loads and final development layout, the piles should extend through the Made Ground and into the dense Glaciofluvial deposits or the underlying Brithdir Member. The depth and type of the piles should be selected by a specialist piling contractor.

Driven piles could be suitable for the development but localised pre drilling might be required if obstructions are encountered. If driven piles are not suitable then bored piles, or continuous flight auger (CFA) with the use of casing should be suitable to support the foundations for the structure. However, the choice of piling system should be undertaken by a specialist piling Contractor and the design of piles is beyond the scope of this report. The decision on pile type and design should take into account the following factors relevant to the site:

- Obstructions in the ground are expected from the historic brick feature in TP02, which could cause piles to stop shallower than the design depths, or to deviate from the vertical. Pre drilling or removal of any obstructions is recommended in order to prevent early pile refusal. In some circumstances, obstructions can lead to pile breakage.
- Pile installation can create preferential pathways for the migration of contaminants to the groundwater.
- Boring of piles through coarse soils can result in loosening of the material, with resultant risk of shaft collapse prior to concreting and reduced shaft friction.
- Groundwater levels are at a depth of 5.60-6.80m bgl and temporary casing may be required. If CFA piles are used, concrete is placed as the auger is withdrawn, which can balance the water pressure if the operation is undertaken carefully.
- Piles should extend a minimum of five pile diameters into the bearing stratum to mobilise sufficient shaft friction and end-bearing resistance to carry the required loads without unacceptable settlement.
- Collapse of the pile shaft can be caused by 'necking' of the pile in running sand conditions, leading to pile failure.

5.6.4 *Foundation works risk assessment*

A foundation works risk assessment is likely to be necessary for piling as there is a possibility that this could lead to creation of new pathways for migration of contamination and may result in a significant increase in risk of pollution to Controlled Waters.

The foundation works risk assessment should be undertaken in accordance with the risk assessment flowchart from National Groundwater & Contaminated Land Centre Report NC/99/73 (figure 6.1) and will need to identify what additional risks to the environment piling may introduce and if necessary, identify mitigation measures that will need to be put in place to remove any significant adverse environmental impacts.

5.6.5 *Working platform*

For piling, a working platform will be required prior to the arrival on site of tracked plant. This should be designed and installed in accordance with BR470 (BRE 2004) based on the piling plant in accordance with an FPS certificate for the rig loadings.

5.6.6 *Earthworks/reuse of site-won materials*

If the raft foundation option is preferred then extensive earthworks will be required. This will mean that, supplementary earthworks testing and an earthworks Specification will be necessary to ensure the appropriate management and reuse of the existing soils.

Whilst no specific earthworks testing has been undertaken, it is understood that cut and fill exercise would be required if a raft foundation option is chosen. Review of geotechnical data (see Section 4.6 and Appendix C) coupled with Hydrock's experience, indicates that:

- Following processing to remove/crush of oversize and deleterious material the Made Ground should be suitable for reuse as Class 1 (Granular) general fill;
- Due to the Glaciofluvial Deposits being encountered at greater than 5m bgl it is unlikely that significant volumes of natural material will be realised. However, of the Glaciofluvial Deposits are likely to be Class 2 (Cohesive) with the deeper Glaciofluvial Deposits are likely to be Class 1 (Granular). The cohesive deposits are likely to be 'wet' of Optimum Moisture Content.

5.7 Ground floor slabs

Raft Option

Subject to geotechnical design and on the basis that excavation and replacement of the Made Ground will be undertaken and all structural fill will be placed strictly in accordance with an appropriate Earthworks Specification, then ground bearing floor slabs may be adopted. The ground bearing floor slab should incorporate any ground gas mitigation measures. However, further assessment may deem that the amount of settlement is too excessive and a raft and ground bearing floor slab are not viable.

The floor slab should be designed by a structural engineer and a limit state assessment undertaken as part of the geotechnical design.

Prior to the placement of the founding materials and the construction of the ground bearing floor slab, the sub-formation and formation will need to be inspected and checked by a competent person to ensure the ground conditions at time of construction are consistent with the Specification and the design parameters derived from this ground investigation. Testing should be undertaken in accordance with The Concrete Society Technical Report 34 (The Concrete Society 2013) and DMRB IAN 73/06. It is recommended that the verification of the sub-formation and formation include, as a minimum, the measurement of modulus of sub-grade reaction (k) determined by static plate load testing.

Pilling Option

A suspended floor slab option is required if pilling the McDonalds due to the thick Made Ground. The suspended slab should incorporate any ground gas mitigation measures that might be required as discussed in Section 6.6.

The floor slab should be designed by a structural engineer and a limit state assessment undertaken as part of the geotechnical design.

5.8 Roads and pavements

Based on the test results and subject to *in situ* testing during construction, it is considered likely an equilibrium CBR of 3% will be achievable over the majority of the site.

Proof rolling of the formation level will be required and any loose or soft spots should be removed and replaced with an engineered fill, in accordance with a suitable Specification. The formation level will also need to be protected during inclement weather from deterioration; all slopes should be trimmed to falls to shed rain water and the surface sealed to limit infiltration.

Prior to the placement of the founding materials and the construction of the road pavement, the sub-formation and formation will need to be inspected and checked in accordance with a suitable specification to ensure the ground conditions are as expected. All testing should be carried out in accordance with DMRB IAN 73/06 to confirm that the ground conditions at time of construction are consistent with the previous design parameters.

5.9 Drainage

Soakaways (and infiltration to the ground as part of a Sustainable Urban Drainage System) are considered unsuitable for the site because of the thickness of made ground and the risk of mobilising contaminants within the soils. A positive drainage scheme should be utilised for this development.

5.10 Buried concrete

Based on guidelines provided in BRE Special Digest 1 (BRE 2005) and the information presented in Section 4.6.6 (Table 4.9):

- The shallow soils (Made Ground) can be classified as Design Sulfate Class DS-4m and ACEC Class AC-4m.
- The deeper soils (Glaciofluvial Deposits) can be classified as Design Sulfate Class DS-1 and ACEC Class AC-1 for strip / trench fill / pad foundations.

This equates to a Design Chemical Class¹ of:

- DC-4 for the shallow soils (Made Ground);
- DC-1 for the deeper soils (Glaciofluvial Deposits); and
- DC-4 for piles.

The designer should check and confirm the classification of concrete using the information presented in Appendix B and Appendix C during the design.

¹ The calculated ACEC class can be used in accordance with BS 8500-1+A2 (2019), Table A.9 to select the Designated Concrete (DC) class for an intended working life of 50 years. However, the designer is referred to BS 8500-1+A2 (2019), for full details and notes to Table A.9, including any Additional Protective Measures (APMs).

6. GEO-ENVIRONMENTAL ASSESSMENT

6.1 Updated conceptual model

6.1.1 *Updated ground model*

The preliminary ground model developed from the desk study and field reconnaissance survey (Section 2) has been updated using the findings of the ground investigation and is presented in Section 4. This ground model is the basis for the geo-environmental assessment presented in this section.

6.1.2 *Updated exposure model*

Following the ground investigation, the plausible contaminant sources, receptors and pathways identified in the preliminary geo-environmental exposure model Hydrock Phase 1 report (15297-HYD-XX-XX-RP-GE-1001_S2_P1), have been updated or confirmed as follows.

Sources

No potential on site sources have been removed from, or added to, the exposure model.

The following off site sources have been removed from the exposure model due to no asbestos being recorded and Polycyclic Aromatic and Total Petroleum Hydrocarbons (PAH and TPH) were not recorded above the Generic Assessment Criteria (GAC)

- Tramways, 20m northeast and 25m southwest, and Swansea Vale Railway, 30m southeast; contaminants of concern include asbestos containing materials, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (S5)
- Pontardawe Chemical Works (and associated tanks), 30m northeast, including elevated concentrations of metals and metalloids, chlorides and sulphides, asbestos fibres and asbestos containing materials, petroleum hydrocarbons, and coal/coke residues (S6);
- Haulage Contractor's Yard, 30m northeast, including elevated concentrations of metals, metalloids, petroleum hydrocarbons, and waste oil (S7);
- Petroleum hydrocarbons migrating from the petrol filling station and car wash, 50m to the north of the site (S8);
- Pontardawe Tin Plate Works, 150m northwest, including elevated concentrations of metals, metalloids, mineral acids, organic acids, oil, organic solvents, asbestos fibres, and asbestos containing materials (S9);

Receptors

No potential receptors have been removed from, or added to, the exposure model.

Pathways

No pathways have been removed from, or added to, the exposure model.

Using the updated ground model and updated exposure model, generic risk assessment is undertaken as presented below.

6.2 Risk assessment approach

Generic risk assessments have been undertaken in accordance with the principles of LCRM (Environment Agency, 2019) using the CM that has been updated following the ground investigation.

Firstly, the risks associated with the identified potential contaminant linkages have been estimated using standardised methods (typically involving comparison of site data with published 'screening values'). Secondly, where screening values are exceeded, the result has been evaluated in an authoritative review of the findings with other pertinent information to determine whether or not the exceedance is, or is not acceptable in the site-specific circumstances. Further explanation is presented in Appendix I.

The data sets used in the assessment comprise the analytical results obtained by Hydrock as listed in Section 3 together with any reliable data from previous investigations as listed in Section 2.

In cases where unacceptable risks are indicated, actions such as more advanced stages of risk assessment or remediation are proposed in Section 6.10.

6.3 Human health risk assessment

This is a Tier 2 assessment using soil screening values applicable to commercial end use scenario.

The soil screening values used are generic assessment criteria (GAC). It should be noted that Category 4 Screening Levels (C4SL) for lead have been used as there is no recognised GAC for lead and the use of the term 'GAC' in this report includes the C4SL for lead.

Statistical testing is used where data sets are suitable. The critical issue is sample numbers. For data sets with low sample numbers or where sampling is targeted at specific areas, individual sample test results are compared directly with the screening values. Larger and non-targeted data sets are subject to statistical testing.

The phrase 'further assessment required' is used to denote soil concentrations that are equal to, or exceed, a GAC. This does not necessarily mean that the soil is 'contaminated' or not otherwise suitable for use. The assessment and any mitigation required are to ensure the site does not pose an 'unacceptable risk'.

The results of the assessment are presented in Appendix E.

6.3.1 Risk estimation (including statistical testing)

Outliers

The data set for each chemical Determinand has been assessed for potential outliers (based on the conceptual model). One outlier was identified based on laboratory testing. The outlier in Table 6.1 is discussed further below.

Table 6.1: Justification for removal of outliers

Location of outlier	Whole sample or particular substance removed (see note)	Reason for removal
CP02 (0.45m)	Lead removed as outlier.	Isolated exceedance of 10,000mg/kg all other contaminants are below the Generic Assessment Criteria.

Statistical assessment

In accordance with the guidance provided by the CIEH (May 2008) the 95th upper confidence level on the true mean (US₉₅) has been calculated from the sample data. Reference to the methodology for statistical assessment is given in Appendix I.

When the lead outlier from CP02 has been removed from the data set there are no contaminants of potential concern which exceed the GAC in the Made Ground or the natural deposits beneath the site. Therefore, no further consideration is required.

The presence of Lead in the Made Ground around CP02 requires further consideration and is discussed in Section 6.3.2.

Petroleum hydrocarbons (TPH)

The presence of petroleum hydrocarbons was not noted on site visually or olfactory. Three soil samples were tested for TPH of which none were found to be above the Generic Assessment Criteria (GAC).

6.3.2 Risk evaluation

The screening exercise has identified Lead in the Made Ground at concentrations above the GAC. This is considered further here to assess if the exceedance may be acceptable with respect to the proposed development. The phrase 'further assessment' does not necessarily mean that the soil is 'contaminated' or not fit for use.

Lead is recorded in the Made Ground in CP02 at 0.45m, 10,000mg/kg, which is a significant but isolated exceedance of the GAC (2330mg/kg). The exceedance of Lead is in an area previously excavated by John Grimes (John Grimes Partnership as part of the construction of the Tesco Stores in Pontardawe (Drawing: Areas of required excavation due to lead and arsenic exceedance, dated April 2005; Job No. 3920; Dwg No. 04; Planning No. P2005/0756). However, Lead still remains in the vicinity of the historic cut indicating that not all of the material was removed as the remediation proposals indicated.

As the proposed end use is 100% hardstanding, it is considered that the pathway is cut off from any potential receptors therefore no further mitigation is required and will require agreement with the Local Authority that this is acceptable. If the proposed development layout changes to include areas of soft landscaping, then Hydrock will need to be informed of the change to update the mitigation measures section of this report.

6.4 Plant life risk assessment

6.4.1 Risk estimation

Priority phytotoxic chemical concentrations have been screened against published values to determine the likely risk to plant growth and the findings presented in Appendix E. As with human health, statistical testing is used where data sets are suitable, otherwise individual sample test results are compared directly with the screening values.

Based on a US₉₅ exceedance of the GAC, the pervasive chemicals of potential concern which require further assessment are summarised in Table 6.2.

Table 6.2: Pervasive chemicals of potential concern for which further assessment is required (risk to plants)

Chemical of potential concern	Generic criterion (mg/kg)	Basis for generic criterion	No. samples	Min. (mg/kg)	Max. (mg/kg)	US ₉₅ (mg/kg)	No. samples exceeding generic criterion
Boron	3	BS3882:2015	13	0.2	5.3	3.3	3
Copper	135	BS3882:2015	13	9.7	490	334	5
Zinc	300	BS3882:2015	13	47	1800	1129	4

6.4.2 Risk evaluation

Within the Made Ground, concentrations of Boron, Copper and Zinc are slightly elevated when compared to the GAC. Detriment to plant life is difficult to quantify and many of the GAC are based on agricultural crop yields rather than harm to particular plant species. As the exceedance is slight and the proposed development is 100% hardstanding or building cover this is not considered to be a significant risk.

6.5 Pollution of controlled waters risk assessment

6.5.1 Risk estimation

The risks to groundwater and surface water from contaminants on site have been assessed in accordance with the Environment Agency (2006) Remedial Targets Methodology (RTM).

Site contaminant loadings are compared with relevant screening values (Water Quality Targets), which are linked to the Conceptual Model.

Acceptable WQT are defined for protection of human health (based on Drinking Water Standards (DWS)) and for protection of aquatic ecosystems (Environmental Quality Standards (EQS)).

As related specifically to this site, the data are compared with criteria selected in accordance with the methodology presented in Appendix I. This methodology involves selecting which of several alternative risk scenarios apply in this case. The assessment is presented in Table 6.3 below, with the justification for the scenarios selected explained in the following text:

- The Glaciofluvial Deposits may connect with and sustain water levels of the River Tawe located approximately 35m northwest of the site, which are classified as inland waters.

Table 6.3: Summary of water quality risk assessment protocol

Hydrock scenario	Water body receptors	Secondary receptors	Example contaminant linkages	RTM level and data used	Water quality targets
D	Groundwater. Surface water.	Human health (abstraction). Aquatic ecosystem.	Contaminants from site leach or seep into a groundwater body that feeds inland surface water by base flow. The surface water may be used for human consumption and is an aquatic ecosystem.	RTM Level 1 - Soil leachate samples	EQS (inland)
Notes:					

Hydrock scenario	Water body receptors	Secondary receptors	Example contaminant linkages	RTM level and data used	Water quality targets
Some EQS are water hardness dependent. This is measured either in the receiving surface water or in groundwater (if it is part of the pathway), or is estimated from national maps. Inland waters EQS applicable to freshwater, 'other' waters EQS applicable to coastal or transitional waters. This table and the results of the assessment are considered as a first screening for potential risks of pollution of Controlled Waters. More specific requirements may be stipulated by the relevant Agency.					

The results of the screening assessment are presented in Appendix E and are summarised in Table 6.4.

In some instances, the reporting limit (or detection limit) quoted by the laboratory may be greater than the WQT that it is being assessed against. As the current exercise is an initial screening assessment, further assessment of these elements has not been undertaken.

Table 6.4: Chemicals of potential concern for which further assessment is required (controlled waters)

Chemical of potential concern	Water quality target (WQT) (µg/l)	Basis for water quality target	No. samples	No. samples above LoD	Min. (µg/l)	Max. (µg/l)	No. samples exceeding WQT and above LoD
<i>Soil Leachate Data</i>							
Cobalt (Co)	3.00	EQS	6	2	0.3	14	2
Vanadium (V)	1.70	EQS	6	2	1.7	56	2
Cadmium (Cd)	0.08	EQS	6	1	0.08	3.1	1
Copper (Cu)	1.00	EQS	6	6	3	13	6
Manganese (Mn)	123	EQS	6	4	27	2600	4
Nickel (Ni)	4.00	EQS	6	2	1.4	16	2
Lead (Pb)	1.20	EQS	6	6	1.6	28	6
Zinc (Zn)	10.9	EQS	6	2	5.9	180	2
Note: the maximum recorded value is compared with the water quality target. † The EQS for these substances represents a bioavailable concentration, which will be a proportion of the actual dissolved concentrations in water. No site-specific bioavailability testing was able to be undertaken at the site and therefore the EQS bioavailable represents a conservative screening approach.							

6.5.2 Risk evaluation

The EQS (3.0 µg/l) was exceeded for cobalt in CP02 (14 µg/l) and TP02 (3.7 µg/l). Whilst the exceedance in TP02 is considered marginal the exceedance in CP02 is considered significant.

The EQS (0.08 µg/l) was exceeded for cadmium in CP02 (3.1 µg/l). Cadmium was not recorded above the laboratory limit of detection in any other sample, and this exceedance is considered an outlier.

The EQS (1.70 µg/l) was exceeded for vanadium in TP01 (34 µg/l) and TP04 (56 µg/l). Vanadium was not recorded above the laboratory limit of detection in any other sample.

The EQS for cobalt and vanadium are exceeded within the leachate samples; CP02 and TP02 had exceedances with cobalt, while TP01 and TP04 showed exceedances with vanadium.

There are also EQS exceedances of copper, manganese, nickel, lead and zinc these are based on the bioavailable fraction and because bioavailability has not been calculated for these metals the assessment is conservative as it assumes 100% bioavailability.

The laboratory leachate test is a very aggressive technique, and, it is considered unlikely that the leaching of metals will occur into the groundwater beneath the site or the River Tawe. This is due to limited surface water infiltration through the Made Ground on site.

The groundwater body beneath the site (Swansea Carboniferous Coal Measures Water body ID: GB41002G201000) is currently (2018 Cycle 2) classified under the Water Framework Directive as 'poor'. This is due to the industrial legacy of the area and the chemical status of the groundwater.

Based on the test results we would suggest that the exceedances or determinands can be attributed to the poor background quality of the groundwater relating to industrial heritage of the area and the after affects of coal mining rather than any particular local anthropogenic source. It is worth noting that other than the outline of Lead in CP02 no other sources have been recorded within the soils during Hydrock's investigations.

The site is currently hard standing and is due to be replaced with hardstanding and building cover, it is therefore considered that the leaching of metals from the groundwater is unlikely to occur due to limited surface water infiltration occurring on site. It is therefore considered not to pose an issue to the groundwater body beneath the site or the River Tawe.

It would be technically challenging and probably disproportionately costly to remove these contaminants from the water. Hydrock believes that the risks to Controlled Waters do not require further consideration.

6.6 Ground gases risk assessment

6.6.1 Data

Hydrock has undertaken four of four readings required as part of this commission.

6.6.2 Assessment

The risks associated with the ground gases methane (CH₄) and carbon dioxide (CO₂) have been assessed using BS 8485:2015 +A1:2019, which cites the guidelines published by CIRIA (Wilson et al 2007) (known as Situation A).

The assessment guidelines published by CIRIA are based on interpretation of the gas concentrations and the gas flow rates, amongst other variables, and are compliant with the model procedures of LCRM. The modified Wilson and Card assessment has been used by comparing the maximum gas concentrations and gas screening values (GSV²) in Appendix D with the published table (CIRIA Table 8.5) and the assessment is summarised in Table 6.5. The assessment is presented in Appendix D.

² Note: GSV is synonymous with 'site characteristic hazardous gas flow rate' (Q_{hgs}) of BS 8485:2015 +A1:2019 Table.

Table 6.5: Ground gas risk assessment

	Min	Max	Typical ⁽ⁱ⁾	Comment
Steady Flow Rate (l/hr)	0.0	0.40	0.2	-
Methane (%)	0.1	0.3	0.3	CS2 due to elevated concentrations of CO ₂ above 5%
Carbon Dioxide (%)	13.0	14.7	13.5	
Oxygen (%)	0.1	2.0	0.1	-
Methane GSV (l/hr)	0.0006	0.0012	<0.07	CS1
Carbon Dioxide GSV (l/hr)	0.0584	0.0584	<0.07	CS1
⁽ⁱ⁾ Hydrock assume that values are considered to be atypical if 95% or more of the remaining data are less than the value under consideration				

The current commission of 4 ground gas monitoring rounds has been completed. Whilst the GSVs for methane and carbon dioxide indicate the ground gas conditions for the site are Characteristic Situation 1 (CS1) elevated concentrations of Carbon Dioxide have been recorded and significantly reduced concentrations of Oxygen have also been recorded. It is therefore considered that Characteristic Situation 2 (CS2) is more suitable for the proposed development.

6.6.3 Off-site risks from carbon dioxide and methane

Planning Policy Wales requires that a developed site should be incapable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990. This position includes a consideration of the potential for off-site migration of ground gases that may impact on adjacent properties.

Consequently, it may be necessary to consider the imposition of measures to protect adjacent, off-site receptors. In this case ground gases (carbon dioxide and methane) from adits, possible mine workings and coal seams adjacent to the site could pose a risk.

6.7 Construction materials risk assessment

6.7.1 Water pipelines

A formal water pipe investigation and risk assessment is beyond the scope of this report. However, the findings of this investigation have been compared to the threshold values in Water UK HBF (2014), Table 1 as far as is practicable, to give an indication of the possible restrictions to the use of plastic pipes for water supply to the site (see the reference in Appendix I for further information).

The site is brownfield. However, the investigation has not detected organic contamination in exceedance of the threshold values and Hydrock believes standard pipework may be suitable for the site. However, confirmation should be sought from the water supply company at the earliest opportunity.

6.8 Contamination risks to ground workers

6.8.1 Introduction

Whilst risks to construction workers are not discussed in detail, the following section discusses potential risks that should be considered.

Information presented in this document is provided to assist in managing the risk associated with contamination in soil and groundwater at the site but is not definitive. The Contractors are responsible for undertaking their own assessments and assessing what risks are present and what control measures are required.

Task specific risk assessments and method statements should be in place, and risks and required mitigation measures communicated to all relevant personnel prior to the works commencing. Appropriate PPE and, if required, RPE should be provided and utilised.

6.8.2 Ground Gas

It is noted that concentrations of carbon dioxide (an asphyxiant) in the soil exceed HSE Workplace Exposure Limits for personnel in the working environment of 1.5% for short term (15 minutes) exposure and 0.5% for long term exposure. Furthermore, soil concentrations of oxygen are below the HSE recommendations of 18%.

Soil gas concentrations are not necessarily reflected by those in the breathing zone, as such, all Contractors and maintenance workers should be made aware of the possible presence of carbon dioxide and should take all necessary health and safety precautions when working in trenches or confined spaces.

6.8.3 Asbestos

As no clearly identifiable ACM has been seen during the site walkover or during the ground investigation and no fibres have been detected in soil samples analysed by laboratory testing, CAR2012 does not apply. However, there is always the possibility of unexpected contamination and the Contractors should undertake a watching brief during the works. If any suspect material is encountered, works in that area of the site should stop, the area fenced off and Hydrock should be notified.

6.9 Findings of the generic contamination risk assessments

The potential sources, pathways and receptors identified in the desk study Hydrock Phase 1 report (15297-HYD-XX-XX-RP-GE-1001_S2_P1), have been investigated (Sections 3 and 4) and assessed (Sections 6.2 to 6.7). A Source-Pathway-Receptor linkage assessment has been undertaken and is presented in Appendix H (Table K.2).

The final Conceptual Model is illustrated on Hydrock Drawing 15297-HYD-XX-XX-DR-GE-1003_S2_P1 in Appendix A.

A summary of the Source-Pathway-Receptor (SPR) contaminant linkages for which the risks may be unacceptable and require mitigation (those that are moderate or higher) are discussed in Table 6.6.

Table 6.6 assumes the following SPR linkages which have been discounted (subject to agreement) at the risk evaluation stage are confirmed by the regulators and the warranty provider as not requiring further

consideration (mitigation). If these assumptions are not agreed during regulatory discussions, the conclusions as noted in Table 6.6 will need to be updated:

- Elevated concentrations of Lead (US₉₅ of 4183.1mg/kg versus a GAC of 2330mg/kg).

Table 6.6: Residual risks following risk evaluation

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation
PL 1.	Ground Gas	Migration through soils indoor air.	End users of new buildings.	Elevated levels of CO ₂ .	Suitable ground gas barrier (CS2) in building to sever the source pathway and receptor.
PL 2.	Radon.	Migration through soils indoor air.	End users of new buildings.	The site is within an area where 1 to 3% of properties are above the action level for radon	Also not deemed necessary it may be reasonably practicable to reduce risks to install basic radon protection measures. CS2 ground gas protection measures are required therefore this just also needs to be radon protective.

6.10 Mitigation measures

The outline remediation strategy presented below is provided for guidance only, and does not represent a 'Remediation Options Appraisal', or a 'Remediation Strategy', prepared in accordance with LCRM (2019).

As shown in Table 6.6, Hydrock consider the following mitigation is required to ensure the site is suitable for use for the proposed end use. The mitigation measures include:

- Installation of ground gas protection measures to comply with CS2 conditions (as described in Section 6.10.1) (PL1).
- Installation of radon protection (note the radon barrier also needs to be resistant to carbon dioxide) (PL2).

Verification of ground gas mitigation measures should be undertaken by a competent third party specialist following installation of ground gas protection measures.

6.10.1 Gas protection measures

Mitigation of the risk from ground gases needs to be undertaken in accordance with BRE 414, CIRIA 665, BS 8485:2015 +A1:2019, CIRIA C748 and CIRIA C735. In accordance with BS 8485:2015 +A1:2019, the design of gas protection measures needs to be undertaken in accordance with the Characteristic Situation and the building type:

- The site is provisionally classified as Characteristic Situation 2.
- The McDonalds unit is classified as a Type C building.

As such, the McDonalds unit require 2.5 points of protection. This is illustrated in Table 6.7.

Table 6.7: Gas protection score by CS and type of building (after BS 8485:2015 +A1:2019)

Characteristic Situation	Minimum gas protection score (points)			
	High risk		Medium risk	Low risk
	Type A building	Type B building	Type C building	Type D building
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5 ^(A)	5.5 ^(A)	4.5	3.5
5	— ^(B)	6.0 ^(A)	5.5	4.5
6	— ^(B)	— ^(B)	— ^(B)	6.0

A) Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.

B) The gas hazard is too high for this empirical method to be used to define the gas protection measures.

The final design of ground gas protection measures is to be specified by the designer (in accordance with CIRIA 665, and BS 8485:2015 +A1:2019) and the protection will need to be achieved by a combination of two or more of the following three types of protection measures:

- the structural barrier of the floor slab
- ventilation measures; and
- gas resistant membrane.

Where design elements are required to meet certain standards to qualify for the protection points (e.g. cast *in situ* monolithic reinforced floor slab), it is up to the designer to ensure the minimum requirements of the standards are met.

Where used, gas resistant membranes should be:

- sufficiently impervious to methane and carbon dioxide;
- capable, after installation, of providing a complete barrier to the entry of the relevant gas;
- sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions;
- sufficiently strong to withstand in service stresses (e.g. due to ground settlement if placed below a floor slab);
- sufficiently strong to withstand the installation process and following construction activities until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, and dropping tools); and
- chemically resistant to degradation by other contaminants that might be present.

As preliminary guidance, Hydrock would suggest the following:

Either:

- Beam and block or pre-cast concrete floor slab (0 points);
- passive sub floor ventilation e.g. void (good performance 1.5 points); and
- 2000g gas resistant membrane (2.0 points).

Where a gas resistant membrane is required as part of the design, all joints and penetrations are to be sealed and the installation is to be verified in accordance with CIRIA C735 (Mallet et al 2014) or it will score zero points and will not be deemed to afford any protection. This verification will involve verification by the Contractor and independent verification on a selected number of plots by Hydrock or alternative qualified independent third-party.

Whilst tape can be utilised to seal the seams Hydrock would recommend the membranes are sealed using welded seams and the use of specialist seals around penetrations (top hats etc.). The installer is to present an installation methodology and a QA/QC plan for installation to Hydrock for comment, with particular attention given to sealing the membrane.

In order to achieve the points specified for ventilation, the architect is to design passive ventilation to meet at least 'good performance', as described in Annex B of BS 8485:2015 +A1:2019.

7. WASTE AND MATERIALS MANAGEMENT

7.1 Introduction

The Waste Framework Directive (WFD) (2009/98/EC) defines waste as ‘*any substance which the holder discards or intends to discard.*’ In a geo-environmental context, the waste is most often ‘soil’ and the two main scenarios are offsite disposal of the material as a waste and/or reuse of the material on site. For cost and sustainability reasons, reuse is preferred to off-site disposal.

Section 7.2 below describes the key issues relating to off-site disposal to landfill and Section 7.3 considers requirements relating to reuse of soils and materials management.

7.2 Waste disposal

7.2.1 Principles

Based on the WFD, any material excavated on site may be classified as waste and it is the responsibility of the producer of a material to determine whether or not it is waste. Where off-site disposal is undertaken, the following guidance applies.

Classification is a staged process:

- A hazardous waste is defined under the WFD as one which possesses one or more of fifteen defined hazardous properties. If a waste is not defined as hazardous, then it is non-hazardous.
- Where the materials are soil, it is then be assigned using the ‘List of Waste Codes’, which classifies the material as either:
 - hazardous (17-05-03), which is defined as “*soil and stones containing hazardous substances*”; or
 - non-hazardous (17-05-04), which is defined as “*soil and stones other than those mentioned in 17-05-03*”.
 - Hydrock utilise the proprietary assessment tool, HazWasteOnline™ to undertake this assessment.
- Waste Acceptance Criteria (WAC) testing is then undertaken if required, and are only applicable following classification of the waste, and only where the waste is destined for disposal to landfill. The WAC are both qualitative and quantitative. The WAC and the associated laboratory analyses (leaching tests) are not suitable for use in the determination of whether a waste is hazardous or non-hazardous.

It should be noted that some non-hazardous wastes may be suitable for disposal at an inert landfill as non-hazardous waste, subject to meeting the appropriate waste acceptance criteria.

It should be noted that classification must be undertaken on the waste produced, by the waste producer. Necessary sampling frequency to adequately characterise a soil population is defined within WM3.

Further discussion with regards to the characterisation process for different scenarios and waste types is provided below.

Topsoil and Peat

Topsoil and peat are biodegradable, therefore if they are surplus to requirements and cannot be re-used in accordance with a Materials Management Plan, they cannot be classified as inert. As such, topsoil and peat need to be classified by a staged assessment and sampling process and would either be classified as hazardous or non-hazardous, depending upon the results of the assessment.

Greenfield Sites

Waste from completely greenfield sites may be accepted at a landfill as inert waste if it meets the requirements of paragraph 10 (wastes acceptable without testing at landfills for inert waste) of the Landfill (England and Wales) (Amendment) Regulations (2005) ('the Regulations') can be met. Paragraph 10 of the Regulations states, "*soils may be able to be classified as inert waste without testing, if:*

- *they are single stream waste of a single waste type;*
- *there is no suspicion of contamination and they do not contain other material or substances such as metals, asbestos, plastics, chemicals, etc....."*

As such, where the site is greenfield and the waste producer is confident about the quality of a soil (i.e. naturally occurring and uncontaminated), further sampling and laboratory testing is not necessary for the Basic Characterisation and this can be undertaken on qualitative Waste Acceptance Criteria testing.

In this instance the waste producer can characterise the waste based on visual assessment and written description of the waste in addition to supporting evidence such as a desk study assessment of the greenfield status. However, it should be noted this characterisation is subject to agreement by the landfill operator who may require testing to be undertaken to confirm classification.

Contaminated or potentially contaminated sites

If the site is brownfield, contaminated or potentially contaminated, the waste must undergo an initial waste classification exercise using background information on the source and origin of the waste and assessment of chemical test data in accordance with Environment Agency Technical Guidance WM3.

If following the initial waste classification exercise, the soils are acceptable for disposal to a non-hazardous landfill, further qualitative Waste Acceptance Criteria (WAC) testing is not required.

However, if soils are potentially able to be disposed to an inert landfill as non-hazardous waste, or require testing to determine if they can be disposed of to a stable non-reactive hazardous or hazardous class of landfill, the next stage of assessment is to undertake qualitative WAC testing. This will determine the Basic Characterisation and the landfill category at which the soils can be accepted.

Hazardous material must be subjected to WAC testing to determine whether it requires treatment before it can be accepted at the hazardous landfill, while non-hazardous material can be tested to determine whether it may be suitable for placement in an inert landfill.

7.2.2 *HazWasteOnline™ assessment*

As the site is brownfield, in order to inform the preliminary waste characterisation process, Hydrock has undertaken an exercise using the proprietary web-based tool HazWasteOnline™. The output of the HazWasteOnline™ assessment is provided in Appendix F and a summary of the preliminary waste classification is provided below in Section 7.2.4.

7.2.3 *WAC Testing*

The site is brownfield. However, WAC testing has not been undertaken to date but will be required on the excavated soils that are to be disposed of, to assist with waste disposal options prior to disposal. A summary of the preliminary waste disposal options is provided below in Section 7.2.4.

7.2.4 *Preliminary waste disposal options*

The site is brownfield and based on the site history, the HazWasteOnline™ assessment, if suitable segregation of different types of waste is put in place, for soils to be disposed of, it is considered that:

- The 'General' Made Ground is likely to be classified as Hazardous waste due to the Lead content.
- Excavated Natural soils to be disposed of as waste, are likely to be classed as Non-Hazardous. However, further testing is required in the form of waste acceptance criteria (WAC) as the soils could be classified as inert and disposed of at an inert landfill.
- Any soils containing > 0.1% asbestos or visible asbestos containing materials would be considered as hazardous. No asbestos has been identified at the site to date.

7.2.5 *General waste comments*

It should be noted that:

- It is the waste producer's responsibility to segregate the waste at source and waste producers must not mix waste materials/streams or dilute hazardous components, for example by mixing with less or non-hazardous waste on site to meet WAC limit values.
- The above preliminary assessment has been made on the basis of the soils tested as part of the ground investigation, using the HazWasteOnline™ assessment. However, the formal classification of waste can only be undertaken on the material to be disposed of, and by the waste producer and the receiving landfill as license conditions vary from landfill to landfill.
- Basic Characterisation should be undertaken in accordance with Environment Agency guidance by the waste producer. Hydrock can assist if required and this report will assist the characterisation. However, Basic Characterisation does not form part of the current commission and would require further assessment and testing on the wastes actually to be disposed.
- Once the waste producer has undertaken an initial Basic Characterisation on each waste stream, they can manage the soils as part of the on-site processing programme (for example, stockpiling, treatment, screening and separation). The waste producer and landfill operator will then need to agree the suite of compliance testing for regularly generated waste to demonstrate compliance with the initial Basic Characterisation prior to disposal.
- At the time of disposal, additional testing on the excavated soils to be disposed of, will likely be necessary.

- Non-hazardous and hazardous soils require pre-treatment (separation, sorting and screening) prior to disposal.
- The costs for disposal of non-hazardous and hazardous soils are significant compared to disposal of inert material.
- In addition to disposal costs, landfill tax will be applicable. Non-hazardous and hazardous waste will generally be subject to the Standard Rate Landfill Tax. Inert or inactive waste will generally be subject to the Lower Rate Landfill Tax. The landfill tax value changes each April and can be found at <https://www.gov.uk/government/publications/rates-and-allowances-landfill-tax/landfill-tax-rates-from-1-april-2013>.
- Before a waste producer can move waste to a landfill site for disposal, they need to check the landfill site has the appropriate permit and must have completed the following³:
 - Duty of care transfer note / Hazardous Waste consignment note, including comment as to if pre-treatment has been undertaken; and
 - Basic Characterisation of the waste, to include: description of the waste; waste code (using list of wastes); composition of the waste (by testing, if necessary) and; WAC testing (if required).

7.3 Materials management

7.3.1 Introduction

Soils that are to remain on site, should be managed and reused in accordance with a Materials Management Plan (MMP), prepared in accordance with 'The Definition of Waste: Development Industry Code of Practice', Version 2 (CL:AIRE), known as the DoWCoP. Where all aspects of the DoWCoP are followed the soils are considered not to be waste, because they were never discarded in the first place.

Version 2 of the DoWCoP clearly sets out the principles and an outline of the requirements of a MMP. The following compliance criteria must be seen to apply to the MMP for the site:

- Factor 1: Protection of human health and protection of the environment.
- Factor 2: Suitability for use, without further treatment.
- Factor 3: Certainty of Use.
- Factor 4: Fixed Quantity of Material.

The reuse of soils at sites should be considered during the planning and development design process so that compliance with issues such as fixed quantity and certainty of use clearly relate to agreed site levels. Suitability of Use is normally evident from the remediation strategy or the design statement, which form an integral part of a MMP. However, some soils may need to be tested post-excavation to prove they are suitable for use.

Once the MMP is finalised, it must be declared by a Qualified Person (QP). The Declaration is an on-line submission as part of which the QP is required to confirm that the declaration is being made before the relevant works have commenced (i.e. it is not a retrospective application).

³ ENVIRONMENT AGENCY. November 2010. Guidance on waste acceptance procedures and criteria. Waste acceptance at landfills. The Environment Agency.

Once all material movements have been completed in accordance with the MMP a verification report must be produced, kept for 2 years and provided to the EA on request.

It should be noted that failure to comply with the requirements of the DoWCoP when re-using materials has potentially significant consequences for the waste holder. The risk is that the reused materials are still regarded as a waste that has been illegally deposited. From 1 April 2018, the scope of Landfill Tax has been extended to sites operating without the appropriate environmental disposal permit, and operators of illegal waste sites will now be liable for Landfill Tax. Further information is available at: <https://www.gov.uk/government/publications/landfill-tax-disposals-not-made-at-landfill-sites/landfill-tax-disposals-not-made-at-landfill-sites>.

If soils are excavated and reused on sites (or moved to another site) without a MMP, exemption, or appropriate Permit in place, anyone who knowingly facilitates the disposal may be '*jointly and severally liable*' to any assessment of tax, fines or prosecution.

7.3.2 *Materials management scenarios*

The materials management scenarios present on site are discussed below.

It should be noted that more than one scenario may apply, dependent upon where the soils are proposed for reuse.

Made Ground and other contaminated soils

On sites where Made Ground or contaminated soils are present, any soils excavated will be a waste as soon as they are excavated (even if they are clean, naturally occurring materials), unless they are subject to reuse in accordance with the DoWCoP. As such, for any brownfield site or a site where Made Ground is present and soils are being moved and reused, the materials could be deemed a waste, subject to either:

- a Materials Management Plan (MMP), to prevent the material being classified as a waste following reuse; or
- an exemption (for limited volumes); or
- an environmental permit, dependant on its status.

Other commonly occurring circumstances are:

If Made Ground is being moved between sites, it must be ensured that appropriate permits are in place to ensure the soils are not classified as a waste. Made Ground cannot be moved between sites under DoWCoP alone and would require relevant permits as part of the MMP documentation for the Hub site the material is being treated at.

Geotechnical improvement requirements

Construction activities carried out on uncontaminated soils solely for the purpose of improving geotechnical properties e.g. lime / cement modification, are not generally regarded as waste treatment operations and do not require a permit.

However, should processing be needed (such as screening, treatment or improvement), that would constitute a waste activity and require a mobile treatment permit. This may be as simple as removing oversize material with an excavator bucket, to using a riddle bucket to remove hardcore to full mechanical screening.

8. UNCERTAINTIES AND LIMITATIONS

8.1 Site-specific comments

Further investigation is required surrounding the mine adit. A CCTV survey should be undertaken in the first instance of the feature relating to the large covers in the north east of the site near the bus stop. If this feature is not related to the treated mine adit then a large site strip will be required to determine where this mine adit is and its orientation.

If these covers relate to the mine adit then conversations with Tesco's and the Local Authority will need to be held to determine who is responsible for the maintenance of this mine adit.

8.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of McDonald's Restaurants Limited (the Client), by e-mail dated July 2021 under the terms of appointment for Hydrock, for the sole and specific use of the Client and parties commissioned by them to undertake work where reliance is placed on this report. Any third parties who use the information contained herein do so at their own risk. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared or for use of the report by any parties not defined in Hydrock's appointment.

This report details the findings of work carried out in August 2021. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed.

Hydrock has used reasonable skill, care and diligence in the design of the investigation of the site and in its interpretation of the information obtained. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths of trial pits and boreholes at the time of the investigation. At intermediate locations, conditions can only be inferred.

Groundwater data are only representative of the dates on which they were obtained and both levels and quality may vary.

Plans that provide assessment of foundation types and depths are indicative and subject to further design. This design should incorporate a detailed assessment of the influence of trees, influence of cut to fill proposals and geological conditions.

Unless otherwise stated, the recommendations in this report assume that ground levels will remain as existing. If there is to be any re-profiling (e.g. to create development platforms or for flood alleviation) then the recommendations may not apply.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness.

Where the existing report(s) prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock. Should this not be the case Hydrock should be informed immediately as additional work may be required. Hydrock is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or later activities.

The work has been carried out in general accordance with recognised best practice. The various methodologies used are referenced in Appendix I. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

The chemical analyses reported were scheduled for the purposes of risk assessment with respect to human health, plant life and controlled waters as discussed in the report. Whilst the results may be useful in applying the Hazardous Waste Assessment Methodology given in Environment Agency Technical Guidance WM3, they are not primarily intended for that purpose and additional analysis will be required at the time of disposal to fully classify waste. Discussion and comment with regards to waste classification are preliminary and do not form the requirements of 'Basic Characterisation' as required.

Assessment and testing for the presence of coal tar has only been completed at the locations of exploratory holes undertaken for risk assessment purposes. This investigation is not designed to provide a definitive assessment of the risk from coal tar, nor the waste classification for bituminous bound pavement arisings at the site.

Unless otherwise stated, at the time of this investigation the future routes of water supply pipes had not been established. This investigation and sampling strategy may not be fully compliant with UKWIR recommendations. Consequently, a targeted investigation and specific sampling and chemical testing may be required at a later date once the routes of the supply pipes are known. In addition, it is recommended that the relevant water supply company be contacted at an early stage to confirm its requirements for assessment, which may not necessarily be the same as those recommended by UKWIR.

Whilst the preliminary risk assessment process has identified potential risks to construction workers, consideration of occupational health and safety issues is beyond the scope of this report.

The non-specialist UXO screening has been undertaken for the purposes of ground investigation only (i.e. low risk activity in accordance with CIRIA Report C681). Further assessment should be undertaken with regards to other higher risk activities e.g. construction.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential constraints and specialist advice should be sought.

Any site boundary line depicted on plans does not imply legal ownership of land.

9. RECOMMENDATIONS FOR FURTHER WORK

Following the ground investigation works undertaken to date, the following further works will be required:

- discussion and agreement with utility providers regarding the materials suitable for pipework;
- discussions with regulatory bodies and the warranty provider regarding the conclusions of this report;
- discussions with piling Contractors regarding conclusions of this report and design of the piles;
- provision of geotechnical design for the Category 2 structures (earthworks, retaining, floor slabs, foundations etc.);
- Additional expansive slag testing maybe required if the Made Ground is going to be re-used as structural fill on site.
- CCTV survey of feature/mine adit on site to determine its extent.
- Discussion with relevant bodies to determine ownership and maintenance of this feature.
- Materials Management Plan might be required if Made Ground is to be re-used as part of a raft foundation solution.

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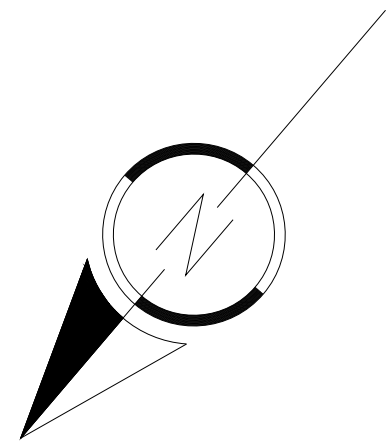
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Appendix A

Drawings



PROJECT	
5029 PONTARDAWE	
F 31 (16.7/8.7)	
DESCRIPTION	
EXISTING SITE LAYOUT	
DRAWING NO	5029pg##
PHASE	-
ISSUE	##
SYSTEM ID	5029bg##.dwg
	5029pg##.dwg
SCALE	DATE
1:500@A0	27.02.2019
UK PLANNING MANAGER	www.i2cLtd.co.uk
BENGALURU PLANNER	UK



RETAIL PLANNING & DESIGN IMPLEMENTATION

TESCO STORES LIMITED

STORE PLANNING DEPARTMENT

PROPERTY SERVICES

HIGHWOODS BUILDING, KESTREL WAY

WELWYN GARDEN CITY, HERTFORDSHIRE, AL7 1GA UK

TELEPHONE : 01707 395150

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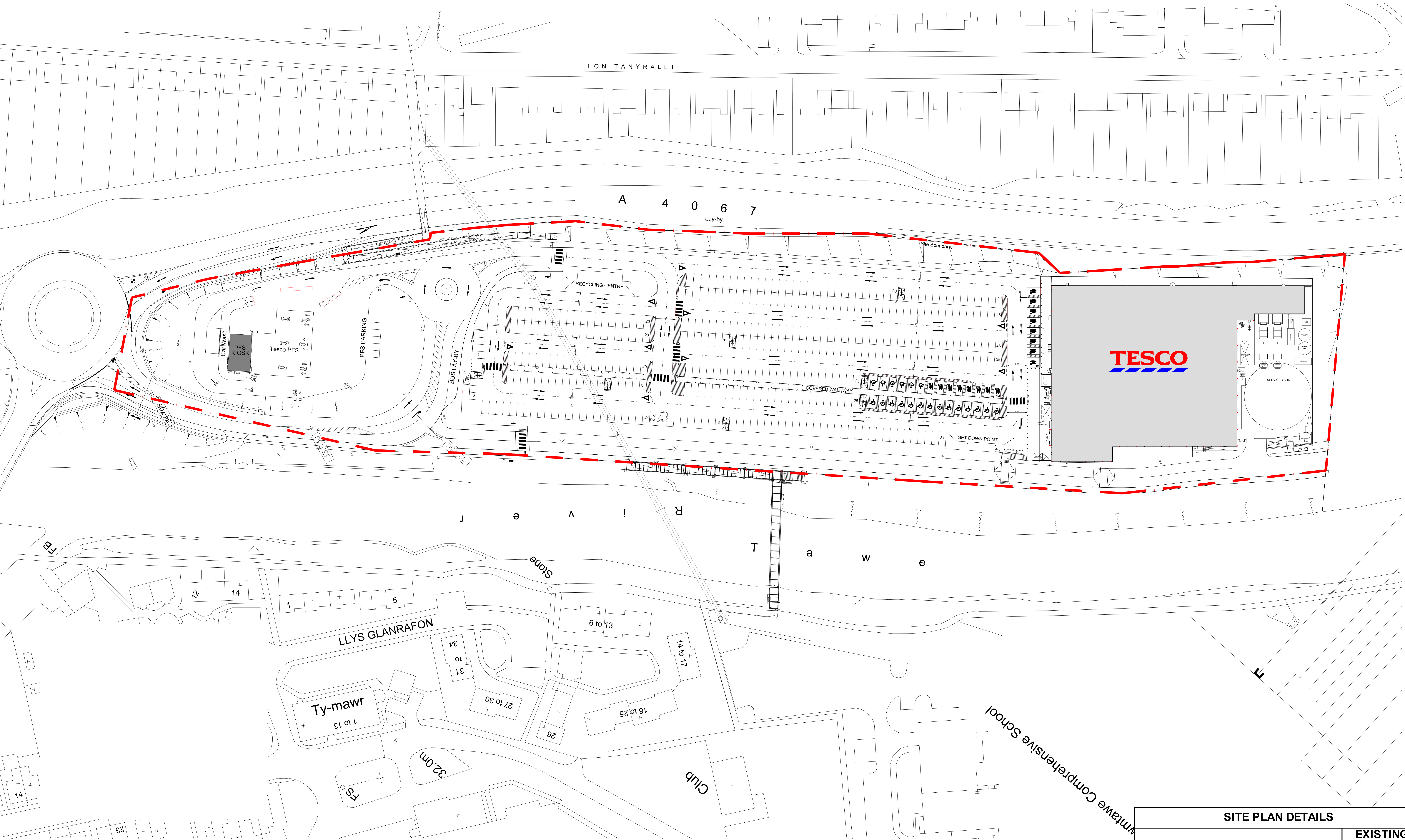
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SITE PLAN DETAILS	
	EXISTING
STORE GROSS FLOOR AREA	45,084 Sq Ft
	4,188 Sq M
PARKING BAY SIZE	2.4x4.8
STANDARD CAR PARKING SPACES	385
PARENT & TODDLER SPACES	16
DISABLED SPACES	20
TOTAL CAR PARKING SPACES	421
CAR PARKING RATIO	1: 10
TROLLEY BAYS	7
SITE AREA ACRES	8.12



RDG-1 APPROVED FEASIBILITY PLAN

REV.	DATE	AMENDMENTS
R1	16.08.2019	PROPOSED MCD LOCATION
R2	26.08.2019	PROPOSED MCD LOCATION AND SLIP LANE
R3	11.09.2019	UPDATED LAYOUT AS PER LATEST SURVEY PLAN
R4	07.10.2019	PROPOSED POD VILLAGE
R5	09.10.2019	PROPOSED POD VILLAGE AND RELOCATED M/C PARKING
R6	11.10.2019	RDG1 APPROVED FEASIBILITY PLAN

--	--	--

N NORTH	
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LEGENDS
Auto Village's Demise 0.11 Acres
Tesco Demise
Proposed McDonald's Demise 0.46 Acres
McDonald's remote parking
Relocated Areas
New Areas

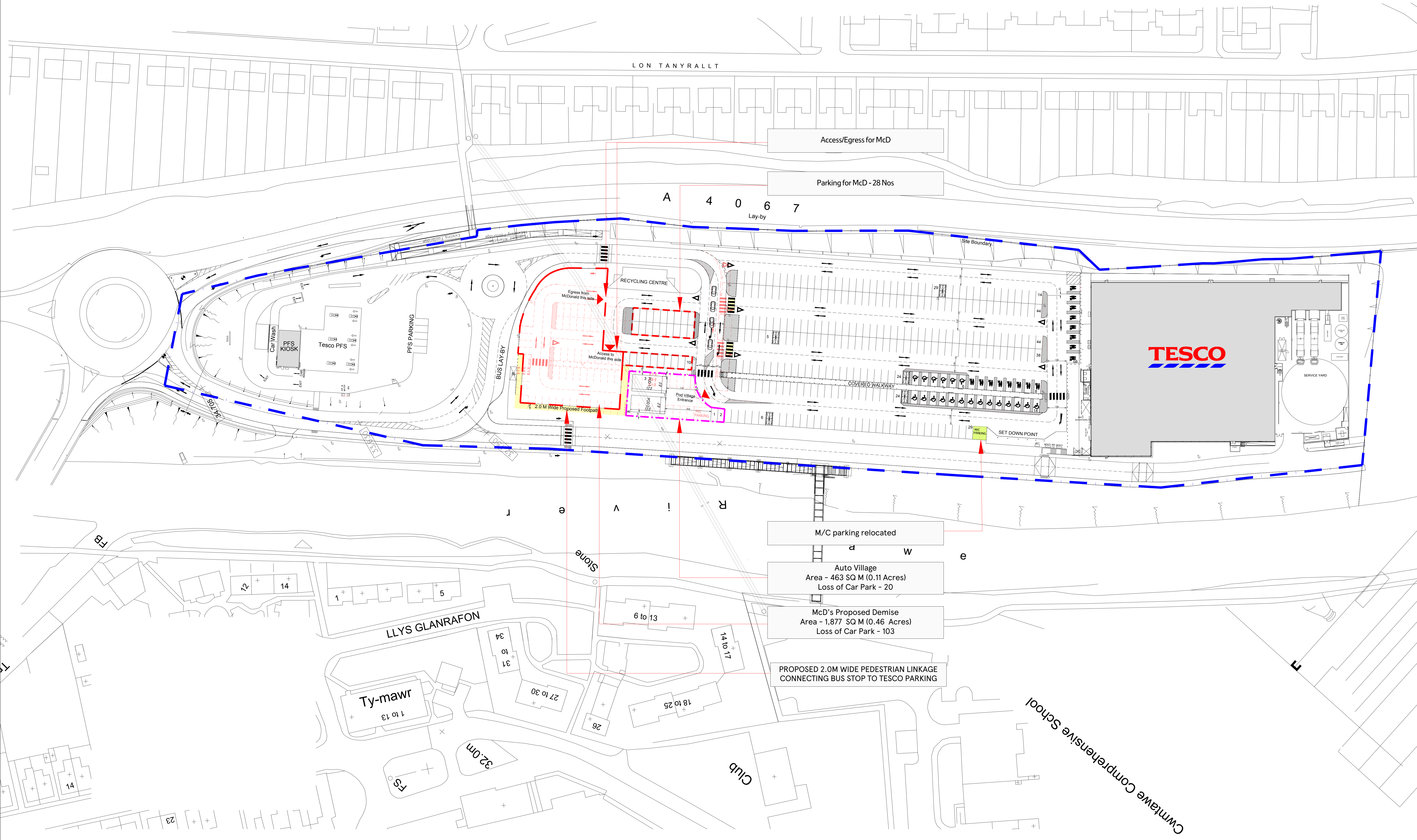
CAR PARKING DETAILS	EXISTING	PROPOSED
TESCO	421	298
McDONALD'S	0	28
LOSS OF CAR PARK - 123		
TESCO REQUIRED - 178		

PROJECT	5029 PONTARDAWE	
DESCRIPTION	PROPOSED McD PLAN	
DRAWING NO	5029FEASpg5	
PHASE	1	ISSUE 6
SYSTEM ID	5029FEASpg4.dwg	5029FEASpg4.dwg
SCALE	1:500@A0	DATE 11.10.2019
UK PLANNING MANAGER	DAN PATANE	
BENGALURU PLANNER	KARTHICK P	

FEASIBILITY PLANNING

TESCO STORES LIMITED
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PROPERTY SERVICES
HIGHWOODS BUILDING, KESTREL WAY, HERTFORDSHIRE,
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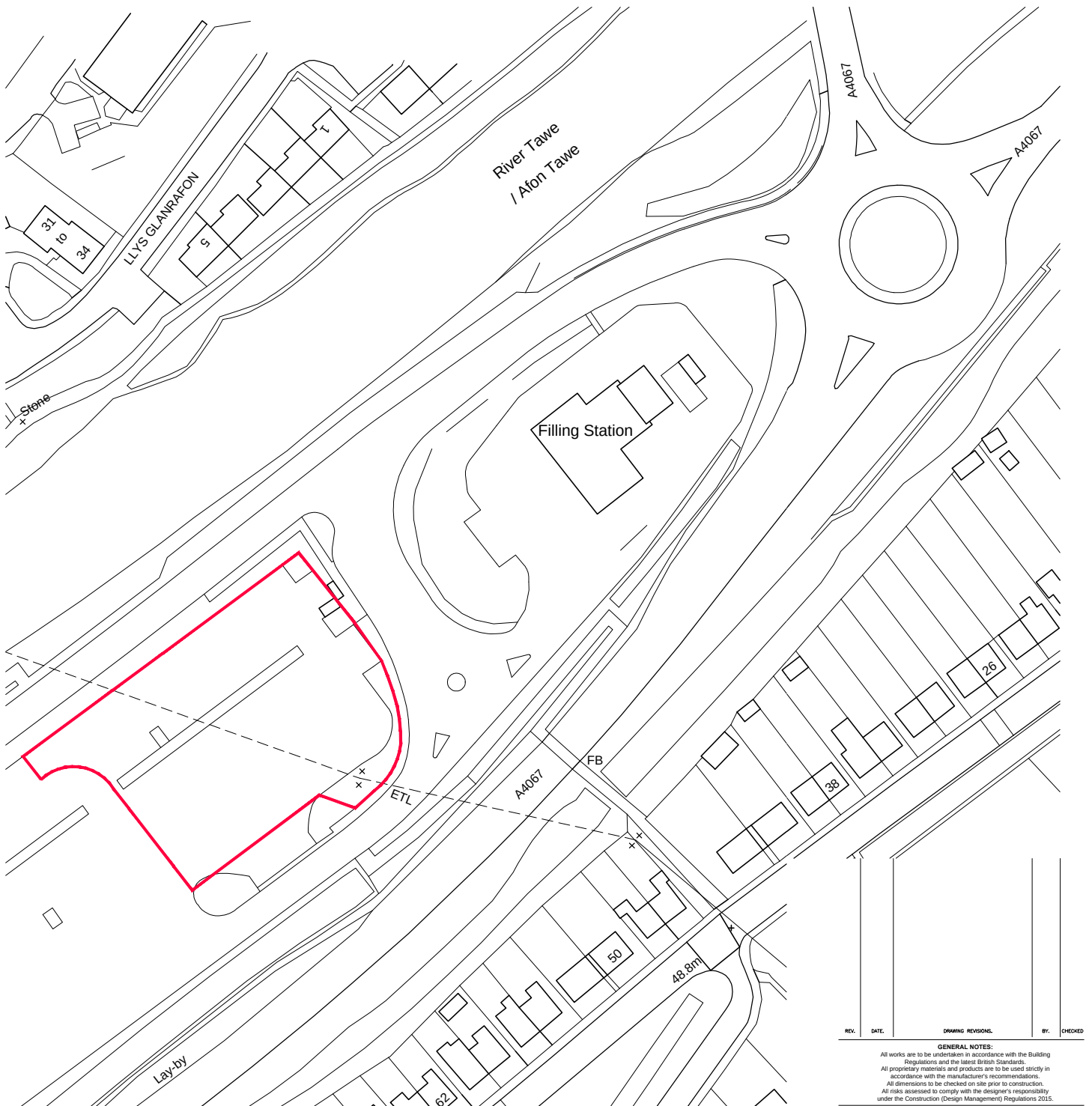


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architects ■ designers ■ project managers

Application Boundary:



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REV.	DATE.	DRAWING REVISIONS.	BY.	CHECKED
------	-------	--------------------	-----	---------

GENERAL NOTES:
All works are to be undertaken in accordance with the Building Regulations and the latest British Standards.
All proprietary materials and products are to be used strictly in accordance with the manufacturer's recommendations.
All dimensions to be checked on site prior to construction.
All risks assessed to comply with the designer's responsibility under the Construction (Design Management) Regulations 2015.

PROPOSED DEVELOPMENT AT	STORE No :-
Tesco, Gwyn's Drift	TBC
PONTARDAWE SA8 3AZ	

ON BEHALF OF :-
McDonald's Restaurants Ltd

DRAWING TITLE :-
Site Location Plan

DRAWN BY	CHECKED BY	DRAWING No.
JK		6682-SA-XXXX-AL01
SCALE & SIZE	DATE	
1:1250@A4	March 2020	

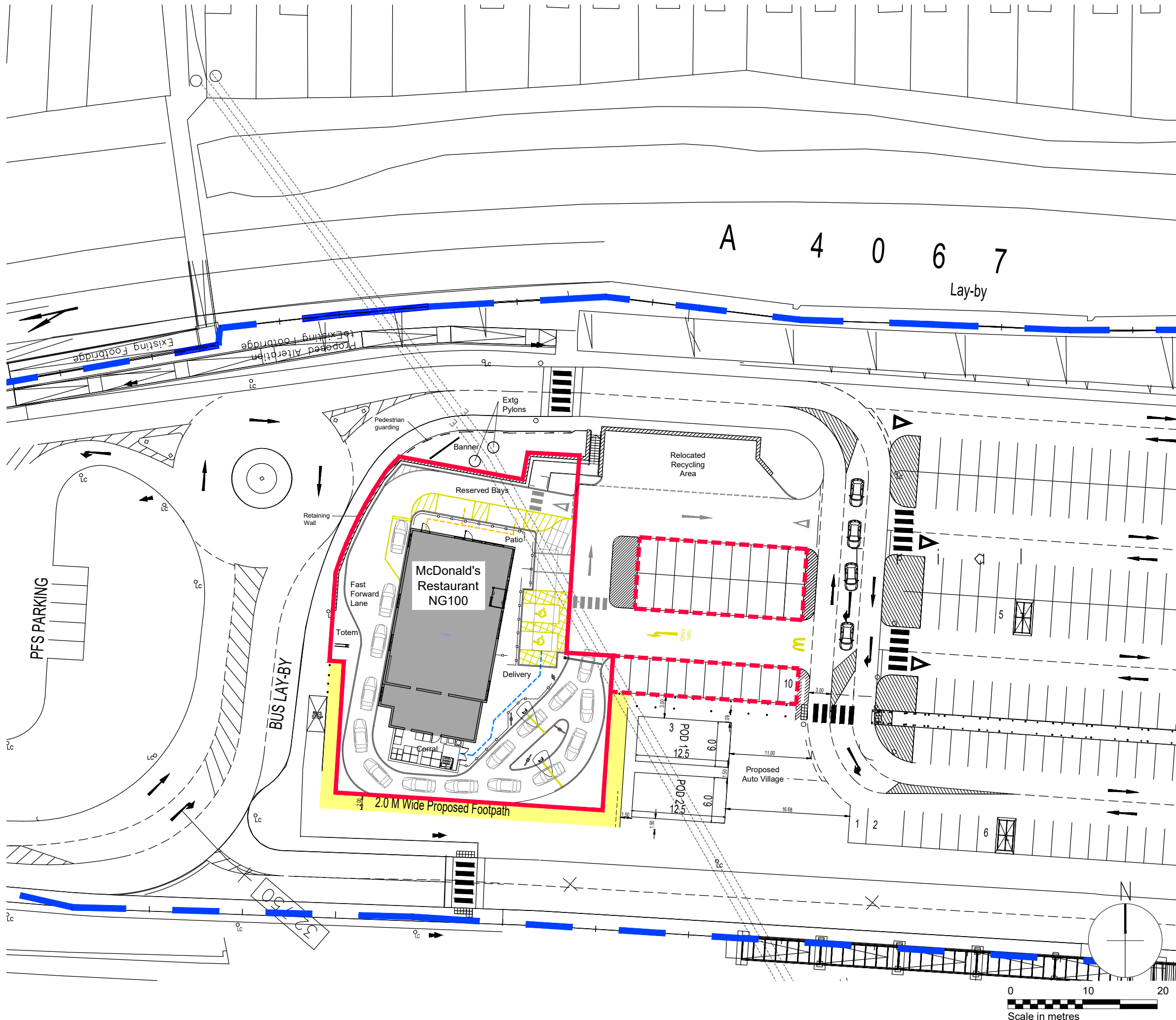


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Notes:
All drawings to be read in conjunction with all other drawings as noted on issue sheet.

Tesco Demise (as per Tesco RDG Layout)

Proposed McDonald's Demise = 0.36 Acres

McDonald's Remote Parking

----- Reserve Bay Route
----- Delivery Route

SITE AREAS SCHEDULE	
TYPE	m ²
DEMISED SITE AREA	1477
DT LANE	549
CAR PARK	105
PATIO	232

NG100 AREAS SCHEDULE	
TYPE	m ²
GEA	371.6
RENTABLE	323.5
FOOTPRINT	371.6

DEMISED PARKING SCHEDULE	
TYPE	No.
GENERAL	30
ACCESSIBLE	02
RESERVE BAY	02
TOTAL	34

NEARBY PARKING	YES
----------------	-----

COD POSITION (CAR No.)	09
PRE - COD STACK	04

VEHICLE TRACKING	
TYPE	Y/N
FAMILY SALOON	NO
7.2m TRANSIT	NO

REV.	DATE.	DRAWING REVISIONS.	BY.	CHECKED

GENERAL NOTES:
All works are to be undertaken in accordance with the Building Regulations and the latest British Standards.
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All dimensions to be checked on site prior to construction.
All risks assessed to comply with the designer's responsibility under the Construction (Design Management) Regulations 2015.

PROPOSED DEVELOPMENT AT	STORE No :-
Tesco, Gwyn's Drift, Pontardawe	TBC
SWANSEA SA8 3AZ	

ON BEHALF OF :-
McDonald's Restaurants Ltd

DRAWING TITLE :-
Site Layout Plan
NG100 Unit
Side by Side CODs

DRAWN BY DM	CHECKED BY -	DRAWING No. 6682-SA-XXXX-SK09
SCALE & SIZE 1:500@A3	DATE MAY 2020	



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NG100

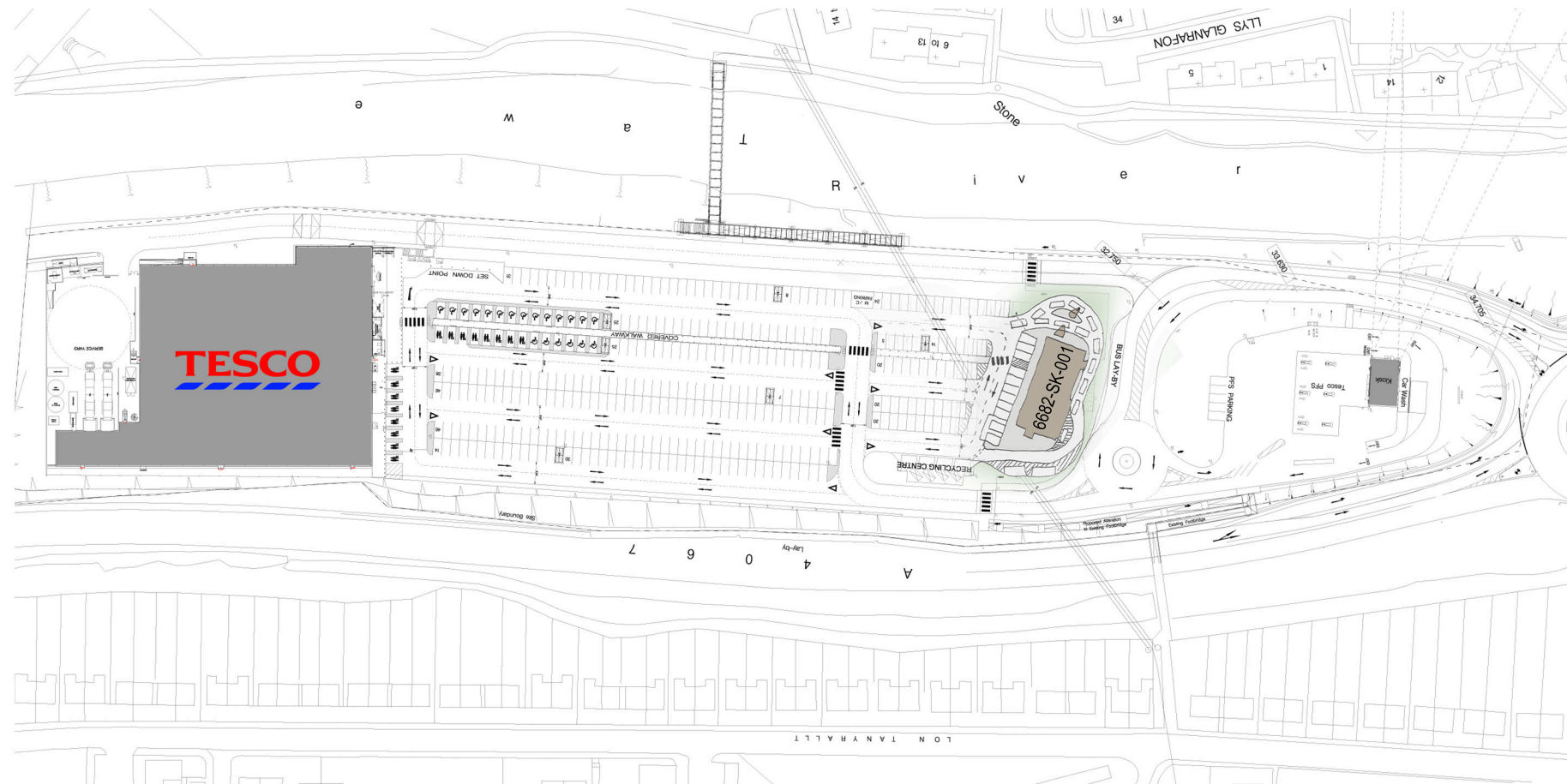


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Notes:

Key Site Plan drawings are not to scale.
This drawing is to be read in conjunction with
all other sketch schemes.



REV.	DATE	DRAWING REVISIONS	BY	CHECKED

GENERAL NOTES:

All works are to be undertaken in accordance with the Building Regulations and the latest British Standards.
All proprietary materials and products are to be used strictly in accordance with the manufacturer's recommendations.
All dimensions to be checked on site prior to construction.
All risks assessed to comply with the designers responsibility under the construction (design management) regulations 2007.

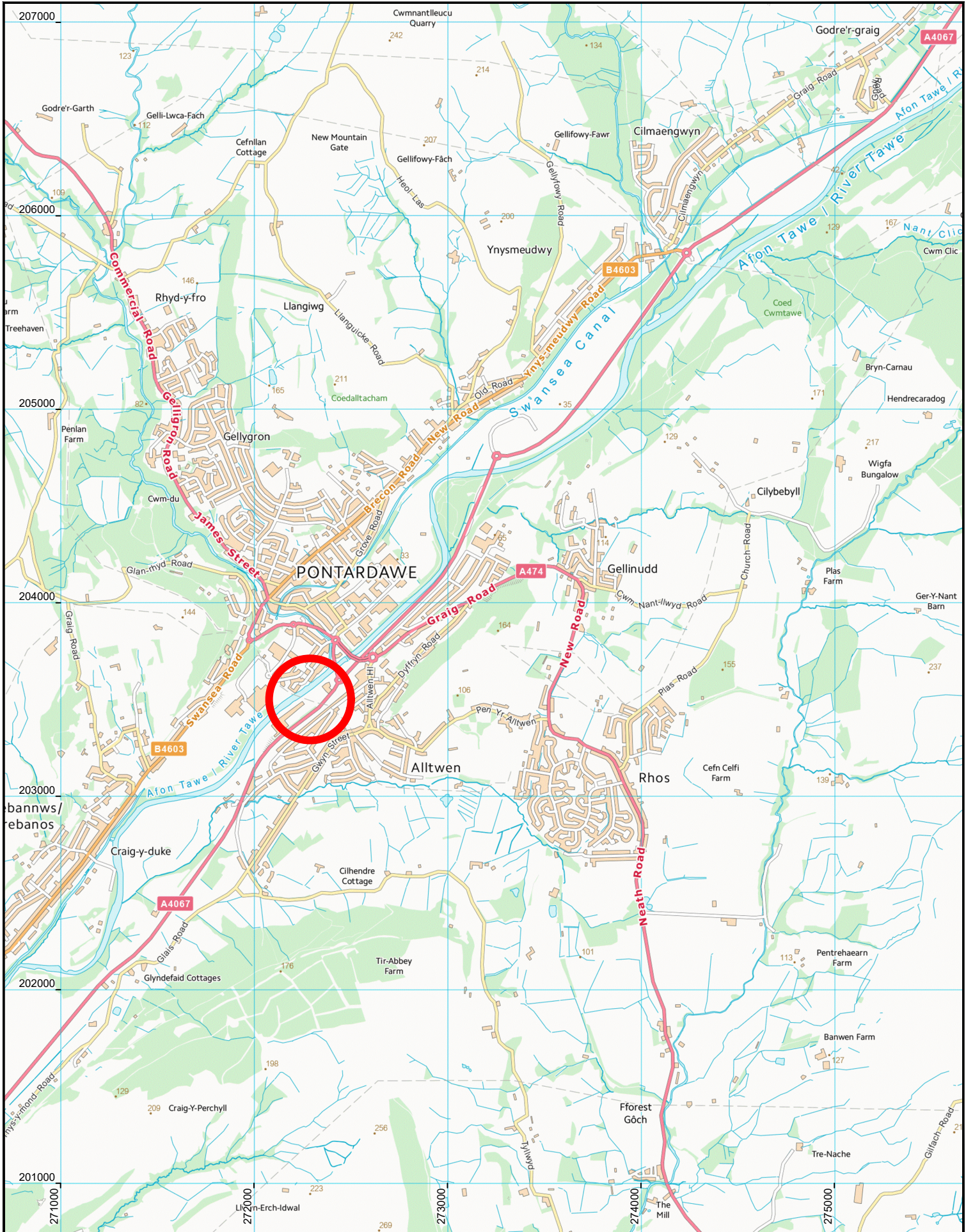
PROPOSED DEVELOPMENT AT
Pontardawe
Tesco Site
ON BEHALF OF :-
McDonald's Restaurants Ltd
DRAWING TITLE :-
Key Site Plan

DRAWN BY
SM
SCALE & SIZE
A4
CHECKED BY
DATE
Nov 2013
DRAWING NO.
6682-SK-002
REV NO.
-



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CLIENT

McDonald's Restaurants Limited

PROJECT

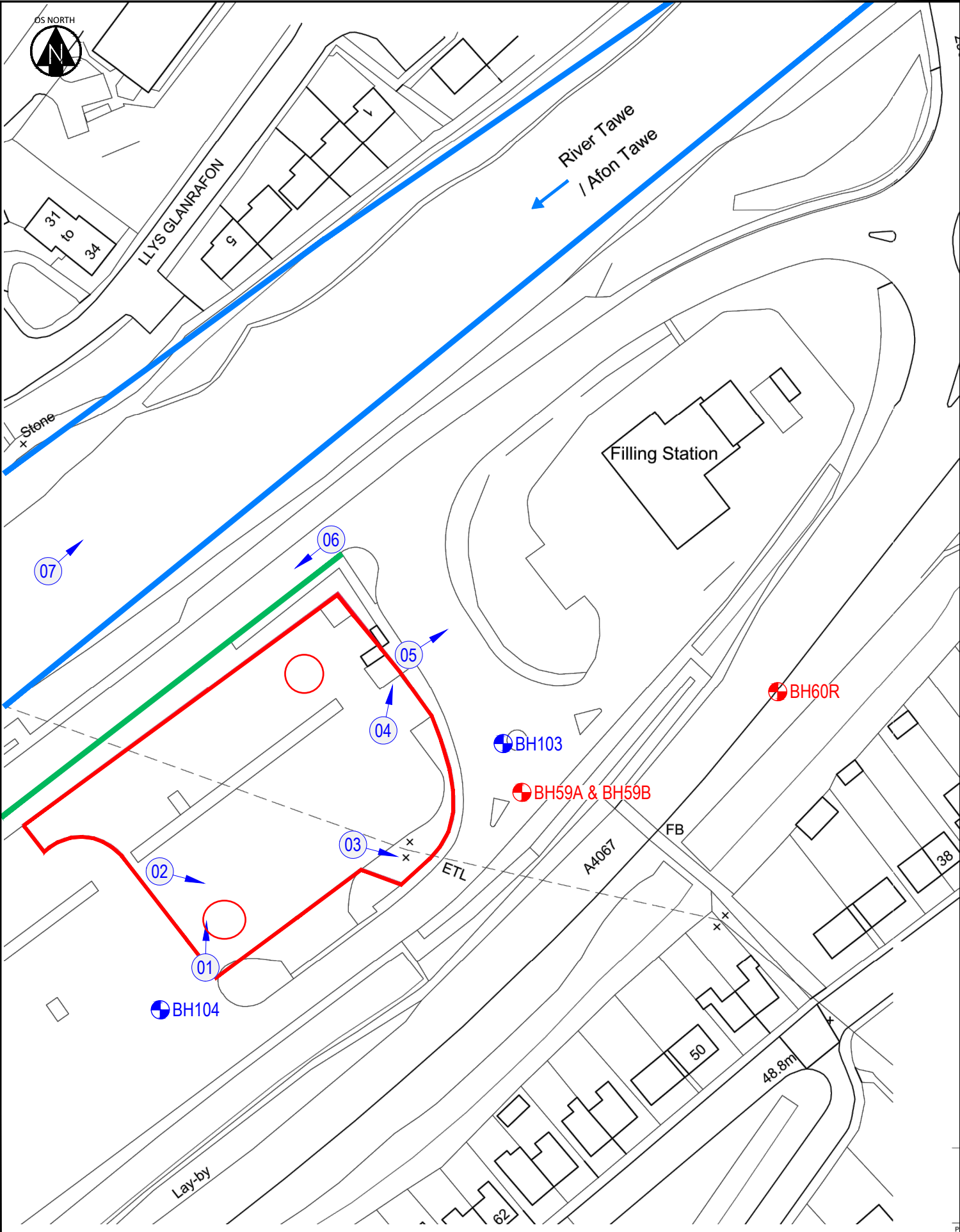
McDonald's Pontardawe

TITLE

SITE LOCATION PLAN

HYDROCK PROJECT NO. C-15297-C	SCALE @ A4 1:25,000
----------------------------------	------------------------

PURPOSE OF ISSUE SUITABLE FOR INFORMATION	STATUS S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 15297-HYD-XX-XX-DR-GE-1001	REVISION P1



KEY
Site boundary
BGS Borehole
Photo location and reference
Structural Soils Borehole 2003

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information:
Site Location_Plan_6682_SA_XXXX_AL01.

4. All borehole positions are approximate and based on visual estimations from historical plans.
P1
EP
05/05/20
MH
05/05/20
AE
05/05/20
REVISION NOTES/COMMENTS
REV.
DRAWN BY
DATE
CHECKED BY
DATE
APPROVED BY
DATE

5-19 Cowbridge Road East
Cardiff
CF11 3AB
t: +44(0) 2920 023 665
e: cardiff@hydrock.com

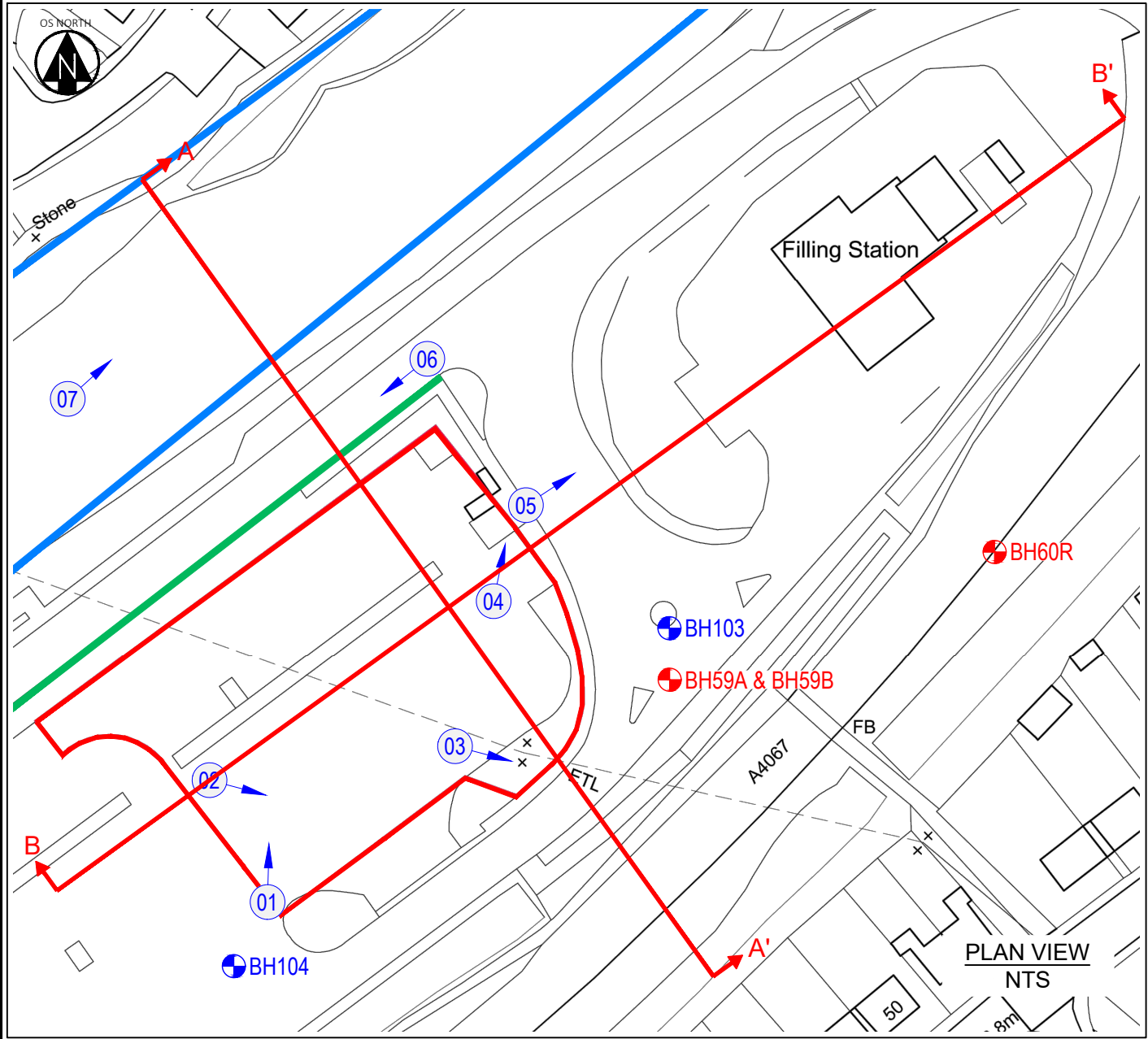
CLIENT

McDonald's Restaurants Limited

PROJECT

McDonald's Pontardawe

TITLE
SITE WALKOVER PLAN
HYDROCK PROJECT NO. C-15297-C
SCALE @ A4 NTS
PURPOSE OF ISSUE SUITABLE FOR INFORMATION
DRAWING NO. (PROJECT - ORIGINATOR VOLUME-LEVEL-TYPE-ROLE-NUMBER) 15297-HYD-XX-XX-DR-GE-1002
STATUS S2
REVISION P1



Potential on-site sources of contamination

- S1. Made Ground, associated with historical coal mining activities on site and old site buildings, including elevated concentrations of metals, metalloids, asbestos fibres, asbestos containing materials, polycyclic aromatic hydrocarbons (PAH) and petroleum hydrocarbons.
- S2. Made Ground, associated with the construction of the Tesco car park (possibly contaminated fill); contaminants could include metals, metalloids, asbestos fibres, asbestos containing materials, polycyclic aromatic hydrocarbons (PAH) and petroleum hydrocarbons.
- S3. Ground gases (carbon dioxide and methane) from organic materials present in Made Ground Alluvium and/or Glaciofluvial Deposits.
- S4. Radon gases; 1-3% of houses are above the action level.

Potential off-site sources of contamination

Source S5 to S9 removed following site investigation see Phase 2 report.

- S10. Ground gases (carbon dioxide and methane) from adits, possible mine workings and coal seams adjacent to the site.
- S11. Ground gases (carbon dioxide and methane) from organic materials in the Alluvium and Glaciofluvial Deposits adjacent to the site.

Potential receptors

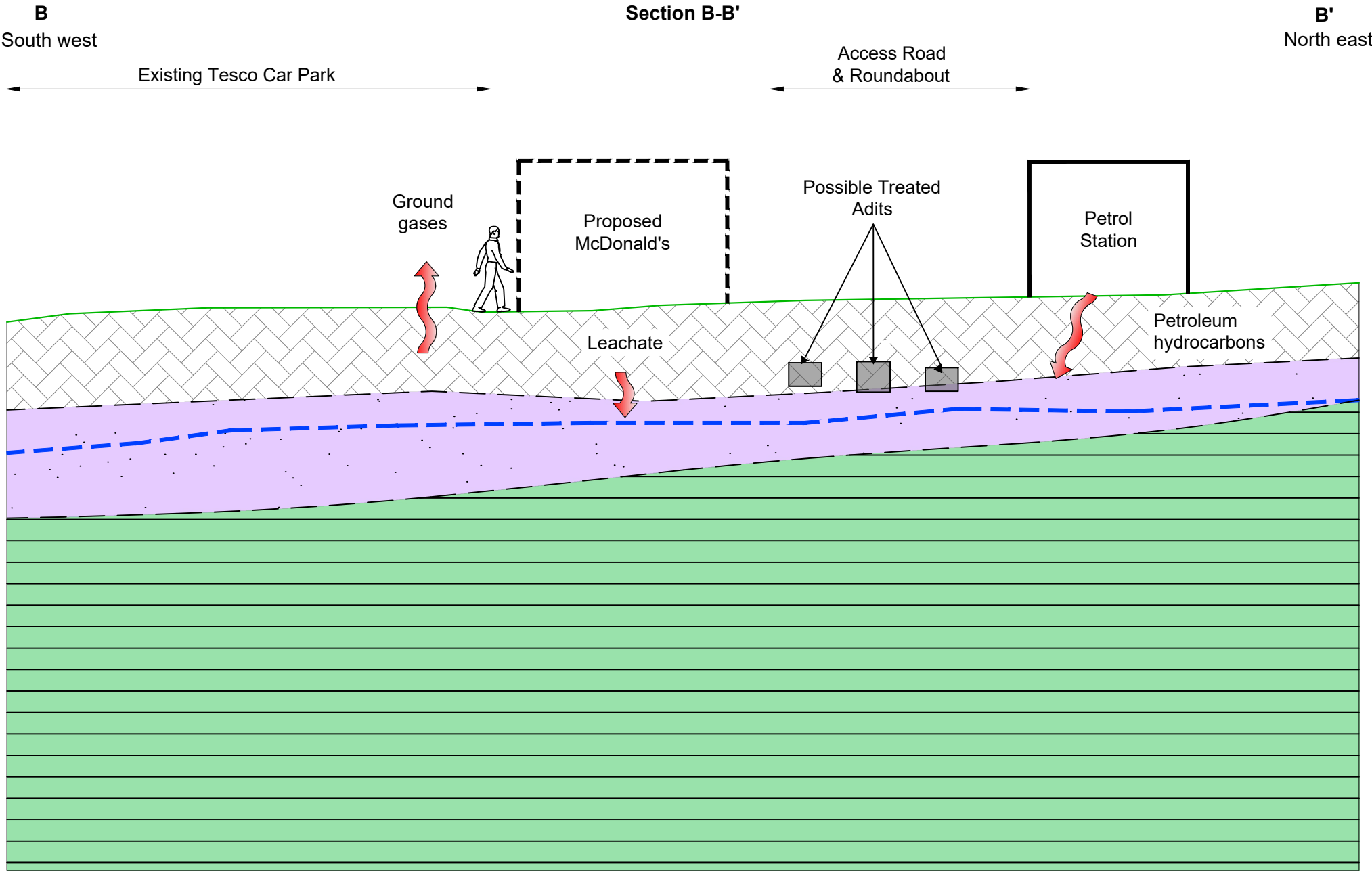
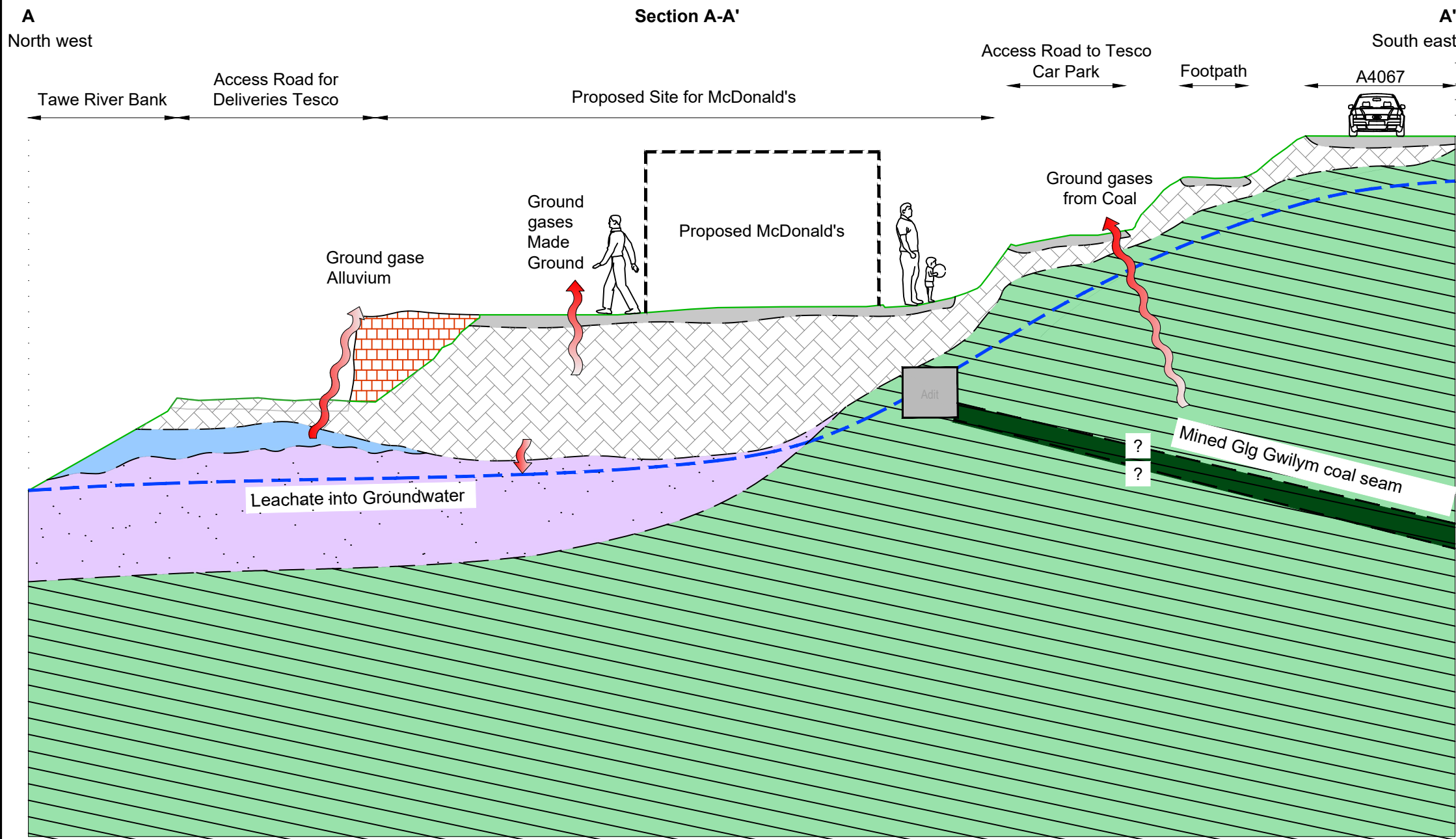
The following potential receptors in relation to the proposed land use have been identified.

- R1. People (neighbours, site end users).
- R2. Development end use (buildings, utilities and landscaping).
- R3. Groundwater: Secondary A aquifer status of the Glaciofluvial Deposits and Brithdir Member.
- R4. Surface water: River Tawe 35m northwest of site.

Potential pathways

The following potential pathways have been identified.

- P1. Ingestion, skin contact, inhalation of dust and outdoor air by people.
- P2. Carbon dioxide and methane ingress via permeable soils and/or construction gaps.
- P3. Volatile organic compound (VOC) and petroleum hydrocarbon vapour ingress via permeable soils and/or construction gaps.
- P4. Migration of contaminant via leachate migration through the unsaturated zone in the Made Ground, Alluvium and/or Glaciofluvial Deposits.
- P5. Surface water via base flow from groundwater (P6).



KEY	Existing ground profile
Conjectural geological boundary	
Approximate Groundwater elevation	
Hard Surfacing	BH BGS Borehole
Made Ground	BH Structural Soils Borehole 2003
Reinforced Soil Wall	
Glaciofluvial Deposits	
Alluvium	
Brithdir Member	

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

SECOND ISSUE					
P2	GGD	27/10/21	MH	27/10/21	AE
FIRST ISSUE					
P1	EP	11/05/20	MH	11/05/20	AE
REVISION NOTES/COMMENTS					
REV.	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY

5-19 Cowbridge Road East
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e: cardiff@hydrock.com

CLIENT

McDonald's Restaurants Limited

PROJECT

McDonald's Pontardawe

TITLE	
REVISED SITE CONCEPTUAL MODELS	
PLAN VIEW	
(SECTION A-A' & SECTION B-B')	
HYDROCK PROJECT NO.	SCALE @ A2
C-15297-C	NTS
PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
15297-HYD-XX-XX-DR-GE-1003	P2



203550N

203525N

203500N

203475N

203450N



- KEY
- 2021 Hydrock Investigation
 - CP01 Borehole Location
 - TP01 Trial Pit Location
 - 2004 Structural Soils Borehole
 - BH103 Borehole Location
 - Site Investigation/Application Boundary

- NOTES
1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
 3. This drawing has been based on the following drawings and information:
Site Location_Plan_6682_SA_XXXX_AL01.

Topographical survey at Tesco Supermarket Pontardawe 15297-TS01.

P2	FIRST ISSUE					
	MH	28/09/21	MH	28/09/21	AE	28/09/21
P1	FIRST ISSUE					
	EP	25/05/21	MH	05/05/21	AE	25/05/21
REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE



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e: cardiff@hydrock.com

CLIENT

MCDONALDS RESTAURANTS LIMITED

PROJECT

MCDONALDS PONTARDAWE

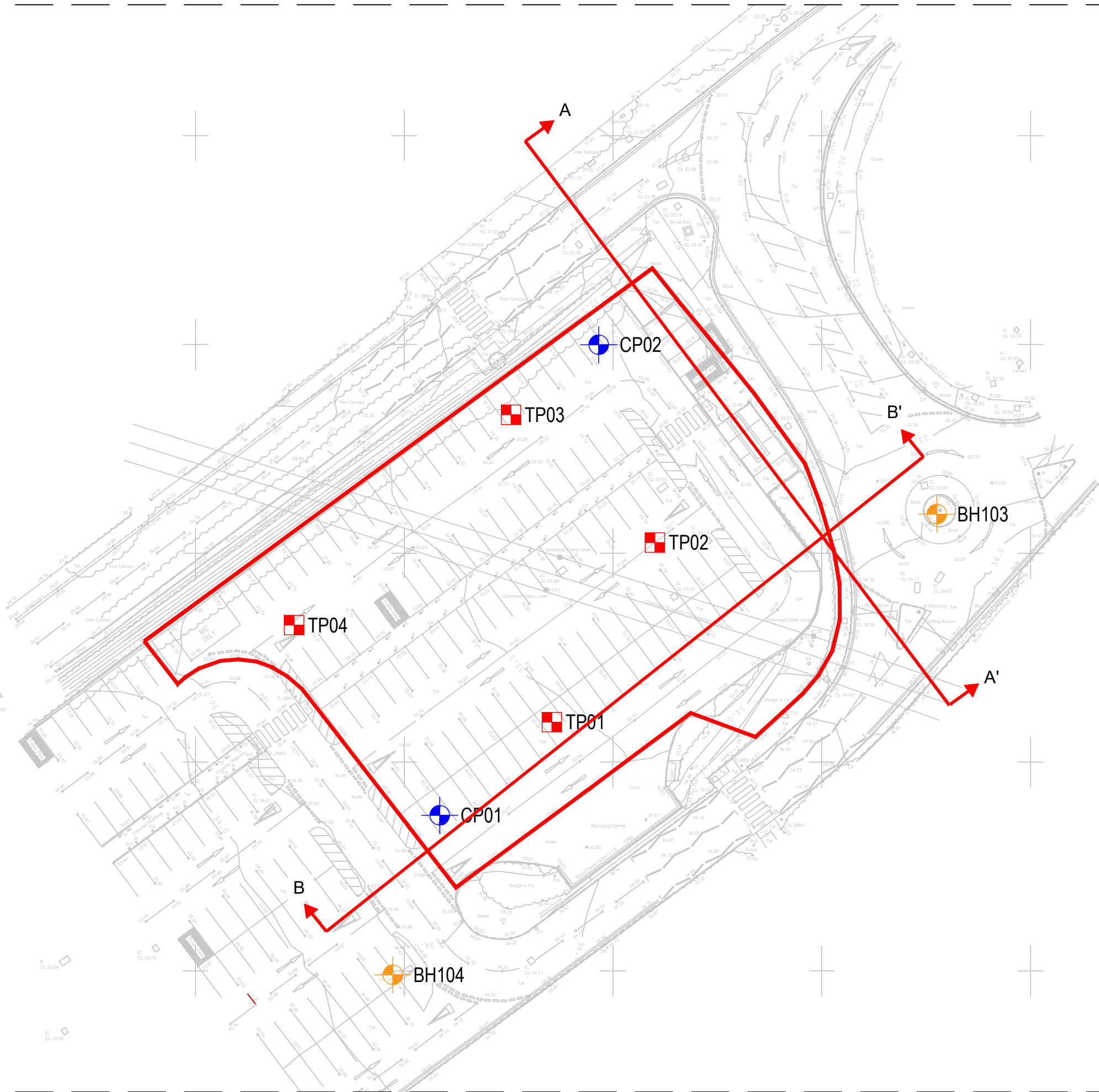
TITLE

EXPLORATORY HOLE LOCATION PLAN

HYDROCK PROJECT NO. C-15297-C		SCALE @ A3 1:500	
PURPOSE OF ISSUE SUITABLE FOR INFORMATION			STATUS S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 15297-HYD-XX-XX-DR-GE-1004_S2_P2			REVISION P2

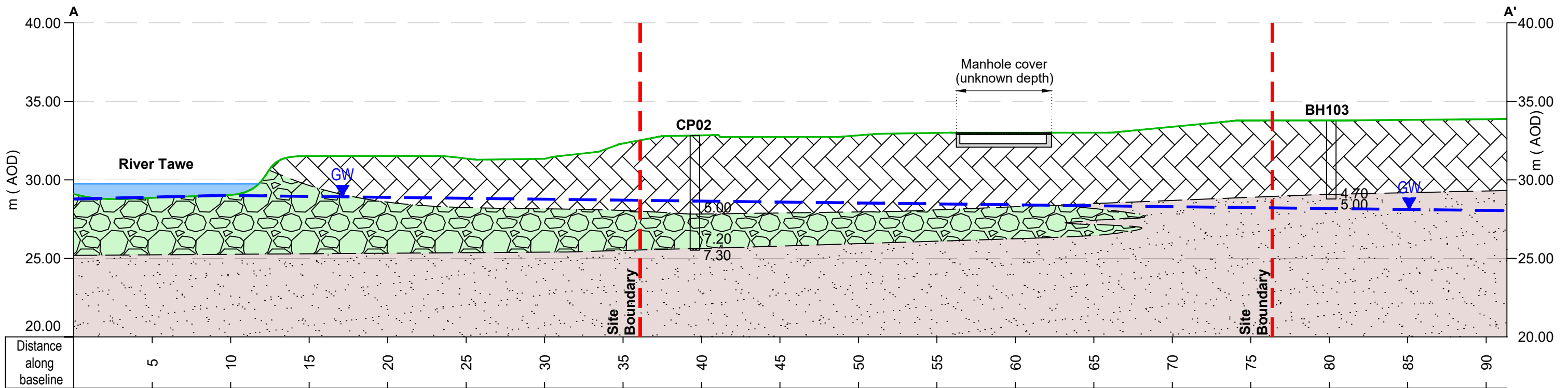


PLAN VIEW
SCALE 1:500

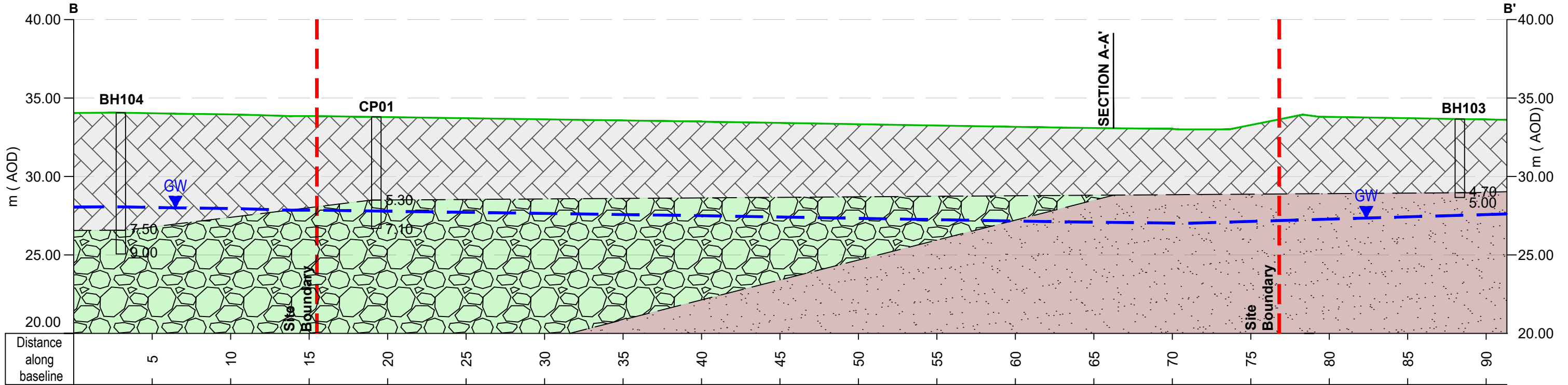


KEY:	
	Site Investigation/Application Boundary
	Borehole Location 2021 Hydrock Investigation
	Trial Pit Location 2021 Hydrock Investigation
	Historic Borehole Location
	Line of Cross Section

SECTION A - A'
Scale 1:250



SECTION B - B'
Scale 1:250



KEY	
	Existing ground profile
	Conjectural geological boundary
	Made Ground
	Glaciofluvial Deposits
	Sandstone

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P1	FIRST ISSUE					
EP	30/09/21	GD	30/09/21	GD	30/09/21	

CLIENT

MCDONALDS RESTAURANTS LIMITED

PROJECT

MCDONALDS PONTARDAWE

TITLE

GEOLOGICAL INTERPRETED
CROSS SECTIONS A-A' & B-B'

HYDROCK PROJECT NO.
C-15297-C

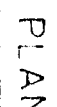
SCALE @ A2
1:500,1:250

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
15297-HYD-XX-XX-DR-GE-1007

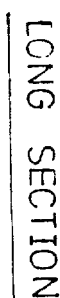
STATUS
S2

REVISION
P1

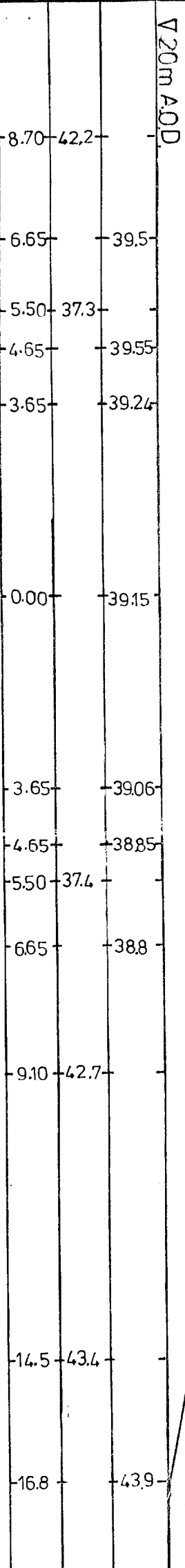


LOCATION OF ADIT SHOWN ON
NCB PLAN NO 9259. NOT FOUND ON SITE

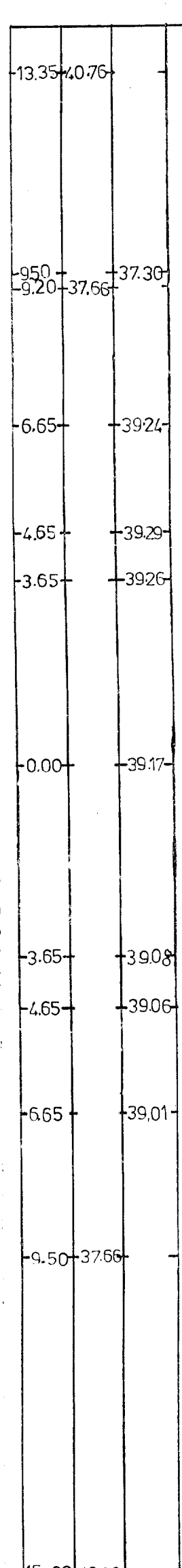
SCALE 1:1250



<u>SCALES</u>	
Vert	1:125
Horiz	1:1250



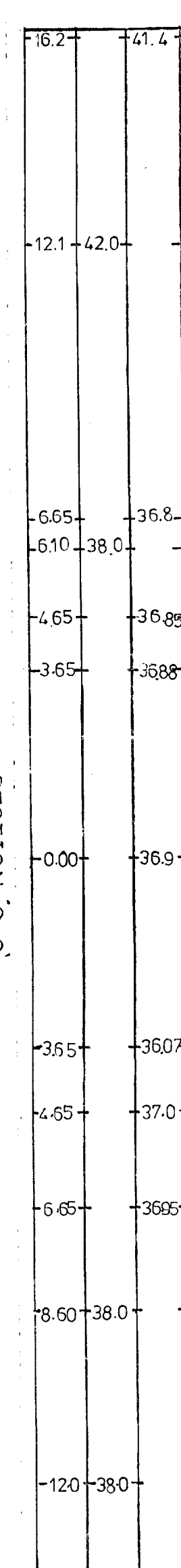
SECTION 'A-B'



SECTION 'B-B'

SCALES

VERI	1:1
HORIZ	1:1



SECTION C-C

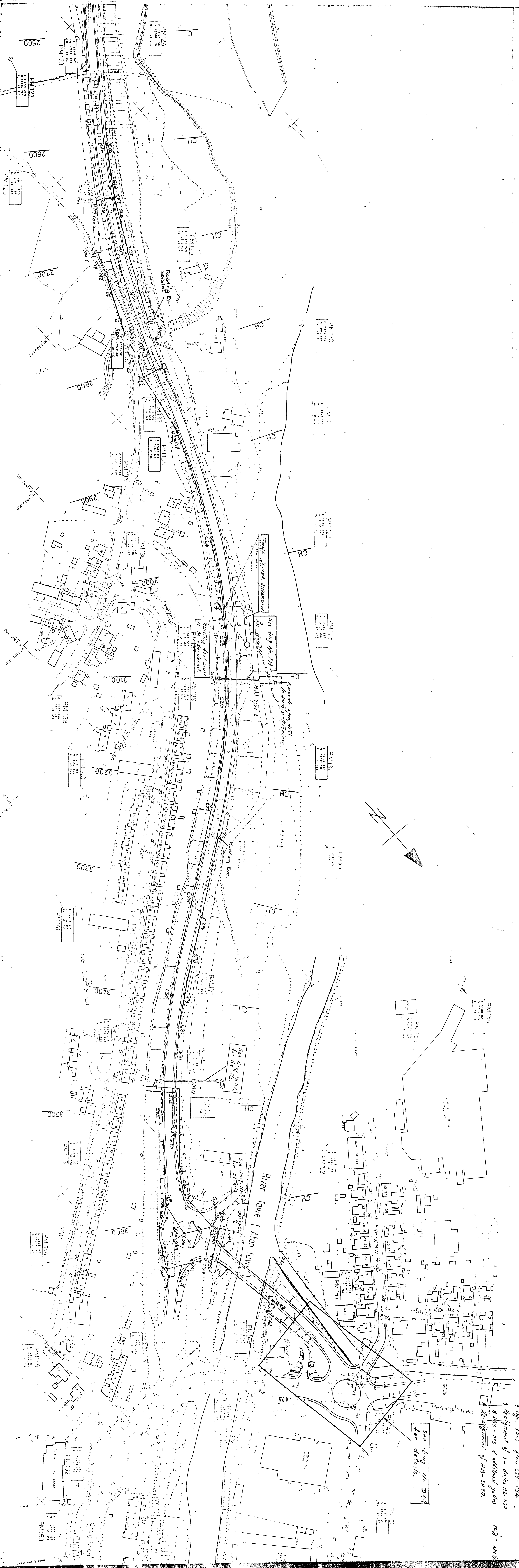
Su't's	Amendments	Date	Int'l

WEST GLAMORGAN COUNTY COUNCIL
W.J. WARD, F.I.C.E., F.I.STRUCTURE, F.I.H.T., F.R.T.P.I.,
COUNTY ENGINEER AND SURVEYOR
COUNTY HALL
SWANSEA SA1 3SN

Job Title

A4067 SWANSEA VALLEY ROUTE
GLAIS TO PONTARDAWE
ABANDONED COAL WORKINGS.

File No. 26,349		Cost Code No.	
Drawn	RHM	Traced	Checked
Date	FEB 85	Date	Date
Scales		AS SHOWN	



GULLY CONNECTING DRAIN

Ref No.	Location Change	Opening	Gully	Length	Drain Group
669	2700 L	CUI Gully	GA1	15	D6.3
670	2740 L	"	"	14	"
671	2770 L	"	"	12	"
672	2810 L	"	"	23.5	D6.1
673	3345 L	"	"	5	"
674	3405 L	"	"	5	"
675	3690 R	"	"	15	"
676	3600 R	"	"	15	D6.3
677	280 Outer Circle Choke	"	"	11.5	"
678	30	"	"	1.5	"
679	550 R (Moor) (down road)	"	"	4.0	D6.2
680	520 L	"	"	9.0	D6.1
681	116 Outer Circle Choke	"	"	5.0	D6.2
682	550 Parkside Link	"	"	7.5	"
683	3565 L	"	"	2.0	"
684	3575 L	"	"	2.0	"
685	3585	"	"	4.0	"
686	221 Kestrel Road	"	"	10.5	D6.1
687	235	"	"	16	D6.2
688	371 Parkside Link	"	"	10	D6.3
689	4 Inner Circle Choke	"	"	14.0	D6.2
690	16	"	"	8.0	"
691	36	"	"	11.0	"
692	50 Inner Circle Choke	"	"	2.0	D6.3
693	685	"	"	16.0	D6.2
694	133 Parkside Link	"	"	12.0	D6.1
695	3445 L	"	"	1.5	D6.3
696	3485 L	"	"	1.5	D6.3
697	3575 L	"	"	1.5	D6.3

CATCHPITS

Ref No.	Location Change	Catchment Area	Level	Level	Opening
C21	2700 L	CPI	34.84	34.75	CUI Gully
C22	2812 R	"	32.75	34.25	"
C23	2880 R	"	34.22	37.21	"
C24	2910 R	"	34.18	37.84	"
C25	3200 R	"	37.30	36.42	"
C26	3125 R	"	37.64	36.64	"
C27	3720 R	"	37.17	38.22	"
C28	3305 L	"	36.40	37.45	"
C29	3323 L	"	36.41	37.46	"
C30	3400 R	"	36.17	37.63	"
C31	3427 L	"	35.77	36.82	"
C32	3505 R	"	35.45	36.45	"
C33	3517 L	"	35.15	35.22	"
C34	3580 L	"	34.45	36.04	"
C35	3590 R	"	34.40	36.03	"
C36	TANTRALIT R/WAY	"	34.20	36.25	"
C37	"	"	34.20	36.5	"
C38	"	"	34.83	36.53	"
C39	"	"	34.50	36.56	"
C40	"	"	28.78	36.46	"
C41	133 Parkside Link	"	32.7	31.60	"

FRENCH DRAINS

Ref No.	Length	Diameter	Design	Depth to Invert	Invert	Outlet
C22-C23	66	225	Type G	1.60	2.20	34.21
C23-C24	40	"	"	1.06	1.46	34.75
C24-C25	44	"	"	1.17	1.25	37.21
C25-C26	61	"	"	1.22	1.33	37.84
C26-C27	45	"	"	1.60	1.15	37.45
C27-C28	85	"	"	1.15	1.35	37.15
C28-C29	75	"	"	1.05	1.08	37.51
C29-C30	148	"	"	1.48	1.48	36.85
C30-C31	105	"	"	1.39	1.48	34.16
C31-C32	90	"	"	1.06	1.06	36.45
C32-C33	48	"	"	1.48	1.48	36.45
C33-C34	85	"	"	1.39	1.50	36.45
C34-C35	55	"	"	1.60	1.68	36.00

SURFACE WATER DRAINS

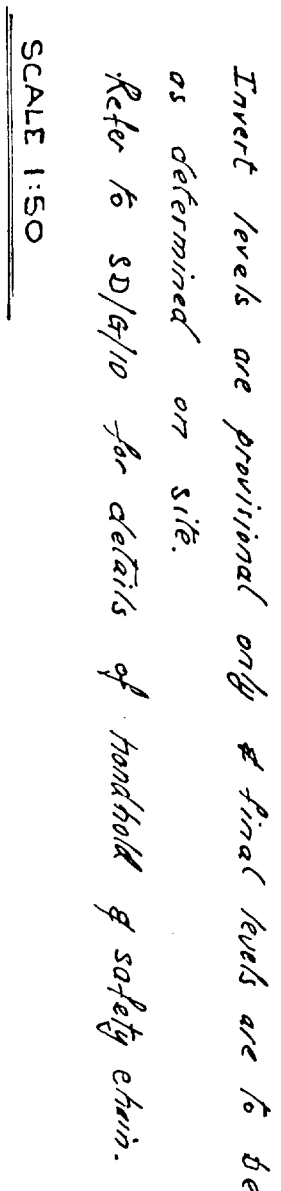
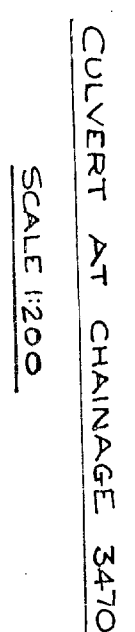
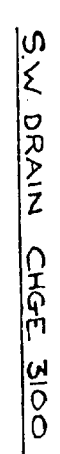
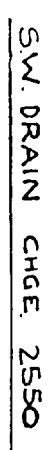
Ref No.	Length	Diameter	Design	Depth to Invert	Invert	Outlet
C19-C21	50	225	"	1.20	1.42	34.85
C21-C22	47	"	"	0.87	1.14	36.54
C22-C23	20	"	"	2.0	2.3	31.45
C23-C24	23	"	"	2.0	2.3	31.45
C24-C25	42	"	"	1.86	2.80	36.44
C25-C26	30	"	"	1.74	2.05	34.54
C26-C27	24	"	"	2.22	2.51	34.19
C27-C28	22	300	"	2.25	2.56	33.94
C28-C29	10	450	"	1.73	2.18	28.71
C29-C30	24	300	"	1.77	1.97	34.87
C30-C31	26	212	"	2.51	2.59	34.59
C31-C32	35	"	"	1.56	2.40	31.45
C32-C33	43	300	"	1.70	1.70	31.45
C33-C34	12	985	"	1.5	1.8	36.88
C34-C35	16	920	"	3.2	3.1	31.45
C35-C36	30	920	"	4.4	5.4	31.10
C36-C37	17	480	"	1.05	1.07	35.45
C37-C38	142	315	"	1.06	1.08	35.15
C38-C39	90	"	"	1.27	1.28	35.15
C39-C40	63	"	"	1.25	1.28	35.15

KEY

Open Drain
French Drain
Surface water drain

S.D. DRAWING NOS.

S0/G/1	Manholes
S0/G/1K	"
S0/G/12	Gully groups
S0/G/1	"
S0/G/13	Gully Connecting Drains
S0/G/14	French Drains
S0/G/15	Fire building details
S0/G/16	Gully Connecting Drains
S0/G/17	Open drains
S0/G/18	Reading Eye
S0/G/19	Drain details
S0/G/20	Drain group details



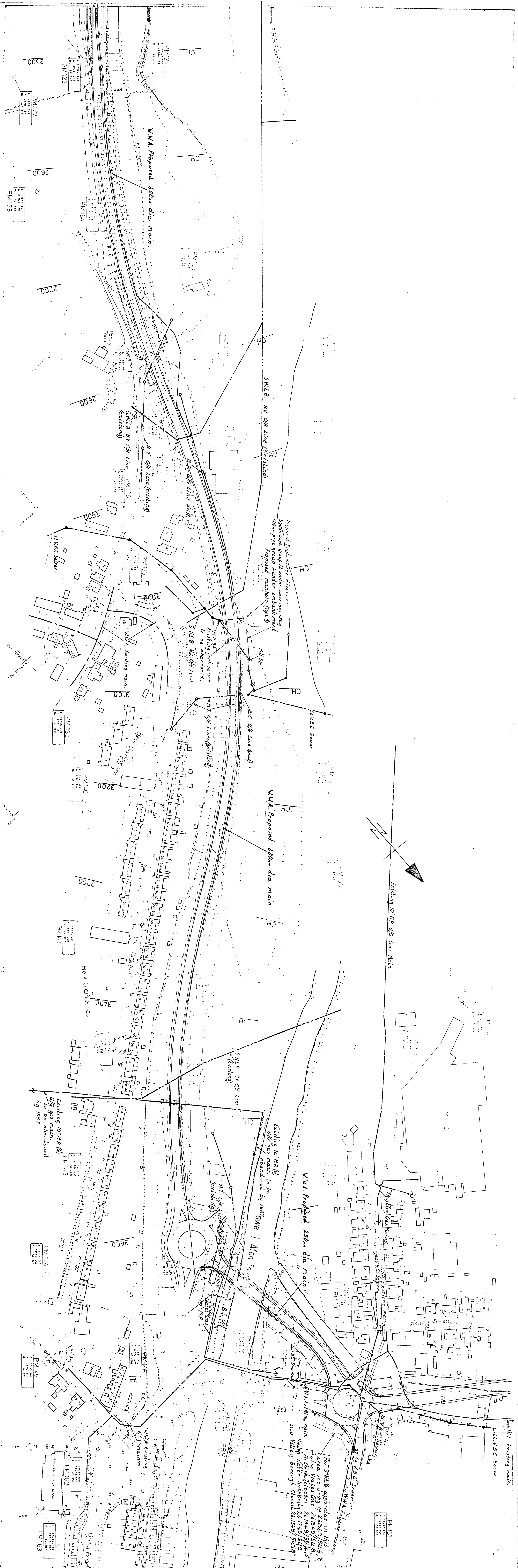
S. 4. Drain at Ch. 3.100 realigned.

COUNTY HALL
SWANSEA SA1 3SN

DRAINAGE DETAILS

HEET 3 OF 3

Oct. 85	Date	
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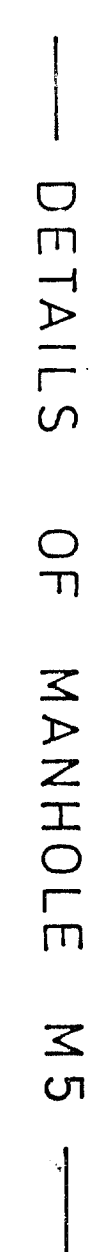
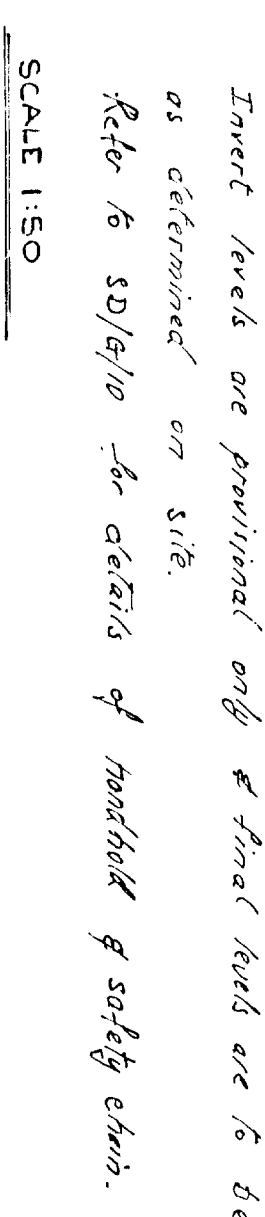
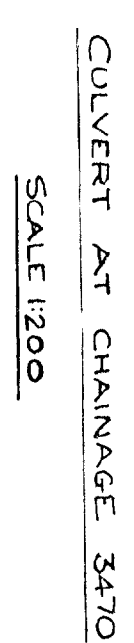
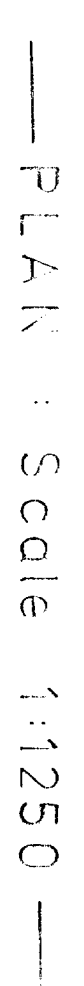
NOTES

1. This plan is based on information supplied by statutory undertakers and is issued as a preliminary plan. It is intended to be used as a guide only and is not to be relied upon for any excavation and the owner of the property is advised to consult the statutory undertakers for further information.

2. All diversion work to be carried out by the statutory undertakers.

3. Contractor to carry out sewer diversion at clearance 3000.

DRAWN	CHECKED	DATE	W. J. WARD F.I.C.E., F.I.P.N.E., F.I.S.T.U.C.T.E., F.I.H.E., F.I.R.T.I.
TRACED			COUNTY ENGINEER AND SURVEYOR
DATE	May 86		WEST GLAMORGAN COUNTY COUNCIL
FILE NO.			SWANSEA
SCALES	1:1250	13.605	JOB NO. 26343/503



WEST GLAMORGAN COUNTY COUNCIL

SWANSEA SAT 35N

RD AWE

ent of N.C.B. Adit]

Date	Date
8/86	

Appendix B

Exploratory Hole Location Plan, Exploratory Hole Logs and Photographs

Exploratory Hole Logs

Drilled By: CJ Associates

Flush: Water

Scale: 1:50

Progress and Observations									Chiselling			General Remarks: 1. Position recorded using total station GPS unit. 2. Position scanned with CAT and Genny prior to excavation. 3. Hand pit excavated to depth of 1.2m bgl. 5. Hole terminated on dense sand and gravels. 6. Groundwater encountered at 6.80m bgl rising to 5.90 m bgl after 20 mins. 7. Ground water and ground gas monitoring station installed with flush cover on completion.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
Dando 2000	25/08	0800	0.00	0.00	200	0.00	Water		6.90	7.10	01:00	
Dando 2000	25/08	0900	0.60	1.00	200	0.60	Water					
Dando 2000	25/08	1300	4.40	4.00	200	4.40	Water					
Dando 2000	25/08	1500	6.80	6.00	200	6.80	Water					

Logged in general accordance with BS5930:2011

Method: Cable Percussion

Date(s): 26/08/2021

Logged By: GGD

Drilled By: CJ Associates

Client: Mc Donalds Restaurants Limited

Co-ords: 272299.45, 203525.58

Checked By: MH

Flush: Water

Hydrock Project No: 15297

Ground Level: 32.86m OD

Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.25 - 0.35 0.25 - 0.35 0.45 - 0.65 0.45 - 0.65 0.75 - 1.15 0.75 - 1.15	B ES B ES B ES			Weak black MACADAM. 70-80% Aggregate of angular fine to coarse gravel. <5% small voids. (MADE GROUND) Grey to black slightly silt/clay sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone, brick and slag. With occasional cobble. (MADE GROUND)	0.20	(0.20)	32.66		
1.20 1.25 - 1.65 1.25 - 1.65	SPT B ES	N=5 (4,4,2,1,1,1)			1	(1.85)			
2.00 2.05 - 2.45 2.05 - 2.45	SPT B ES	N=8 (2,3,3,2,1,2)		Reddish brown slightly silt/clay gravelly SAND. Sand is fine to coarse. Gravels are fine to coarse angular of sandstone and glass. (MADE GROUND)	2	2.05	30.81		
3.00 3.05 - 3.45 3.05 - 3.45	SPT B ES	N=13 (1,1,1,4,4,4)		... Burnt charcoal odour	3				
4.00 4.05 - 4.45 4.05 - 4.45	SPT B ES	N=11 (2,2,3,2,3,3)			4				
5.00 5.00 - 5.45 5.00 - 5.45 5.55 - 5.95 5.55 - 5.95	SPT B ES B ES	N=8 (1,1,1,2,2,3)		Loose light greyish brown silty/clayey SAND. Sand is fine to coarse. (GLACIOFLUVIAL DEPOSITS)	5	5.00	27.86		
6.50 6.55 - 6.95 6.55 - 6.95	SPT B ES	N=29 (5,8,8,7,7,7)		Medium dense light greyish brown slightly silty/clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse sub rounded to rounded sandstone. (GLACIOFLUVIAL DEPOSITS)	6	5.55	27.31		
7.20 - 7.30 7.30	SPT B SPT	50/40mm (25,50)		Dense dark brown gravelly SAND. Sand is fine to coarse. Gravel is fine to medium rounded of sandstone. (GLACIOFLUVIAL DEPOSITS)	7	6.55	26.31		
				Weak light grey to brownish grey fine to coarse grained SANDSTONE. Recovered as brownish grey GRAVEL and COBBLES. Gravel and cobbles are fine to coarse angular of Sandstone. (BRITHDIR MEMBER) ... Terminated on bedrock.	7.20 7.26	(0.05)	25.66 25.61		
				End of Borehole at 7.30m	8				
					9				
					10				

Progress and Observations

Chiselling

General Remarks:

1. Position recorded using total station GPS unit. 2. Position scanned with CAT and Genny prior to excavation. 3. Hand pit excavated to depth of 1.2m bgl. 5. Hole terminated on Bedrock. 6. Groundwater encountered at 5.60m bgl rising to 4.80 m bgl after 20 mins. 7. Ground water and ground gas monitoring station installed with flush cover on completion.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)
Dando 2000	26/08	0800	0.00	0.00	200	0.00	Water		7.20	7.30	01:00
Dando 2000	26/08	1100	2.80	2.00	200	2.80	Water				
Dando 2000	26/08	1345	3.90	3.00	200	3.90	Water				
Dando 2000	26/08	1600	5.60	5.00	200	5.60	Water				

Method: Trial Pit	Date(s): 25/08/2021	Logged By: GGD	Checked By: MH
Client: Mc Donalds Restaurants Limited	Co-ords: 272292.46, 203480.40	Stability: Stable	Dimensions: 2.20m
Hydrock Project No: 15297	Ground Level: 33.35m OD	Plant: JCB3CX	0.80m 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.15 - 0.20	ES			Weak black MACADAM. 70-80% Aggregate of angular fine to coarse gravel. <5% small voids. (MADE GROUND)	0.10	(0.10)	33.25	
0.25 - 0.35	B			Grey to black slightly silty/clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone, brick and slag.	0.20	(0.10)	33.15	
0.30 - 0.35	ES			(MADE GROUND)				
0.45 - 0.50	ES			Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse sub-angular to angular of sandstone and slag.	0.40	(0.20)	32.95	
0.50 - 0.80	B			(MADE GROUND)				
				Grey to black slightly silty/clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone, brick, concrete, wood, ash and slag. (MADE GROUND)				
					1	(1.10)		
					1.50		31.85	
1.60 - 1.70	ES			Black sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone. With wood and brick. (MADE GROUND)				
1.70 - 1.75	D				2	(0.70)		
					2.20		31.15	
2.30 - 2.40	ES			Reddish brown to black slightly silty/clayey slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse angular of glass and brick. (MADE GROUND)		(0.30)		
2.40 - 2.50	B				2.50		30.85	
				Base of Excavation at 2.50m				
					3			
					4			
					5			

General Remarks:

1. CAT and Genny scan prior to excavation. 2. Machine excavated to 2.50m bgl terminated due to density of Made Ground. 3. No olfactory of visual evidence of contamination recorded. 4. Trial pit backfilled with arisings on completion, and reinstated with Asphalt at surface.

HoleBASE SI - Hydrock Trialhole Template v3

Method: Trial Pit	Date(s): 25/08/2021	Logged By: GGD	Checked By: MH
Client: Mc Donalds Restaurants Limited	Co-ords: 272287.84, 203516.57	Stability: Unstable	Dimensions: 2.20m
Hydrock Project No: 15297	Ground Level: 33.11m OD	Plant: JCB3CX	0.80m 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.15 - 0.20 0.15 - 0.20	B ES			Weak black MACADAM. 70-80% Aggregate of angular fine to coarse gravel. <5% small voids. (MADE GROUND)	0.10	(0.10)	33.01	
0.35 - 0.50 0.35 - 0.50	B ES			Grey to black slightly silty/clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone, brick and slag. (MADE GROUND)	0.30	(0.20)	32.81	
				Light greyish brown slightly sandy GRAVEL. Sand is fine to coarse. Gravel is coarse sub angular to sub rounded of slag. (MADE GROUND)		(0.40)		
0.80 - 0.90 0.80 - 0.90	B ES			Grey sandy gravelly SILTY/CLAY. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone. (MADE GROUND)	0.70		32.41	
					1	(1.10)		
1.80 - 1.90 1.80 - 2.00	ES B			Light greyish yellow slightly silty/clayey slightly sandy GRAVEL . Sand is fine to coarse. Gravel is fine to coarse angular of sandstone, brick and slag. (MADE GROUND)	1.80		31.31	
					2	(0.40)		
					2.20		30.91	
				Base of Excavation at 2.20m				
					3			
					4			
					5			

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 1.20m bgl terminated due to instability of trial pit. 3. No olfactory or visual evidence of contamination recorded. 4. Trial pit backfilled with arisings on completion and reinstated with Asphalt at surface.

Groundwater: None

HoleBASE SI - Hydrock Trialhole Template v3

Exploratory Hole Photographs

Desk Study Photograph 1	
Date: 24/09/2021	
Direction Photograph Taken: N/A.	
Description: CP01 hand dug pit to 1.2m bgl.	

Desk Study Photograph 2	
Date: 24/09/2021	
Direction Photograph Taken: N/A.	
Description: CP02 Hand dig pit to 1.2m bgl.	

Desk Study Photograph 3	
Date: 24/09/2021	
Direction Photograph Taken: N/A.	
Description: TP01 from GL- 2.5m bgl.	

Desk Study Photograph 4	
Date: 24/09/2021	
Direction Photograph Taken: N/A.	
Description: TP01 Spoil.	

Desk Study Photograph 5	
Date: 24/09/2021	
Direction Photograph Taken:	
Description: TP02 GL to 1.20m bgl terminated on brick feature.	

Desk Study Photograph 6	
Date: 24/09/2021	
Direction Photograph Taken: N/A.	
Description: Brick feature in TP02, unable to explore due to time and reinstatement constraints.	

Desk Study Photograph 7	
Date: 24/09/2021	
Direction Photograph Taken: N/A.	
Description: TP04 with perched water seepage at 1.0m bgl. Trial pit final depth to 1.20m bgl terminated due to water inflow.	

Appendix C

Geotechnical Test Results and Geotechnical Plots

Geotechnical Laboratory Test Results



Contract Number: 55568

Client Ref: **C-15297-C**

Report Date: **22-09-2021**

Client PO: **PO09493**

Client **Hydrock Limited**
Hydrock
First Floor
5 Castlebridge
5-19 Cowbridge Road East
Cardiff
CF11 9AB
Tel: 02920 023665 Mob: 07392 081090

Contract Title: **McDonalds Pontardawe**
For the attention of: **David Pethica**

Date Received: **27-08-2021**
Date Completed: **22-09-2021**

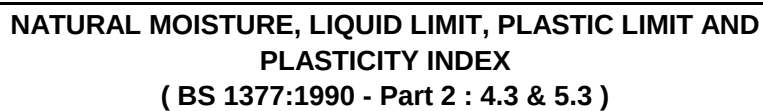
Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	4
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	4
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	10
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	1
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
* - denotes test included in laboratory scope of accreditation
- denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

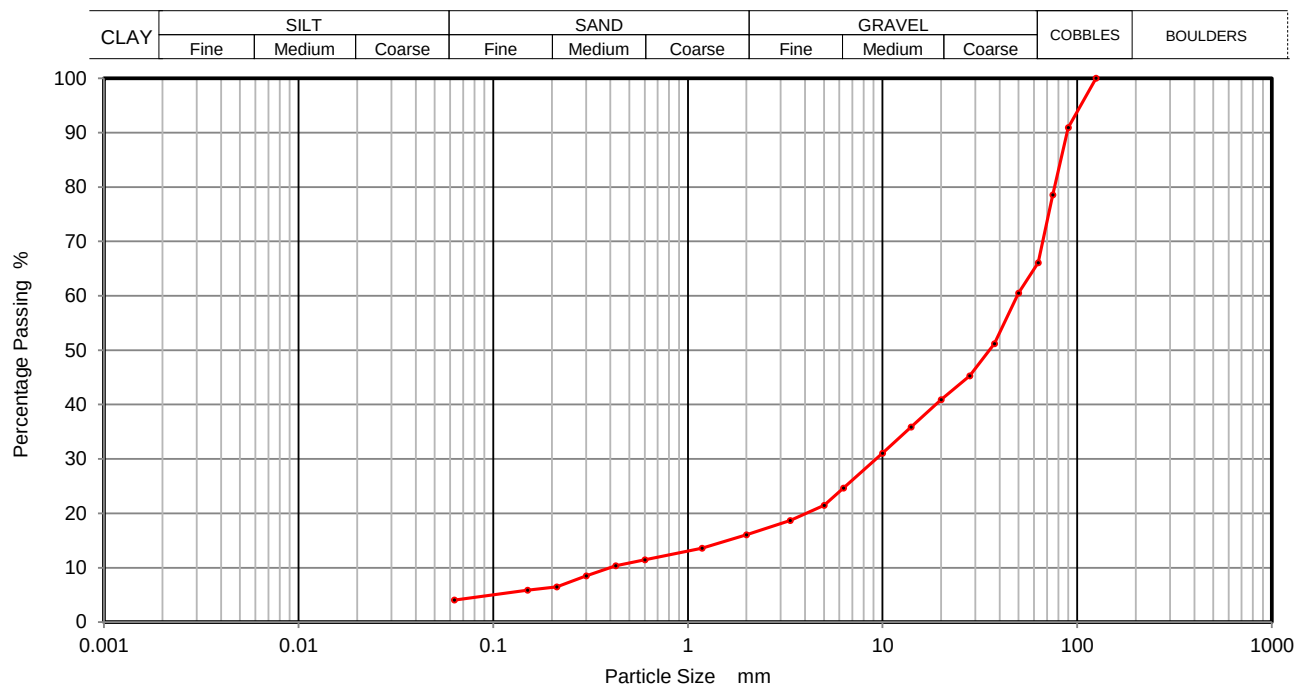
Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	55568
		Borehole/Pit No.	CP01
Site Name	McDonalds Pontardawe	Sample No.	
Soil Description	Grey slightly silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles	Depth Top	0.30
		Depth Base	0.50
Date Tested	21/09/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	91		
75	79		
63	66		
50	61		
37.5	51		
28	45		
20	41		
14	36		
10	31		
6.3	25		
5	21		
3.35	19		
2	16		
1.18	14		
0.6	11		
0.425	10		
0.3	8		
0.212	6		
0.15	6		
0.063	4		

Sample Proportions	% dry mass
Cobbles	34
Gravel	50
Sand	12
Silt and Clay	4

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 55568

Borehole/Pit No. CP01

Site Name McDonalds Pontardawe

Sample No.

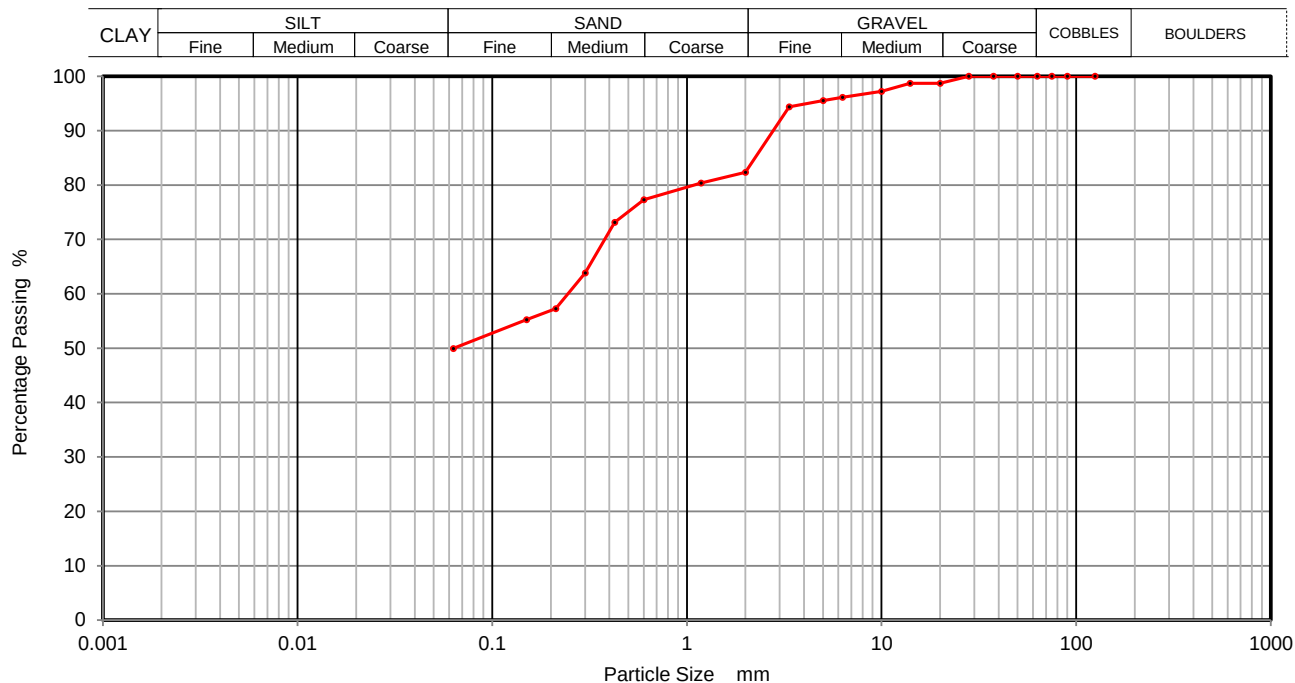
Soil Description Grey fine to coarse gravelly fine to coarse sandy SILTY/ CLAY

Depth Top 2.00

Depth Base 2.45

Date Tested 21/09/2021

Sample Type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	99		
10	97		
6.3	96		
5	96		
3.35	94		
2	82		
1.18	80		
0.6	77		
0.425	73		
0.3	64		
0.212	57		
0.15	55		
0.063	50		

Sample Proportions	% dry mass
Cobbles	0
Gravel	18
Sand	32
Silt and Clay	50

Remarks

Preparation and testing in accordance with BS1377 unless noted below

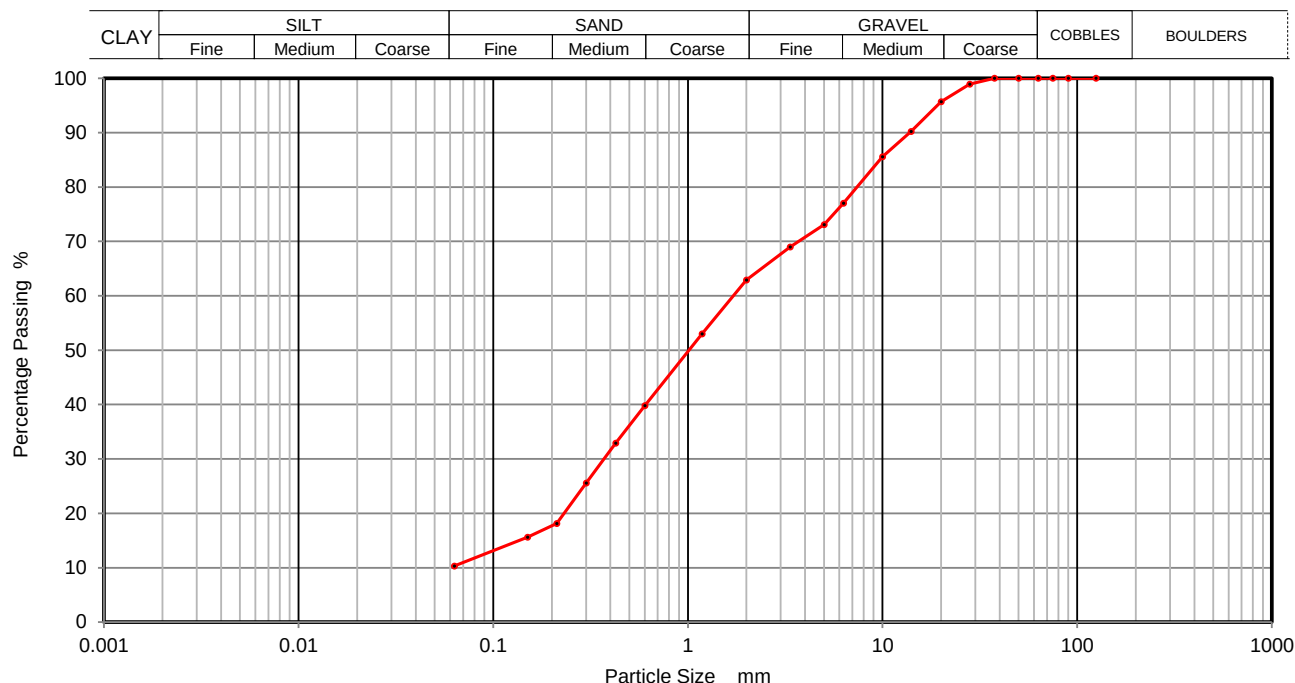
Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	55568
		Borehole/Pit No.	CP01
Site Name	McDonalds Pontardawe	Sample No.	
Soil Description	Brown silty/ clayey fine to coarse gravelly fine to coarse SAND	Depth Top	3.00
		Depth Base	3.45
Date Tested	21/09/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	96		
14	90		
10	86		
6.3	77		
5	73		
3.35	69		
2	63		
1.18	53		
0.6	40		
0.425	33		
0.3	26		
0.212	18		
0.15	16		
0.063	10		

Sample Proportions	% dry mass
Cobbles	0
Gravel	37
Sand	53
Silt and Clay	10

Remarks
Preparation and testing in accordance with BS1377 unless noted below

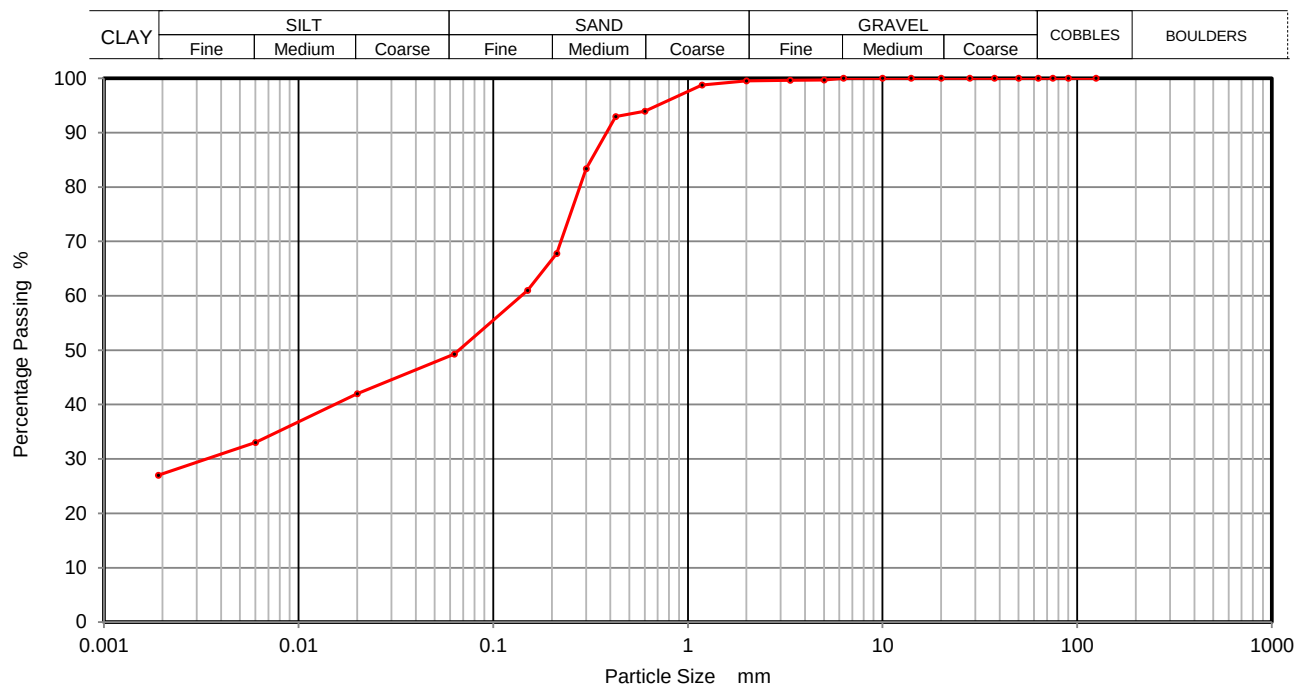
Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	55568
	Borehole/Pit No. CP01
Site Name	McDonalds Pontardawe
Soil Description	Grey silty clayey fine to coarse SAND
Date Tested	21/09/2021
Sample No.	
Depth Top	6.00
Depth Base	6.45
Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	42
90	100	0.0060	33
75	100	0.0020	27
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	94		
0.425	93		
0.3	83		
0.212	68		
0.15	61		
0.063	49		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	51
Silt	22
Clay	27

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 55568

Borehole/Pit No. CP02

Site Name McDonalds Pontardawe

Sample No.

Soil Description

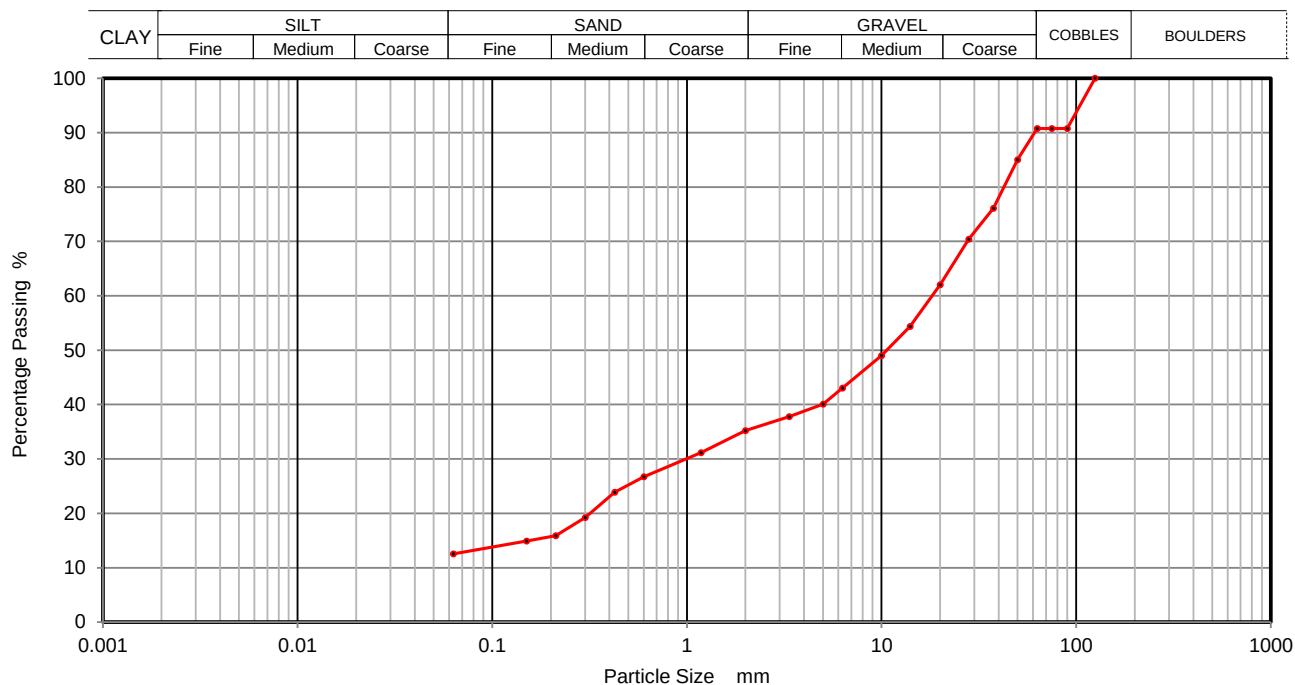
Grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles

Depth Top 0.45

Depth Base 0.65

Date Tested 21/09/2021

Sample Type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	91		
75	91		
63	91		
50	85		
37.5	76		
28	70		
20	62		
14	54		
10	49		
6.3	43		
5	40		
3.35	38		
2	35		
1.18	31		
0.6	27		
0.425	24		
0.3	19		
0.212	16		
0.15	15		
0.063	13		

Sample Proportions	% dry mass
Cobbles	9
Gravel	56
Sand	22
Silt and Clay	13

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	



2788



PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 55568

Borehole/Pit No. CP02

Site Name McDonalds Pontardawe

Sample No.

Soil Description

Brown/ grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles

Depth Top

1.25

Depth Base

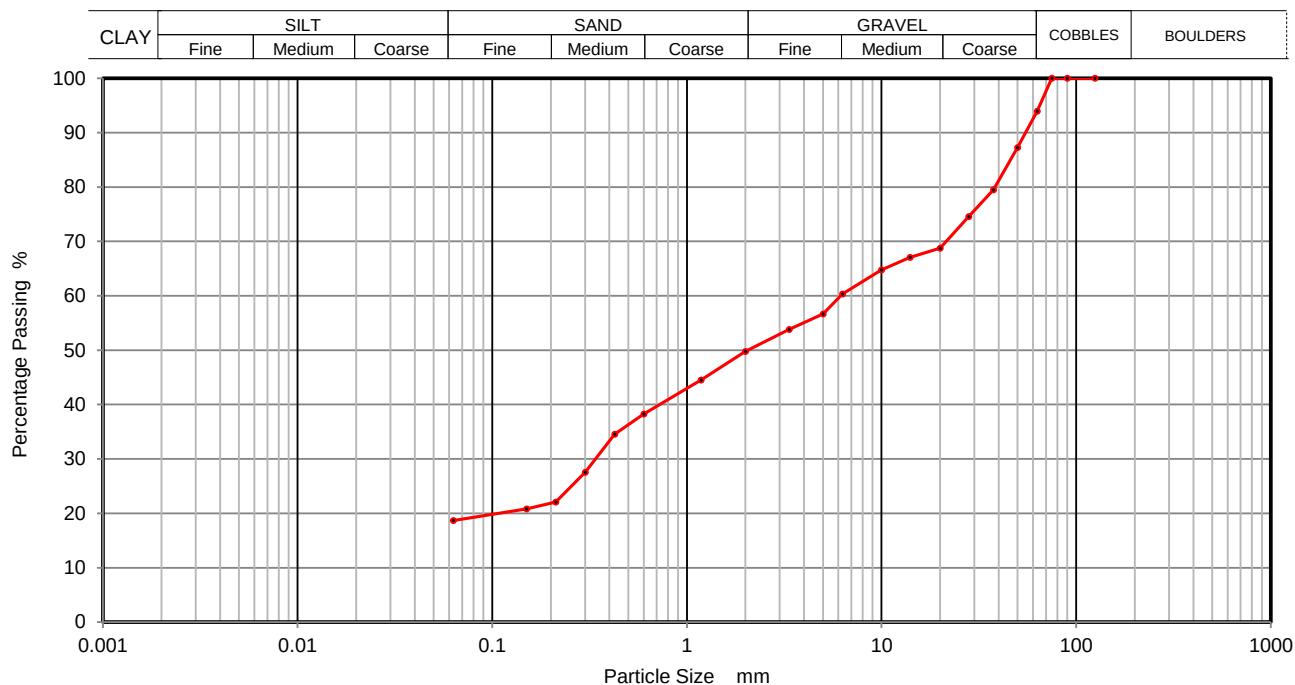
1.65

Date Tested

21/09/2021

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	94		
50	87		
37.5	79		
28	75		
20	69		
14	67		
10	65		
6.3	60		
5	57		
3.35	54		
2	50		
1.18	45		
0.6	38		
0.425	35		
0.3	28		
0.212	22		
0.15	21		
0.063	19		

Sample Proportions	% dry mass
Cobbles	6
Gravel	44
Sand	31
Silt and Clay	19

Remarks

Preparation and testing in accordance with BS1377 unless noted below

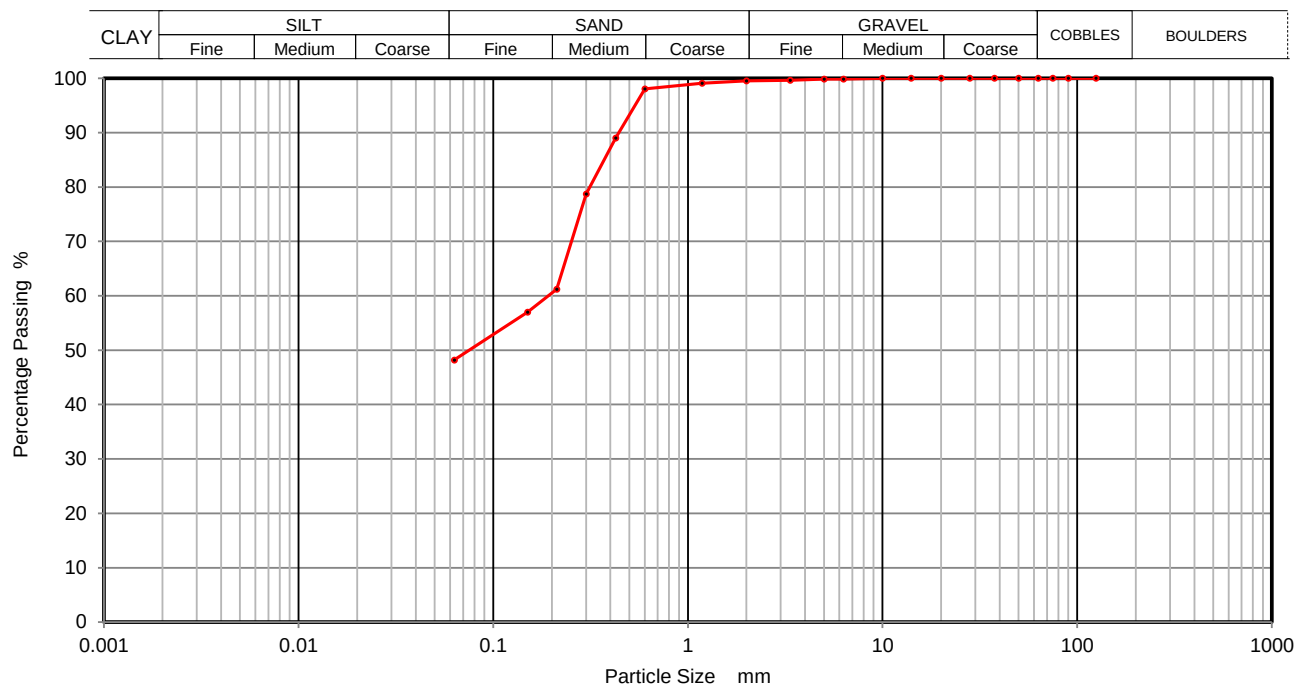
Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number	55568
	Borehole/Pit No. CP02
Site Name	McDonalds Pontardawe
Soil Description	Grey silty/ clayey fine to coarse SAND
	Depth Top 5.00
	Depth Base 5.45
Date Tested	21/09/2021
Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	89		
0.3	79		
0.212	61		
0.15	57		
0.063	48		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	52
Silt and Clay	48

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 55568

Borehole/Pit No. CP02

Site Name McDonalds Pontardawe

Sample No.

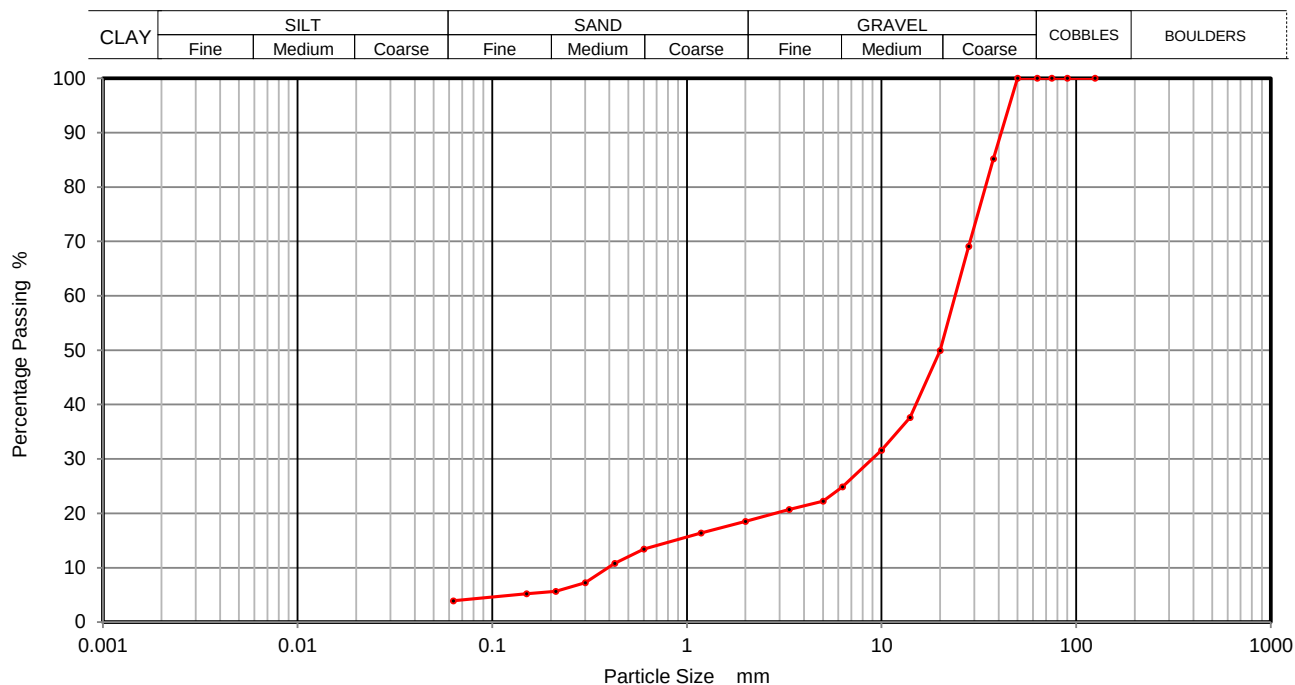
Soil Description Brown/ grey slightly silty/ clayey fine to coarse sandy fine to coarse GRAVEL

Depth Top 5.55

Depth Base 5.95

Date Tested 21/09/2021

Sample Type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	85		
28	69		
20	50		
14	38		
10	32		
6.3	25		
5	22		
3.35	21		
2	18		
1.18	16		
0.6	13		
0.425	11		
0.3	7		
0.212	6		
0.15	5		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	82
Sand	14
Silt and Clay	4

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	



2788



PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 55568

Borehole/Pit No. TP01

Site Name McDonalds Pontardawe

Sample No.

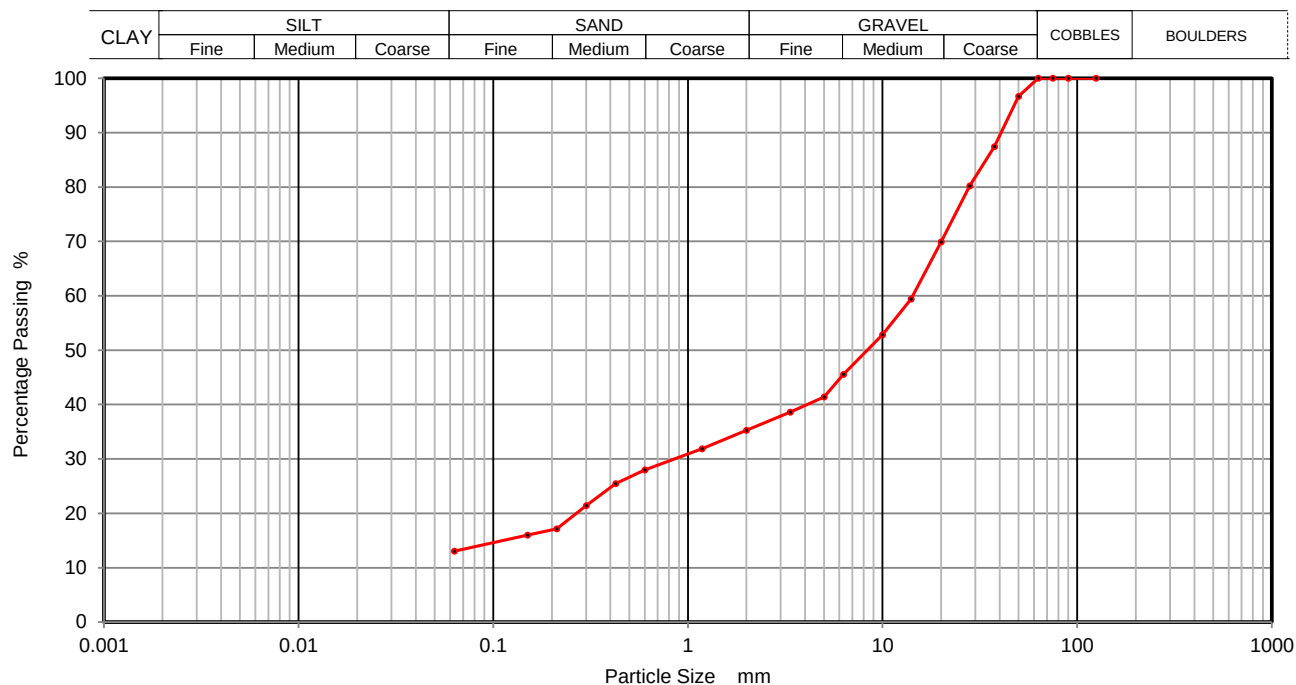
Soil Description Grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL

Depth Top 0.50

Depth Base 0.80

Date Tested 21/09/2021

Sample Type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	97		
37.5	87		
28	80		
20	70		
14	59		
10	53		
6.3	46		
5	41		
3.35	39		
2	35		
1.18	32		
0.6	28		
0.425	25		
0.3	21		
0.212	17		
0.15	16		
0.063	13		

Sample Proportions	% dry mass
Cobbles	0
Gravel	65
Sand	22
Silt and Clay	13

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	

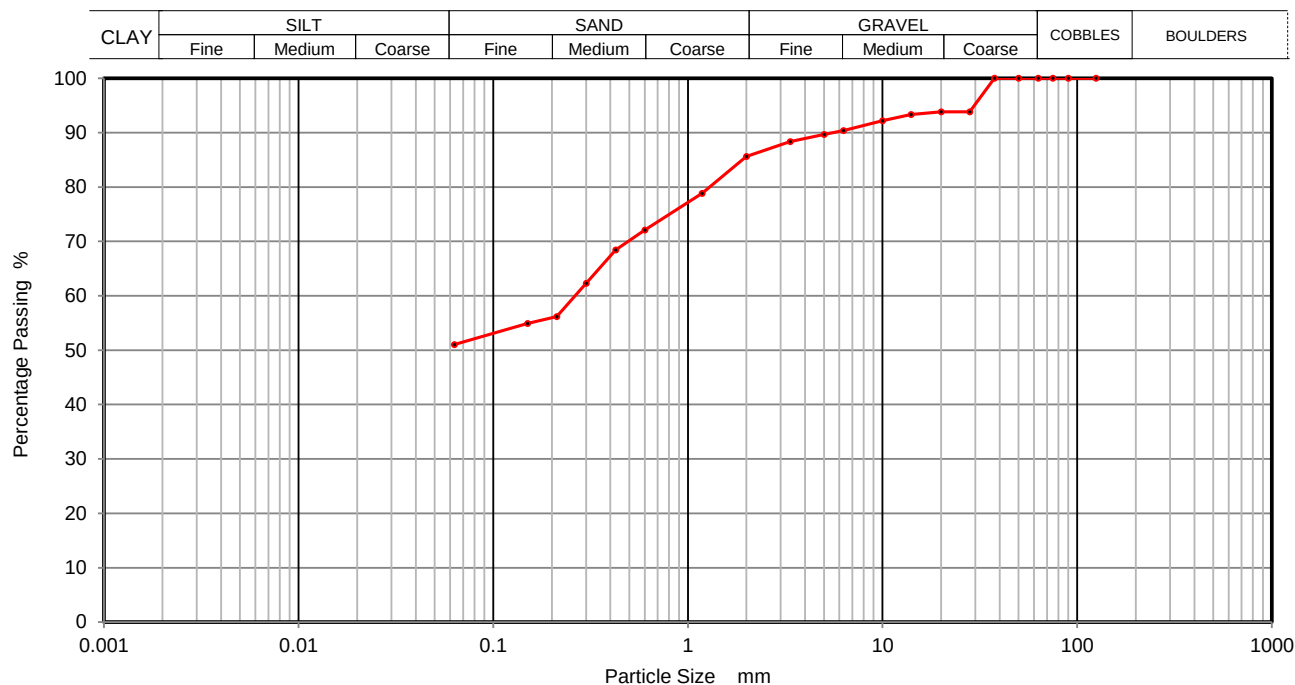


2788



PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number	55568
	Borehole/Pit No.
Site Name	McDonalds Pontardawe
Soil Description	Grey fine to coarse gravelly fine to coarse sandy SILTY/ CLAY
	Depth Top
Date Tested	21/09/2021
	Sample Type
Depth Base	0.90
Sample No.	
	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	94		
20	94		
14	93		
10	92		
6.3	90		
5	90		
3.35	88		
2	86		
1.18	79		
0.6	72		
0.425	68		
0.3	62		
0.212	56		
0.15	55		
0.063	51		

Sample Proportions	% dry mass
Cobbles	0
Gravel	14
Sand	35
Silt and Clay	51

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/09/2021	Richard John	
David	Approved	22/09/2021	Paul Evans	



2788

Geotechnical Plots

Registered Office:
Hydrock Consultants Ltd
Over Court Barns
Over Lane Almondsbury
Bristol BS32 4DF U.K.

Client	MCDONALDS RESTAURANTS LIMITED	Location or material to which this assessment applies Made Ground
Project	Pontardawe	
Job numb	15297	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	8	8	0
No. tests in 20% data set	2	2	
No. tests with suspected pyrite		4	
Maximum value	1730	8.6	
Mean of highest two values	1375	6	
Mean of highest 20%			
Characteristic Value	1375	6	
Mg not required			
	[no pyrite]	[pyrite suspected]	
DS Class	DS-2	DS-5 m	
If pyrite suspected, DS Class limited to		DS-4 m	
Is pyrite assumed to be present?	Yes	Adopted DS Class =	DS-4 m

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0
		Mg not required
DS Class		

pH data

	Soil	Water
Number of tests	8	0
No. tests in 20% data set	2	
Lowest pH	6.8	
Mean of lowest 20%	7.1	
Characteristic value	7.1	
Design value	7.1	

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data

ACEC Class design value

 Brownfield
Mobile groundwater **AC-4m**
DS-4 m

Client	MCDONALDS RESTAURANTS LIMITED	Location or material to which this assessment applies Glaciofluvial Deposits
Project	Pontardawe	
Job numb	15297	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	2	2	0
No. tests in 20% data set	0	0	
No. tests with suspected pyrite		0	
Maximum value	56.6	0.1	
Mean of highest two values	56	0	
Mean of highest 20%			
Characteristic Value	56.6	0.1	
Mg not required			
	[no pyrite]	[pyrite suspected]	
DS Class	DS-1	DS-1	
If pyrite suspected, DS Class limited to DS-1			
Is pyrite assumed to be present?	No	Adopted DS Class =	DS-1

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0
Mg not required		
DS Class		

pH data

	Soil	Water
Number of tests	2	0
No. tests in 20% data set	0	
Lowest pH	7.4	
Mean of lowest 20%		
Characteristic value	7.4	
Design value	7.4	

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data

ACEC Class design value

 Brownfield
Mobile groundwater **AC-1**

Appendix D

Site Monitoring Data and Ground Gas Risk Assessment

Site Monitoring Data

[illegible]

Appendix E

Contamination Test Results and Statistical Analysis

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Analytical Report Number : 21-96478

Project / Site name:	Mc Donalds Pontardawe	Samples received on:	31/08/2021
Your job number:	C-15297-C	Samples instructed on/ Analysis started on:	01/09/2021
Your order number:	PO09494	Analysis completed by:	09/09/2021
Report Issue Number:	1	Report issued on:	09/09/2021
Samples Analysed:	6 leachate samples - 17 soil samples		

Signed: 

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 21-96478
Project / Site name: Mc Donalds Pontardawe
Your Order No: PO09494

Lab Sample Number				1993648	1993649	1993650	1993651	1993652
Sample Reference				CP01	CP01	CP01	CP01	CP01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.80	3.10	4.80	6.70
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	3.3	10	18	29	17
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	1.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.0	8.1	7.8	6.8	7.4
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	1600	16000	1700	320
Total Sulphate as SO ₄	%	0.005	MCERTS	-	0.157	1.59	0.167	0.032
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.040	0.39	0.097	0.066	0.056
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	385	97.2	65.7	55.9
Total Sulphur	mg/kg	50	MCERTS	-	790	7800	1200	390
Total Sulphur	%	0.005	MCERTS	-	0.079	0.779	0.116	0.039
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.015	0.018	0.060	-	0.012
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	0.11	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	9.9	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.7	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.9	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	3.7	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	1.3	1.3	15	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.33	< 0.05	5.1	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.7	0.73	9.6	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	1.4	0.68	6.3	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.3	0.48	6.4	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.84	0.60	6.8	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.5	0.62	7.4	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.34	0.28	2.6	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.89	0.27	3.5	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.71	< 0.05	2.4	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.94	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.45	< 0.05	1.7	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	10.8	4.94	84.8	< 0.80
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Analytical Report Number: 21-96478
Project / Site name: Mc Donalds Pontardawe
Your Order No: PO09494

Lab Sample Number				1993648	1993649	1993650	1993651	1993652
Sample Reference				CP01	CP01	CP01	CP01	CP01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.80	3.10	4.80	6.70
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	33	160	33	5.5
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.62	0.68	1.6	1.1	0.77
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.4	0.7	0.6	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	2.8
Chromium (III)	mg/kg	1	NONE	13	15	35	12	7.4
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	16	35	12	10
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.7	89	330	130	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	400	1700	280	240
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	28	81	24	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	18	24	83	22	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	54	150	360	97	47

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-

TPH Total C5 - C44	mg/kg	10	NONE	-	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-96478
Project / Site name: Mc Donalds Pontardawe
Your Order No: P009494

Lab Sample Number				1993653	1993654	1993656	1993657	1993658
Sample Reference				CP02	CP02	CP02	CP02	CP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	1.25	3.05	4.05	6.55
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.3	14	26	23	15
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	1.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.4	7.4	7.5	7.8	8.4
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	39000	-	20000	320
Total Sulphate as SO ₄	%	0.005	MCERTS	-	3.93	-	1.96	0.032
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	2.6	1.7	1.5	1.0	0.057
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	1730	-	1020	56.6
Total Sulphur	mg/kg	50	MCERTS	-	14000	-	12000	400
Total Sulphur	%	0.005	MCERTS	-	1.36	-	1.23	0.040
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.020	0.035	0.060	-	0.0055
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	0.060	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	20	70	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.5	1.0	2.1	11	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.25	0.53	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.34	< 0.05	1.2	3.3	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.83	1.5	6.1	16	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	4.0	6.0	7.2	12	< 0.05
Anthracene	mg/kg	0.05	MCERTS	1.6	1.6	2.4	4.9	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	6.8	5.6	6.4	6.6	< 0.05
Pyrene	mg/kg	0.05	MCERTS	4.8	4.4	6.0	6.1	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.9	3.2	4.8	4.2	< 0.05
Chrysene	mg/kg	0.05	MCERTS	3.6	2.4	3.8	3.5	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.7	3.3	4.0	3.0	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.4	1.3	1.2	1.3	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.3	2.3	3.1	2.3	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	1.4	1.7	1.4	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.68	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.5	1.2	2.3	1.2	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	39.8	35.6	52.1	76.7	< 0.80
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Analytical Report Number: 21-96478
Project / Site name: Mc Donalds Pontardawe
Your Order No: PO09494

Lab Sample Number				1993653	1993654	1993656	1993657	1993658
Sample Reference				CP02	CP02	CP02	CP02	CP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	1.25	3.05	4.05	6.55
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	64	460	170	180	34
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5	0.69	0.58	0.57	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	5.0	0.4	0.3	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	12	16	2.5
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	68	15	17	21	14
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	69	15	17	21	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	220	310	490	120
Lead (aqua regia extractable)	mg/kg	1	MCERTS	10000	2000	2000	1500	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.6	1.8	2.5	2.2	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	28	42	33	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	15	6.1	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	27	40	41	27
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	280	1800	1800	250

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	16	42	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	19	58	-
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	50	180	-
o-xylene	µg/kg	1	MCERTS	-	< 1.0	70	240	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	5.8	16	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	4.9	29	90	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	9.6	52	120	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	32	140	250	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	42	190	370	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	14	16	20	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	47	230	470	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	61	240	490	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	0.015	0.042	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	0.33	1.2	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	22	67	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	9.1	120	310	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	27	170	320	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	48	280	500	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	74	94	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	85	600	1200	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	85	670	1300	-

TPH Total C5 - C44	mg/kg	10	NONE	-	150	910	1800	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-96478
Project / Site name: Mc Donalds Pontardawe
Your Order No: PO09494

Lab Sample Number				1993659	1993660	1993661	1993662	1993663
Sample Reference				TP01	TP01	TP02	TP02	TP03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.60	0.35	0.70	0.35
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	4.8	17	18	19	31
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	1.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.1	7.3	8.1	8.9	8.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	21000	92000
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	2.06	9.20
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.26	0.084	2.0	0.84	0.85
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	841	854
Total Sulphur	mg/kg	50	MCERTS	-	-	-	11000	28000
Total Sulphur	%	0.005	MCERTS	-	-	-	1.11	2.85
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.011	0.018	0.048	-	0.0047
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.84	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.31	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.41	< 0.05	0.57	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.81	0.31	2.8	-	0.28
Anthracene	mg/kg	0.05	MCERTS	0.24	< 0.05	1.2	-	0.27
Fluoranthene	mg/kg	0.05	MCERTS	0.71	0.40	5.5	-	0.53
Pyrene	mg/kg	0.05	MCERTS	0.87	0.38	4.6	-	0.50
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.39	0.32	3.1	-	0.25
Chrysene	mg/kg	0.05	MCERTS	0.39	0.29	3.4	-	0.42
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.43	0.37	4.0	-	0.25
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.18	0.17	1.4	-	0.21
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.31	0.28	3.1	-	0.30
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.7	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.41	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.0	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	4.74	2.52	34.8	-	3.01
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Analytical Report Number: 21-96478
Project / Site name: Mc Donalds Pontardawe
Your Order No: PO09494

Lab Sample Number				1993659	1993660	1993661	1993662	1993663
Sample Reference				TP01	TP01	TP02	TP02	TP03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.60	0.35	0.70	0.35
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	20	140	-	180
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	3.1	0.90	0.79	-	0.10
Boron (water soluble)	mg/kg	0.2	MCERTS	5.3	< 0.2	0.6	-	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	2.9	< 1.2	-	< 1.2
Chromium (III)	mg/kg	1	NONE	260	16	21	-	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	260	19	21	-	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	38	42	410	-	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	400	73	1400	-	400
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	2.1	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.4	31	64	-	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	5.2	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	170	21	40	-	89
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99	100	1100	-	260

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-

TPH Total C5 - C44	mg/kg	10	NONE	-	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-96478
 Project / Site name: Mc Donalds Pontardawe
 Your Order No: P009494

Lab Sample Number				1993664
Sample Reference				TP04
Sample Number				None Supplied
Depth (m)				0.95
Date Sampled				25/08/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	11
Total mass of sample received	kg	0.001	NONE	1.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	3200
Total Sulphate as SO ₄	%	0.005	MCERTS	0.317
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.24
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	243
Total Sulphur	mg/kg	50	MCERTS	2900
Total Sulphur	%	0.005	MCERTS	0.293
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.0067
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80
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Analytical Report Number: 21-96478
Project / Site name: Mc Donalds Pontardawe
Your Order No: P009494

Lab Sample Number				1993664
Sample Reference				TP04
Sample Number				None Supplied
Depth (m)				0.95
Date Sampled				25/08/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.9
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	4.0
Boron (water soluble)	mg/kg	0.2	MCERTS	3.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2
Chromium (III)	mg/kg	1	NONE	89
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	89
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	94
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	67

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-
Toluene	µg/kg	1	MCERTS	-
Ethylbenzene	µg/kg	1	MCERTS	-
p & m-xylene	µg/kg	1	MCERTS	-
o-xylene	µg/kg	1	MCERTS	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-

TPH Total C5 - C44	mg/kg	10	NONE	-
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 21-96478

Project / Site name: Mc Donalds Pontardawe

Your Order No: PO09494

Lab Sample Number	1993665				1993666	1993667	1993668	1993669
Sample Reference	CP01				CP02	TP01	TP02	TP03
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	3.10				2.05	0.30	0.35	0.35
Date Sampled	25/08/2021				25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.4	7.0	11.4	7.7	7.3
Electrical Conductivity	µS/cm	10	ISO 17025	120	720	530	920	310
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	19	< 1.0	6.1	19
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1	< 1
Sulphate as SO4	µg/l	100	ISO 17025	25600	369000	56500	384000	133000
Chloride	mg/l	0.15	ISO 17025	0.84	4.0	3.6	29	1.5
Fluoride	µg/l	50	ISO 17025	230	120	91	190	82
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	1800	< 15	< 15	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	< 15	2200	< 15	< 15	16
Ammoniacal Nitrogen as NH4	µg/l	15	NONE	< 15	2300	< 15	15	16
Nitrate as N	mg/l	0.01	NONE	0.32	0.16	0.08	0.12	0.13
Nitrate as NO3	mg/l	0.05	NONE	1.42	0.72	0.36	0.52	0.57
Nitrite as N	µg/l	1	NONE	1.2	1.9	14	< 1.0	< 1.0
Nitrite as NO2	µg/l	5	NONE	< 5.0	6.3	47	< 5.0	< 5.0
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	0.013	0.007	0.010	< 0.002

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

PAH Sums

Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Sum of Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.022	NONE	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
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Analytical Report Number: 21-96478

Project / Site name: Mc Donalds Pontardawe

Your Order No: PO09494

Lab Sample Number				1993665	1993666	1993667	1993668	1993669
Sample Reference				CP01	CP02	TP01	TP02	TP03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.10	2.05	0.30	0.35	0.35
Date Sampled				25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Aluminium (dissolved)	mg/l	0.012	ISO 17025	0.081	0.47	1.0	0.078	0.031
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	17	< 1.7
Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0	3.1	< 1.0	< 1.0	33
Barium (dissolved)	µg/l	0.05	ISO 17025	66	76	140	110	27
Boron (dissolved)	µg/l	10	ISO 17025	24	24	77	68	18
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	3.1	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	3.6	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	1.0	3.6	< 0.4	< 0.4
Cobalt (dissolved)	µg/l	0.3	ISO 17025	< 0.3	14	< 0.3	3.7	< 0.3
Copper (dissolved)	µg/l	0.7	ISO 17025	4.3	10	5.9	13	3.0
Iron (dissolved)	mg/l	0.004	ISO 17025	0.12	0.64	0.033	0.10	0.21
Lead (dissolved)	µg/l	1	ISO 17025	2.3	28	5.7	7.7	3.1
Manganese (dissolved)	µg/l	0.06	ISO 17025	230	2600	27	690	240
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	2.8	16	2.1	9.3	1.9
Silver (dissolved)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (dissolved)	µg/l	4	ISO 17025	13	< 4.0	< 4.0	14	14
Tin (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	34	< 1.7	< 1.7
Zinc (dissolved)	µg/l	0.4	ISO 17025	8.0	180	6.7	55	7.0

Sodium (dissolved)	mg/l	0.01	ISO 17025	1.8	5.8	4.5	35	2.5
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 21-96478

Project / Site name: Mc Donalds Pontardawe

Your Order No: P009494

Lab Sample Number	1993670			
Sample Reference	TP04			
Sample Number	None Supplied			
Depth (m)	0.95			
Date Sampled	25/08/2021			
Time Taken	None Supplied			
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status	

General Inorganics

pH	pH Units	N/A	ISO 17025	10.5
Electrical Conductivity	µS/cm	10	ISO 17025	280
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1
Sulphate as SO4	µg/l	100	ISO 17025	67000
Chloride	mg/l	0.15	ISO 17025	10
Fluoride	µg/l	50	ISO 17025	150
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	< 15
Ammoniacal Nitrogen as NH4	µg/l	15	NONE	< 15
Nitrate as N	mg/l	0.01	NONE	0.09
Nitrate as NO3	mg/l	0.05	NONE	0.39
Nitrite as N	µg/l	1	NONE	< 1.0
Nitrite as NO2	µg/l	5	NONE	< 5.0
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01

PAH Sums

Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.02
Sum of Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.002	NONE	< 0.002
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.022	NONE	< 0.022

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2
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Analytical Report Number: 21-96478

Project / Site name: Mc Donalds Pontardawe

Your Order No: PO09494

Lab Sample Number				1993670
Sample Reference				TP04
Sample Number				None Supplied
Depth (m)				0.95
Date Sampled				25/08/2021
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status	

Heavy Metals / Metalloids

Aluminium (dissolved)	mg/l	0.012	ISO 17025	0.43
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7
Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0
Barium (dissolved)	µg/l	0.05	ISO 17025	76
Boron (dissolved)	µg/l	10	ISO 17025	120
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.0
Cobalt (dissolved)	µg/l	0.3	ISO 17025	< 0.3
Copper (dissolved)	µg/l	0.7	ISO 17025	4.2
Iron (dissolved)	mg/l	0.004	ISO 17025	0.034
Lead (dissolved)	µg/l	1	ISO 17025	1.6
Manganese (dissolved)	µg/l	0.06	ISO 17025	67
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.4
Silver (dissolved)	µg/l	1	NONE	< 1.0
Selenium (dissolved)	µg/l	4	ISO 17025	9.4
Tin (dissolved)	µg/l	1	ISO 17025	< 1.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	56
Zinc (dissolved)	µg/l	0.4	ISO 17025	5.9

Sodium (dissolved)	mg/l	0.01	ISO 17025	13
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 21-96478

Project / Site name: Mc Donalds Pontardawe

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1993648	CP01	None Supplied	0.1	Grey sand with tar and gravel.
1993649	CP01	None Supplied	0.8	Brown loam and clay with gravel and vegetation.
1993650	CP01	None Supplied	3.1	Brown loam and sand with gravel.
1993651	CP01	None Supplied	4.8	Black clay and sand with gravel.
1993652	CP01	None Supplied	6.7	Brown clay and sand with gravel.
1993653	CP02	None Supplied	0.45	Brown loam and sand with gravel and vegetation.
1993654	CP02	None Supplied	1.25	Brown loam and sand with gravel.
1993656	CP02	None Supplied	3.05	Brown clay and sand with gravel and oil / petroleum.
1993657	CP02	None Supplied	4.05	Brown clay and sand with gravel and oil / petroleum.
1993658	CP02	None Supplied	6.55	Brown sand with gravel and oil / petroleum.
1993659	TP01	None Supplied	0.3	Brown sand with tar and gravel
1993660	TP01	None Supplied	1.6	Brown clay and loam with gravel and vegetation.
1993661	TP02	None Supplied	0.35	Brown loam and clay with gravel and vegetation.
1993662	TP02	None Supplied	0.7	Brown loam and sand with rubble.
1993663	TP03	None Supplied	0.35	Red sandy clay with gravel.
1993664	TP04	None Supplied	0.95	Brown sand with gravel.

Analytical Report Number : 21-96478
Project / Site name: Mc Donalds Pontardawe

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Electrical conductivity at 20oC of leachate	Determination of electrical conductivity in leachate by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023	D	MCERTS
Fluoride in leachate	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L0338-PL	W	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Nitrite, leachate soluble, in leachate	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L077-PL	W	NONE

Analytical Report Number : 21-96478
Project / Site name: Mc Donalds Pontardawe

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Nitrate, leachate soluble, in leachate	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	NONE
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate (LOW LEVEL Dets)	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammonium as NH4 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Nitrite as N in leachate	Determination of nitrite in leachate by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L082-PL	W	NONE
Nitrate as N in leachate	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	NONE
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE

Analytical Report Number : 21-96478
Project / Site name: Mc Donalds Pontardawe

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Cr (III) in leachate	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Chloride in leachate	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Bromate in Leachate	Determination of bromate in leachate based on ion chromatography	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
Specific PAH sums in leachate	Determination of PAH compounds in leachate by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Soil type																	
Location		CP01	CP01	CP01	CP01	CP01	CP02	CP02	CP02	CP02	CP02	TP01	TP01	TP02	TP02	TP03	TP04
Depth		0.10	0.80	3.10	4.80	6.70	0.45	1.25	3.05	4.05	6.55	0.30	1.60	0.35	0.70	0.35	0.95
Hydrock Default Soils		LOD															
Arsenic	1	10	33	160	33	5.5	64	460	170	180	34	22	20	140	N/A	180	9.9
Beryllium	0.06	0.62	0.68	1.6	1.1	0.77	1.5	0.69	0.58	0.57	1.2	3.1	0.9	0.79	N/A	0.1	4
Boron	0.2	0.3	0.4	0.7	0.6	0.4	5	0.4	0.3	< 0.2	< 0.2	5.3	< 0.2	0.6	N/A	< 0.2	3.9
Cadmium	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	12	16	2.5	< 0.2	< 0.2	< 0.2	N/A	< 0.2	0.4
Chromium (III)	1	13	15	35	12	7.4	68	15	17	21	14	260	16	21	N/A	30	89
Chromium (VI)	1.2	< 1.2	< 1.2	< 1.2	< 1.2	2.8	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	2.9	< 1.2	N/A	< 1.2	< 1.2
Chromium (T)	1	13	16	35	12	10	69	15	17	21	15	260	19	21	N/A	30	89
Copper	1	9.7	89	330	130	16	110	220	310	490	120	38	42	410	N/A	22	24
Lead	1	12	400	1700	280	240	10000	2000	2000	1500	15	400	73	1400	N/A	400	25
Mercury, inorganic	0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	1.6	1.8	2.5	2.2	< 0.3	< 0.3	< 0.3	2.1	N/A	< 0.3	< 0.3
Nickel	1	24	28	81	24	19	28	28	42	33	21	9.4	31	64	N/A	19	18
Selenium	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	15	6.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5.2	N/A	< 1.0	< 1.0
Vanadium	1	18	24	83	22	15	56	27	40	41	27	170	21	40	N/A	89	94
Zinc	1	54	150	360	97	47	220	280	1800	1800	250	99	100	1100	N/A	260	67
Cyanide (free)	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	N/A	< 1.0	< 1.0
Phenol (total)	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	20	70	< 1.0	< 1.0	< 1.0	< 1.0	N/A	< 1.0	< 1.0
Acenaphthene	0.05	< 0.05	< 0.05	< 0.05	1.9	< 0.05	0.34	< 0.05	1.2	3.3	< 0.05	< 0.05	< 0.05	< 0.05	N/A	< 0.05	< 0.05
Acenaphthylene	0.05	< 0.05	< 0.05	< 0.05	1.7	< 0.05	0.25	0.53	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.31	N/A	< 0.05	< 0.05
Anthracene	0.05	< 0.05	0.33	< 0.05	5.1	< 0.05	1.6	1.6	2.4	4.9	< 0.05	0.24	< 0.05	1.2	N/A	0.27	< 0.05
Benzo(a)anthracene	0.05	< 0.05	1.3	0.48	6.4	< 0.05	3.9	3.2	4.8	4.2	< 0.05	0.39	0.32	3.1	N/A	0.25	< 0.05
Benzo(a)pyrene	0.05	< 0.05	0.89	0.27	3.5	< 0.05	3.3	2.3	3.1	2.3	< 0.05	0.31	0.28	3.1	N/A	0.3	< 0.05
Benzo (b) fluoranthene	0.05	< 0.05	1.5	0.62	7.4	< 0.05	3.7	3.3	4	3	< 0.05	0.43	0.37	4	N/A	0.25	< 0.05
Benzo(ghi)perylene	0.05	< 0.05	0.45	< 0.05	1.7	< 0.05	1.5	1.2	2.3	1.2	< 0.05	< 0.05	< 0.05	2	N/A	< 0.05	< 0.05
Benzo (k) fluoranthene	0.05	< 0.05	0.34	0.28	2.6	< 0.05	1.4	1.3	1.2	1.3	< 0.05	0.18	0.17	1.4	N/A	0.21	< 0.05
Chrysene	0.05	< 0.05	0.84	0.6	6.8	< 0.05	3.6	2.4	3.8	3.5	< 0.05	0.39	0.29	3.4	N/A	0.42	< 0.05
Dibenzo(a,h)anthracene	0.05	< 0.05	< 0.05	< 0.05	0.94	< 0.05	0.68	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.41	N/A	< 0.05	< 0.05
Fluoranthene	0.05	< 0.05	1.7	0.73	9.6	< 0.05	6.8	5.6	6.4	6.6	< 0.05	0.71	0.4	5.5	N/A	0.53	< 0.05
Fluorene	0.05	< 0.05	< 0.05	< 0.05	3.7	< 0.05	0.83	1.5	6.1	16	< 0.05	0.41	< 0.05	0.57	N/A	< 0.05	< 0.05
Indeno(1,2,3,cd)pyrene	0.05	< 0.05	0.71	< 0.05	2.4	< 0.05	1.6	1.4	1.7	1.4	< 0.05	< 0.05	< 0.05	1.7	N/A	< 0.05	< 0.05
Naphthalene	0.05	< 0.05	< 0.05	< 0.05	9.9	< 0.05	1.5	1	2.1	11	< 0.05	< 0.05	< 0.05	0.84	N/A	< 0.05	< 0.05
Phenanthrene	0.05	< 0.05	1.3	1.3	15	< 0.05	4	6	7.2	12	< 0.05	0.81	0.31	2.8	N/A	0.28	< 0.05
Pyrene	0.05	< 0.05	1.4	0.68	6.3	< 0.05	4.8	4.4	6	6.1	< 0.05	0.87	0.38	4.6	N/A	0.5	< 0.05
FOC (dimensionless)	0.001	N/A	N/A	N/A	0.11	N/A	N/A	N/A	N/A	0.06	N/A	N/A	N/A	N/A	N/A	N/A	N/A
pH (su)	0	9	8.1	7.8	6.8	7.4	9.4	7.4	7.5	7.8	8.4	11.1	7.3	8.1	8.9	8	11
Asbestos	0	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	Not-detecte d	N/A	Not-detecte d	Not-detecte d

TPH Level 1

EC5-EC6	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC6-EC7	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC7-EC8	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC8-EC10	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC10-EC12	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC12-EC16	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC16-EC21	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC21-EC35	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
>EC35-EC44	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.016	0.042	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethyl benzene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.019	0.058	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
o-Xylene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.07	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
m- & p-Xylene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.05	0.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MTBE	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TPH Level 2

Ali EC5-EC6	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ali >EC6-EC8	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ali >EC8-EC10	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ali >EC10-EC12	1	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	5.8	16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ali >EC12-EC16	2	N/A	N/A	N/A	N/A	N/A	N/A	4.9	29	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ali >EC16-EC35	10	N/A	N/A	N/A	N/A	N/A	N/A	42	190	370	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ali >EC35-EC44	8.4	N/A	N/A	N/A	N/A	N/A	N/A	14	16	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro EC5-EC7	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro >EC7-EC8	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.015	0.042	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro >EC8-EC10	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.33	1.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro >EC10-EC12	1	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	22	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro >EC12-EC16	2	N/A	N/A	N/A	N/A	N/A	N/A	9.1	120	310	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro >EC16-EC21	10	N/A	N/A	N/A	N/A	N/A	N/A	27	170	320	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro >EC21-EC35	10	N/A	N/A	N/A	N/A	N/A	N/A	48	280	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aro >EC35-EC44	8.4	N/A	N/A	N/A	N/A	N/A	N/A	< 8.4	74	94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.016	0.042	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethyl benzene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.019	0.058	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
o-Xylene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.07	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
m- & p-Xylene	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.05	0.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MTBE	0.001	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Hydrock SD1 Soil Suite

pH 2.5:1 extract	0	9	8.1	7.8	6.8	7.4	9.4	7.4	7.5	7.8	8.4	11.1	7.3	8.1	8.9	8	11
Soluble Sulphate 2:1 (mg/l)	1.25	N/A	385	97.2	65.7	55.9	N/A	1730	N/A	1020	56.6	N/A	N/A	N/A	841	854	243
Acid Soluble Sulphate (%)	0.005	N/A	0.157	1.59	0.167	0.032	N/A	3.93	N/A	1.96	0.032	N/A	N/A	N/A	2.06	9.2	0.317
Total Sulphur (%)	0.005	N/A	0.079	0.779	0.116	0.039	N/A	1.36	N/A	1.23	0.04	N/A	N/A	N/A	1.11	2.85	0.293
Magnesium 2:1 (mg/l)	2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ammonium (mg/l)	0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrate 2:1 (mg/l)	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloride 2:1 (mg/l)	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Summary of Remedial Targets Methodology Screening

Hydrock Scenario: Scenario B - EQS (inland)																	
RTM Level: RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples																	
Water body receptor(s): Groundwater and surface water																	
Secondary receptor(s): Human health (abstraction)																	
Data set: Groundwater / Leachate / Perched water / Surface water (as appropriate)																	
Client: MCDONALD S																	
Site: PONTARDA WE																	
Job no: C15297C																	
Test Certificate(s): 21-96478																	
Dataset: ALL ZONES																	
2013/39/EU Annex I P = priority substance PH = priority hazardous substances. WFD Designation (2015 Directions) OP = Other substance identical to previous legislation SP = Specific Pollutant JAGDAG Hazardous Substances Determination (UK) H Hazardous substance NP Non-hazardous pollutant (blank) Not included in assessment																	
2																	
CAS / AGS Number	Chemicals of Potential Concern (concentrations in µg/l)	WFD Designation	Hazardous Substance Status	Summary of Sample Data						Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red)		No. Samples Exceeding Water Quality Target		No. Samples above LoD Exceeding Water Quality Target		Notes
				No. of Samples	No. of Samples > LoD	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		Inland Waters EQS		Inland Waters EQS		Inland Waters EQS		
P1133	Hardness as mg/l CaCO ₃			-	-	-	10	-	-	-	-						EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
7440-22-4	Silver (Ag) (dissolved)			6	0	1	1	1	1	0.05					0		Representative hardness of receiving surface water environment used in some inland EQS
7429-90-5	Aluminium (Al) (dissolved)			6	6	12	30	1000	867.5	1000	n/a						Limit of Detection (LOD) higher value than EQS.
7440-38-2	Arsenic (As) (dissolved)	SP	H	6	2	1	1	33	25.525	33	50		0		0		
7440-42-8	Boron (B) (dissolved)		NP	6	6	10	18	120	109.25	120	2000		0		0		
7440-39-3	Barium (Ba) (dissolved)			6	6	0.05	27	140	132.5	140	n/a						
7440-43-9	Cadmium (Cd) (dissolved)	PH	NP	6	1	0.08	0.08	3.1	2.345	3.1	0.08		1		1		EQS (inland) dependent on hardness of receiving surface water environment
7440-48-4	Cobalt (Co) (dissolved)		NP	6	2	0.3	0.3	14	11.425	14	3		2		2		Further assessment required
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	H	6	0	5	5	5	5	5	3.4		6		0		
16065-83-1	Chromium (III) (Cr) (dissolved)	SP		6	1	1	1	3.6	2.95	3.6	4.7		0		0		
7440-47-3	Chromium (Cr) (total) (dissolved)			6	3	0.4	0.4	3.6	2.95	3.6	n/a						
7440-50-8	Copper (Cu) (dissolved)	SP	NP	6	6	0.7	3	13	12.25	13	1		6		6		Bioavailable EQS (inland)
7439-89-6	Iron (Fe) (dissolved)	SP		6	6	4	33	640	532.5	640	1000		0		0		
7439-97-6	Mercury (Hg) (dissolved)	PH	H	6	0	0.5	0.5	0.5	0.5	0.5	0.07		6		0		Limit of Detection (LOD) higher value than EQS.
P1286	Manganese (Mn) (dissolved)	SP		6	6	0.06	27	2600	2122.5	2600	123		4		4		Bioavailable EQS (inland)
7440-23-5	Sodium (Na) (dissolved)			6	6	100	180	13000	10375	13000	n/a						
7440-02-0	Nickel (Ni) (dissolved)	P	NP	6	6	0.3	1.4	16	14.325	16	4		2		2		Bioavailable EQS (inland)
7439-92-1	Lead (Pb) (dissolved)	P	H	6	6	1	1.6	28	22.925	28	1.2		6		6		Bioavailable EQS (inland)
7440-36-0	Antimony (Sb) (dissolved)		NP	6	1	1.7	1.7	17	13.175	17	n/a						
7782-49-2	Selenium (Se) (dissolved)		NP	6	4	4	4	14	14	14	n/a						
7440-31-5	Tin (Sn) (dissolved)			6	0	1	1	1	1	1	25		0		0		
7440-62-2	Vanadium (V) (dissolved)			6	2	1.7	1.7	56	50.5	56	20		2		2		EQS (inland) dependent on hardness of receiving surface water environment
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	6	6	0.4	5.9	180	148.75	180	10.9		2		2		Bioavailable EQS (inland) + ambient background concentration (ABC)
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP	6	0	1	1	1	1	1	1		0		0		
57-12-5	Cyanide (total)			6	3	1	1	19	19	19	n/a						
P1140	Ammonium (NH ₄ ⁺)		NP	6	2	15	15	2300	1729	2300	n/a						
P1238	Ammoniacal Nitrogen (as N)		NP	6	0	15	1	14	10.975	14	300		0		0		
P1720	Ammonia (unionised) (NH ₃ as N) (free ammonia)	SP	NP	6	0	15	0.36	1.42	1.245	1.42	n/a						
15541-45-4	Bromate (BrO ₃ ⁻)			6	3	0.002	0.002	0.013	0.01225	0.013	n/a						
16887-00-6	Chloride (Cl ⁻)			6	6	0.15	0.84	29	24.25	29	250000		0		0		
16984-48-8	Fluoride (F ⁻)			6	6	50	82	230	220	230	1000		0		0		EQS (inland) dependent on hardness of receiving surface water environment
P1348	Nitrate (NO ₃ ⁻)			6	6	0.05	0.36	1.42	1.245	1.42	n/a						
P1349	Nitrite (NO ₂ ⁻)			6	2	5	5	47	36.825	47	n/a						
14898-79-8	Sulfate (SO ₄ ²⁻)			6	6	100	25600	384000	380250	384000	400000		0		0		
P1134	pH (min.) (su)			0							6						
P1134	pH (max.) (su)			0							9						
P1287	Electrical conductivity (µS/cm)			6	6	10	120	920	870	920	n/a						
120-12-7	Anthracene	PH	H	6	0	0.01	0.01	0.01	0.01	0.01	0.1		0		0		
50-32-8	Benzo(a)pyrene	PH	H	6	0	0.01	0.01	0.01	0.01	0.01	0.00017		6		0		Limit of Detection (LOD) higher value than EQS.
206-44-0	Fluoranthene	P	H	6	0	0.01	0.01	0.01	0.01	0.01	0.0063		6		0		Limit of Detection (LOD) higher value than EQS.
91-20-3	Naphthalene	P	NP	6	0	0.01	0.01	0.01	0.01	0.01	2		0		0		
GRP01	PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	P	H	6	0	0.022	0.022	0.022	0.022	0.022	n/a						
P1877	Phenol	SP	NP	6	0	1	1	1	1	1	7.7		0		0		

Assessment of Chemicals of Potential Concern to Plant Life

All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG	MG	N	MG	MG	MG	MG	N	MG	MG	MG	MG	MG
								Location & Depth	CP01	CP01	CP01	CP01	CP01	CP02	CP02	CP02	CP02	CP02	TP01	TP01	TP02	TP03	TP04
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US ₉₅	Result of Significance Test	0.10	0.80	3.10	4.80	6.70	0.45	1.25	3.05	4.05	6.55	0.30	1.60	0.35	0.35	0.95
Arsenic	1	15	5.5	460	1	250	237.5615	POTENTIALLY SUITABLE FOR USE	10	33	160	33	5.5	64	460	170	180	34	22	20	140	180	9.9
Boron	0.2	15	0.2	5.3	3	3	3.309698	FURTHER ASSESSMENT REQUIRED	0.3	0.4	0.7	0.6	0.4	5	0.4	0.3	0.2	0.2	5.3	0.2	0.6	0.2	3.9
Chromium (III)	1	15	7.4	260	0	400	114.6632	POTENTIALLY SUITABLE FOR USE	13	15	35	12	7.4	68	15	17	21	14	260	16	21	30	89
Chromium (VI)	1.2	15	1.2	2.9	0	25	2.073931	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	2.8	1.2	1.2	1.2	1.2	1.2	1.2	2.9	1.2	1.2	1.2
Copper	1	15	9.7	490	5	135	334.3593	FURTHER ASSESSMENT REQUIRED	9.7	89	330	130	16	110	220	310	490	120	38	42	410	22	24
Nickel	1	15	9.4	81	1	75	52.27073	POTENTIALLY SUITABLE FOR USE	24	28	81	24	19	28	28	42	33	21	9.4	31	64	19	18
Zinc	1	15	47	1800	4	300	1129.005	FURTHER ASSESSMENT REQUIRED	54	150	360	97	47	220	280	1800	1800	250	99	100	1100	260	67
	Mean																						
pH (su)	8.3								9	8.1	7.8	6.8	7.4	9.4	7.4	7.5	7.8	8.4	11.1	7.3	8.1	8	11

Risk parameter: Plant life pH 7

Data set: 21-96478

Client: Mc Donalds Restaraunts Limited

Site: Pontardawe

Job no.: C15297C

Lab. report no(s): 21-96478

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC). MG denotes Made Ground NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health



All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG	MG	N	MG	MG	MG	N	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
								Location & Depth	CP01	CP01	CP01	CP01	CP01	CP02	CP02	CP02	CP02	CP02	TP01	TP01	TP02	TP03	TP04					
									0.10	0.80	3.10	4.80	6.70	1.25	3.05	4.05	6.55	0.30	1.60	0.35	0.35	0.95						
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US ₉₅	Result of Significance Test																				
Arsenic	1	14	5.5	460	0	640	249.7953	POTENTIALLY SUITABLE FOR USE	10	33	160	33	5.5	460	170	180	34	22	20	140	180	9.9						
Beryllium	0.06	14	0.1	4	0	390	2.441224	POTENTIALLY SUITABLE FOR USE	0.62	0.68	1.6	1.1	0.77	0.69	0.58	0.57	1.2	3.1	0.9	0.79	0.1	4						
Boron	0.2	14	0.2	5.3	0	190000	2.804596	POTENTIALLY SUITABLE FOR USE	0.3	0.4	0.7	0.6	0.4	0.4	0.3	0.2	5.3	0.2	0.6	0.2	3.9							
Cadmium	0.2	14	0.2	16	0	220	8.216448	POTENTIALLY SUITABLE FOR USE	0.2	0.2	0.2	0.2	0.2	0.2	12	16	2.5	0.2	0.2	0.2	0.4							
Chromium (III)	1	14	7.4	260	0	8400	117.7158	POTENTIALLY SUITABLE FOR USE	13	15	35	12	7.4	15	21	21	14	260	16	21	30	89						
Chromium (VI)	1.2	14	1.2	2.9	0	33	2.134283	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	2.8	1.2	1.2	1.2	1.2	2.9	1.2	1.2	1.2							
Copper	1	14	9.7	490	0	69000	350.2087	POTENTIALLY SUITABLE FOR USE	9.7	89	330	130	16	220	310	490	120	38	42	410	22	24						
Lead	1	14	12	2000	0	2330	1656.145	POTENTIALLY SUITABLE FOR USE	12	400	1700	280	240	2000	2000	1500	15	400	73	1400	400	25						
Mercury, inorganic	0.3	14	0.3	2.5	0	1100	1.85203	POTENTIALLY SUITABLE FOR USE	0.3	0.3	0.3	0.3	0.3	1.8	2.5	2.2	0.3	0.3	0.3	2.1	0.3	0.3						
Nickel	1	14	9.4	81	0	1700	54.03497	POTENTIALLY SUITABLE FOR USE	24	28	81	24	19	28	42	33	21	9.4	31	64	19	18						
Selenium	1	14	1	6.1	0	13000	3.642645	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	6.1	1	1	1	1	1	5.2	1	1						
Vanadium	1	14	15	170	0	9000	101.7079	POTENTIALLY SUITABLE FOR USE	18	24	83	22	15	27	40	41	27	170	21	40	89	94						
Zinc	1	14	47	1800	0	670000	1191.919	POTENTIALLY SUITABLE FOR USE	54	150	360	97	47	280	1800	1800	250	99	100	1100	260	67						
Cyanide (free)	1	14	1	1	0	16000	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Phenol (total)	1	14	1	70	0	3200	29.13084	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1	20	70	1	1	1	1	1	1						
Acenaphthene	0.05	14	0.05	3.3	0	100000	1.63985	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	1.9	0.05	0.05	1.2	3.3	0.05	0.05	0.05	0.05	0.05	0.05						
Acenaphthylene	0.05	14	0.05	1.7	0	100000	0.743084	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	1.7	0.05	0.53	0.05	0.05	0.05	0.05	0.05	0.31	0.05	0.05						
Anthracene	0.05	14	0.05	5.1	0	540000	3.235608	POTENTIALLY SUITABLE FOR USE	0.05	0.33	0.05	5.1	0.05	1.6	2.4	4.9	0.05	0.24	0.05	1.2	0.27	0.05						
Benz(a)anthracene	0.05	14	0.05	6.4	0	94	4.271106	POTENTIALLY SUITABLE FOR USE	0.05	1.3	0.48	6.4	0.05	3.2	4.8	4.2	0.05	0.39	0.32	3.1	0.25	0.05						
Benzo(a)pyrene	0.05	14	0.05	3.5	0	14	2.753001	POTENTIALLY SUITABLE FOR USE	0.05	0.89	0.27	3.5	0.05	2.3	3.1	2.3	0.05	0.31	0.28	3.1	0.3	0.05						
Benzo(b)fluoranthene	0.05	14	0.05	7.4	0	99	4.39201	POTENTIALLY SUITABLE FOR USE	0.05	1.5	0.62	7.4	0.05	3.3	4	3	0.05	0.43	0.37	4	0.25	0.05						
Benzo(ghi)perylene	0.05	14	0.05	2.3	0	640	1.63943	POTENTIALLY SUITABLE FOR USE	0.05	0.45	0.05	1.7	0.05	1.2	2.3	1.2	0.05	0.05	0.05	2	0.05	0.05						
Benzo(k)fluoranthene	0.05	14	0.05	2.6	0	140	1.560051	POTENTIALLY SUITABLE FOR USE	0.05	0.34	0.28	2.6	0.05	1.3	1.2	1.3	0.05	0.18	0.17	1.4	0.21	0.05						
Chrysene	0.05	14	0.05	6.8	0	140	4.01669	POTENTIALLY SUITABLE FOR USE	0.05	0.84	0.6	6.8	0.05	2.4	3.8	3.5	0.05	0.39	0.29	3.4	0.42	0.05						
Dibenz(a,h)anthracene	0.05	14	0.05	0.94	0	13	0.430169	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.94	0.05	0.05	0.05	0.05	0.05	0.05	0.41	0.05	0.05							
Fluoranthene	0.05	14	0.05	9.6	0	23000	6.53185	POTENTIALLY SUITABLE FOR USE	0.05	1.7	0.73	9.6	0.05	5.6	6.4	6.6	0.05	0.71	0.4	5.5	0.53	0.05						
Fluorene	0.05	14	0.05	16	0	71000	7.167862	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	3.7	0.05	1.5	6.1	16	0.05	0.41	0.05	0.57	0.05	0.05						
Indeno(1,2,3,cd)pyrene	0.05	14	0.05	2.4	0	60	1.676474	POTENTIALLY SUITABLE FOR USE	0.05	0.71	0.05	2.4	0.05	1.4	1.7	1.4	0.05	0.05	0.05	1.7	0.05	0.05						
Naphthalene	0.05	14	0.05	11	0	1100	6.13594	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	9.9	0.05	1	2.1	11	0.05	0.05	0.05	0.84	0.05	0.05						
Phenanthrene	0.05	14	0.05	15	0	23000	9.059564	POTENTIALLY SUITABLE FOR USE	0.05	1.3	1.3	15	0.05	6	7.2	12	0.05	0.81	0.31	2.8	0.28	0.05						
Pyrene	0.05	14	0.05	6.3	0	55000	5.249807	POTENTIALLY SUITABLE FOR USE	0.05	1.4	0.68	6.3	0.05	4.4	6	6.1	0.05	0.87	0.38	4.6	0.5	0.05						
Asbestos identified	Y/N								N	N	N	N	N	N	N	N	N	N	N	N	N	N						
FOC (dimensionless)	0.031993	(mean)							0.0015	0.018	0.06	0.11	0.012	0.035	0.06	0.06	0.005	0.011	0.018	0.048	0.0047	0.0047						
SOM (calculated)	5.52%	(mean)							0.26%	3.10%	10.34%	18.96%	2.07%	6.03%	10.34%	10.34%	0.86%	1.90%	3.10%	8.28%	0.81%	0.81%						
pH (su)	8.3	(mean)							9	8.1	7.8	6.8	7.4	7.4	7.5	7.8	8.4	11.1	7.3	8.1	8	11						

Risk parameter: Human health - commercial (6%SOM)

Data set: 21-96478

Client: Mc Donalds Restaraunts Limited

Site: Pontardawe

Job no.: C15297C

Lab. report no(s): 21-96478

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.

Values in red are equal to, or greater than, the generic assessment criterion (GAC) or +ve asbestos ID.

MG denotes Made Ground

NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health



All values in mg/kg unless otherwise stated								Soil Type	MG	MG	MG								
								Location & Depth	CP02	CP02	CP02								
									1.25	3.05	4.05								
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US ₉₅	Result of Significance Test											
Aliphatics EC5-EC6	0.001	3	0.001	0.001	0	1200	0.001	POTENTIALLY SUITABLE FOR USE	0.001	0.001	0.001								
Aliphatics >EC6-EC8	0.001	3	0.001	0.001	0	740	0.001	POTENTIALLY SUITABLE FOR USE	0.001	0.001	0.001								
Aliphatics >EC8-EC10	0.001	3	0.001	0.001	0	450	0.001	POTENTIALLY SUITABLE FOR USE	0.001	0.001	0.001								
Aliphatics >EC10-EC12	1	3	1	16	0	280	20.51419	POTENTIALLY SUITABLE FOR USE	1	5.8	16								
Aliphatics >EC12-EC16	2	3	4.9	90	0	140	115.2471	POTENTIALLY SUITABLE FOR USE	4.9	29	90								
Aliphatics >EC16-EC35	10	3	42	370	0	1000000	614.1496	POTENTIALLY SUITABLE FOR USE	42	190	370								
Aliphatics >EC35-EC44	8.4	3	14	20	0	1000000	24.35698	POTENTIALLY SUITABLE FOR USE	14	16	20								
Aromatics EC5-EC7	0.001	3	0.001	0.001	0	4700	0.001	POTENTIALLY SUITABLE FOR USE	0.001	0.001	0.001								
Aromatics >EC7-EC8	0.001	3	0.001	0.042	0	4400	0.071794	POTENTIALLY SUITABLE FOR USE	0.001	0.015	0.042								
Aromatics >EC8-EC10	0.001	3	0.001	1.2	0	3600	2.069788	POTENTIALLY SUITABLE FOR USE	0.001	0.33	1.2								
Aromatics >EC10-EC12	1	3	1	67	0	2200	114.8801	POTENTIALLY SUITABLE FOR USE	1	22	67								
Aromatics >EC12-EC16	2	3	9.1	310	0	38000	529.4236	POTENTIALLY SUITABLE FOR USE	9.1	120	310								
Aromatics >EC16-EC21	10	3	27	320	0	28000	541.1451	POTENTIALLY SUITABLE FOR USE	27	170	320								
Aromatics >EC21-EC35	10	3	48	500	0	28000	844.9647	POTENTIALLY SUITABLE FOR USE	48	280	500								
Aromatics >EC35-EC44	8.4	3	8.4	94	0	28000	171.5187	POTENTIALLY SUITABLE FOR USE	8.4	74	94								
ADDITIVITY CHECK								HAZARD QUOTIENTS FOR EACH FRACTION											
								Aliphatics EC5-EC6	0.000	0.000	0.000								
								Aliphatics >EC6-EC8	0.000	0.000	0.000								
Considered additive								Aliphatics >EC8-EC10	0.000	0.000	0.000								
								Aliphatics >EC10-EC12	0.004	0.021	0.057								
								Aliphatics >EC12-EC16	0.035	0.207	0.643								
								Aliphatics >EC16-EC35	0.000	0.000	0.000								
								Aliphatics >EC35-EC44	0.000	0.000	0.000								
								Aromatics EC5-EC7	0.000	0.000	0.000								
								Aromatics >EC7-EC8	0.000	0.000	0.000								
Considered additive								Aromatics >EC8-EC10	0.000	0.000	0.000								
								Aromatics >EC10-EC12	0.000	0.010	0.030								
								Aromatics >EC12-EC16	0.000	0.003	0.008								
								Aromatics >EC16-EC21	0.001	0.006	0.011								
Considered additive								Aromatics >EC21-EC35	0.002	0.010	0.018								
								Aromatics >EC35-EC44	0.000	0.003	0.003								
								Hazard Index for ali>C8-C16	0.039	0.228	0.700								
								Hazard Index for aro>C8-C16	0.001	0.013	0.039								
								Hazard Index for aro>C16-C35	0.003	0.016	0.029								
Risk parameter: Human health - commercial (6%SOM)								Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading.											
Data set: 21-96478								Legend: Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.											
Client: MCDONALDS								Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).											
Site: Pontardawe								MG denotes Made Ground											
Job no.: 15297								NAT denotes natural ground											
Lab. report no(s).: 21-96478																			

Appendix F

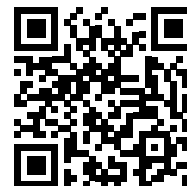
Waste Assessment

HazWasteOnline™ Assessment

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



73DQ2-R1MUY-FEZAA

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

Job name

21-96478_HWOL_Results

Description/Comments

Lab cert 21-96478

Project

C-15297

Site

McDonalds Pontardawe

Classified by

Name: **Alison Holland**
 Date: **22 Sep 2021 16:53 GMT**
 Telephone:
 Company: **Hydrock Consultants Ltd**

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course
 Hazardous Waste Classification

Date
 08 Sep 2020

Next 3 year Refresher due by Sep 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP01--25082021-0.10		Non Hazardous		2
2	CP01--25082021-0.80		Non Hazardous		4
3	CP01--25082021-3.10		Non Hazardous		6
4	CP01--25082021-4.80		Non Hazardous		8
5	CP01--25082021-6.70		Potentially Hazardous	HP 2	10
6	CP02--25082021-0.45		Hazardous	HP 10, HP 14	12
7	CP02--25082021-1.25		Non Hazardous		15
8	CP02--25082021-3.05		Hazardous	HP 14	18
9	CP02--25082021-4.05		Hazardous	HP 3(i), HP 7, HP 11, HP 14	21
10	CP02--25082021-6.55		Non Hazardous		24
11	TP01--25082021-0.30		Non Hazardous		26
12	TP01--25082021-1.60		Potentially Hazardous	HP 2	28
13	TP02--25082021-0.35		Non Hazardous		30
14	TP03--25082021-0.35		Non Hazardous		32
15	TP04--25082021-0.95		Non Hazardous		34

Related documents

#	Name	Description
1	21-96478_HWOL_Results.hwol	.hwol file used to create the Job
2	Hydrock Standard plus Cresol (ammended Lead)	waste stream template used to create this Job

Report

Created by: Alison Holland

Created date: 22 Sep 2021 16:53 GMT

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	36
Appendix B: Rationale for selection of metal species	37
Appendix C: Version	38

Classification of sample: CP01--25082021-0.10

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CP01--25082021-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
3.3% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 3.3% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	acenaphthene	201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	10	mg/kg	1.32	12.768	mg/kg	0.00128 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.62	mg/kg	2.775	1.664	mg/kg	0.000166 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.3	mg/kg	13.43	3.896	mg/kg	0.00039 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %	<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		13	mg/kg	1.462	18.373	mg/kg	0.00184 %	✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	9.7	mg/kg	1.126	10.561	mg/kg	0.00106 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-912-4	206-44-0								
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	12 mg/kg		11.604 mg/kg	0.00116 %		✓	
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				24 mg/kg	1.579	36.657 mg/kg	0.00367 %		✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				9 pH		9 pH	9pH			
			PH								
27	phenanthrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-581-5	85-01-8								
28	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				54 mg/kg	1.245	64.996 mg/kg	0.0065 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				18 mg/kg	1.785	31.073 mg/kg	0.00311 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.02 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP01--25082021-0.80

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CP01--25082021-0.80	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
10% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		0.33 mg/kg		0.297	mg/kg	0.0000297 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	33 mg/kg	1.32	39.214	mg/kg	0.00392 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.3 mg/kg		1.17	mg/kg	0.000117 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.89 mg/kg		0.801	mg/kg	0.0000801 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.5 mg/kg		1.35	mg/kg	0.000135 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		0.45 mg/kg		0.405	mg/kg	0.0000405 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.34 mg/kg		0.306	mg/kg	0.0000306 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.68 mg/kg	2.775	1.699	mg/kg	0.00017 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.4 mg/kg	13.43	4.835	mg/kg	0.000483 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		15 mg/kg	1.462	19.731	mg/kg	0.00197 %	✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2 mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.84 mg/kg		0.756	mg/kg	0.0000756 %	✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	89 mg/kg	1.126	90.184	mg/kg	0.00902 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				1.7 mg/kg		1.53 mg/kg	0.000153 %		✓	
		205-912-4	206-44-0								
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				0.71 mg/kg		0.639 mg/kg	0.0000639 %		✓	
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	400 mg/kg		360 mg/kg	0.036 %		✓	
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				28 mg/kg	1.579	39.803 mg/kg	0.00398 %		✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.1 pH		8.1 pH	8.1 pH			
			PH								
27	phenanthrene				1.3 mg/kg		1.17 mg/kg	0.000117 %		✓	
		201-581-5	85-01-8								
28	pyrene				1.4 mg/kg		1.26 mg/kg	0.000126 %		✓	
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				150 mg/kg	1.245	168.036 mg/kg	0.0168 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				24 mg/kg	1.785	38.56 mg/kg	0.00386 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0779 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP01--25082021-3.10

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CP01--25082021-3.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	acenaphthene	201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	160	mg/kg	1.32	173.227	mg/kg	0.0173 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.48	mg/kg		0.394	mg/kg	0.0000394 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.27	mg/kg		0.221	mg/kg	0.0000221 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.62	mg/kg		0.508	mg/kg	0.0000508 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.28	mg/kg		0.23	mg/kg	0.000023 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	1.6	mg/kg	2.775	3.641	mg/kg	0.000364 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.7	mg/kg	13.43	7.709	mg/kg	0.000771 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %	<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		35	mg/kg	1.462	41.947	mg/kg	0.00419 %	✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.6	mg/kg		0.492	mg/kg	0.0000492 %	✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	330	mg/kg	1.126	304.665	mg/kg	0.0305 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				0.73 mg/kg		0.599 mg/kg	0.0000599 %		✓	
		205-912-4	206-44-0								
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	1700 mg/kg		1394 mg/kg	0.139 %		✓	
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				81 mg/kg	1.579	104.91 mg/kg	0.0105 %		✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				7.8 pH		7.8 pH	7.8 pH			
			PH								
27	phenanthrene				1.3 mg/kg		1.066 mg/kg	0.000107 %		✓	
		201-581-5	85-01-8								
28	pyrene				0.68 mg/kg		0.558 mg/kg	0.0000558 %		✓	
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				360 mg/kg	1.245	367.44 mg/kg	0.0367 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				83 mg/kg	1.785	121.5 mg/kg	0.0121 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.253 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP01--25082021-4.80

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CP01--25082021-4.80	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
29% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 29% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	acenaphthene	201-469-6	83-32-9		1.9	mg/kg		1.349	mg/kg	0.000135 %	✓	
2	acenaphthylene	205-917-1	208-96-8		1.7	mg/kg		1.207	mg/kg	0.000121 %	✓	
3	anthracene	204-371-1	120-12-7		5.1	mg/kg		3.621	mg/kg	0.000362 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	33	mg/kg	1.32	30.935	mg/kg	0.00309 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	6.4	mg/kg		4.544	mg/kg	0.000454 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	3.5	mg/kg		2.485	mg/kg	0.000248 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	7.4	mg/kg		5.254	mg/kg	0.000525 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		1.7	mg/kg		1.207	mg/kg	0.000121 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	2.6	mg/kg		1.846	mg/kg	0.000185 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	1.1	mg/kg	2.775	2.168	mg/kg	0.000217 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	5.721	mg/kg	0.000572 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %	<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		12	mg/kg	1.462	12.452	mg/kg	0.00125 %	✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %	<LOD	
15	chrysene	601-048-00-0	205-923-4	218-01-9	6.8	mg/kg		4.828	mg/kg	0.000483 %	✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	130	mg/kg	1.126	103.919	mg/kg	0.0104 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.94 mg/kg		0.667 mg/kg	0.0000667 %	✓		
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				9.6 mg/kg		6.816 mg/kg	0.000682 %	✓		
		205-912-4	206-44-0								
20	fluorene				3.7 mg/kg		2.627 mg/kg	0.000263 %	✓		
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				2.4 mg/kg		1.704 mg/kg	0.00017 %	✓		
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	280 mg/kg		198.8 mg/kg	0.0199 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				9.9 mg/kg		7.029 mg/kg	0.000703 %	✓		
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				24 mg/kg	1.579	26.915 mg/kg	0.00269 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				6.8 pH		6.8 pH	6.8 pH			
			PH								
27	phenanthrene				15 mg/kg		10.65 mg/kg	0.00107 %	✓		
		201-581-5	85-01-8								
28	pyrene				6.3 mg/kg		4.473 mg/kg	0.000447 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				97 mg/kg	1.245	85.723 mg/kg	0.00857 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				22 mg/kg	1.785	27.885 mg/kg	0.00279 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0562 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP01--25082021-6.70

*** Potentially Hazardous Waste**
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:	LoW Code:
CP01--25082021-6.70	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
17%	Entry:
(wet weight correction)	17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00044%)

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

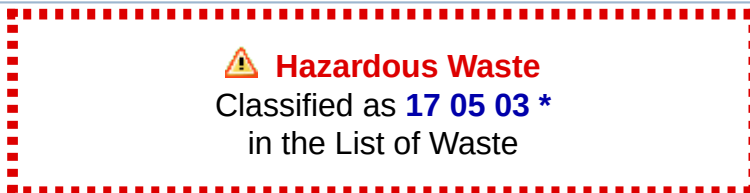
#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4		5.5 mg/kg	1.32	6.027 mg/kg	0.000603 %		✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
7	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1		0.77 mg/kg	2.775	1.774 mg/kg	0.000177 %		✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.4 mg/kg	13.43	4.459 mg/kg	0.000446 %		✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8		<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %			<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		7.4 mg/kg	1.462	8.977 mg/kg	0.000898 %		✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	chromium in chromium(VI) compounds { chromium(VI) oxide }				2.8 mg/kg	1.923	4.469 mg/kg	0.000447 %	✓	
	024-001-00-0	215-607-8	1333-82-0							
15	chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
16	copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	14.952 mg/kg	0.0015 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
	006-007-00-5									
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
19	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0							
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5							
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	240 mg/kg		199.2 mg/kg	0.0199 %	✓	
	082-001-00-6									
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
25	nickel { nickel dihydroxide }				19 mg/kg	1.579	24.909 mg/kg	0.00249 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
26	pH				7.4 pH		7.4 pH	7.4 pH		
			PH							
27	phenanthrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8							
28	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0							
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
30	zinc { zinc oxide }				47 mg/kg	1.245	48.556 mg/kg	0.00486 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
			P1186							
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				15 mg/kg	1.785	22.226 mg/kg	0.00222 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.0341 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP02--25082021-0.45



Sample details

Sample name:	LoW Code:	
CP02--25082021-0.45	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
9.3% (wet weight correction)		

Hazard properties

HP 10: Toxic for reproduction "waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring"

Hazard Statements hit:

Repr. 1A; H360Df "May damage the unborn child. Suspected of damaging fertility."

Because of determinand:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.907%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 1; H410 "Very toxic to aquatic life with long lasting effects."

Because of determinand:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.907%)

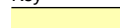
Determinands

Moisture content: 9.3% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		0.34 mg/kg		0.308 mg/kg	0.0000308 %	✓	
2	acenaphthylene	205-917-1	208-96-8		0.25 mg/kg		0.227 mg/kg	0.0000227 %	✓	
3	anthracene	204-371-1	120-12-7		1.6 mg/kg		1.451 mg/kg	0.000145 %	✓	
4	arsenic { arsenic trioxide }	215-481-4	1327-53-3		64 mg/kg	1.32	76.642 mg/kg	0.00766 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	3.9 mg/kg		3.537 mg/kg	0.000354 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	3.3 mg/kg		2.993 mg/kg	0.000299 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	3.7 mg/kg		3.356 mg/kg	0.000336 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		1.5 mg/kg		1.361 mg/kg	0.000136 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.4 mg/kg		1.27 mg/kg	0.000127 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	1.5 mg/kg	2.775	3.776 mg/kg	0.000378 %	✓	

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number								
11		boron {  boron tribromide/trichloride/trifluoride (combined) }				5 mg/kg	13.43	60.905 mg/kg	0.00609 %		✓	
				10294-33-4, 10294-34-5, 7637-07-2								
12		cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %			<LOD
	048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				68 mg/kg	1.462	90.143 mg/kg	0.00901 %		✓	
			215-160-9	1308-38-9								
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2 mg/kg	1.923	<2.308 mg/kg	<0.000231 %			<LOD
		024-001-00-0	215-607-8	1333-82-0								
15		chrysene				3.6 mg/kg		3.265 mg/kg	0.000327 %		✓	
		601-048-00-0	205-923-4	218-01-9								
16		copper { dicopper oxide; copper (I) oxide }				110 mg/kg	1.126	112.33 mg/kg	0.0112 %		✓	
		029-002-00-X	215-270-7	1317-39-1								
17		cyanides {  salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
			006-007-00-5									
18		dibenz[a,h]anthracene				0.68 mg/kg		0.617 mg/kg	0.0000617 %		✓	
		601-041-00-2	200-181-8	53-70-3								
19		fluoranthene				6.8 mg/kg		6.168 mg/kg	0.000617 %		✓	
			205-912-4	206-44-0								
20		fluorene				0.83 mg/kg		0.753 mg/kg	0.0000753 %		✓	
			201-695-5	86-73-7								
21		indeno[123-cd]pyrene				1.6 mg/kg		1.451 mg/kg	0.000145 %		✓	
			205-893-2	193-39-5								
22		lead {  lead compounds with the exception of those specified elsewhere in this Annex }			1	10000 mg/kg		9070 mg/kg	0.907 %		✓	
			082-001-00-6									
23		mercury { mercury dichloride }				1.6 mg/kg	1.353	1.964 mg/kg	0.000196 %		✓	
		080-010-00-X	231-299-8	7487-94-7								
24		naphthalene				1.5 mg/kg		1.361 mg/kg	0.000136 %		✓	
		601-052-00-2	202-049-5	91-20-3								
25		nickel { nickel dihydroxide }				28 mg/kg	1.579	40.113 mg/kg	0.00401 %		✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26		pH				9.4 pH		9.4 pH	9.4 pH			
				PH								
27		phenanthrene				4 mg/kg		3.628 mg/kg	0.000363 %		✓	
			201-581-5	85-01-8								
28		pyrene				4.8 mg/kg		4.354 mg/kg	0.000435 %		✓	
			204-927-3	129-00-0								
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				15 mg/kg	1.405	19.115 mg/kg	0.00191 %		✓	
		034-002-00-8										
30		zinc { zinc oxide }				220 mg/kg	1.245	248.37 mg/kg	0.0248 %		✓	
		030-013-00-7	215-222-5	1314-13-2								
31		monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
				P1186								
32		vanadium { divanadium pentaoxide; vanadium pentoxide }				56 mg/kg	1.785	90.673 mg/kg	0.00907 %		✓	
		023-001-00-8	215-239-8	1314-62-1								
Total:									0.986 %			

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP02--25082021-1.25

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CP02--25082021-1.25	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
14% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
2	acenaphthylene	205-917-1	208-96-8		0.53 mg/kg		0.456 mg/kg	0.0000456 %	✓		
3	anthracene	204-371-1	120-12-7		1.6 mg/kg		1.376 mg/kg	0.000138 %	✓		
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	460 mg/kg	1.32	522.321 mg/kg	0.0522 %	✓		
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	3.2 mg/kg		2.752 mg/kg	0.000275 %	✓		
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.3 mg/kg		1.978 mg/kg	0.000198 %	✓		
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	3.3 mg/kg		2.838 mg/kg	0.000284 %	✓		
9	benzo[ghi]perylene	205-883-8	191-24-2		1.2 mg/kg		1.032 mg/kg	0.000103 %	✓		
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.3 mg/kg		1.118 mg/kg	0.000112 %	✓		
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.69 mg/kg	2.775	1.647 mg/kg	0.000165 %	✓		
12	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.4 mg/kg	13.43	4.62 mg/kg	0.000462 %	✓		
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %			<LOD
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		15 mg/kg	1.462	18.854 mg/kg	0.00189 %	✓		
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2 mg/kg	1.923	<2.308 mg/kg	<0.000231 %			<LOD
16	chrysene	601-048-00-0	205-923-4	218-01-9	2.4 mg/kg		2.064 mg/kg	0.000206 %	✓		

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
17	copper { dicopper oxide ; copper (I) oxide }				220	mg/kg	1.126	213.018	mg/kg	0.0213 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5											
19	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
20	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
21	fluoranthene				5.6	mg/kg		4.816	mg/kg	0.000482 %	✓	
		205-912-4	206-44-0									
22	fluorene				1.5	mg/kg		1.29	mg/kg	0.000129 %	✓	
		201-695-5	86-73-7									
23	indeno[123-cd]pyrene				1.4	mg/kg		1.204	mg/kg	0.00012 %	✓	
		205-893-2	193-39-5									
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	2000	mg/kg		1720	mg/kg	0.172 %	✓	
	082-001-00-6											
25	mercury { mercury dichloride }				1.8	mg/kg	1.353	2.095	mg/kg	0.00021 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
26	naphthalene				1	mg/kg		0.86	mg/kg	0.000086 %	✓	
	601-052-00-2	202-049-5	91-20-3									
27	nickel { nickel dihydroxide }				28	mg/kg	1.579	38.034	mg/kg	0.0038 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
28	pH				7.4	pH		7.4	pH	7.4 pH		
			P1186									
29	phenanthrene				6	mg/kg		5.16	mg/kg	0.000516 %	✓	
		201-581-5	85-01-8									
30	pyrene				4.4	mg/kg		3.784	mg/kg	0.000378 %	✓	
		204-927-3	129-00-0									
31	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				6.1	mg/kg	1.405	7.371	mg/kg	0.000737 %	✓	
	034-002-00-8											
32	toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
33	TPH (C6 to C40) petroleum group				150	mg/kg		129	mg/kg	0.0129 %	✓	
			TPH									
34	xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
35	zinc { zinc oxide }				280	mg/kg	1.245	299.727	mg/kg	0.03 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
36	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
			P1186									
37	vanadium { divanadium pentaoxide ; vanadium pentoxide }				27	mg/kg	1.785	41.452	mg/kg	0.00415 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
38	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
Total:										0.303 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1 Only the metal concentration has been used for classification	

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because Flammability of soils due to TPH is likely to be in the region of 10,000mg/kg. Anything below 1000mg/kg is unlikely to be flammable and is therefore considered non-hazardous.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0129%)

Classification of sample: CP02--25082021-3.05

 **Hazardous Waste**
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:	LoW Code:
CP02--25082021-3.05	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 03 * (Soil and stones containing hazardous substances)
26% (wet weight correction)	

Hazard properties

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 1; H410 "Very toxic to aquatic life with long lasting effects."

Because of determinands:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.148%)

zinc oxide: (compound conc.: 0.166%)

Determinands

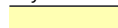
Moisture content: 26% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		1.2 mg/kg		0.888 mg/kg	0.0000888 %		✓	
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
3	anthracene	204-371-1	120-12-7		2.4 mg/kg		1.776 mg/kg	0.000178 %		✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	170 mg/kg	1.32	166.097 mg/kg	0.0166 %		✓	
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	4.8 mg/kg		3.552 mg/kg	0.000355 %		✓	
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	3.1 mg/kg		2.294 mg/kg	0.000229 %		✓	
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	4 mg/kg		2.96 mg/kg	0.000296 %		✓	
9	benzo[ghi]perylene	205-883-8	191-24-2		2.3 mg/kg		1.702 mg/kg	0.00017 %		✓	
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.2 mg/kg		0.888 mg/kg	0.0000888 %		✓	
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.58 mg/kg	2.775	1.191 mg/kg	0.000119 %		✓	
12	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.3 mg/kg	13.43	2.981 mg/kg	0.000298 %		✓	
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	12 mg/kg	1.285	11.413 mg/kg	0.000888 %		✓	

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		17	mg/kg	1.462	18.386	mg/kg	0.00184 %	✓	
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
16	chrysene	601-048-00-0	205-923-4	218-01-9	3.8	mg/kg		2.812	mg/kg	0.000281 %	✓	
17	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	310	mg/kg	1.126	258.279	mg/kg	0.0258 %	✓	
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5			<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20	ethylbenzene	601-023-00-4	202-849-4	100-41-4	0.019	mg/kg		0.0141	mg/kg	0.00000141 %	✓	
21	fluoranthene		205-912-4	206-44-0	6.4	mg/kg		4.736	mg/kg	0.000474 %	✓	
22	fluorene		201-695-5	86-73-7	6.1	mg/kg		4.514	mg/kg	0.000451 %	✓	
23	indeno[123-cd]pyrene		205-893-2	193-39-5	1.7	mg/kg		1.258	mg/kg	0.000126 %	✓	
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			2000	mg/kg		1480	mg/kg	0.148 %	✓	
25	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	2.5	mg/kg	1.353	2.504	mg/kg	0.00025 %	✓	
26	naphthalene	601-052-00-2	202-049-5	91-20-3	2.1	mg/kg		1.554	mg/kg	0.000155 %	✓	
27	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]	42	mg/kg	1.579	49.091	mg/kg	0.00491 %	✓	
28	pH			PH	7.5	pH		7.5	pH	7.5 pH		
29	phenanthrene		201-581-5	85-01-8	7.2	mg/kg		5.328	mg/kg	0.000533 %	✓	
30	pyrene		204-927-3	129-00-0	6	mg/kg		4.44	mg/kg	0.000444 %	✓	
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32	toluene	601-021-00-3	203-625-9	108-88-3	0.016	mg/kg		0.0118	mg/kg	0.00000118 %	✓	
33	TPH (C6 to C40) petroleum group			TPH	910	mg/kg		673.4	mg/kg	0.0673 %	✓	
34	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	0.12	mg/kg		0.0888	mg/kg	0.00000888 %	✓	
35	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	1800	mg/kg	1.245	1657.959	mg/kg	0.166 %	✓	
36	monohydric phenols			P1186	20	mg/kg		14.8	mg/kg	0.00148 %	✓	
37	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1	40	mg/kg	1.785	52.841	mg/kg	0.00528 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
38	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
Total:								0.443 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1 Only the metal concentration has been used for classification	

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Flammability of soils due to TPH is likely to be in the region of 10,000mg/kg. Anything below 1000mg/kg is unlikely to be flammable and is therefore considered non-hazardous.

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

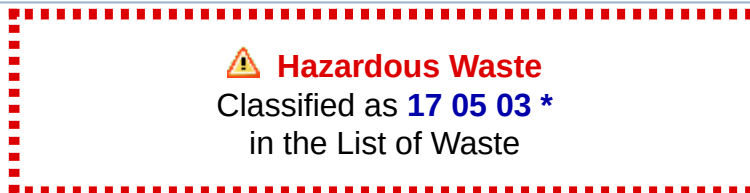
ethylbenzene: (conc.: 1.41e-06%)
toluene: (conc.: 1.18e-06%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.0673%)
xylene: (conc.: 8.88e-06%)

Classification of sample: CP02--25082021-4.05



Sample details

Sample name:	LoW Code:	
CP02--25082021-4.05	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
23% (wet weight correction)		

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.139%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.139%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 1; H410 "Very toxic to aquatic life with long lasting effects."

Because of determinands:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.116%)

zinc oxide: (compound conc.: 0.173%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

ethylbenzene: (conc.: 4.47e-06%)

toluene: (conc.: 3.23e-06%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.139%)

xylene: (conc.: 0.00003%)

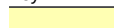
Determinands

Moisture content: 23% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	acenaphthene	201-469-6	83-32-9		3.3	mg/kg		2.541	mg/kg	0.000254 %	✓	
2	acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		4.9	mg/kg		3.773	mg/kg	0.000377 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	180	mg/kg	1.32	182.997	mg/kg	0.0183 %	✓	
5	benzene	601-020-00-8	200-753-7	71-43-2	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	4.2	mg/kg		3.234	mg/kg	0.000323 %	✓	
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.3	mg/kg		1.771	mg/kg	0.000177 %	✓	
8	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	3	mg/kg		2.31	mg/kg	0.000231 %	✓	
9	benzo[ghi]perylene	205-883-8	191-24-2		1.2	mg/kg		0.924	mg/kg	0.0000924 %	✓	
10	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.3	mg/kg		1.001	mg/kg	0.0001 %	✓	
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.57	mg/kg	2.775	1.218	mg/kg	0.000122 %	✓	
12	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		<0.2	mg/kg	13.43	<2.686	mg/kg	<0.000269 %		<LOD
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	16	mg/kg	1.285	15.834	mg/kg	0.00123 %	✓
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		21	mg/kg	1.462	23.633	mg/kg	0.00236 %	✓	
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
16	chrysene	601-048-00-0	205-923-4	218-01-9	3.5	mg/kg		2.695	mg/kg	0.000269 %	✓	
17	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	490	mg/kg	1.126	424.798	mg/kg	0.0425 %	✓	
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5			<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20	ethylbenzene	601-023-00-4	202-849-4	100-41-4	0.058	mg/kg		0.0447	mg/kg	0.00000447 %	✓	
21	fluoranthene	205-912-4	206-44-0		6.6	mg/kg		5.082	mg/kg	0.000508 %	✓	
22	fluorene	201-695-5	86-73-7		16	mg/kg		12.32	mg/kg	0.00123 %	✓	
23	indeno[123-cd]pyrene	205-893-2	193-39-5		1.4	mg/kg		1.078	mg/kg	0.000108 %	✓	
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	1500	mg/kg	1155	mg/kg	0.116 %	✓	
25	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	2.2	mg/kg	1.353	2.293	mg/kg	0.000229 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
26	naphthalene				11 mg/kg		8.47 mg/kg	0.000847 %	✓	
	601-052-00-2	202-049-5	91-20-3							
27	 nickel { nickel dihydroxide }				33 mg/kg	1.579	40.135 mg/kg	0.00401 %	✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
28	pH		PH		7.8 pH		7.8 pH	7.8 pH		
29	phenanthrene				12 mg/kg		9.24 mg/kg	0.000924 %	✓	
		201-581-5	85-01-8							
30	pyrene				6.1 mg/kg		4.697 mg/kg	0.00047 %	✓	
		204-927-3	129-00-0							
31	 selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
32	toluene				0.042 mg/kg		0.0323 mg/kg	0.0000323 %	✓	
	601-021-00-3	203-625-9	108-88-3							
33	TPH (C6 to C40) petroleum group		TPH		1800 mg/kg		1386 mg/kg	0.139 %	✓	
34	xylene				0.42 mg/kg		0.323 mg/kg	0.0000323 %	✓	
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
35	 zinc { zinc oxide }				1800 mg/kg	1.245	1725.174 mg/kg	0.173 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
36	monohydric phenols		P1186		70 mg/kg		53.9 mg/kg	0.00539 %	✓	
37	 vanadium { divanadium pentaoxide; vanadium pentoxide }				41 mg/kg	1.785	56.358 mg/kg	0.00564 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
38	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
Total:								0.513 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1 Only the metal concentration has been used for classification	

Classification of sample: CP02--25082021-6.55

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CP02--25082021-6.55	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
15% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	acenaphthene	201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	34	mg/kg	1.32	38.157	mg/kg	0.00382 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	1.2	mg/kg	2.775	2.831	mg/kg	0.000283 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		<0.2	mg/kg	13.43	<2.686	mg/kg	<0.000269 %		<LOD
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	2.5	mg/kg	1.285	2.731	mg/kg	0.000213 %	✓
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		14	mg/kg	1.462	17.393	mg/kg	0.00174 %	✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	120	mg/kg	1.126	114.841	mg/kg	0.0115 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-912-4	206-44-0								
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	15 mg/kg		12.75 mg/kg	0.00128 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				21 mg/kg	1.579	28.194 mg/kg	0.00282 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.4 pH		8.4 pH	8.4 pH			
			PH								
27	phenanthrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-581-5	85-01-8								
28	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				250 mg/kg	1.245	264.502 mg/kg	0.0265 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				27 mg/kg	1.785	40.97 mg/kg	0.0041 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0532 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP01--25082021-0.30

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP01--25082021-0.30	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
4.8% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 4.8% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
3	anthracene	204-371-1	120-12-7		0.24 mg/kg		0.228 mg/kg	0.0000228 %		✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	22 mg/kg	1.32	27.653 mg/kg	0.00277 %		✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.39 mg/kg		0.371 mg/kg	0.0000371 %		✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.31 mg/kg		0.295 mg/kg	0.0000295 %		✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.43 mg/kg		0.409 mg/kg	0.0000409 %		✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.18 mg/kg		0.171 mg/kg	0.0000171 %		✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	3.1 mg/kg	2.775	8.191 mg/kg	0.000819 %		✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		5.3 mg/kg	13.43	67.762 mg/kg	0.00678 %		✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %			<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		260 mg/kg	1.462	361.764 mg/kg	0.0362 %		✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2 mg/kg	1.923	<2.308 mg/kg	<0.000231 %			<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.39 mg/kg		0.371 mg/kg	0.0000371 %		✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	38 mg/kg	1.126	40.73 mg/kg	0.00407 %		✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				0.71 mg/kg		0.676 mg/kg	0.0000676 %	✓		
		205-912-4	206-44-0								
20	fluorene				0.41 mg/kg		0.39 mg/kg	0.000039 %	✓		
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	400 mg/kg		380.8 mg/kg	0.0381 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				9.4 mg/kg	1.579	14.135 mg/kg	0.00141 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				11.1 pH		11.1 pH	11.1 pH			
			PH								
27	phenanthrene				0.81 mg/kg		0.771 mg/kg	0.0000771 %	✓		
		201-581-5	85-01-8								
28	pyrene				0.87 mg/kg		0.828 mg/kg	0.0000828 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				99 mg/kg	1.245	117.312 mg/kg	0.0117 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				170 mg/kg	1.785	288.914 mg/kg	0.0289 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.132 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP01--25082021-1.60

*** Potentially Hazardous Waste**
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:	LoW Code:
TP01--25082021-1.60	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
17%	Entry:
(wet weight correction)	17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00046%)

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	20 mg/kg	1.32	21.917 mg/kg	0.00219 %	✓		
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.32 mg/kg		0.266 mg/kg	0.0000266 %	✓		
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.28 mg/kg		0.232 mg/kg	0.0000232 %	✓		
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.37 mg/kg		0.307 mg/kg	0.0000307 %	✓		
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.17 mg/kg		0.141 mg/kg	0.0000141 %	✓		
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.9 mg/kg	2.775	2.073 mg/kg	0.000207 %	✓		
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %			<LOD
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %			<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		16 mg/kg	1.462	19.409 mg/kg	0.00194 %	✓		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				2.9	mg/kg	1.923	4.629	mg/kg	0.000463 %	✓	
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				0.29	mg/kg		0.241	mg/kg	0.0000241 %	✓	
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				42	mg/kg	1.126	39.248	mg/kg	0.00392 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
17		cyanides {  salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19		fluoranthene				0.4	mg/kg		0.332	mg/kg	0.0000332 %	✓	
			205-912-4	206-44-0									
20		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
21		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
22		lead {  lead compounds with the exception of those specified elsewhere in this Annex }			1	73	mg/kg		60.59	mg/kg	0.00606 %	✓	
		082-001-00-6											
23		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		nickel { nickel dihydroxide }				31	mg/kg	1.579	40.641	mg/kg	0.00406 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26		pH				7.3	pH		7.3	pH	7.3 pH		
				PH									
27		phenanthrene				0.31	mg/kg		0.257	mg/kg	0.0000257 %	✓	
			201-581-5	85-01-8									
28		pyrene				0.38	mg/kg		0.315	mg/kg	0.0000315 %	✓	
			204-927-3	129-00-0									
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
		034-002-00-8											
30		zinc { zinc oxide }				100	mg/kg	1.245	103.311	mg/kg	0.0103 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31		monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
				P1186									
32		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	31.116	mg/kg	0.00311 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
Total:											0.0333 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP02--25082021-0.35

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP02--25082021-0.35	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	acenaphthene	201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		0.31	mg/kg		0.254	mg/kg	0.0000254 %	✓	
3	anthracene	204-371-1	120-12-7		1.2	mg/kg		0.984	mg/kg	0.0000984 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	140	mg/kg	1.32	151.573	mg/kg	0.0152 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	3.1	mg/kg		2.542	mg/kg	0.000254 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	3.1	mg/kg		2.542	mg/kg	0.000254 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	4	mg/kg		3.28	mg/kg	0.000328 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		2	mg/kg		1.64	mg/kg	0.000164 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.4	mg/kg		1.148	mg/kg	0.000115 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.79	mg/kg	2.775	1.798	mg/kg	0.00018 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	6.608	mg/kg	0.000661 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %	<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		21	mg/kg	1.462	25.168	mg/kg	0.00252 %	✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %	<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9		3.4	mg/kg		2.788	mg/kg	0.000279 %	✓
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		410	mg/kg	1.126	378.524	mg/kg	0.0379 %	✓

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.41 mg/kg		0.336 mg/kg	0.0000336 %	✓		
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				5.5 mg/kg		4.51 mg/kg	0.000451 %	✓		
		205-912-4	206-44-0								
20	fluorene				0.57 mg/kg		0.467 mg/kg	0.0000467 %	✓		
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				1.7 mg/kg		1.394 mg/kg	0.000139 %	✓		
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	1400 mg/kg		1148 mg/kg	0.115 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				2.1 mg/kg	1.353	2.331 mg/kg	0.000233 %	✓		
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				0.84 mg/kg		0.689 mg/kg	0.0000689 %	✓		
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				64 mg/kg	1.579	82.892 mg/kg	0.00829 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.1 pH		8.1 pH	8.1 pH			
			PH								
27	phenanthrene				2.8 mg/kg		2.296 mg/kg	0.00023 %	✓		
		201-581-5	85-01-8								
28	pyrene				4.6 mg/kg		3.772 mg/kg	0.000377 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				5.2 mg/kg	1.405	5.991 mg/kg	0.000599 %	✓		
	034-002-00-8										
30	zinc { zinc oxide }				1100 mg/kg	1.245	1122.732 mg/kg	0.112 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				40 mg/kg	1.785	58.554 mg/kg	0.00586 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.302 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03--25082021-0.35

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP03--25082021-0.35	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
31%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 31% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
3	anthracene	204-371-1	120-12-7		0.27 mg/kg		0.186 mg/kg	0.0000186 %		✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	180 mg/kg	1.32	163.984 mg/kg	0.0164 %		✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.25 mg/kg		0.173 mg/kg	0.0000173 %		✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.3 mg/kg		0.207 mg/kg	0.0000207 %		✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.25 mg/kg		0.173 mg/kg	0.0000173 %		✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.21 mg/kg		0.145 mg/kg	0.0000145 %		✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	0.1 mg/kg	2.775	0.191 mg/kg	0.0000191 %		✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %			<LOD
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %			<LOD
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		30 mg/kg	1.462	30.254 mg/kg	0.00303 %		✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2 mg/kg	1.923	<2.308 mg/kg	<0.000231 %			<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	0.42 mg/kg		0.29 mg/kg	0.000029 %		✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	22 mg/kg	1.126	17.091 mg/kg	0.00171 %		✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				0.53 mg/kg		0.366 mg/kg	0.0000366 %	✓		
		205-912-4	206-44-0								
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	400 mg/kg		276 mg/kg	0.0276 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				19 mg/kg	1.579	20.707 mg/kg	0.00207 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8 pH		8 pH	8pH			
			PH								
27	phenanthrene				0.28 mg/kg		0.193 mg/kg	0.0000193 %	✓		
		201-581-5	85-01-8								
28	pyrene				0.5 mg/kg		0.345 mg/kg	0.0000345 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				260 mg/kg	1.245	223.302 mg/kg	0.0223 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				89 mg/kg	1.785	109.628 mg/kg	0.011 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0853 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP04--25082021-0.95

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP04--25082021-0.95	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	acenaphthylene	205-917-1	208-96-8		<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	9.9 mg/kg	1.32	11.633	mg/kg	0.00116 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	4 mg/kg	2.775	9.88	mg/kg	0.000988 %	✓	
11	boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		3.9 mg/kg	13.43	46.616	mg/kg	0.00466 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.4 mg/kg	1.285	0.458	mg/kg	0.0000356 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		89 mg/kg	1.462	115.77	mg/kg	0.0116 %	✓	
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1.2 mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15	chrysene	601-048-00-0	205-923-4	218-01-9	<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	24 mg/kg	1.126	24.049	mg/kg	0.0024 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-912-4	206-44-0								
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	25 mg/kg		22.25 mg/kg	0.00223 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				18 mg/kg	1.579	25.304 mg/kg	0.00253 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				11 pH		11 pH	11pH			
			PH								
27	phenanthrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-581-5	85-01-8								
28	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				67 mg/kg	1.245	74.222 mg/kg	0.00742 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				94 mg/kg	1.785	149.349 mg/kg	0.0149 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0487 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

■ **boron tribromide/trichloride/trifluoride (combined)** (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06 Aug 2015
Hazard Statements: EUH014 , Acute Tox. 2 H330 , Acute Tox. 2 H300 , Skin Corr. 1A H314 , Skin Corr. 1B H314

■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

■ **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

■ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

• **lead compounds with the exception of those specified elsewhere in this Annex**

CLP index number: 082-001-00-6

Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers many simple lead compounds to be Carcinogenic category 2

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium

www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

• **pH (CAS Number: PH)**

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

• **phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)**

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

• **pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)**

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• **monohydric phenols (CAS Number: P1186)**

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)

Data source: CLP combined data

Data source date: 26 Mar 2019

Hazard Statements: Acute Tox. 3 H301 , Acute Tox. 3 H311 , Acute Tox. 3 H331 , Skin Corr. 1B H314 , Skin Corr. 1B H314 >= 3 % , Skin Irrit. 2 H315 1 & conc. < 3 % , Eye Irrit. 2 H319 1 & conc. < 3 % , Muta. 2 H341 , STOT RE 2 H373 , Aquatic Chronic 2 H411

• **ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)**

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

• **TPH (C6 to C40) petroleum group (CAS Number: TPH)**

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species based on hazard statements

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species based on hazard statements.

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2021.246.4869.9247 (05 Sep 2021)

HazWasteOnline Database: 2021.246.4869.9247 (05 Sep 2021)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2019 - UK: 2019 No. 720 of 27th March 2019

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

Appendix G

Preliminary Geotechnical Risk Register

Geotechnical Hazard Identification – Desk Study Stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table J.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with ground investigation design.

Table J.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Variable Made Ground and Glaciofluvial Deposits (variable strength and compressibility).	Based on summaries from historical ground investigations the ground conditions on site are expected to vary significantly. During investigation the Made Ground was found to be 5.3m bgl.	✓	-
Soft/loose compressible ground (low strength and high settlement potential).	Alluvium is mapped northwest of the site; however, previous site investigation(s) have recorded some Alluvium on site. Glaciofluvial deposits were found during investigation.	✓	-
Shrink swell of the clay fraction of soils under the influence of vegetation.	Alluvium and Glaciofluvial Deposits, which are anticipated beneath the site, could contain clay fractions that have a medium to high volume change potential.	✓	-
Variable lateral and vertical changes in ground conditions.	Made Ground is mapped in one half of the site with Glaciofluvial Deposits mapped in the other half. Ground investigations recorded changes in Made Ground thickness across the wider Tesco Superstore development.	✓	-
High sulfates present in the soils.	The history of coal mining in the vicinity of the site means sulfates could be present in the Made Ground.	✓	-
Adverse chemical ground conditions, (e.g. expansive slag).	The colliery spoil on site prior to the Tesco development was found to have high sulfate and slag content. These could still be present beneath the site, depending on what remediation was undertaken.	✓	-
Obstructions.	Historical buildings on site and neighbouring adits that could be located on the site boundary mean there could be obstructions in the ground.	✓	-
Existing below ground structures to remain (adjacent possible treated mine adits).	Any treated mine adits will likely have to remain in-situ. If they do cross on to the site then the proposed development will have to be constructed around these.	✓	-
Shallow groundwater.	The BGS SuDs report indicates that the groundwater is likely to be less than 3m bgl with a	✓	-

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
	very high likelihood of persistent shallow groundwater beneath the site. This is corroborated by historical groundwater monitoring, which indicates that groundwater was between 1m and 4m bgl within the Glaciofluvial Deposits. The depth to groundwater was dependant on Made Ground thickness.		
Changing groundwater conditions.	The site is not in a tidally affected area and groundwater will only be affected by seasonal change.	-	✓
Risk from erosion.	The site is at low risk from erosion given the elevation of site in comparison to the River Tawe.	-	✓
Risk from flooding.	There is low risk from surface water flooding on site however, there is potential for groundwater flooding on site.	✓	-
Loose Made Ground, leading to difficulty with excavation and collapse of side walls.	The composition of Made Ground beneath the Tesco car park is of unknown and could likely lead to difficulties with excavation.	✓	-
Slope stability issues – general slopes.	There are no significant slopes on site that would cause potential issues to the proposed development.	-	✓
Slope stability issues – retaining walls.	The northwest boundary of the site comprises a reinforced soil wall that supports the Tesco car park. It is unknown what loads this wall has been designed to retain and whether the addition of the proposed development would destabilise it.	✓	-
Earthworks – settlement (due to placement of fill on soft / loose ground).	Levels on site are unlikely to change with the construction.	-	✓
Earthworks – poor bearing capacity of new fill.	The levels on site are unlikely to change significantly, therefore new fill is unlikely to be required.	-	✓
Earthworks – unsuitability of site won material to be reused as fill.	It is unclear whether the Made Ground or the Glaciofluvial Deposits will be suitable to be used as fill on site and earthworks testing should be undertaken to confirm suitability.	✓	-
Mining.	The ground conditions beneath the site indicate that coal seams outcrop outside of the site boundary and shallow worked coal seams are unlikely to present and unlikely to pose a risk to the proposed development. The main risk is related to the adits, and whether all the adits have been treated during the construction of the A4067 and the Tesco superstore and car park.	✓	-

Geotechnical Hazard Identification – Following Ground Investigation

The preliminary Geotechnical Risk Register following Ground Investigation is set out in Table J.3.

The probability and impact of a hazard have been judged on a qualitative scale as set out in Table J.2. The degree of risk (R) is determined by combining an assessment of the probability (P) of the hazard occurring with an assessment of the impact (I) of the hazard and associated mitigation it will require if it occurs ($R = P \times I$).

Table J.2: Qualitative assessment of hazards and risks

P = Probability		I = Impact		R = Risk Rating (P x I)	
1	Very unlikely (VU)	1	Very Low	1 – 4	None / negligible
2	Unlikely (U)	2	Low	5 – 9	Minor
3	Plausible (P)	3	Medium	10 – 14	Moderate
4	Likely (Lk)	4	High	15 – 19	Substantial
5	Very Likely (VLk)	5	Very High	20 – 25	Severe

Table J.3: Preliminary geotechnical risk register

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Uncontrolled Made Ground (variable strength and compressibility).	The Made Ground is up to 5.0m thick due to the historic site activity.	Commercial developments	Bearing capacity failure, settlement (total and differential).	1	4	4	Design foundations to found below Made Ground or on Made Ground which has been improved.
			Floor slab failure.	1	4	4	Design floor slabs as suspended.
		Roads and Pavements.	Settlement (total and differential) of roads and pavements.	2	2	4	Design roads and pavements using suitable geotechnical parameters and increase the sub-base.
		Services.	Settlement (differential), causing damage to services.	2	2	4	Anticipated settlements are significant with regard to services. There is a requirement to improve the Made Ground prior to installation of services. It is also advisable to steepen falls in drainage to prevent back fall and use rocker boxes and flexible couplings.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	1	3	3	Where soft spots encountered, over-excavation and replacement with suitable fill. Outline design of working platform to include geo-grid. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
Sulfates present in the soils.	The ground investigation has proven that there is the potential for expansive sulfate bearing soils to be present.	Attack of buried concrete.	Damage to concrete and reduction in strength.	4	4	8	Classify concrete in accordance with BRE SD1 and design concrete accordingly.
Adverse chemical ground conditions,	The site history and the conditions proven during the ground	Concrete below ground.	Damage to concrete and reduction in strength.	3	3	9	Supplementary slag expansion tests in accordance with BRE guidelines to be undertaken if Made Ground to be re-used during earthworks.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
(e.g. expansive slag).	investigation indicate there is the potential for expansive slag to be present.						Classify concrete in accordance with BRE SD1 and design concrete accordingly.
Obstructions.	Obstructions have been proven by the investigation and there is a potential for additional obstructions to be present due to historical construction activity, or unknown fill in Made Ground.	Construction staff, vehicles and plant operators.	Risk of collapse of excavation as obstructions are pulled out.	3	3	9	Allow for a breaker to be present during construction and remove obstructions, where encountered during construction.
		Roads and Pavements.	Hard spots in externals and roads / pavements.	3	2	6	
		Residential Dwellings.	Impact on piling / VSC, resulting in additional piles / columns and re-design of foundations.	3	3	9	
Existing below ground structures to remain (Mine Adit).	There is an existing Mine Adit on the north to northeast edge of the site.	Adjacent Building.	Foundation bearing capacity failure, settlement (differential).	5	4	20	Undertake geotechnical design to ensure the proposed structures do not place additional load on the existing structures. Design to be undertaken in accordance with EC7. Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011. Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations. CCTV survey of mine adit to be undertaken to determine its orientation and current condition. Discussions with relevant stakeholders need to be held to determine responsibility of maintenance of this feature.
Loose Made Ground, leading to difficulty with excavation and	The ground investigation has indicated that there is a potential for loose soils and Made Ground	Construction staff, vehicles and plant operators.	Ground failure, instability of plant and machinery.	2	4	8	As instability has been noted in all pits from surface, foundation options should be reviewed to ensure minimal excavation (e.g. piles). Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011.
			Risk of collapse of excavation.	2	3	6	

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
collapse of side walls.	to be present at the site.	Pavement construction and long-term durability highways and external areas.	Serviceability issues.	2	3	6	Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations.
		Foundations	Floor slab failure.	1	5	5	Design floor slab as suspended.
		Roads and Pavements.	Serviceability affected.	1	3	3	-
		Services.	Damage to services. Leaking drainage causing inundation and further collapse.	1	3	3	No soakaway drainage recommended on site. Use rocker boxes and flexible couplings.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	1	3	3	Where soft spots encountered, over-excavation and replacement with suitable fill. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
Unforeseen ground conditions - risk associated with limited data.	Ground investigation has been undertaken. However, additional information will be obtained during construction. Ground conditions are only defined at exploratory hole locations.	All aspects of the development		4	4	16	Designers to be contacted if conditions encountered are different to those identified during investigation. Regular inspections of excavations and earthworks for evidence of stability. Adequate investigation required to characterise the site and understand the potential risks.

Whilst the probability and impact of the hazard occurring can be reduced to a minimum by geotechnical design, the impact cannot be reduced below very low. The risk register will need to be up-dated, as necessary, to reflect design, additional information, data and experience as it is gained through the construction process.

Impacts of the design with regard to health and Safety considerations will need to be included by the designer at design stage.

Appendix H

Plausible Source-Pathway-Receptor Contaminant Linkages

Summary of Potential Contaminant Linkages

Table K.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in LCRM (2019) and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland et al 2001) but modified to add a ‘no linkage’ category and to remove low/moderate risk (See Table K.1). Further information is given in the relevant Hydrock methodology, referenced in Appendix I, including descriptions of typical examples of probability and consequences.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table K.1: Consequence versus probability assessment.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table K.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Made Ground below the site associated with historical coal mining activities on site and possible contaminated fill associated with the construction of the Tesco car park. (metals, metalloids, asbestos fibres, asbestos containing materials, PAH and petroleum hydrocarbons).	Ingestion, inhalation or direct contact.	Site users.	Low likelihood	Medium	Low	There is Made Ground below the entire site. Although the planning condition relating to contaminated land for the Tesco development has been discharged by the Local Authority, Hydrock have not had sight of the verification plan or any of the quantitative risk assessments undertaken by John Grimes Partnership and the residual contamination levels beneath the site are now known to contain elevated Lead. As the entire development is 100% hardstanding and building cover, the contaminated soil can remain in situ.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low	
	Leaching through unsaturated zone.	Groundwater.	Low likelihood	Medium	Low	
	Surface run-off.	Aquatic ecosystems. Surface water.	Low likelihood	Medium	Low	
Ground gases (carbon dioxide and methane) form organic materials present in Made Ground, Alluvium and Glaciofluvial Deposits on-site and adjacent to the site, also includes adits and possible mine workings adjacent to the site.	Migration, build up and asphyxiation.	Site users.	Likely	Medium	Moderate	There is a possibility for ground gases to be released from organic materials within the Made Ground, Glaciofluvial Deposits on site and adjacent to the site. The unknown condition of the adits and possible mine workings adjacent to the site mean that ground gas could be present within these features. Ground gas monitoring as part of this current commission has been completed and CS₂ is recommended due to high carbon dioxide levels recorded and low oxygen.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Petroleum hydrocarbons, associated with the petrol filling station (and car wash) northeast of, and up hydraulic gradient of, the site.	Ingestion, inhalation or direct contact.	Site users.	Low likelihood	Medium	Low	The petrol filling station northeast of the site is approximately 15 years old, and the condition of the below ground fuel tanks is unknown. Ground investigation has not found elevated levels of TPH or PAH in the soil with respect to commercial development.
	Vapours.	Neighbours.		Medium	Low	
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low	
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Low likelihood	Medium	Low	
Radon	Inhalation.	Site users.	Low likelihood	Medium	Low	BR211 indicates the site is in an area where 1-3% of properties are above the action level. Although no measures are required, Hydrock considered it prudent to consider installing basic protection measures.
Pontardawe Chemical Works (and associated tanks) 30m northeast, including elevated concentrations of metals and metalloids, chlorides and sulphides, sulphuric acid, asbestos fibres and asbestos containing materials, petroleum hydrocarbons, polychlorinated biphenyls (PCBs) and coal/coke residues.	Inhalation of fugitive dust.	Neighbours.	Likely	Medium	Low	Ground investigation found no olfactory or visual evidence of groundwater contamination. Whilst exceedances of CoPC were recorded within the leachate samples it is deemed that they do not pose a risk to controlled waters based on current development proposals and no further assessment of groundwater is required.
	Leaching through unsaturated zone.	Groundwater.	Likely	Medium	Low	
	Surface run-off.	Aquatic ecosystems. Surface water.	Low likelihood	Medium	Low	

Appendix I

Hydrock Methodologies

This report uses Hydrock Desk Study and Ground Investigation template V47.1.

This appendix provides additional background information on certain approaches and methods used by Hydrock Consultants Limited in the preparation of this report.

The following Hydrock Methodologies apply to this report. These are not included, but are available on request by quoting the methodology reference, revision and date.

Reference	Name	Revision	Date
001	Desk Study	001	30/07/2018
002	Ground Investigation	001	30/07/2018
003	Preliminary Geo-environmental Risk Assessment Rationale	001	30/07/2018
004	Preliminary geotechnical Risk Register	001	30/07/2018
005	Generic Risk Assessment for Human Health (Soils)	001	30/07/2018
006	Generic Risk Assessment for Pollution of Controlled Waters	001	30/07/2018
007	Detailed Quantitative Risk Assessment for Risk to Controlled Waters	001	30/07/2018
008	Generic Risk Assessment for Risk to Plants	001	30/07/2018
009	Generic Risk Assessment for Water Supply Pipes	001	30/07/2018
010	Generic Ground Gas Risk Assessment	001	30/07/2018
011	Determination of Contaminated Land Under Part 2A of the Environmental Protection Act 1990	001	30/07/2018
012	Waste Management	001	30/07/2018
013	Materials Management	001	30/07/2018
014	Asbestos in Soils	001	30/07/2018
015	Remediation and Mitigation (New Methodology)	001	30/07/2018
016	Geotechnical Categorization and Characteristic Design Values	001	30/07/2018
017	Foundation and Floor Slab Recommendations - Residential	001	30/07/2018
018	Foundation and Floor Slab Recommendations – Commercial / Distribution	001	30/07/2018
019	Earthworks Suitability Recommendations	001	30/07/2018
020	Pavements and Pavement Foundations	001	30/07/2018
021	Slope Stability Recommendations	001	30/07/2018
022	Retaining Recommendations	001	30/07/2018
023	Sulphate Recommendations	001	30/07/2018
024	Basement Recommendations	001	30/07/2018
025	Settlement Assessment	001	30/07/2018
026	CPT assessment	001	30/07/2018