

03 March 2020

Tom Lewis
Senior Environment Officer
Tim Rheoli Adnoddau Naturiol Sir Ddinbych / Denbighshire Environment Team.
Cyfoeth Naturiol Cymru / Natural Resources Wales

Our Ref: P19866/AP-L-01

Your Ref: 2001256

Dear Tom

Re: Notification of Works - Cerrigllwydion Hall, B5429 Gables Farm Junction to Llandyrnog Roundabout, Llandyrnog, Denbigh, Clwyd, LL16 4LE

1.0 Background

- 1.1 Oracle Environmental Experts Ltd (OEE) have been appointed by Oil Facilities Ltd (OFL) to undertake investigation and remediation works at the above insured property following a loss of domestic heating oil (kerosene).
- 1.2 During the investigation works, kerosene impacted perched groundwater was encountered within trial pits excavated in and around the foul drainage system serving the property. To address the identified kerosene impact, OEE have recommended the installation of a groundwater treatment system which will be abstracting from up to 4 no. recovery sumps installed at the site.
- 1.3 The purpose of this correspondence is to outline our understanding of the requirements with respect to the Environmental Permitting (England and Wales) Regulations 2016, and to provide relevant details of the proposed treatment system along with appropriate supporting information.

2.0 Regulatory Position

- 2.1 It is understood that the position of Natural Resources Wales with respect to the remediation of land and water contamination is based on the previously published Operational Instruction 226_06 'Remediation Position Statement' (issued 24/09/2013). Remediation Position Statement 3A states that:

“Removing or pumping contaminated groundwater for the purpose of remediating land or controlled waters is not effecting the treatment of waste and so does not need an environmental permit. Where the contaminated groundwater is subsequently remediated ex-situ it needs to be regulated through a mobile plant permit or a site based permit. The process can be considered under the pilot trials/ small scale remediation schemes enforcement position statement.”

2.2 In the enforcement position statement relating to pilot trials / small scale remediation schemes, the Environment Agency state the following:

“An environmental permit is required for all remedial projects which involve the treatment of waste. However, applying our Enforcement and Prosecution Policy and our commitment to proportionate regulation we will not enforce the requirement for such a permit for use in small scale remediation schemes or site specific pilot trials of existing techniques provided that:

- *the total quantity of contaminated materials being treated doesn't exceed 1000 cubic metres;*
- *the following information is supplied to the Environment Agency Area office at least five working days before the project begins:*
- *site address and contact details of any landowner, developer or contractor involved in the remediation project;*
- *expected duration of the activity;*
- *details of the specific measures to be employed so as to prevent pollution of the environment, harm to health or serious detriment to amenities of the locality; and*
- *we have no subsequent objection to the treatment operation in question for example, on the grounds we consider the proposed treatment operation to pose an unacceptable risk to the environment.”*

2.3 We anticipate that we will be removing less than 1000 m³ of water during the proposed treatment period.

2.4 To take advantage of this 'non-enforcement position' it is understood that Natural Resources Wales must be provided with the above information at least 5 days before those works commence and this document is intended to provide all of the information as set out in the above position statement.

3.0 Company Information

3.1 OEE are an environmental and specialist remediation consultant/contractor with extensive experience in the investigation and remediation of contaminated land. All of our remediation equipment is designed and constructed in-house and our groundwater treatment systems are adapted to the requirements of the individual sites. Our groundwater treatment systems are

installed, monitored and maintained by experienced technicians and incorporate a range of safety features.

OEE Office Address: Unit 14 Cygnet Business Centre, Worcester Road, Hanley Swan, WR8 0EA

OEE Registered Office: Wyche Innovation Centre, Walwyn Road, Upper Colwall, WR13 6PL

4.0 Summary of Site Setting, Spill Incident & Works to Date

4.1 Site Setting

4.1.1 Details relating to the spill incident and site setting are provided in the OEE 'Initial Site Assessment Report' dated 27 February 2020. A summary of these details is provided below.

4.1.2 The site is located within a large estate and comprises a two-storey detached residential property as well as numerous outbuildings, a tennis court, a pond and an unknown number of hectares of grass and farmland. The site is approximately 0.7 miles south from the village of Llandyrnog. The site layout is presented in Figure 1 of Appendix A.

4.1.3 The storm and surface water drainage discharges to numerous locations including ground, the pond and a drainage ditch leading to an unnamed brook. Foul drainage discharges to septic tank located close to the tennis court in the western corner of the property. An abstraction borehole provides water to the pond.

4.2 Spill Incident

4.2.1 During early December 2019, Clarke Construction had been appointed to install a new foul water treatment system at the property which included the installation of a new septic tank. The works were completed but shortly after 'oily' vapours were detected in the vicinity of the backfilled excavation and a slight sheen was visible on the surface water within the nearby brook.

4.2.2 According to the estate manager, the estate had a delivery of 2,300 litres of heating oil in late November 2019 and then a second delivery of 2,300 litres on the 18 December 2019. The tanks were isolated on 2 January 2020 due to unusual consumption rates and the presence of internal vapours. The suspected leak was reported to Oil Facilities Ltd (OFL) who first attended site on 9 January 2020.

4.2.3 On 9 January 2020, the 2 no. kerosene fuel transfer lines (FTLs) were exposed for inspection. It was evident that one of the FTLs had failed and this was confirmed by a pressure test. OFL made a temporary repair to the failed FTL and replaced the isolation valve on the 1,200 L tank to allow for the pressure testing of the second FTL which passed.

4.2.4 OFL returned to site on 10 January 2020 and completed an ambient VOC survey in the hall with an appropriately calibrated photo-ionisation detector (PID) and no detectable VOCs were recorded at that time. Using an excavator, soils to a depth of 2.3 m bgl within the trench for foul drainage were screened for VOC concentrations. VOC concentrations of >150 parts per million (ppm) were recorded in soils up to 13 m laterally downgradient of the damaged section on the FTL. Oil absorbent booms were deployed within the drainage ditch leading to the brook to prevent migration towards the river.

4.2.5 Based on the available information provided to OEE, it appears that the spill was caused by damage to the FTL between the 2 no. larger OSTs and the Hall during works on the foul drainage system at the site. It is estimated that potentially in excess of 2000 litres of kerosene may have been lost to ground as a result of the spill incident.

4.3 Investigation and Mitigation Works to Date

4.3.1 On 10 February 2020, OEE completed an initial site assessment at the property. A total of 6 no. trial pits (TP-1 to TP-6) were machine excavated to 2.0 m bgl along the route of the foul drainage pipe and kerosene FTLs. Soil arisings from the trial pits were screened for volatile organic compound (VOC) concentrations and representative samples were collected for independent laboratory analysis of the contaminants of concern.

4.3.2 Kerosene contamination was identified in soils beneath the spill origin to the maximum extent of the investigation at 2 m depth. Kerosene contamination was also identified along the entire route of the foul drainage system and around the septic tank serving the property. Recommendations have been provided to OFL to excavate kerosene contaminated soils at the spill origin, along the route of the foul drainage and around the septic tank. Shallow groundwater was encountered around the septic tank at depths of 1.5 to 2 m bgl.

4.3.3 Due to the close proximity of the brook to the spill origin and the identified areas of impact, absorbent booms and pads were deployed in the brook to minimise migration downstream in the brook. A considerable sheen was present approximately 300 m downstream when vegetation was disturbed. OFL have set up several boomed areas to prevent further migration in the brook and these are being regularly inspected and maintained.

4.3.4 Subject to the findings on completion of the recommended initial remediation works, there may be a requirement for drilling of boreholes to assess the impact to groundwater in the principal aquifer underlying the site.

4.3.5 A preliminary qualitative risk assessment has been presented in the OEE 'Initial Site Assessment' report and identified a high risk to surface water and groundwater.

5.0 Environmental Site Sensitivity

- 5.1 According to the British Geological Survey (BGS) Geoindex resource the site is underlain by superficial geology comprising Glacial Till described as a 'heterogenous mixture of clay, sand, gravel, and boulders' which is in turn underlain by Kinnerton Formation (Sandstone) described as 'red-brown to yellow, generally pebble-free, fine- to medium-grained sandstone'.
- 5.2 The superficial geology is classified as a Secondary aquifer and the solid geology is classified as a Principal aquifer. The site is not located within 1 km of a mapped groundwater source protection zone for a public water supply. There is a borehole located approximately 50 m to the south west of the spill origin and it is understood the borehole is solely used to supply water to the nearby pond.
- 5.3 The nearest surface watercourse is a brook which runs in a south westerly direction and feeds into the River Clwyd which is located approximately 750 m from the spill origin. The brook is fed via a drainage ditch which is located approximately 5-10 m from the septic tank. The pond on site is approximately 45 m to the south of the spill origin and approximately 25 m to the south east of the borehole.

6.0 Groundwater Treatment System

- 6.1 OEE have been authorised by OFL to install and operate a light non-aqueous phase liquid (LNAPL) and groundwater treatment system to remove free phase and treat dissolved phase kerosene from groundwater at the insured property. The system will enable the continuous removal of free phase kerosene from groundwater beneath the site, targeting recovery sumps installed during the recommended source excavation works.
- 6.2 The system will consist of the following:
- Surface mounted air operated double diaphragm pumps;
 - Oil Water Separator (OWS);
 - Compressor Unit;
 - Control panel (pneumatic delivery);
 - 2 no. 300 l granular activated carbon vessels arranged in series for groundwater;
- 6.3 The system will be controlled with high-level float alarms and various other safety devices.
- 6.4 The use of the AODD pumps is designed to ensure that free phase kerosene on groundwater will be removed and will also enable the creation of a cone of depression to encourage free phase kerosene into the recovery sumps.

- 6.5 The OWS and GAC vessels should remove all detectable concentrations of hydrocarbons from the water that enters the treatment system.
- 6.6 Groundwater monitoring will be completed throughout the proposed treatment period as detailed further below.

7.0 Abstraction Licensing

- 7.1 The proposed water treatment system is scheduled to operate for an initial period of 12 weeks to facilitate the removal of free phase kerosene and kerosene contaminated groundwater. Following the initial period, further recommendations will be made by OEE, which will depend on the volumes of kerosene recovered. The abstraction volume will be maintained below 20 m³/day and will therefore not require an abstraction license.

8.0 Discharge and Water Sample Analysis

- 8.1 The objective is that treated water will contain no detectable concentrations of hydrocarbons (i.e. <10 µg/l TPH) and the discharge is scheduled to operate for a period of up to 12 weeks. The treated water is proposed to be discharged to a soakaway, installed within the grounds of the property.
- 8.2 OEE have reviewed the site and the surrounding drainage infrastructure and owing to the distance to the distance to the nearest foul sewer and / or the likely timescale to obtain a trade effluent consent, discharge to foul sewer is not considered feasible or appropriate.
- 8.3 The treated water will be inspected on at least a fortnightly basis for visual and olfactory evidence of hydrocarbons and will be sampled on a fortnightly basis with samples submitted for analysis of speciated TPH, BTEX and naphthalene. The objective is to ensure that the filtration system discharges water with no hydrocarbon concentrations above the laboratory limits of detection (LoD) equivalent to <10µg/l TPH and <1 µg/l BTEX and naphthalene.
- 8.4 Remediation Position Statement 3A states that:

“discharge to ground or groundwater; this would be a groundwater activity under the Environmental Permitting Regulations 2010 and would require an environmental permit. The regulations require that the input of hazardous substances to groundwater is prevented and the input of non-hazardous pollutants is limited so as to avoid pollution. If after treatment the discharge is still likely to contain hazardous substances, we may consider the granting of a permit under Schedule 22 paragraph 8(b) of the Environmental Permitting Regulations 2010...”

- 8.5 Under the Environmental Permitting (England and Wales) Regulations 2016, the Environment Agency (England) and Natural Resources Wales (Wales) may determine that the discharge, or the activity that may lead to a discharge, is not a groundwater activity if the input of the pollutant.
- 8.6 This exclusion relates to discharges that are so small in quantity and concentration, that they only pose an extremely low risk of polluting groundwater. There must also be no danger of any future deterioration in groundwater quality.
- 8.7 It may include the possible attenuation effects of the unsaturated zone, or dilution as the discharge enters the water table. It must be self-evident the pollutant is very minor, with no need for investigation.
- 8.8 It applies to both hazardous substances and non-hazardous pollutants. The discharge of hazardous substances must not be discernible or exceed the minimum reporting value (MRV).
- 8.9 The discharge in question is not a listed 'class of case' but based on the non-detectable-low concentrations of substances proposed to be discharged to ground, we consider the activity qualifies for the de minimis exclusion.
- 8.10 Given the above, OEE consider that the proposed discharge will not require an environmental permit for discharge.

9.0 Contact Details

- 9.1 In the case of an emergency, the following contacts are provided:
- OEE Project Manager – Aaron Provis – 07940 733 945
 - OEE Project Director – Sam Eden – 07940 213 232
 - OEE Office No. – 01684 252858
- 9.2 Please note that we hope to be in a position to install the treatment system at the above site in the week commencing 8 March 2020

We trust that the above and enclosed is appropriate and acceptable but please do not hesitate to contact the undersigned if you require any further information.



Yours sincerely
For Oracle Environmental Experts Ltd

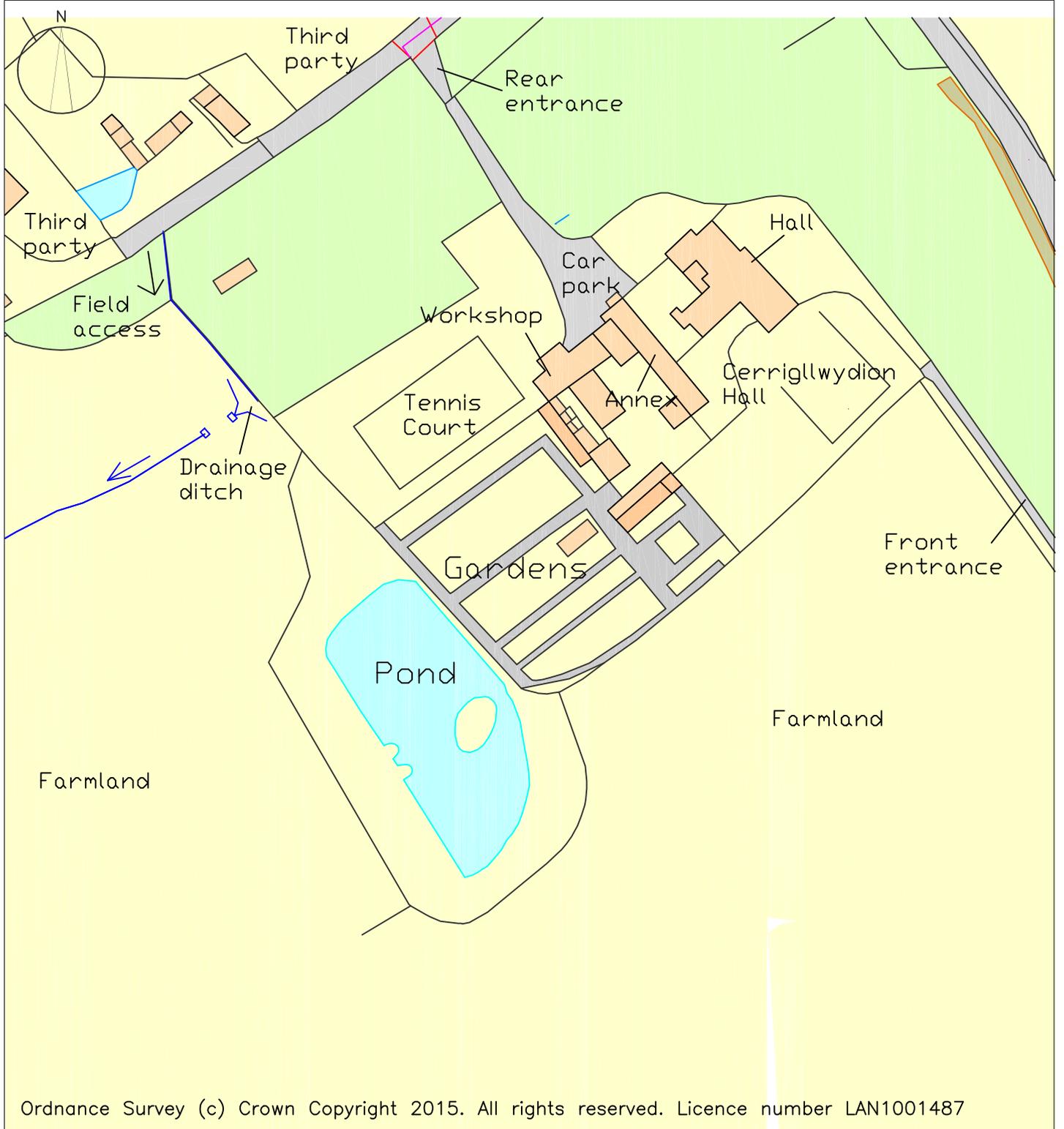
Aaron Provis
Environmental Consultant

AP/JMB

Encl. Appendix A: Relevant Plans
Appendix B: Photo record

Please note that OEE's standard terms and conditions and limitations apply to the works presented or detailed herein.

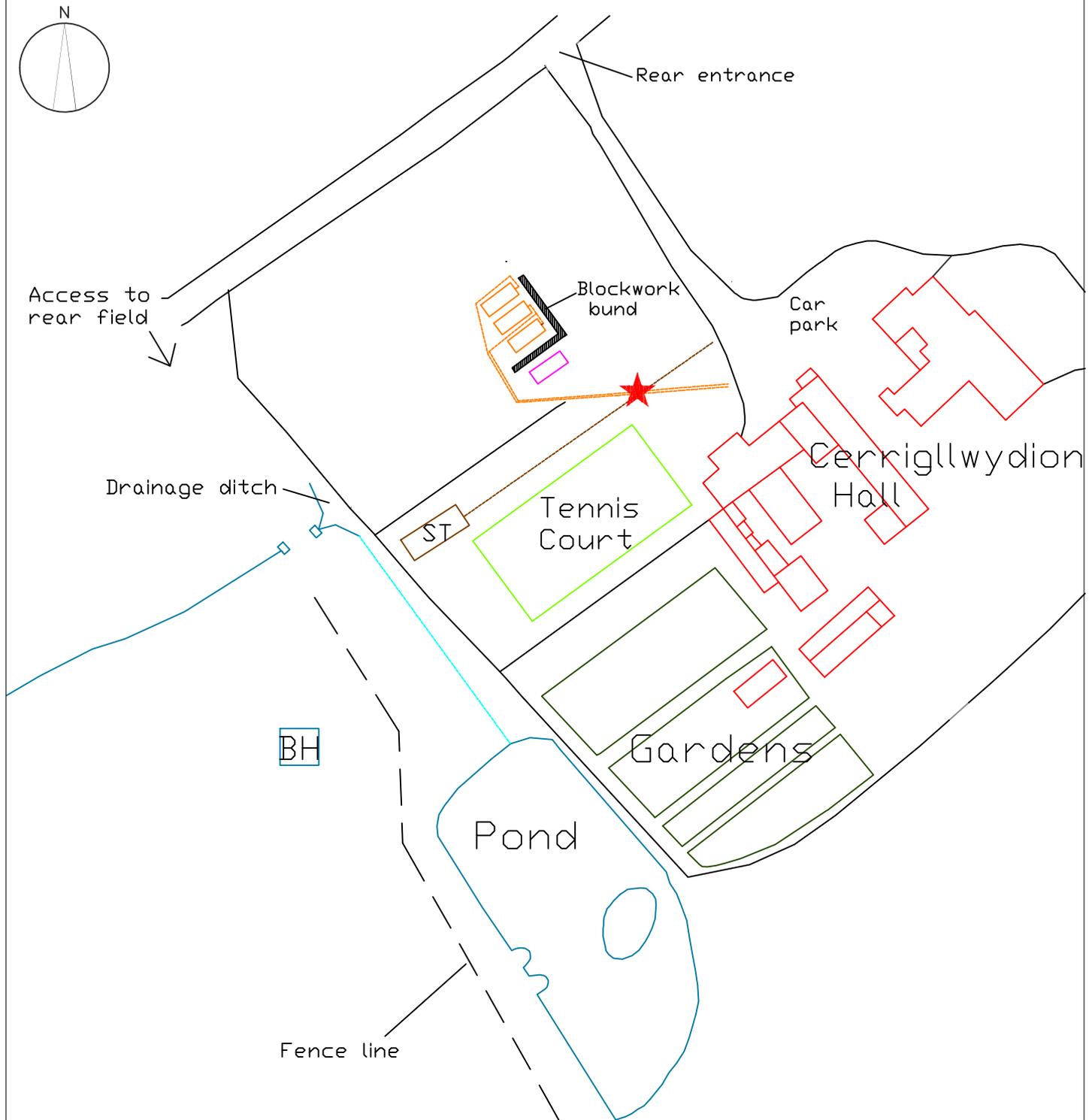
APPENDIX A – RELEVANT PLANS



LEGEND

— Brook leading to the River Clwyd

PROJECT Howard, Denbig		PROJECT REF. P19866		AP Drawn by	JMB Checked by	0 Rev
TITLE Figure 1 – Estate Plan						
CLIENT Oil Facilities Ltd	CLIENT REF. REMHOWLL16	SCALE 1:1250	DATE 25/02/20	 www.oracle-environmental.com Unit 14 Cygnet Business Centre, Worcester Road, Hanley Swan Worcestershire WR8 0EA Tel: +44 (0)1684 252858 Company registered in England and Wales Company No: 09161078		



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LEGEND

- Spill origin
- Oil storage tank
- LPG tank
- ST Septic tank
- BH Borehole
- Foul pipe
- Kerosene feedline
- Brook
- Overflow pipe
- Building footprint

PROJECT: Howard, Denbigh
 PROJECT REF.: P19866

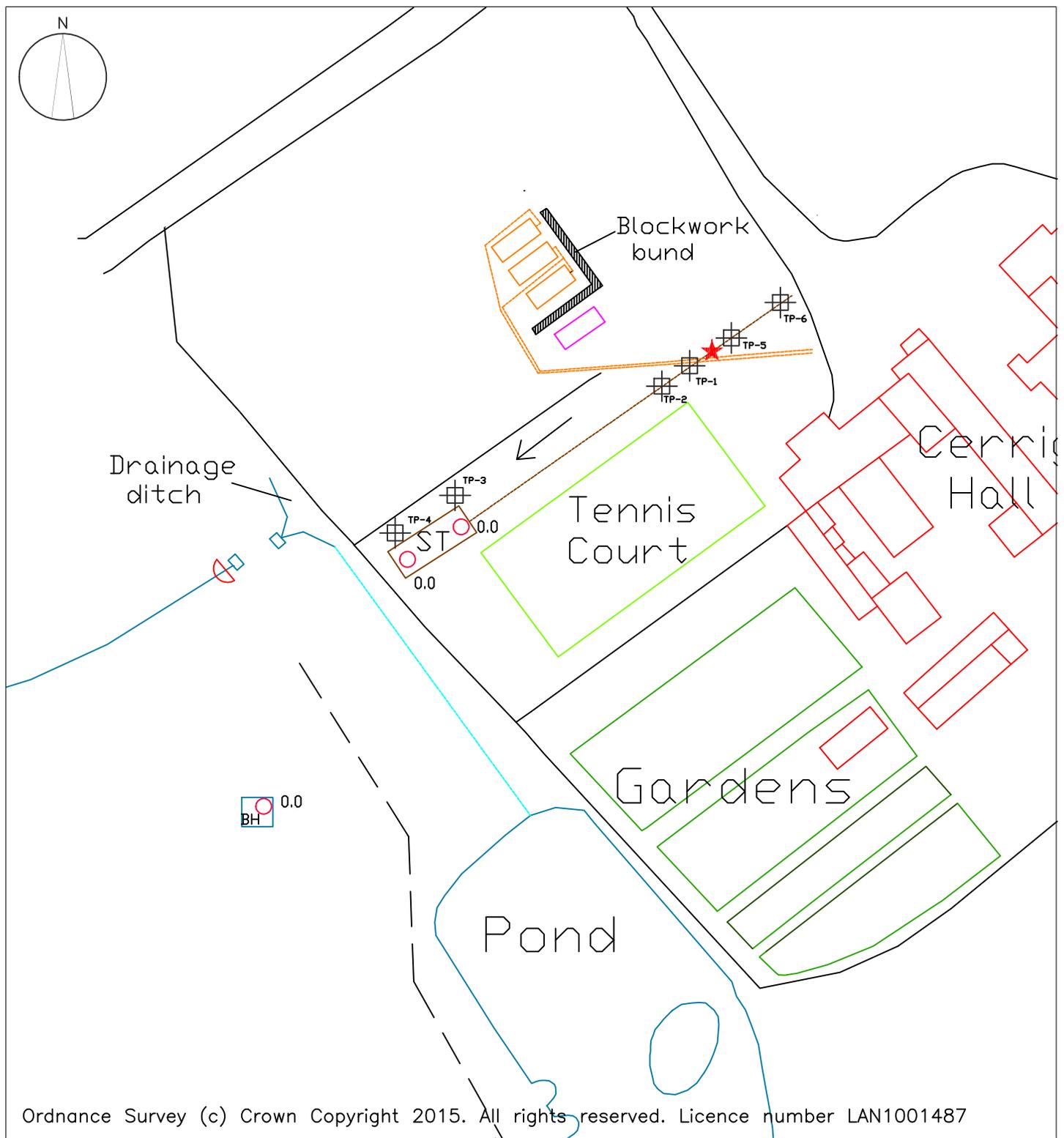
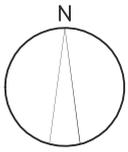
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Drawn by	Checked by	Rev

TITLE: Figure 2 - Site Plan



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 Company No: 09161078

CLIENT: Oil Facilities Ltd	CLIENT REF.: REMHOWLL16	SCALE: 1:1000	DATE: 24/02/20
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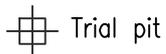


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LEGEND



Spill origin



Trial pit



Oil storage tank



LPG tank



Septic tank



Borehole

Foul pipe

Kerosene feedline

Overflow pipe

Brook

Building footprint

Ambient air VOC concentration (ppm)

Location of boom deployment

Slope of land

PROJECT
Howard, Denbigh

PROJECT REF.
P19866

AP	JMB	0
Drawn by	Checked by	Rev

TITLE
Figure 3 – ISA Plan



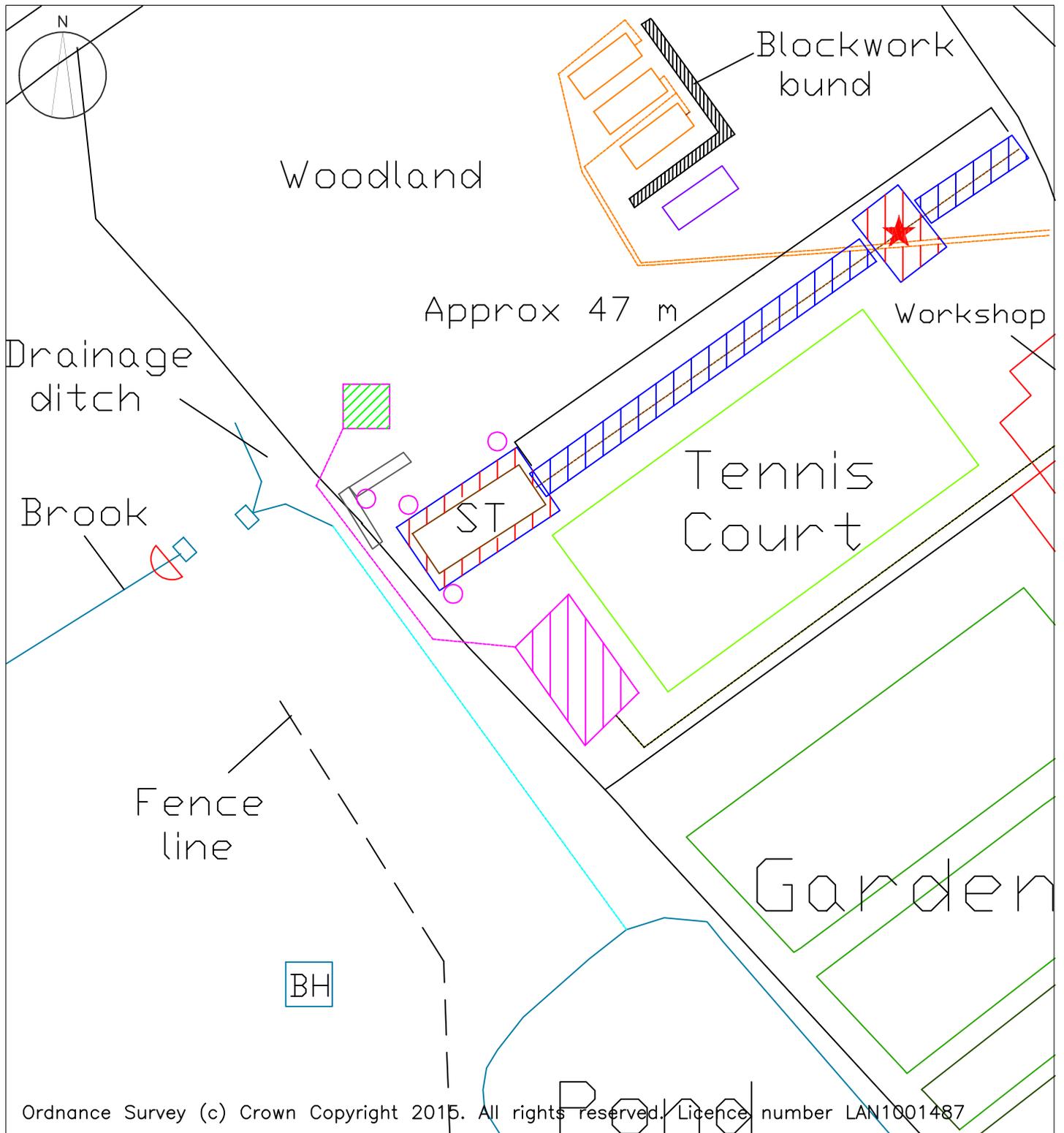
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CLIENT
Oil Facilities Ltd

CLIENT REF.
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SCALE
1:750

DATE
25/02/20



LEGEND

- Spill origin
- 4 X 4m spill source excavation to 2.0 m bgl
- Septic tank excavation
- System location
- Trench excavation to 2.0 m bgl
- Interception trench location
- Discharge line
- Power cable
- Discharge point - soakaway
- Recovery sump

PROJECT
Howard, Denbigh

PROJECT REF.
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TITLE
Figure 4 - SOW Plan



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Company No: 09161078

CLIENT
Oil Facilities Ltd

CLIENT
REMHOWLL16

SCALE
As shown

DATE
27/02/20

APPENDIX B – PHOTOGRAPHIC RECORD

PHOTOGRAPHIC RECORD



Photo 1: Rear entrance to the property.



Photo 2: Rear view of the hall and annex.



Photo 3: Spill origin excavation exposing damaged feedline.

PHOTOGRAPHIC RECORD



Photo 4: Oil storage tanks at the property.



Photo 5: LPG tank at the property.



Photo 6: Septic tank is located near the tennis court in the south west corner.

PHOTOGRAPHIC RECORD



Photo 7: Large pond on site.



Photo 8: Borehole chamber on site.



Photo 9: Absorbent booms and mats were deployed next to the brook opening.

PHOTOGRAPHIC RECORD



Photo 10: Drainage ditch which feeds the brook. An overflow pipe from the pond can be seen.

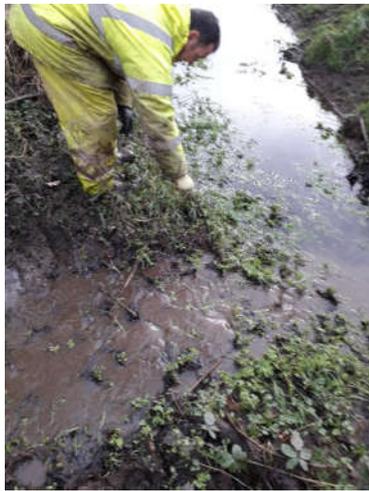


Photo 11: Contamination was identified within flora approximately 300 m downstream where the brook meets a second stream.



Photo 12: The foul pipe was exposed in TP-1 and neat product was identified. Gravels around the pipe were significantly contaminated.

PHOTOGRAPHIC RECORD



Photo 13: TP-2 was advanced next to the tennis court.



Photo 14: TP-3 and TP-4 were advanced next to the septic tank. Groundwater entered the excavations between 1.5 – 2.0 m.



Photo 15: TP-5 was advanced 1 .0 m from the spill origin excavation towards the car park.

PHOTOGRAPHIC RECORD



Photo 16: TP-6 was advanced next to the extent of the grass area and manhole.



Photo 17: Ideal location for a groundwater treatment system would be behind the tennis court near to the septic tank providing power can be sourced.



Photo 18: Access into the rear field can be sought via a side road.

STANDARD LIMITATIONS

Oracle Environmental Experts Limited (OEE) has prepared this report with all reasonable skill, care and diligence in accordance with the instructions from the Client.

OEE has prepared this report for the sole use of the Client and those parties an assignment agreed by OEE in writing. Any third parties who wish to rely upon the contents of this report must seek written approval from OEE and a charge may be levied for such approval. OEE accept no responsibility or liability for the consequences of the contents of this report being used for any other purpose other than which it was commissioned or by any third party with whom an assignment has not been granted.

OEE retain intellectual copyright of the contents of this report and grant exclusive use of the material contained herein to the Client. No unauthorised distribution shall be made to any third parties without the prior written consent of both OEE and the Client.

Subject to the specific instructions from the Client and the agreed scope of works, the intrusive site investigation works will have been carried out to provide sufficient information regarding the type, nature and extent of the contamination of the soil, groundwater and surface waters and air, to enable a reasonable assessment of risks to human health, the environment and building structures and services.

The investigation of the site will have been limited to those areas of the site that were accessible by exploratory equipment and were clear of buried services and ordinance (if present).

A more comprehensive investigation of the site may be required should the site be developed or used for a more sensitive land use than that indicated in this report.

The investigations of the exploratory holes undertaken can only provide an indication of the site conditions owing to the small volume of the ground represented by the exploratory holes in relation to the remainder of the site. The number and distribution of sampling locations and the methods of sampling and testing used does not preclude the presence of localised 'hotspots' of contamination where concentrations of contaminants may be higher than those encountered. Reasonable care must be taken in the interpretation of the findings of this investigation and in accordance with standard practice, no liability can be accepted by OEE for localised contamination 'hot-spots' not identified by the site investigation.

The soil, surface water, groundwater and air conditions reported herein are based on observations and testing completed at the time of the site investigation. The soil, surface water, groundwater and air conditions will change over time (e.g. owing to seasonal groundwater level fluctuations, weather related effects etc).

The risk assessment and associated opinions provided herein are based on currently available guidance relating to acceptable contaminant concentrations and the relevant land use scenarios associated with the proposed development of the site and the current land use of the adjacent sites. OEE accepts no liability for the retrospective effects associated with any future changes or amendments to published assessment criteria, models or associated guidance. Should the proposed use of the site change from that detailed herein further investigation and/or assessment may be required.