

**Environmental Protection Act 1990, section 78h(7) (the 1990 act)**

**The Contaminated Land (England) regulations 2006 (SI 2006/1380).**

**Remediation statement prepared by BP Oil UK Limited**

This remediation statement is prepared by BP Oil UK Limited in relation to contaminated land identified by Luton Borough Council under s78B of the Environmental Protection Act 1990 (the 1990 Act) and designated as a special site under section 78C of the 1990 Act.

The location and extent of the contaminated land to which this remediation statement relates (the Land) are set out in Schedule 1.

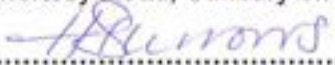
The Environment Agency as enforcing authority in relation to the Land, is precluded by s78H(5)(b) of the 1990 Act from serving a Remediation Notice and BP Oil UK Limited has therefore prepared this remediation statement in accordance with s78H(7) and (8).

The things which have been and are being and are expected to be done by way of remediation and the date of completion and the period within which each of these things are being and are expected to be done are set out in Schedule 2.

Particulars of the substances and pollution of controlled waters by reason of which the Land is contaminated land are set out in Schedule 3.

The current use of the Land is disused and awaiting development on completion of remediation with all above and below ground petrol retailing infrastructure including the forecourt shop having been removed during the remediation works.

The name and address of the person who has done and is doing and is expected to do each of the things set out in Schedule 2 to this remediation statement is: BP Oil UK Limited, Chertsey Road, Sunbury on Thames, Middlesex TW16 7BP.

Signed: .....  H. BURROWS.  
Date: ..... 2.2.2011 .....

**The enforcing authority's address for the purposes of this remediation statement is: The Environment Agency, Apollo Court 2, Bishops Square Business Park, St Albans Road West, Hatfield Herts AL10 9EX**

**Schedule 1** Location and extent of contaminated land to which this remediation statement relates

**Schedule 2** Remediation actions and periods (s78H(7)(a) and (c))

**Schedule 3** Particulars of pollution of controlled waters and particulars of substances including details relating to escaped substances

## Schedule 1

## Schedule 2

**ASSESSMENT AND REMEDIATION ACTIONS WHICH HAVE BEEN DONE**

<b>TABLE 1 GUILDFORD ST PETROL FORECOURT ASSESSMENT ACTIONS</b>				
<b>Action No.</b>	<b>Pollutant Linkage No.</b>	<b>Scope Of Action</b>	<b>Time Period</b>	<b>Location</b>
1	1	Installation of boreholes BH6 to BH27 for the purposes of delineating the source of contamination and the extent of free phase & dissolved phase plumes.	1999 to 2002	Schedule 1 Figure 2
2	1	Membrane interface probe investigation and installation of 12 no. boreholes for the purposes of ongoing groundwater monitoring within the Putty Chalk stratum to determine the partitioning of unleaded petrol.	June 2004 – July 2005	Schedule 1 Figure 2
3	1	Advancing of 4 no. boreholes into the Putty Chalk for the purposes of delineating the vertical profile of unleaded petrol contamination within the Putty Chalk.	July 2005	Schedule 1 Figure 2
4	1	Installation of	September 2005 –	Schedule 1 Figure 2

		6 no. boreholes into the Putty Chalk stratum to provide data on contamination within Putty Chalk stratum and for the purposes of ongoing monitoring.	<b>December 2009</b>	
<b>5</b>	1	Installation of 6 no. boreholes for the purposes of delineating the vertical profile of contamination within the Putty Chalk together with associated groundwater monitoring.	<b>June 2009 – June 2010</b>	<b>Schedule 1 Figure 2</b>
<b>6</b>	1	Cone penetration testing at 60 no. locations in order to assess the depth of penetration of unleaded petrol within the Putty Chalk and confirm lack of penetration into competent chalk strata.	<b>June 2009</b>	<b>Schedule 1 Figure 3</b>

<b>TABLE 2 GUILDFORD ST PETROL FORECOURT REMEDIATION ACTIONS</b>				
<b>Action No.</b>	<b>Pollutant Linkage No.</b>	<b>Scope of Action</b>	<b>Date</b>	<b>Location of Action</b>
1.	1	Installation and operation of soil vacuum extraction system from boreholes BH6 to BH12	December 2001 to April 2002	Schedule 1 Figure 2
2.	1	Installation and operation of dual phase extraction system extracting dissolved and free phase contamination from boreholes BH6-12, BH14, BH15, BH18 and BH21	April 2002 to December 2002	Schedule 1 Figure 2
3.	1	Removal of underground storage tanks and petrol filling infrastructure (i.e. fill lines and pumps).	December 2003	Schedule 1 Figure
4.	1	Removal for all contaminated soils as a result of remediation action 3 for off-site disposal together with treatment of groundwater and free phase through on-site treatment system. Voids backfilled with clean material	December 2003	Schedule 1 Figure
5.	1	Excavation of Made Ground and alluvial soils across the former petrol forecourt area and ex-situ bioremediation of hydrocarbon	December 2009 – April 2010	Schedule 1 Figure 5

		impacted soils. Removal of all surface water drainage.		
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## Remediation & Monitoring Actions Which are being Done

TABLE 3 REMEDIATION ACTIONS					
Action No.	Standard to be Achieved	Pollutant Linkage No.	Scope of Action	Date	Location of Action
1. Detailed modelling of the aquifer system beneath and down gradient of the site.	To determine the risks posed to the Crescent Road abstraction by the contamination identified at the site. Carried out in-line with CLR11 and EA guidance.	1	Detailed risk assessment modelling using site specific data and aquifer specific data for the Chalk aquifer influenced by the Crescent Road Borehole.  Updated following 3 months of baseline monitoring data	April 2010  November 2010	Schedule 1 Figure 1
2. Installation of Multi Phase extraction system to remove unleaded petrol contamination from Putty Chalk Strata	Demonstrated asymptotic recovery rates of mobile hydrocarbons.	1	Installation of treatment system to treat unleaded petrol contamination within the Putty Chalk strata within the petrol forecourt site and a portion of the adjacent Luton Borough Council owned car park	August 2010 – January 2011	Schedule 1 Figure 4
3. Containment pumping from boreholes prevent migration of a dissolved phase plume of unleaded petrol		1	Pumping and treatment and discharge of up to 600 000 litres of groundwater per day to foul sewer from boreholes	March 2003 – February 2011	Schedule 1 Figure 2

towards the Crescent Road Borehole			BH30, BH32 and BH33 and pumping treatment and discharge to foul sewer of groundwater from borehole BH28.		
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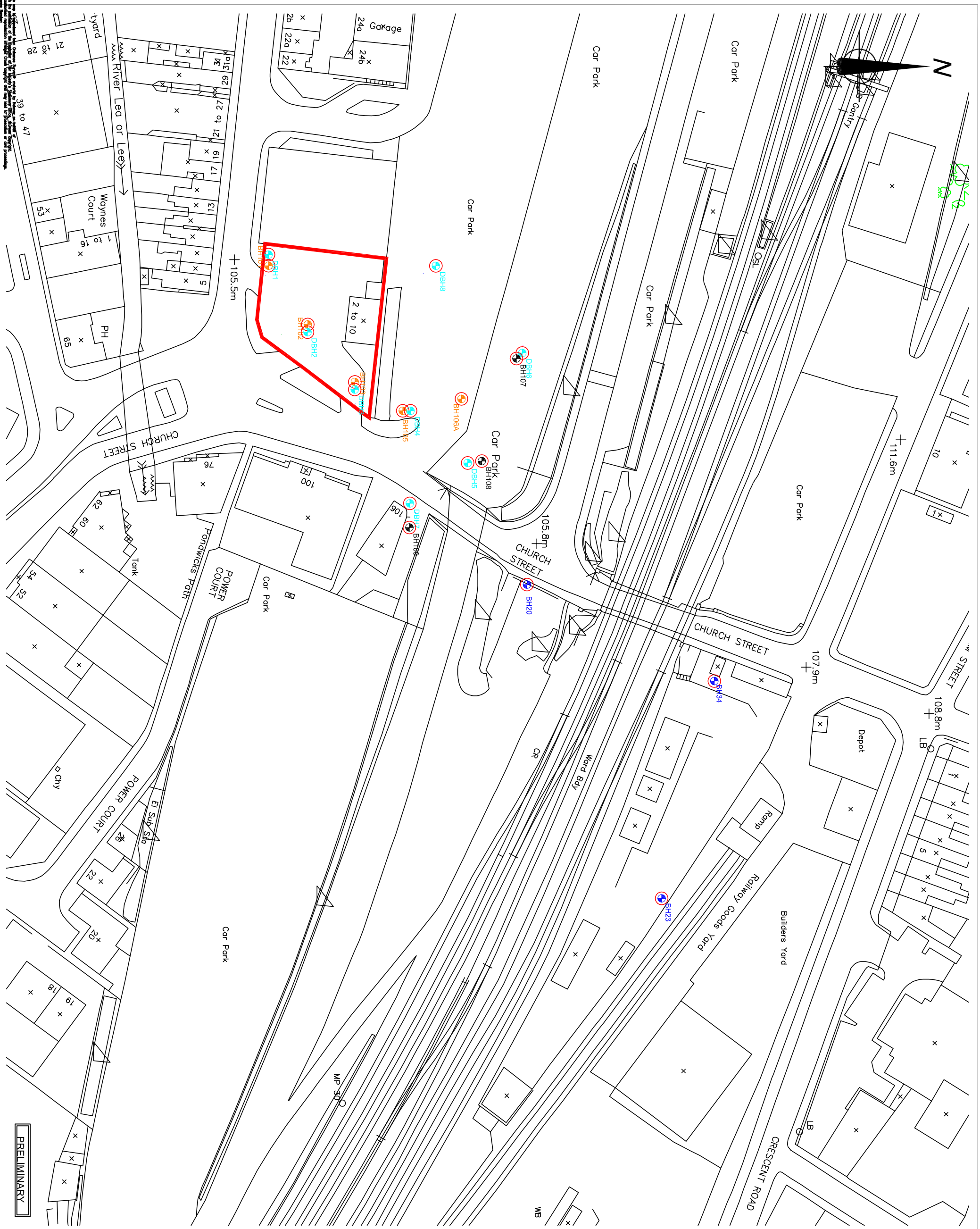
**TABLE 4 MONITORING ACTIONS**

Action No.	Pollutant Linkage No.	Scope of Action	Date	Location of Action
1	1	Groundwater quality Monitoring carried out at monthly intervals from a series of boreholes within the source zone and down gradient of the site. The monitoring to be carried out at monthly intervals over a period of 6 months before and during treatment and for 12 months following the achievement of asymptotic conditions within the treatment zone. Analysis to include TPH CWG Aliphatic and Aromatic functions, BTEX, pH and DO. Further monitoring will be scheduled in blocks of 3 months of additional monitoring should results indicate that	August 2010 – February 2012	Schedule 1 Figure 6

		further monitoring is necessary.		
2	1	Undertake a pumping switch off trial in accordance with the method statement agreed with the EA and Veolia Water in order to demonstrate that the hydraulic containment system consisting of boreholes BH30, BH32 and BH33 is unnecessary.	January 2011 – February 2011 Contaminant analysis and Level logger monitoring until June 2011	Schedule 1 Figure 6
3	1	Undertake a pumping switch off trial in accordance with the method statement agreed with the EA and Veolia Water in order to demonstrate that the hydraulic containment system consisting of borehole BH28 is unnecessary.	May 2011 – June 2011 Contaminant analysis and Level logger monitoring until December 2011. (The trial may happen sooner dependant upon the results of the embankment borehole switch off trial.)	Schedule 1 Figure 6

**Schedule 3**

<b>POLLUTANT LINKAGES</b>						
<b>Pollutant Linkage Identifier</b>	<b>.Pollutant</b>	<b>Source Location</b>	<b>Pathway</b>	<b>Receptor</b>	<b>Receptor Location</b>	<b>Description of Pollution of Controlled Waters</b>
1	Unleaded Petrol hydrocarbons	Source zone within Putty Chalk (shown on Site Plan Figure 1)	Leaching of unleaded petrol hydrocarbons from Putty Chalk	Controlled waters: groundwater within Scheduled Aquifer Cretaceous Chalk beneath the site	Water table in the aquifer as shown on the Schedule 1 Figure 1 and X-section	Pollution of waters being caused and continuing to enter.



**Key Plan:**

- Extent of land designated as contaminated land
- Proposed groundwater sampling boreholes
- + Arcadis/Subadra, 1999 to 2002 (BH6-BH27, BH29, BH34-BH37) Installation of boreholes to delineate the extent of dissolved and free phase
- + Halcrow June 2009 to June 2010 (BH101 to BH106A) Installation of boreholes to delineate the vertical profile of contamination within the Putty Chalk and associated groundwater
- + Celtic 2010 (DB1 to DB8) Proposed deep groundwater monitoring boreholes in the Middle Chalk
- + Halcrow 2009 (BH107 to BH109) Proposed shallow groundwater monitoring borehole in the Putty Chalk

**Notes**

1. Drawing information taken from the Celtic Drawing No. D1390/3795/A19 (23/03/10)

Rev	By	Chkd	Apprvd	Date	Description



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 Unit 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100  
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Project: GUILDFORD STREET, LUTON

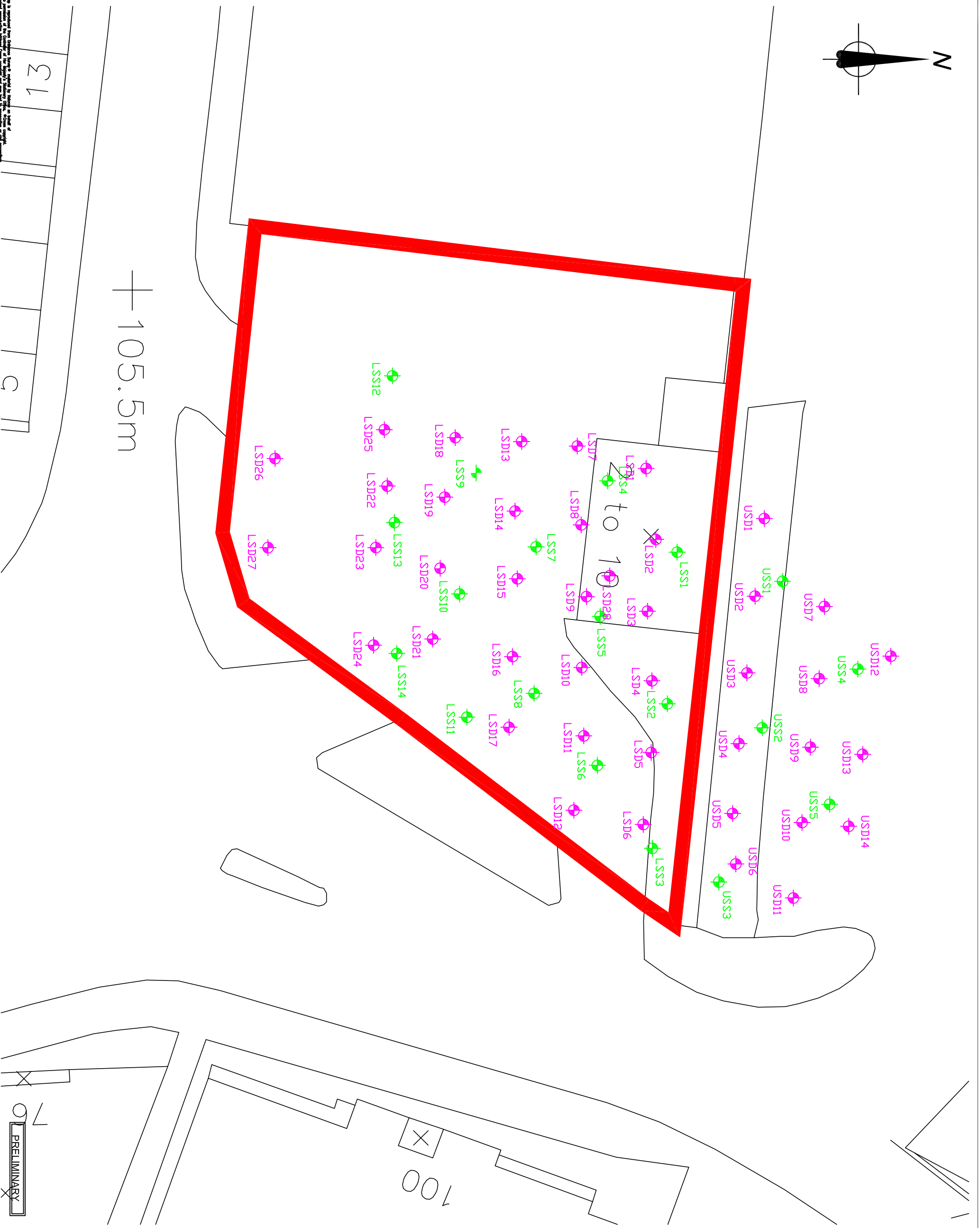
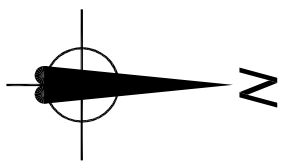
**POST REMEDIATION VALIDATION MONITORING**

Drawn By: RML	Date: 04/10
Checked By: -	Date: -
Approved By: -	Date: -
Drawing No. Figure 6	Revision

Drawing Scale: 1:10,000 at A3

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**Key Plan:**

- Extent of land designated as contaminated land
- Shallow Treatment Wells (Celtic 2010)
- Deep Treatment Wells (Celtic 2010)

**Notes**

1. Drawing information taken from the Celtic Drawing No. D1390/3795/A19 (23/03/10)

Rev	By	Chkd	Approved	Date	Description



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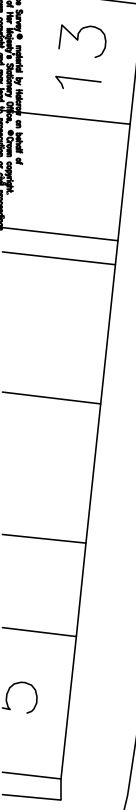
Drawing: EXTENT OF CELTIC ONSITE & OFFSITE MULTIPHASE EXTRACTION TREATMENT AREA

Drawn By: RML	Date: Oct 10
Checked By: -	Date: -
Approved By: -	Date: -
Drawing No. Figure 4	Revision

Drawing Scale: 1:2,500 @ A3

PRELIMINARY

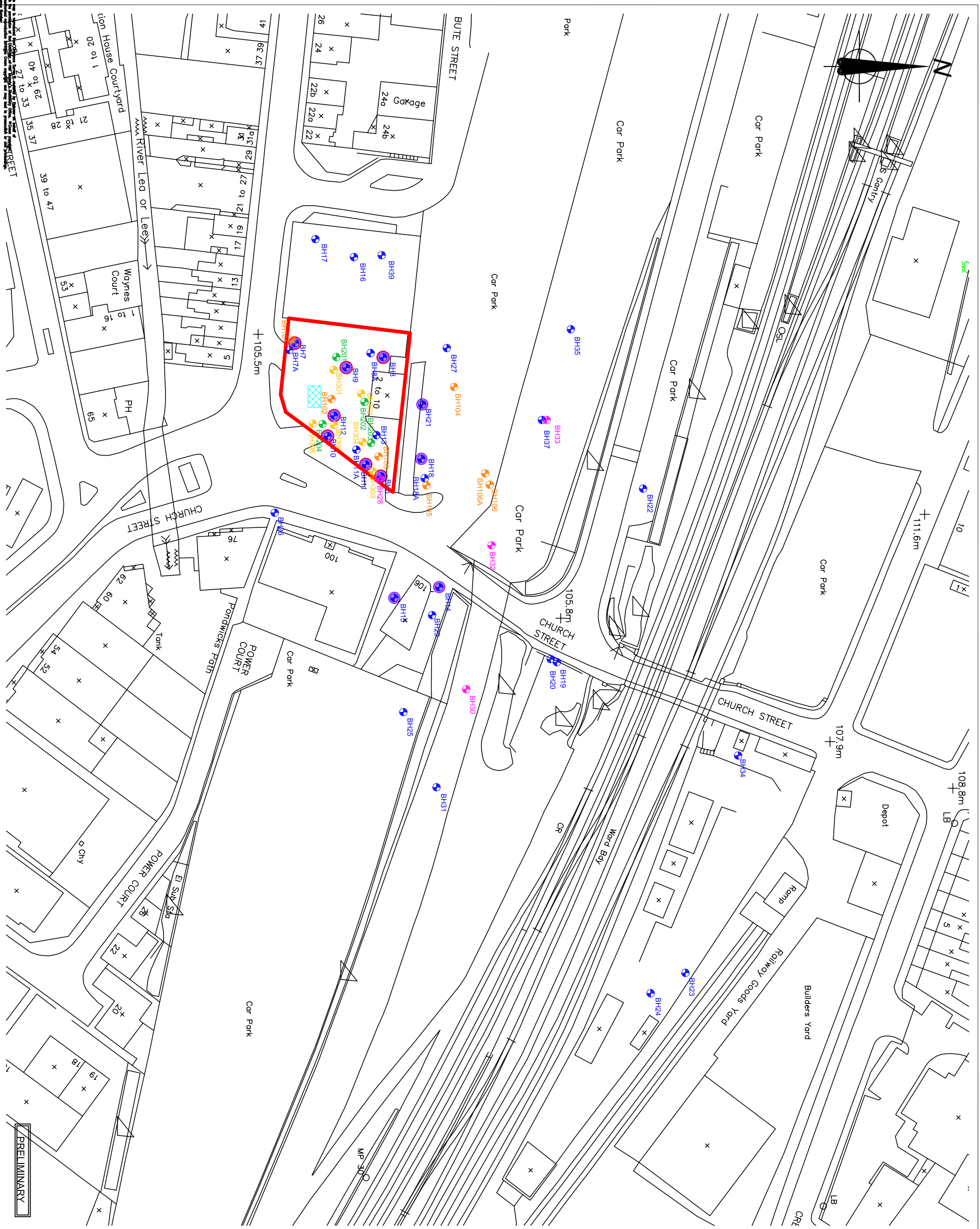
This drawing is a preliminary drawing and should not be used for construction purposes. It is for information only and is subject to change without notice.



±105.5m

100





**Key Plan:**

- Extent of land designated as contaminated land
- Arcadis/Subadra 1999 to 2002 (BH6-BH27, BH29, BH34-BH37) Installation of boreholes to delineate the extent of dissolved and free phase
- Subadra June 2004 to July 2005 (BH101 to BH112) Area of Membrane Interface probe investigation
- Subadra July 2005 (BH201 to BH204) Installation of boreholes to delineate the vertical profile of unleased parcel within the Pully Chalk
- Subadra Sept 2005 to Dec 2009 (BH301 to BH306) Installation of boreholes to provide data on contamination within the Pully Chalk
- Halcrow June 2009 to June 2010 (BH101 to BH106A) Installation of boreholes to delineate the vertical profile of contamination within the Pully Chalk and associated groundwater
- REMEDIATION BOREHOLES (BH6 to BH12) Installation and operation of soil vacuum extraction system
- REMEDIATION BOREHOLES (BH6-BH12, BH14, BH15, BH18 and BH21) Installation and operation of dual phase extraction system
- REMEDIATION BOREHOLES (BH28, BH30, BH32 and BH33) Installation of hydraulic containment walls

**Notes:**

Rev	By	Check	Approved	Date	Description



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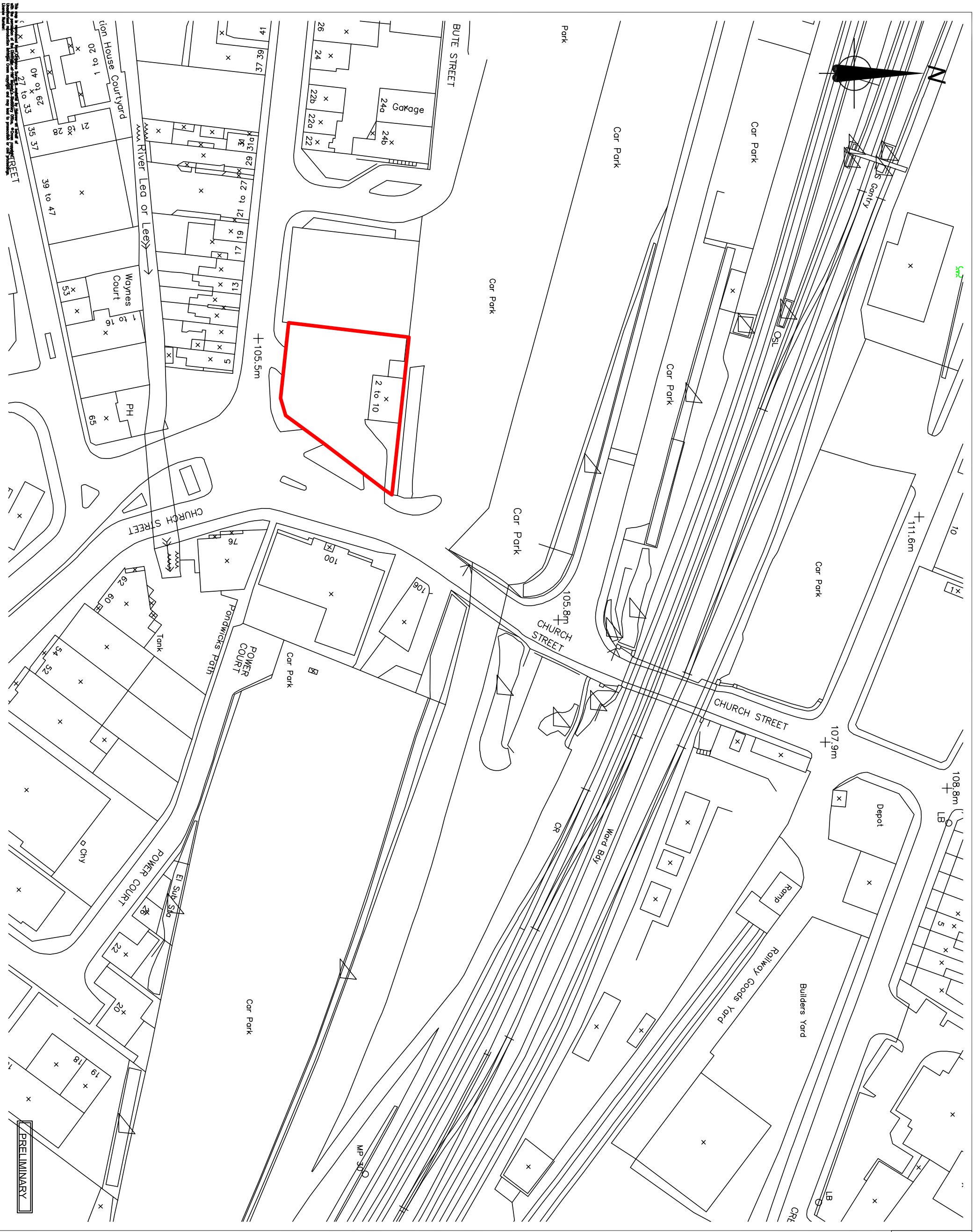
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**MONITORING AND REMEDIATION BOREHOLE LOCATION PLAN**

Drawn By: RML	Date: Oct 10
Checked By: -	Date: -
Approved By: -	Date: -
Drawing No: Figure 2	Revision: -

Drawing Scale: 1:10,000 at A3

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 Reference file path : RTEXT: file open error  
 User and Plot Date : RTEXT: file open error



**Key Plan:**  
 — Extent of land designated as contaminated land

**Notes:**

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**Drawing:**  
 EXTENT OF LAND  
 DESIGNATED AS  
 CONTAMINATED LAND

**Figure 1**

Drawn by: RML Date: 04/10  
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 Drawing No. Revision

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