

Oath to Burrowbridge Dredging and Associated Activities

Volume 3: Appendices Part 3



APPENDIX 2B: SOIL SCREENING




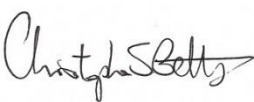

River Parrett Oath to Burrow Bridge Dredge

Soils Screening Report

On Behalf of

Somerset Drainage Boards Consortium

Quality Management

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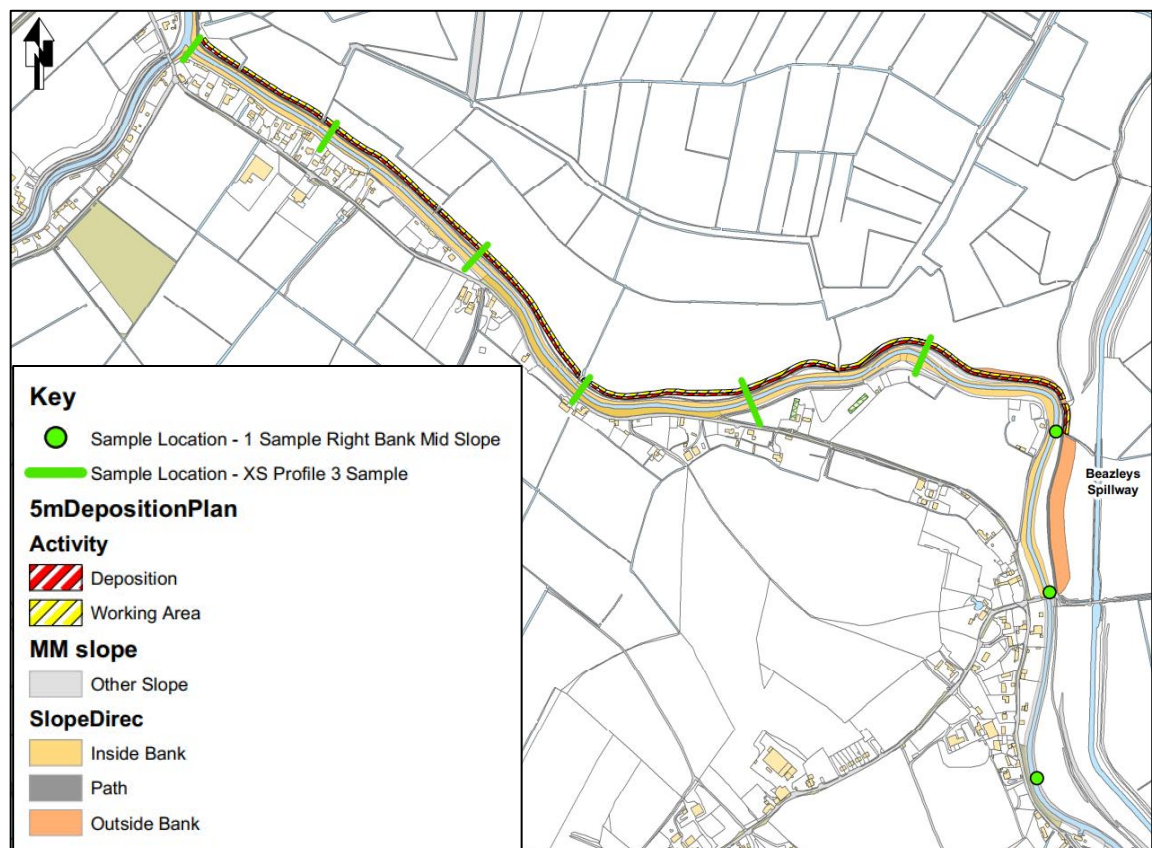
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1 Introduction

The Somerset Drainage Boards Consortium intends to undertake maintenance dredging of the River Parrett between Burrow Bridge and Oath Lock. During the dredging works, the river banks will be restored to a design profile to increase flow rates to alleviate flooding. It is intended that dredged sediment will be placed upon the right hand bank (north-eastern bank) of the River Parrett. An extract showing the reach to be dredged is shown in Figure 1.

Figure 1 - Proposed dredging, sampling and placement of sediment



Hydrogeo have been commissioned to undertake chemical analyses and screening of the sediment to ensure that there is no risk to human health or the environment from the deposited sediment. Options for spreading the sediment to agricultural land and waste disposal have also been explored. Geotechnical analysis in the form of Particle Size Distribution testing has been carried out to determine the grading of the sediment.

2 Sediment Testing

2.1 Sediment Sampling

Sediment sampling was undertaken using a 1m long hand-driven auger, collecting 15mm sediment cores. In total, 21 samples were collected comprising three individual samples and six transects each consisting of three samples. A plan showing the location of each sample is appended as Drawing 1.

A photographic record was made of each sediment core. The core was then subsampled into laboratory containers for chemical analysis and bulk bags for geotechnical analysis. Chemical samples were packed into cool boxes with ice packs before dispatch to ensure sample stability.

The sampled sediment in all 21 locations generally consisted of *Firm brown slightly clayey silt*. No deleterious material, staining or odours was noted in any of the sediment cores. Representative photographs of the sediment are shown in Figure 2 and Figure 3.

Figure 2 - Sediment sample no. 2



Figure 3 - Sediment sample no.12

2.2 Chemical Test Scheduling

All 21 samples were scheduled for the following chemical analyses:

- Soil Organic Matter;
- pH;
- Toxic metals suite;
- Additional metals – Antimony, Cobalt, Molybdenum, Silver, Vanadium;
- Salinity - chloride and sodium, plus fluoride;
- Nitrate, nitrite, and ammoniacal nitrogen;
- Extractable nutrients including magnesium, potassium and phosphorus;
- Total petroleum hydrocarbons (screen banded);
- Polyaromatic Hydrocarbons (PAH speciated 16).

Five samples were scheduled for additional analyses consisting of the following suite:

- Semi-volatile organic compounds (SVOCs);
- Poly Chlorinated Biphenyls (PCBs) – 7 congeners;
- Combined Herbicides and Pesticides – 35 in total.

All chemical testing was undertaken by ALS Environmental, a MCERTS and UKAS accredited laboratory.

2.3 Chemical Screening Criteria

Sediment samples have been screened against the following screening criteria:

- Suitable 4 Use Levels (S4ULs) – Human health screening criteria produced using the CLEA mode, used to assess the risk posed to human health by the deposited sediment. These values determine the suitability of materials kept as bank-side retention. ‘Residential – With produce’ values have been selected as they provide the most conservative screening criteria, although less a stringent ‘Public Open Space’ end use would be more applicable for the land use at the site.
- Environment Agency Ecological Soils Screening Values (SSVs) – Produced by the EA in 2017, the SSVs are used for screening waste and waste derived materials to be used as soil improvers on agricultural land. The values assess the hazard posed by 19 substances to soil fauna, flora and ecosystems. These values assess the suitability of the materials for agricultural spreading, taking into account background concentrations which have been sourced from the NSIV survey.
- Sewage Sludge on Farmland – Potentially Toxic Elements (PTEs) – the sediment has also been screened using the same values which are applied to sewage sludge spreading on agricultural land.
- NSIV Survey Normal Background Concentrations – These values represent the normal background concentration of substances in the local area. Background concentrations are primarily the result of the material's parent geology.
- Soil nutrients in the sediment have also been expressed as DEFRA Nutrient Index Values, used in formulating nutrient balances for agriculture.

2.4 Chemical Testing Results

Laboratory certificates are attached as Appendix A. The soil screening tables are attached as Appendix B.

Soil Organic Matter and pH

The average Soil Organic Matter (SOM) content was 6.12%, and the average pH was 7.96, indicating the sediments are organic matter rich and slightly alkaline. S4UL screening criteria using the 6% SOM content have been selected for further screening.

Inorganics

The average values for sodium, chloride and fluoride were 368mg/kg, 28.67mg/kg and 1.32mg/kg respectively. The recorded concentrations of sodium and fluoride are lower than the levels previously recorded during the Hook Bridge to Raymond's Farm dredging; presumably this is due to the recent sampling being a greater distance from the river estuary. The recorded concentrations of fluoride are also well below the PTE, which is 500mg/kg.

Nutrients

The sediment is high in extractable magnesium, potassium and phosphate, with average eluate values of 119.1mg/l, 140.12mg/l and 77.08mg/l recorded respectively.

If converted to the DEFRA nutrient index values, these would equate to soils with a magnesium index of 3, a potassium index of 2 and a phosphate index of 5. The levels of nutrients within the sediment would and the receiving field would have to be assessed if agricultural spreading was required.

Metals

Metals content in the sediments was generally low, and was close to the background concentrations recorded in the NSIV soil survey. The background concentrations have been included on the soil screening table in Appendix B.

None of the S4UL or PTE screening criteria were exceeded. The Ecological SSV was exceeded for Vanadium, with an average value of 25.60mg/kg recorded versus a SSV of 2.00mg/kg. The Ecological SSV for zinc was exceeded, with an average value of 114.23mg/kg recorded versus a SSV of 35.60mg/kg.

The Ecological SSVs relate to the increase in the amount of a compound which is added to a soil during a spreading activity, rather than a limiting value. The background concentration of vanadium in the local area is 100.70mg/kg, and the background concentration of zinc is 104.00mg/kg. As the recorded concentrations are close to or below the background value, the materials would not exceed the SSV during spreading activities.

Hydrocarbons

Total Petroleum hydrocarbons screening shows an average C6 to C40 concentration of 171mg/kg, and a maximum concentration of 250mg/kg. The lowest 'Residential – with produce' S4UL for a banded TPH is 150mg/kg for Aliphatic C8 to C10 hydrocarbons. For

a 'Public Open Space' end use the S4UL is 21,000mg/kg for Aliphatic C8 to C10 hydrocarbons.

The recorded concentrations are likely to be due to natural organics present in the silt such as humus (which can be co-extracted in the TPH extraction), rather than anthropogenic contamination. At these levels total TPH concentrations are unlikely to pose a risk to human health, and further banded testing for mineral oils and fuels is not required.

Speciated Polyaromatic hydrocarbons (PAH) were below their corresponding S4UL value for each species. Benzo(a)pyrene (BaP) exceeded the SSV, with an average value of 0.43mg/kg recorded against an SSV of 0.15mg/kg. The normal background concentration of BaP in rural soils is 0.50mg/kg; as such, the SSV would not be exceeded during spreading activities and does not pose a risk to the environment.

Semi Volatile Organic Compounds (SVOCs)

Of the five samples analysed for SVOCs, only Sample 1 was reported as containing an SVOC. Sample 1 recorded a concentration of 0.163mg/kg of bis(2-Ethylhexyl)phthalate, a common plasticizer used in plastics and household products. The SSV for bis(2-Ethylhexyl)phthalate is 13mg/kg, indicating that the SSV would not be exceeded during spreading activities.

No other SVOCs were recorded during the analyses.

Poly Chlorinated Biphenyls (PCBs)

Of the five samples tested for PCBs, PCB congener 28 was detected in four samples. The maximum recorded concentration was 0.00746mg/kg in sample 21; the average recorded concentration was 0.006mg/kg. No other PCB congeners were detected.

There is no soil standard for PCB congener 28; DEFRA has produced soil standards for dioxin-like PCBs, a grouping which does not include PCB Congener 28. The inert waste limit for waste categorisation is 1mg/kg total PCBs. On the basis of the very low recorded concentrations and non-dioxin properties, the recorded level of PCB congener 28 is unlikely to pose a risk to human health or the environment.

Pesticides and Herbicides

Pesticides and herbicides were below the limit of detection in all five analysed samples.

2.5 Geotechnical Test Scheduling

All 21 samples were scheduled for the following geotechnical testing:

- Particle Size Distribution by Wet Sieve Analysis (BS1377:1990, Clause 9.2);
- Mechanical analysis by Pipette method (BS1377:1990, Clause 9.4).

This allows for a full PSD curve to be determined for each sample, from clay to cobble sized particles.

All geotechnical testing was undertaken by Geolabs, a UKAS accredited geotechnical laboratory.

The geotechnical samples are currently undergoing testing, which will be completed by the 3th of July. Hydrogeo will report the results of the geotechnical testing as an addendum to this report.

2.6 Discussion and Recommendations

Overall the sediment appears to be of good chemical quality, with no exceedances of any of the screening criteria recorded in any of the samples. The sediment can be classified as 'Dredging spoil not containing hazardous substances' with the European Waste Code (EWC) 170506.

Bankside Retention

Based on the analyses carried out, the sediment is suitable for bankside retention, and does not pose a risk to human health. Chemical sampling shows that the sediment passed the 'Residential – with produce' screening criteria, which is more stringent than the 'Public Open Space' end use screening criteria. The sediment can be deposited bankside under a D1 waste exemption., this exemption allows you to deposit dredging spoil (dredgings) on the banks of the waters it was dredged from and to treat it by screening and removing water.

Under this exemption, over any 12 month period you can deposit or treat up to 50 cubic metres of dredgings for each metre length of land on which waste is deposited.

The waste must be deposited as close as possible to where it was dredged from.

The waste must be deposited either:

- on the bank of the waters from where it was dredged
- or on land next to the water it was dredged from (the dredgings must be removed from the waterway and deposited mechanically in one operation)

This means that you can't deposit onto a bank and then move it further away by the same or another machine.

Spreading on Land for Agricultural Benefit

The sediment passed the SSV and PTE screening criteria, indicating that there are no contaminants present which would be detrimental to agricultural land. The Soil organic Matter content is high. Concentrations of metals and BaP are close to normal background levels. Sodium levels are lower than recorded in previous maintenance dredging works.

If spreading on land used for agriculture is required, further assessment of nutrient balances once receptor fields are identified would need to be performed. Whether the sediment would be suitable for spreading depends on the nutrient balance, cropping and spreading area of the receiving field. As the sediments are rather high in nutrients, it may only be possible to spread them on fields which are deficient in magnesium, potassium and phosphate. The sediment could then be spread to land under a U10 waste exemption.

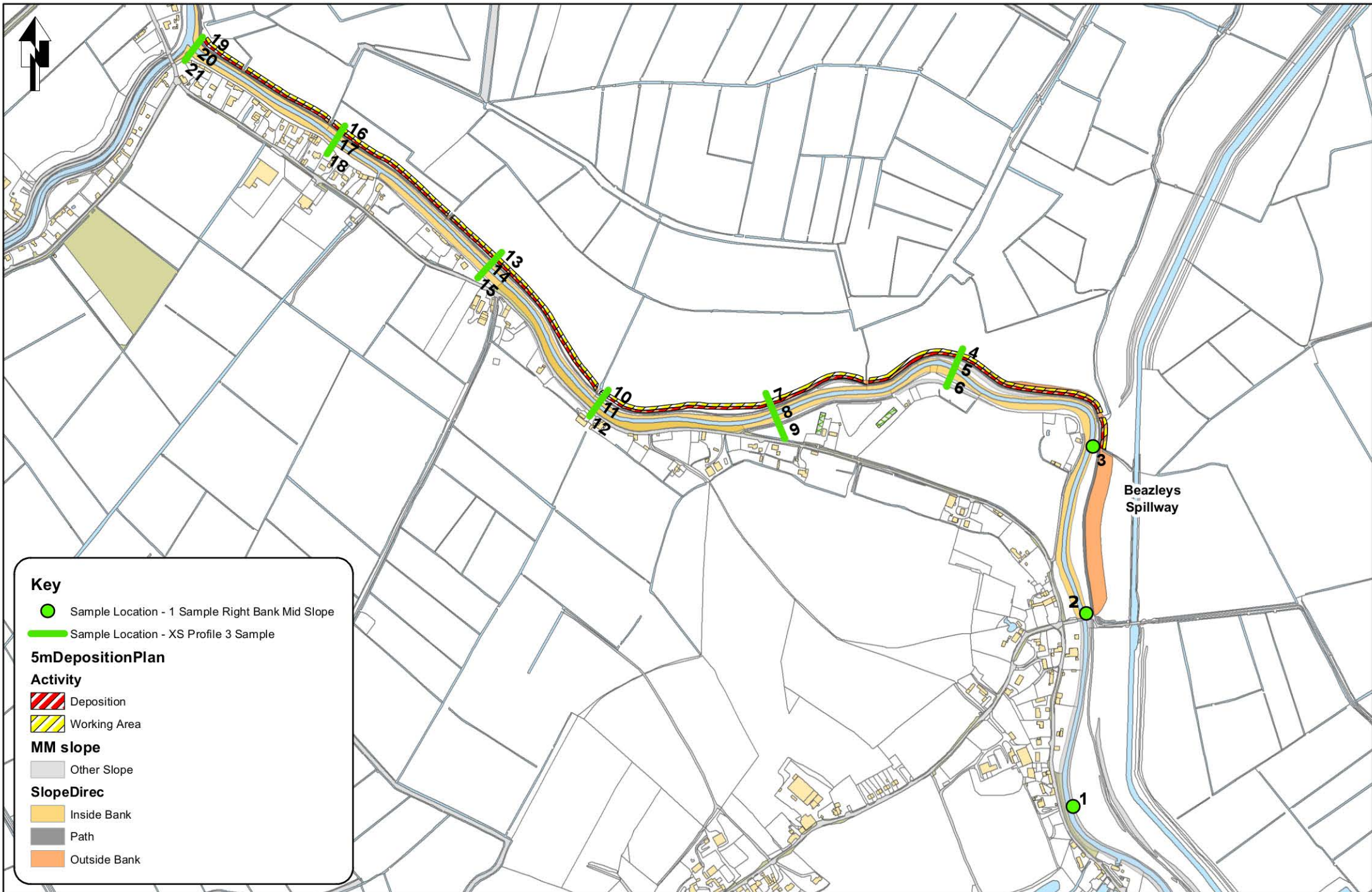
Waste Disposal

From the testing carried out to date, it appears that the sediment contains no anthropogenic contaminants of concern which would complicate disposal.

The sediment has Soil Organic Matter in the order of 6 to 7% which approximates to Total Organic Carbon values of 3.5 to 4.0%. This can result in waste falling into a "stable non-reactive hazardous waste in non-hazardous" waste classification, even if the material presents no risk to human health or the environment.

If disposal to a licensed facility is required, the sediment would need to be subject to Waste Acceptance Criteria (WAC) testing to determine leachable concentrations of compounds.

Drawings



Appendices

Appendix A

ALS Laboratory Certificates



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Attention: Matt Johns

CERTIFICATE OF ANALYSIS

Date: 18 June 2018
Customer: H_HYDROGEO_MON
Sample Delivery Group (SDG): 180608-108
Your Reference: JOO281
Location: Oath Burrow Bridge
Report No: 460496

This report has been revised and directly supersedes 460325 in its entirety.

We received 21 samples on Friday June 08, 2018 and 21 of these samples were scheduled for analysis which was completed on Friday June 15, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	180608-108	Client Reference:	JOO281	Report Number:	460496
Location:	Oath Burrow Bridge	Order Number:		Superseded Report:	460325

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
17706866	OATH 1		1.00 - 1.00	07/06/2018
17706868	OATH 2		1.00 - 1.00	07/06/2018
17706869	OATH 3		1.00 - 1.00	07/06/2018
17706870	OATH 4		1.00 - 1.00	07/06/2018
17706871	OATH 5		1.00 - 1.00	07/06/2018
17706873	OATH 6		1.00 - 1.00	07/06/2018
17706874	OATH 7		1.00 - 1.00	07/06/2018
17706876	OATH 8		1.00 - 1.00	07/06/2018
17706877	OATH 9		1.00 - 1.00	07/06/2018
17706878	OATH 10		1.00 - 1.00	07/06/2018
17706880	OATH 11		1.00 - 1.00	07/06/2018
17706881	OATH 12		1.00 - 1.00	07/06/2018
17706882	OATH 13		1.00 - 1.00	07/06/2018
17706883	OATH 14		1.00 - 1.00	07/06/2018
17706884	OATH 15		1.00 - 1.00	07/06/2018
17706885	OATH 16		1.00 - 1.00	07/06/2018
17706886	OATH 17		1.00 - 1.00	07/06/2018
17706887	OATH 18		1.00 - 1.00	07/06/2018
17706888	OATH 19		1.00 - 1.00	07/06/2018
17706889	OATH 20		1.00 - 1.00	07/06/2018
17706892	OATH 21		1.00 - 1.00	07/06/2018

Maximum Sample/Coolbox Temperature (°C) : 18.4

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow BridgeClient Reference: JOO281
Order Number:Report Number: 460496
Superseded Report: 460325

Results Legend



Test

No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

			17706866	17706868	17706869	17706870	17706871	17706873	17706874	17706876	17706877	17706878	17706880	17706881	17706882	17706883	17706884	17706885	17706886	17706887	17706888	17706889
			OATH 1	OATH 2	OATH 3	OATH 4	OATH 5	OATH 6	OATH 7	OATH 8	OATH 9	OATH 10	OATH 11	OATH 12	OATH 13	OATH 14	OATH 15	OATH 16	OATH 17	OATH 18	OATH 19	OATH 20
			1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Alkali Metals in Agricultural soils	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ammonium Soil by Titration	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fluoride (soluble)	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 6	X			X				X				X				X				X
PAH by GCMS	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PCBs by GCMS	All	NDPs: 0 Tests: 6	X			X				X				X				X				X
pH	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Phosphate (Bicarbonate Extractable)	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 6	X			X				X				X				X				X
Silver	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

17706892	OATH 21		1.00 - 1.00	250g Amber Jar (ALE210)	S
X					
X					
X					
X					
X					
X					
X					
X					
X					
X					
X					
X					

17706892	OATH 21		1.00 - 1.00	250g Amber Jar (ALE210)	S	X		X
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CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
17706866	OATH 1	1.00 - 1.00	Light Brown	Silt Loam	Stones	Vegetation
17706868	OATH 2	1.00 - 1.00	Light Brown	Silt Loam	Vegetation	None
17706869	OATH 3	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706870	OATH 4	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706871	OATH 5	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706873	OATH 6	1.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
17706874	OATH 7	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706876	OATH 8	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706877	OATH 9	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706878	OATH 10	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706880	OATH 11	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706881	OATH 12	1.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
17706882	OATH 13	1.00 - 1.00	Light Brown	Silty Clay	Vegetation	None
17706883	OATH 14	1.00 - 1.00	Light Brown	Silt Loam	Vegetation	None
17706884	OATH 15	1.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
17706885	OATH 16	1.00 - 1.00	Dark Brown	Clay Loam	Vegetation	None
17706886	OATH 17	1.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
17706887	OATH 18	1.00 - 1.00	Light Brown	Clay Loam	Vegetation	None
17706888	OATH 19	1.00 - 1.00	Dark Brown	Silt Loam	None	None
17706889	OATH 20	1.00 - 1.00	Light Brown	Clay Loam	Vegetation	None
17706892	OATH 21	1.00 - 1.00	Light Brown	Silty Clay	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Results Legend			Customer Sample Ref.	OATH 1	OATH 2	OATH 3	OATH 4	OATH 5	OATH 6
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018
(F)	Trigger breach confirmed			180608-108	180608-108	180608-108	180608-108	180608-108	180608-108
1-5&*\$@	Sample deviation (see appendix)			17706866	17706868	17706869	17706870	17706871	17706873
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		26	29	22	26	29	32
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12	<12	<12	<12	<12	<12
Soil Organic Matter (SOM)	<0.35 %	TM132		6.65	6.67	6.76	7.09	5.93	6.26
pH	1 pH Units	TM133		8.06	7.87	7.96	7.72	7.8	7.77
TPH >C6-C40	<10 mg/kg	TM154		247	195	200	245	243	138
PCB congener 28	<0.003 mg/kg	TM168		<0.003			0.00391		
PCB congener 52	<0.003 mg/kg	TM168		<0.003			<0.003		
PCB congener 101	<0.003 mg/kg	TM168		<0.003			<0.003		
PCB congener 118	<0.003 mg/kg	TM168		<0.003			<0.003		
PCB congener 138	<0.003 mg/kg	TM168		<0.003			<0.003		
PCB congener 153	<0.003 mg/kg	TM168		<0.003			<0.003		
PCB congener 180	<0.003 mg/kg	TM168		<0.003			<0.003		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168		<0.021			<0.021		
Antimony	<0.6 mg/kg	TM181		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Arsenic	<0.6 mg/kg	TM181		13.8	10.3	8.83	8.45	9.09	9.17
Cadmium	<0.02 mg/kg	TM181		0.643	0.471	0.424	0.381	0.325	0.37
Chromium	<0.9 mg/kg	TM181		73.5	46	42.3	35.8	26.3	31.6
Cobalt	<0.1 mg/kg	TM181		11.1	9.74	8.39	7.88	8.63	8.55
Copper	<1.4 mg/kg	TM181		34.5	28.1	22.6	21.7	18.8	21.1
Lead	<0.7 mg/kg	TM181		39.6	28.6	27.9	26.6	30.3	29.2
Mercury	<0.14 mg/kg	TM181		<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Molybdenum	<0.1 mg/kg	TM181		2.11	1.8	1.23	1.13	0.738	1.04
Nickel	<0.2 mg/kg	TM181		29.2	25.2	21	19.9	20.8	21.3
Selenium	<1 mg/kg	TM181		1.09	<1	<1	<1	<1	<1
Vanadium	<0.2 mg/kg	TM181		44.8	38.3	29.7	26.3	25.6	26.4
Zinc	<1.9 mg/kg	TM181		159	151	115	111	118	120
Sodium	<7 mg/kg	TM224		189	222	314	308	387	330
Phosphate (Bicarbonate Extractable) as mg/l P	<2 mg/l	TM229		170	137	130	113	93.3	108
Fluoride, 2:1 water soluble	<1 mg/kg	TM242		<1	<1	<1	<1	1.36	<1
Chloride (soluble)	<5 mg/kg	TM243		17.1	20.1	15.6	22.8	35.9	25.8
Nitrate as N, 2:1 water soluble	<0.226 mg/kg	TM243		3.85	6.35	3.5	5.33	1.33	3.73
Nitrite (soluble) as N	<0.03 mg/kg	TM243		2.99	2.24	0.426	0.795	0.227	0.459



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Results Legend			Customer Sample Ref.	OATH 7	OATH 8	OATH 9	OATH 10	OATH 11	OATH 12
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.			08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018
**	Subcontracted test.			180608-108	180608-108	180608-108	180608-108	180608-108	180608-108
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			17706874	17706876	17706877	17706878	17706880	17706881
(F)	Trigger breach confirmed								
1-5&*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		27	27	29	25	26	31
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12	<12	<12	<12	<12	<12
Soil Organic Matter (SOM)	<0.35 %	TM132		7.22	5.12	5.88	6.81	5.69	5.78
pH	1 pH Units	TM133		7.92	7.9	8.1	7.81	8.01	7.93
TPH >C6-C40	<10 mg/kg	TM154		215	127	160	250	159	142
PCB congener 28	<0.003 mg/kg	TM168			0.00601				0.00646
PCB congener 52	<0.003 mg/kg	TM168			<0.003				<0.003
PCB congener 101	<0.003 mg/kg	TM168			<0.003				<0.003
PCB congener 118	<0.003 mg/kg	TM168			<0.003				<0.003
PCB congener 138	<0.003 mg/kg	TM168			<0.003				<0.003
PCB congener 153	<0.003 mg/kg	TM168			<0.003				<0.003
PCB congener 180	<0.003 mg/kg	TM168			<0.003				<0.003
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021				<0.021
Antimony	<0.6 mg/kg	TM181		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Arsenic	<0.6 mg/kg	TM181		8.51	8.76	8.1	9.3	8.48	8.42
Cadmium	<0.02 mg/kg	TM181		0.389	0.284	0.292	0.418	0.306	0.298
Chromium	<0.9 mg/kg	TM181		34.7	22.3	23.6	42.1	21.4	22.3
Cobalt	<0.1 mg/kg	TM181		7.9	8.5	7.36	8.34	7.85	7.84
Copper	<1.4 mg/kg	TM181		20.3	17.2	15.6	22.7	16.7	16.4
Lead	<0.7 mg/kg	TM181		27.6	29.4	25.2	27.5	27.7	27.1
Mercury	<0.14 mg/kg	TM181		<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Molybdenum	<0.1 mg/kg	TM181		0.987	0.686	0.726	1.24	0.725	0.745
Nickel	<0.2 mg/kg	TM181		19.6	20.6	18.2	21.2	19.1	19.1
Selenium	<1 mg/kg	TM181		<1	<1	<1	<1	<1	<1
Vanadium	<0.2 mg/kg	TM181		25	24.4	20.6	28	22.6	22.4
Zinc	<1.9 mg/kg	TM181		109	116	96.9	116	104	104
Sodium	<7 mg/kg	TM224		356	396	393	281	358	416
Phosphate (Bicarbonate Extractable) as mg/l P	<2 mg/l	TM229		48.3	78.9	89.4	128	79.6	69.1
Fluoride, 2:1 water soluble	<1 mg/kg	TM242		1.21	1.32	1.31	1.03	1.41	1.45
Chloride (soluble)	<5 mg/kg	TM243		18	31	21.9	19.1	29.2	24.4
Nitrate as N, 2:1 water soluble	<0.226 mg/kg	TM243		4.21	1.86	4	7.82	2.92	1.29
Nitrite (soluble) as N	<0.03 mg/kg	TM243		0.321	0.202	0.127	0.475	0.143	0.157



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow BridgeClient Reference: JOO281
Order Number:Report Number: 460496
Superseded Report: 460325

Results Legend			Customer Sample Ref.	OATH 13	OATH 14	OATH 15	OATH 16	OATH 17	OATH 18
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed			08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018
1-5&*\$@	Sample deviation (see appendix)			180608-108	180608-108	180608-108	180608-108	180608-108	180608-108
				17706882	17706883	17706884	17706885	17706886	17706887
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		29	19	32	26	30	32
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12	<12	<12	<12	<12	<12
Soil Organic Matter (SOM)	<0.35 %	TM132		5.84	6.43	7	4.98	6.05	6.55
pH	1 pH Units	TM133		7.88	8.2	8.04	7.94	7.9	7.87
TPH >C6-C40	<10 mg/kg	TM154		123	158	145	147	185	144
PCB congener 28	<0.003 mg/kg	TM168					0.00601		
PCB congener 52	<0.003 mg/kg	TM168					<0.003		
PCB congener 101	<0.003 mg/kg	TM168					<0.003		
PCB congener 118	<0.003 mg/kg	TM168					<0.003		
PCB congener 138	<0.003 mg/kg	TM168					<0.003		
PCB congener 153	<0.003 mg/kg	TM168					<0.003		
PCB congener 180	<0.003 mg/kg	TM168					<0.003		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021		
Antimony	<0.6 mg/kg	TM181		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Arsenic	<0.6 mg/kg	TM181		8.54	10.4	8.01	8.36	8.57	8.46
Cadmium	<0.02 mg/kg	TM181		0.228	0.418	0.226	0.281	0.233	0.232
Chromium	<0.9 mg/kg	TM181		14.6	24.9	14.8	19.9	15.3	14.2
Cobalt	<0.1 mg/kg	TM181		8.07	7.56	7.89	8.38	8.17	7.93
Copper	<1.4 mg/kg	TM181		15.1	18.8	15.3	15.9	15.3	15.7
Lead	<0.7 mg/kg	TM181		29.6	27.7	29.1	29.2	30.6	29.2
Mercury	<0.14 mg/kg	TM181		<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Molybdenum	<0.1 mg/kg	TM181		0.544	0.868	0.544	0.683	0.535	0.572
Nickel	<0.2 mg/kg	TM181		19.2	19.1	18.9	20	19.4	18.8
Selenium	<1 mg/kg	TM181		<1	<1	<1	<1	<1	<1
Vanadium	<0.2 mg/kg	TM181		21.9	23.9	21.5	23.8	22.3	21.1
Zinc	<1.9 mg/kg	TM181		108	98	106	111	111	105
Sodium	<7 mg/kg	TM224		433	314	454	408	434	439
Phosphate (Bicarbonate Extractable) as mg/l P	<2 mg/l	TM229		34.6	65.2	37.2	71.7	28.3	31.6
Fluoride, 2:1 water soluble	<1 mg/kg	TM242		1.38	1.16	1.4	1.13	1.18	1.15
Chloride (soluble)	<5 mg/kg	TM243		34.2	39.7	37	23.7	37.3	37.3
Nitrate as N, 2:1 water soluble	<0.226 mg/kg	TM243		<0.226	5.3	0.504	2.83	<0.226	0.702
Nitrite (soluble) as N	<0.03 mg/kg	TM243		0.141	1.23	0.213	0.204	0.138	0.277



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow BridgeClient Reference: JOO281
Order Number:Report Number: 460496
Superseded Report: 460325

Results Legend			Customer Sample Ref.	OATH 19	OATH 20	OATH 21			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	OATH 19	OATH 20	OATH 21			
M	mCERTS accredited.			1.00 - 1.00	1.00 - 1.00	1.00 - 1.00			
aq	Aqueous / settled sample.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
diss.filt	Dissolved / filtered sample.			07/06/2018	07/06/2018	07/06/2018			
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.			08/06/2018	08/06/2018	08/06/2018			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			180608-108	180608-108	180608-108			
(F)	Trigger breach confirmed			17706888	17706889	17706892			
1-5&*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		28	26	31			
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12	<12	<12			
Soil Organic Matter (SOM)	<0.35 %	TM132		5.21	5.31	5.24			
pH	1 pH Units	TM133		8	8.04	8.37			
TPH >C6-C40	<10 mg/kg	TM154		140	145	79.4			
PCB congener 28	<0.003 mg/kg	TM168			0.00746				
PCB congener 52	<0.003 mg/kg	TM168			<0.003				
PCB congener 101	<0.003 mg/kg	TM168			<0.003				
PCB congener 118	<0.003 mg/kg	TM168			<0.003				
PCB congener 138	<0.003 mg/kg	TM168			<0.003				
PCB congener 153	<0.003 mg/kg	TM168			<0.003				
PCB congener 180	<0.003 mg/kg	TM168			<0.003				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021				
Antimony	<0.6 mg/kg	TM181		<0.6	<0.6	<0.6			
Arsenic	<0.6 mg/kg	TM181		8.13	8.56	9.22			
Cadmium	<0.02 mg/kg	TM181		0.226	0.227	0.22			
Chromium	<0.9 mg/kg	TM181		14.7	15.1	17.3			
Cobalt	<0.1 mg/kg	TM181		7.97	8.17	9.04			
Copper	<1.4 mg/kg	TM181		14.1	15.4	15.8			
Lead	<0.7 mg/kg	TM181		29.2	30.6	33.4			
Mercury	<0.14 mg/kg	TM181		<0.14	<0.14	<0.14			
Molybdenum	<0.1 mg/kg	TM181		0.49	0.552	0.482			
Nickel	<0.2 mg/kg	TM181		19	19.5	21.6			
Selenium	<1 mg/kg	TM181		<1	<1	<1			
Vanadium	<0.2 mg/kg	TM181		21.7	22.1	25.3			
Zinc	<1.9 mg/kg	TM181		106	111	123			
Sodium	<7 mg/kg	TM224		447	427	425			
Phosphate (Bicarbonate Extractable) as mg/l P	<2 mg/l	TM229		37.1	32.4	36			
Fluoride, 2:1 water soluble	<1 mg/kg	TM242		1.22	1.59	1.87			
Chloride (soluble)	<5 mg/kg	TM243		44.3	44.2	23.4			
Nitrate as N, 2:1 water soluble	<0.226 mg/kg	TM243		<0.226	0.887	0.579			
Nitrite (soluble) as N	<0.03 mg/kg	TM243		0.168	0.17	0.125			



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

OC, OP Pesticides and Triazine Herb

Results Legend			Customer Sample Ref.	OATH 1	OATH 4	OATH 8	OATH 12	OATH 16	OATH 20
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018
(F)	Trigger breach confirmed			180608-108	180608-108	180608-108	180608-108	180608-108	180608-108
1-5&*\$@	Sample deviation (see appendix)			17706866	17706870	17706876	17706881	17706885	17706889
Component	LOD/Units	Method							
Tecnazene	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Hexachlorobenzene	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Trifluralin	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Phorate	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Quintozene (PCNB)	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Triallate	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Disulfoton	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Heptachlor	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Aldrin	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Chlorothalonil	<0.05 mg/kg	TM073		<1	<0.5	<0.5	<0.05	<0.05	<0.05
Telodrin	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Isodrin	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Triadimefon	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Pendimethalin	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
o,p-DDE	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Endosulphan I	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Trans-chlordane	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
cis-Chlordane	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
p,p-DDE	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Dieldrin	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
o,p'-DDD (TDE)	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Endrin	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
o,p-DDT	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
Endosulphan II	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
p,p-DDT	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
o,p-Methoxychlor	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.5	<0.25	<0.25	<0.05	<0.05	<0.05



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	OATH 1	OATH 4	OATH 8	OATH 12	OATH 16	OATH 20
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018
(F)	Trigger breach confirmed			180608-108	180608-108	180608-108	180608-108	180608-108	180608-108
1-5&*\$@	Sample deviation (see appendix)			17706866	17706870	17706876	17706881	17706885	17706889
Component	LOD/Units	Method							
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		0.163	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	OATH 1	OATH 4	OATH 8	OATH 12	OATH 16	OATH 20
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed			08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018	08/06/2018
1-5&*\$@	Sample deviation (see appendix)			180608-108	180608-108	180608-108	180608-108	180608-108	180608-108
				17706866	17706870	17706876	17706881	17706885	17706889
Component	LOD/Units	Method							
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157		0.286	0.338	0.19	0.159	0.176	0.135
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		0.354	0.378	0.19	0.159	0.19	<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		0.299	0.257	0.19	<0.1	0.163	<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157		0.381	0.351	0.204	0.159	0.217	<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		0.354	0.27	0.163	<0.1	0.149	<0.1
Chrysene	<0.1 mg/kg	TM157		0.367	0.432	0.286	0.202	0.271	0.162
Fluoranthene	<0.1 mg/kg	TM157		0.558	0.689	0.394	0.318	0.379	0.216
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		0.299	0.243	0.136	<0.1	0.136	<0.1
Phenanthrene	<0.1 mg/kg	TM157		0.15	0.284	0.177	0.145	0.176	<0.1
Pyrene	<0.1 mg/kg	TM157		0.503	0.567	0.34	0.275	0.325	0.189
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108 **Client Reference:** JOO281 **Report Number:** 460496
Location: Oath Burrow Bridge **Order Number:** **Superseded Report:** 460325

Table of Results - Appendix

Method No	Reference	Description
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM154	In - house Method	Determination of Petroleum Hydrocarbons by EZ Flash GC-FID in the Carbon range C6-C40
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM229	The Analysis of Agricultural Materials, MAFF, Third Edition 1986.	Determination Of Extractable Phosphorus in Agricultural Soils using MAFF Extraction Procedures.
TM242	Method 340.3, Fluoride, EPA, 1997.	Determination of Fluoride in Soil Samples using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM244	The Analysis of Agricultural Materials, MAFF, Third Edition 1986.	Determination Of Extractable Magnesium and Potassium in Agricultural Soils using MAFF Extraction Procedures
TM250		Determination of Silver in Soil by ICP-OES
TM339		

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	17706866	17706868	17706869	17706870	17706871	17706873	17706874	17706876	17706877	17706878
	OATH 1	OATH 2	OATH 3	OATH 4	OATH 5	OATH 6	OATH 7	OATH 8	OATH 9	OATH 10
	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Alkali Metals by iCap-OES (Soil)	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018
Alkali Metals in Agricultural soils	13-Jun-2018	13-Jun-2018	13-Jun-2018	14-Jun-2018	13-Jun-2018	13-Jun-2018	14-Jun-2018	14-Jun-2018	13-Jun-2018	13-Jun-2018
Ammonium Soil by Titration	12-Jun-2018	13-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	13-Jun-2018
Anions by Kone (soil)	14-Jun-2018	14-Jun-2018	15-Jun-2018	14-Jun-2018	15-Jun-2018	14-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018
Fluoride (soluble)	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018
Metals in solid samples by OES	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
NO3, NO2 and TON by KONE (s)	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
OC, OP Pesticides and Triazine Herb	14-Jun-2018			14-Jun-2018				14-Jun-2018		
PAH by GCMS	13-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
PCBs by GCMS	14-Jun-2018			14-Jun-2018				14-Jun-2018		
pH	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018
Phosphate (Bicarbonate Extractable)	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
Sample description	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018
Semi Volatile Organic Compounds	14-Jun-2018			14-Jun-2018				14-Jun-2018		
Silver	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
Total Organic Carbon	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
TPH c6-40 Value of soil	14-Jun-2018	12-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	17706880	17706881	17706882	17706883	17706884	17706885	17706886	17706887	17706888	17706889
	OATH 11	OATH 12	OATH 13	OATH 14	OATH 15	OATH 16	OATH 17	OATH 18	OATH 19	OATH 20
	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Alkali Metals by iCap-OES (Soil)	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018
Alkali Metals in Agricultural soils	13-Jun-2018	14-Jun-2018	14-Jun-2018	13-Jun-2018	13-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
Ammonium Soil by Titration	12-Jun-2018	13-Jun-2018	12-Jun-2018	13-Jun-2018	12-Jun-2018	13-Jun-2018	13-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
Anions by Kone (soil)	15-Jun-2018	15-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	15-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
Fluoride (soluble)	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018	15-Jun-2018
Metals in solid samples by OES	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
NO3, NO2 and TON by KONE (s)	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
OC, OP Pesticides and Triazine Herb		14-Jun-2018				14-Jun-2018				14-Jun-2018
PAH by GCMS	14-Jun-2018	14-Jun-2018	13-Jun-2018	13-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	13-Jun-2018	14-Jun-2018	13-Jun-2018
PCBs by GCMS		14-Jun-2018				14-Jun-2018				14-Jun-2018
pH	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018
Phosphate (Bicarbonate Extractable)	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
Sample description	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018	09-Jun-2018
Semi Volatile Organic Compounds		14-Jun-2018				14-Jun-2018				14-Jun-2018
Silver	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
Total Organic Carbon	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018	14-Jun-2018
TPH c6-40 Value of soil	13-Jun-2018	13-Jun-2018	14-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	13-Jun-2018	14-Jun-2018	13-Jun-2018	14-Jun-2018

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	17706892
	OATH 21
	1.00 - 1.00
	Soil/Solid (S)
Alkali Metals by iCap-OES (Soil)	13-Jun-2018
Alkali Metals in Agricultural soils	13-Jun-2018
Ammonium Soil by Titration	12-Jun-2018
Anions by Kone (soil)	14-Jun-2018
Fluoride (soluble)	15-Jun-2018
Metals in solid samples by OES	12-Jun-2018
NO3, NO2 and TON by KONE (s)	14-Jun-2018
PAH by GCMS	14-Jun-2018
pH	13-Jun-2018
Phosphate (Bicarbonate Extractable)	14-Jun-2018
Sample description	09-Jun-2018
Silver	14-Jun-2018
Total Organic Carbon	14-Jun-2018
TPH c6-40 Value of soil	13-Jun-2018



CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

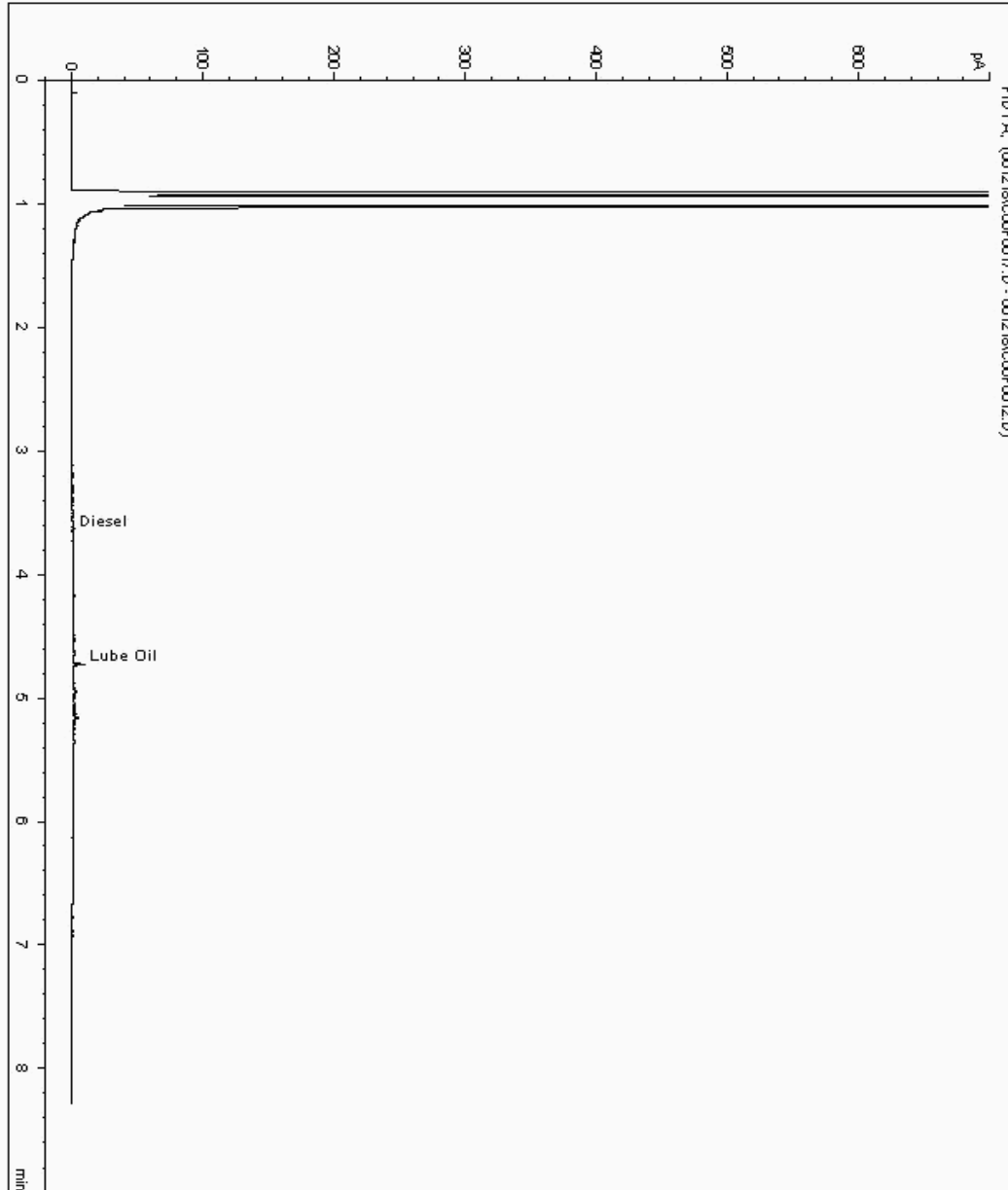
Analysis: TPH c6-40 Value of soil

Sample No : 17712729
Sample ID : OATH 3

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641808-
Date Acquired : 12/06/2018 17:32:50 PM
Units : mg/kg
Sample Multiplier : 1.695
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

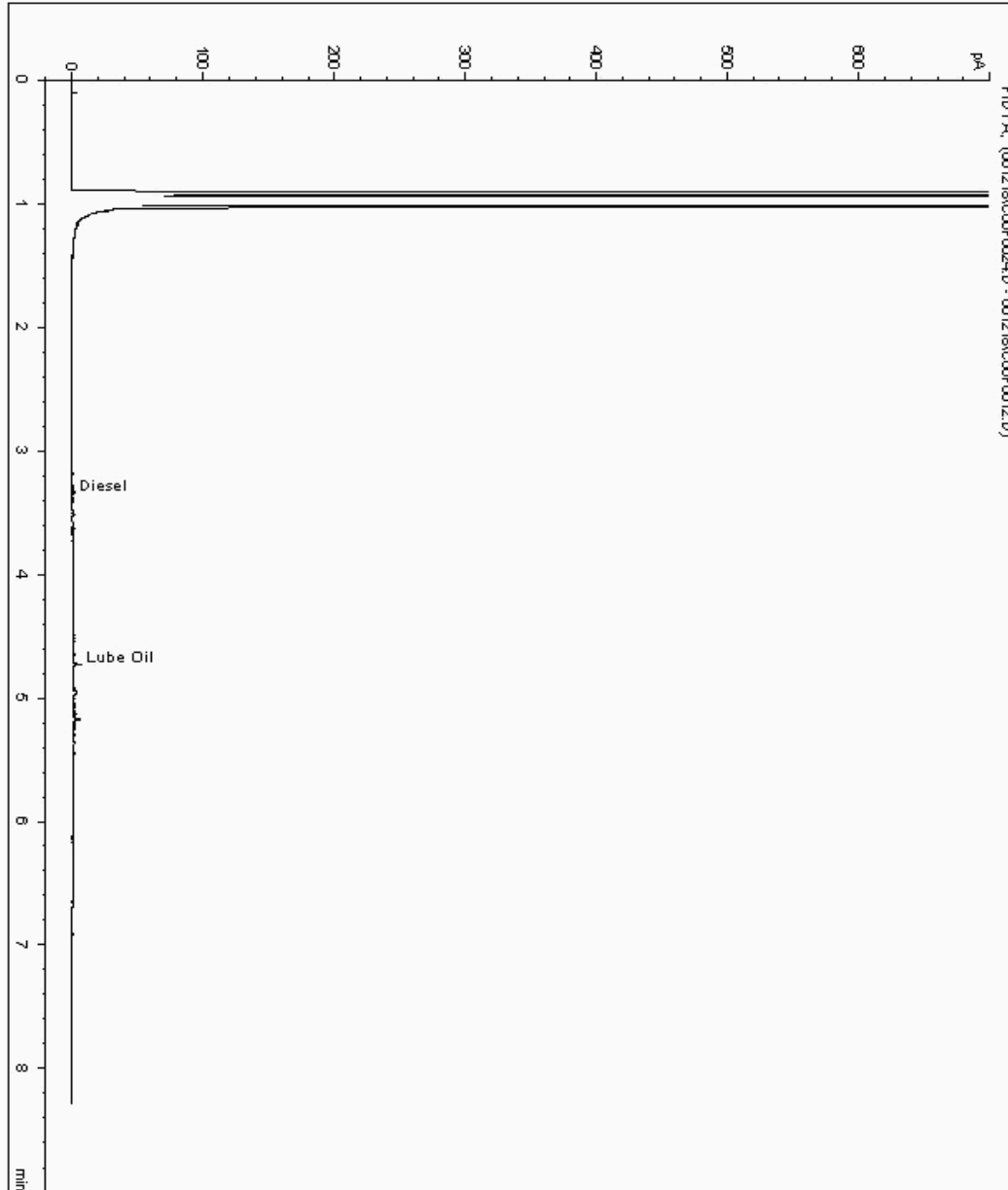
Analysis: TPH c6-40 Value of soil

Sample No : 17712764
Sample ID : OATH 5

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641848-
Date Acquired : 12/06/2018 19:41:28 PM
Units : mg/kg
Sample Multiplier : 1.808
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

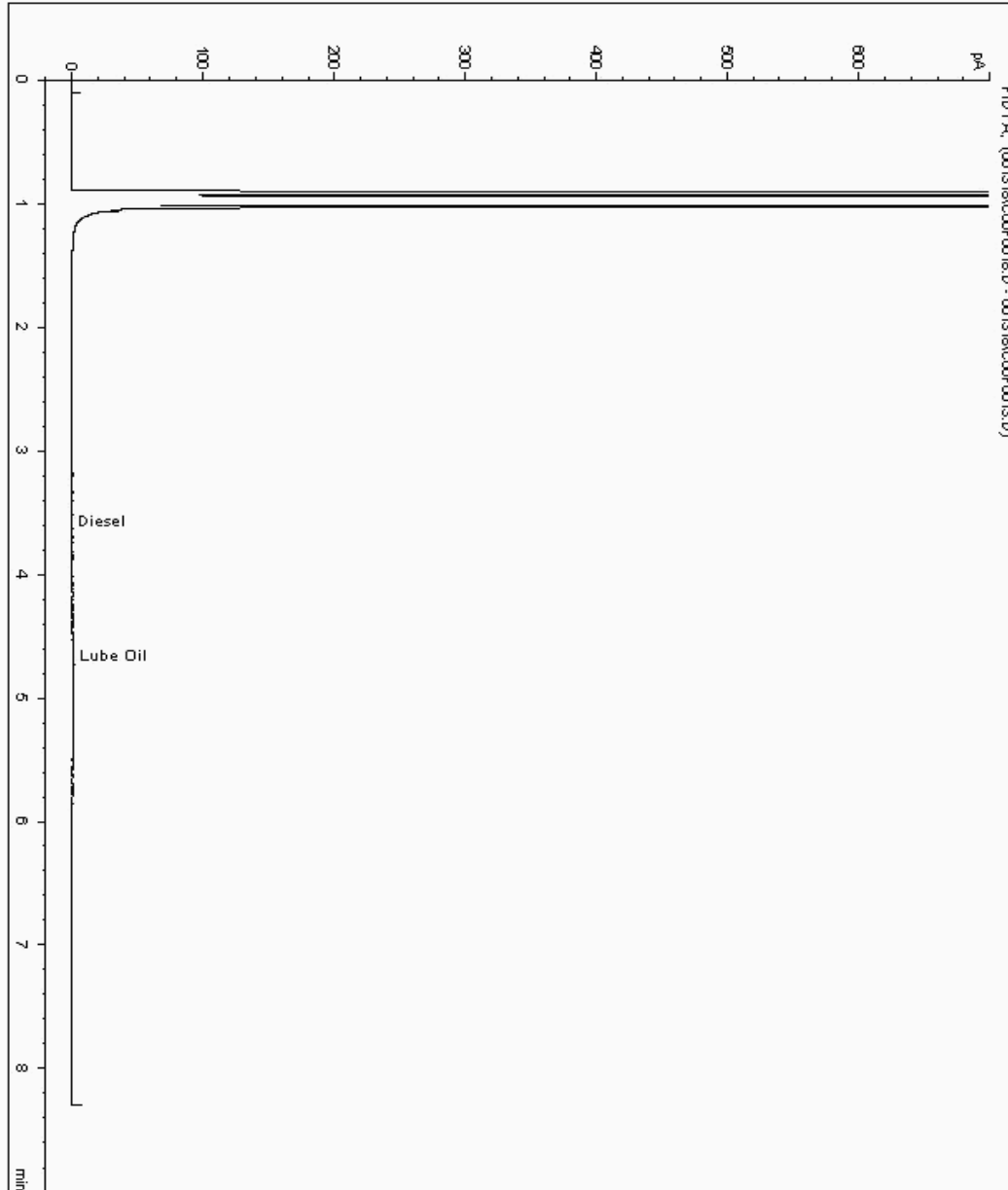
Analysis: TPH c6-40 Value of soil

Sample No : 17712795
Sample ID : OATH 18

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642156-
Date Acquired : 13/06/2018 20:34:11 PM
Units : mg/kg
Sample Multiplier : 2.451
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

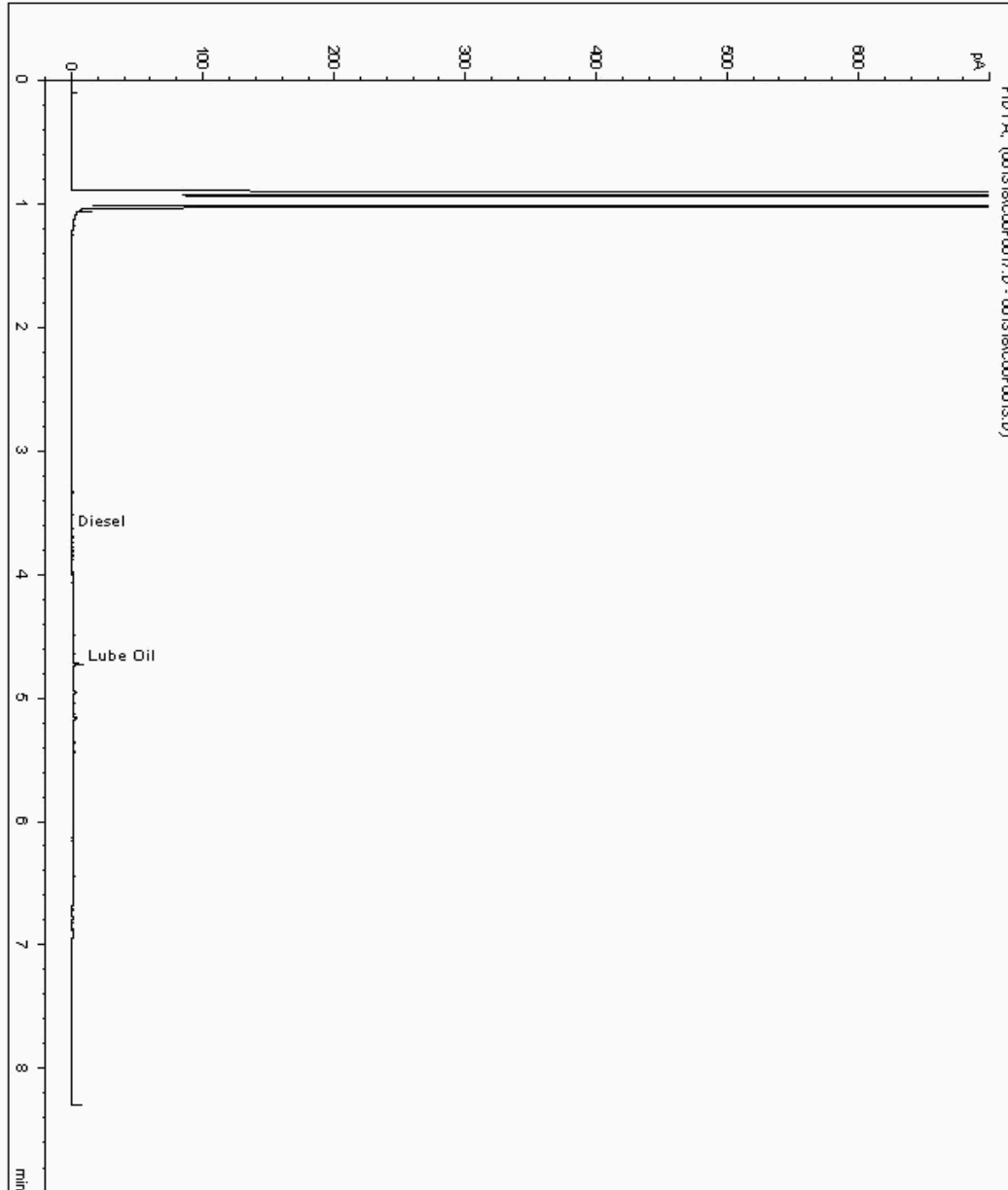
Analysis: TPH c6-40 Value of soil

Sample No : 17712904
Sample ID : OATH 1

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641768-
Date Acquired : 13/06/2018 20:15:51 PM
Units : mg/kg
Sample Multiplier : 2.075
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

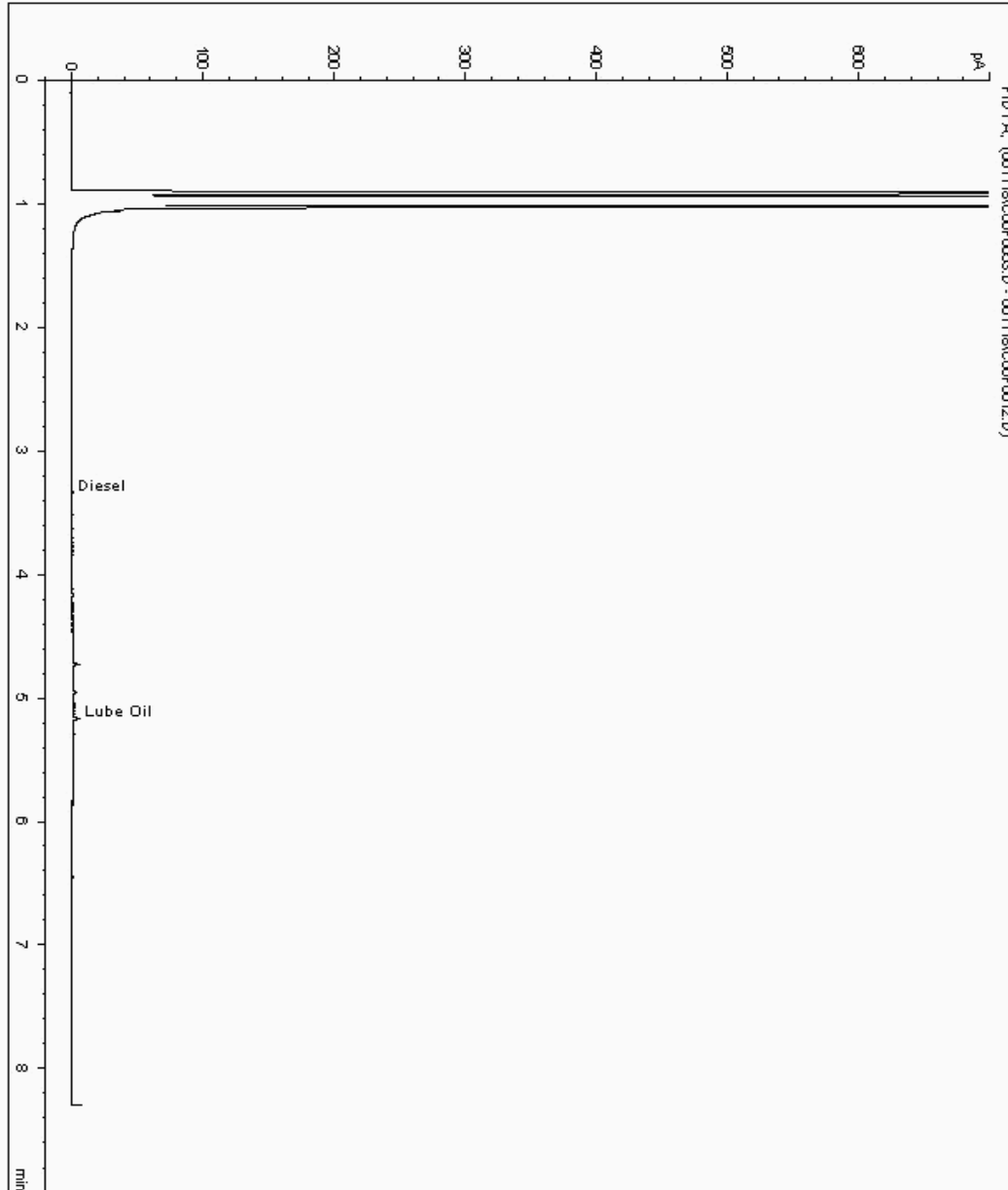
Analysis: TPH c6-40 Value of soil

Sample No : 17713029
Sample ID : OATH 2

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641788-
Date Acquired : 12/06/2018 02:16:56 PM
Units : mg/kg
Sample Multiplier : 1.821
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

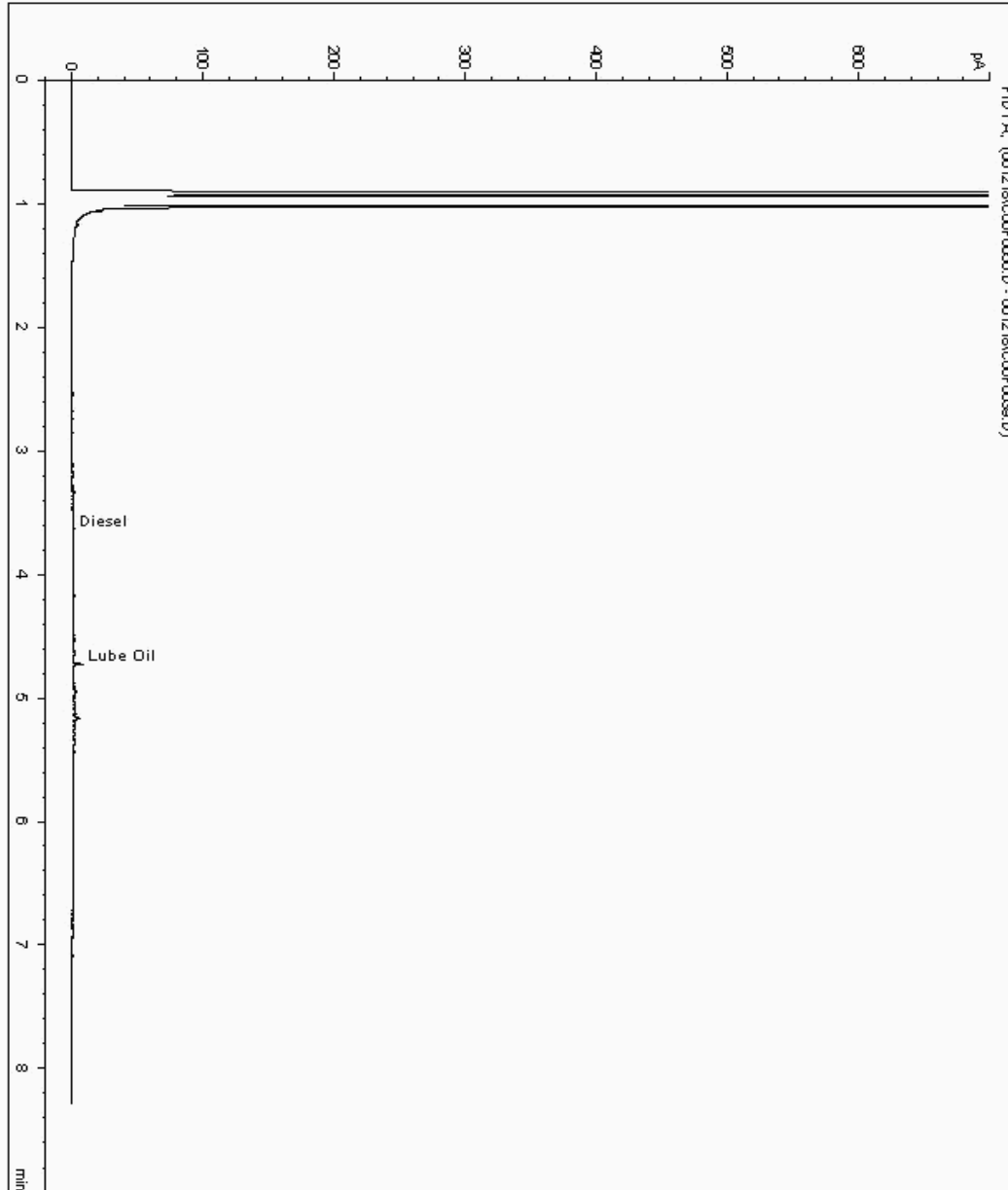
Analysis: TPH c6-40 Value of soil

Sample No : 17713091
Sample ID : OATH 4

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641828-
Date Acquired : 13/06/2018 05:18:20 PM
Units : mg/kg
Sample Multiplier : 1.923
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

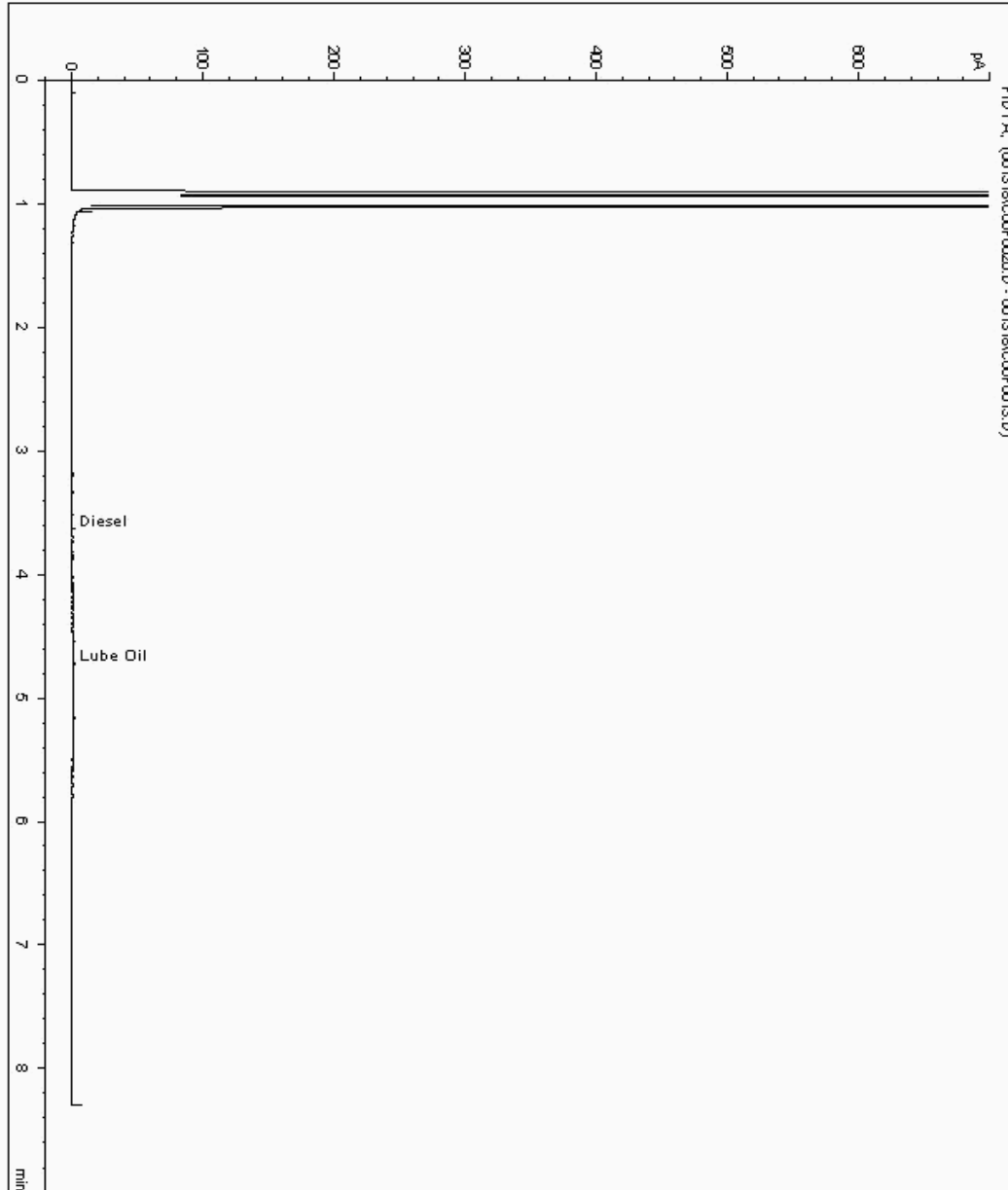
Analysis: TPH c6-40 Value of soil

Sample No : 17713108
Sample ID : OATH 20

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642196-
Date Acquired : 13/06/2018 21:10:31 PM
Units : mg/kg
Sample Multiplier : 2.088
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

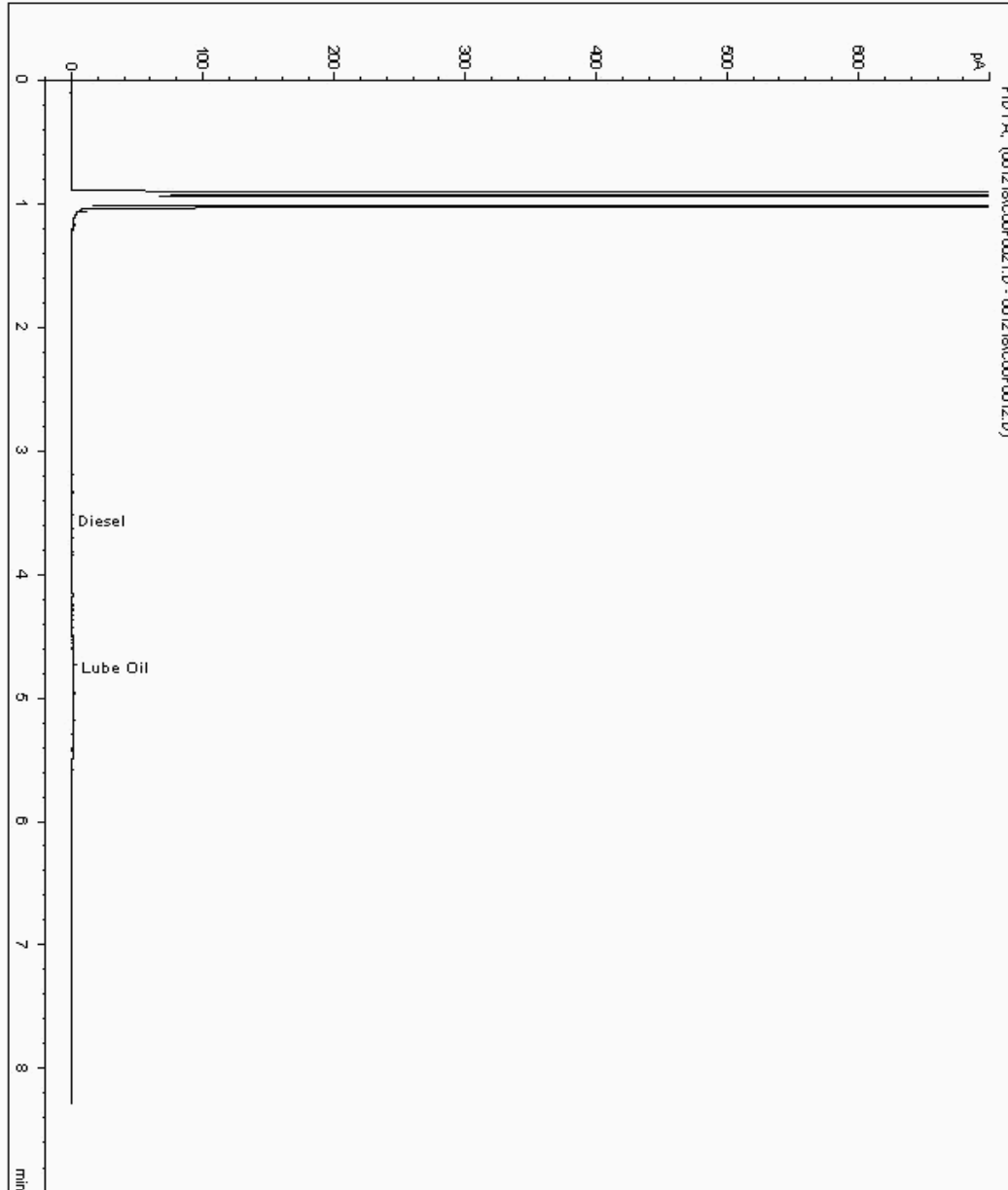
Analysis: TPH c6-40 Value of soil

Sample No : 17713127
Sample ID : OATH 16

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642113-
Date Acquired : 12/06/2018 18:46:22 PM
Units : mg/kg
Sample Multiplier : 2.004
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

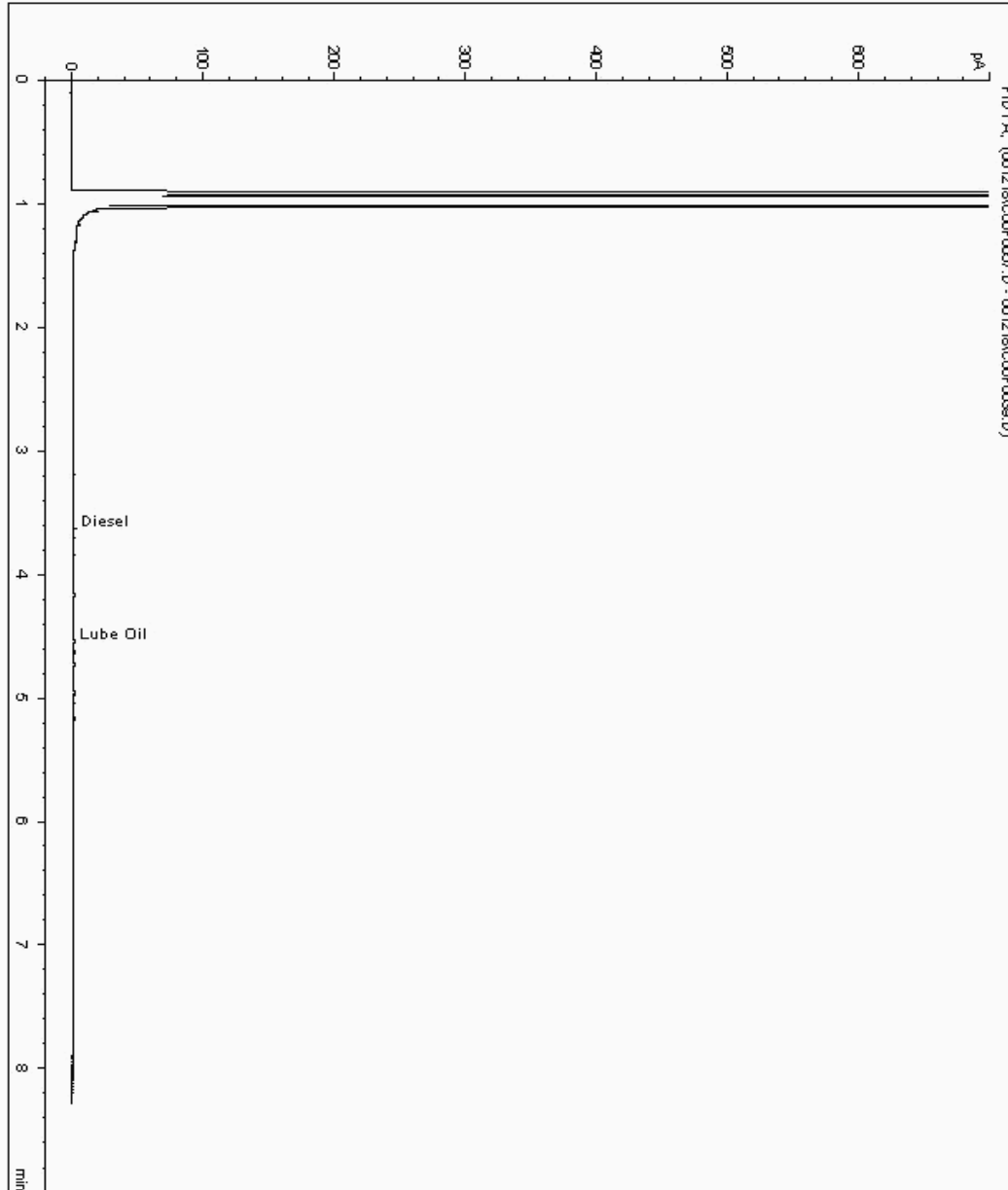
Analysis: TPH c6-40 Value of soil

Sample No : 17713202
Sample ID : OATH 21

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642230-
Date Acquired : 13/06/2018 05:36:24 PM
Units : mg/kg
Sample Multiplier : 1.808
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

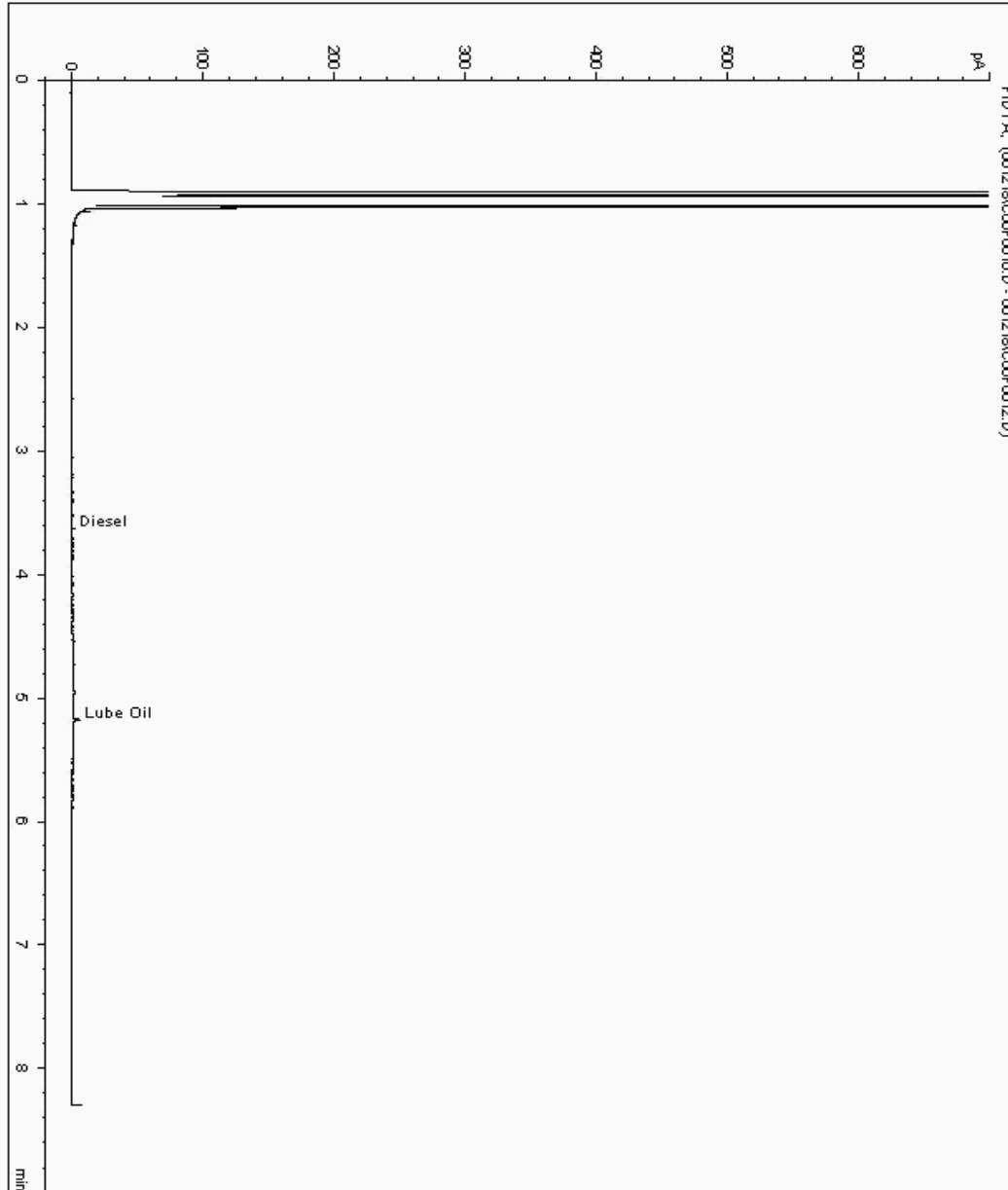
Analysis: TPH c6-40 Value of soil

Sample No : 17713216
Sample ID : OATH 17

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642135-
Date Acquired : 12/06/2018 17:14:23 PM
Units : mg/kg
Sample Multiplier : 1.992
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

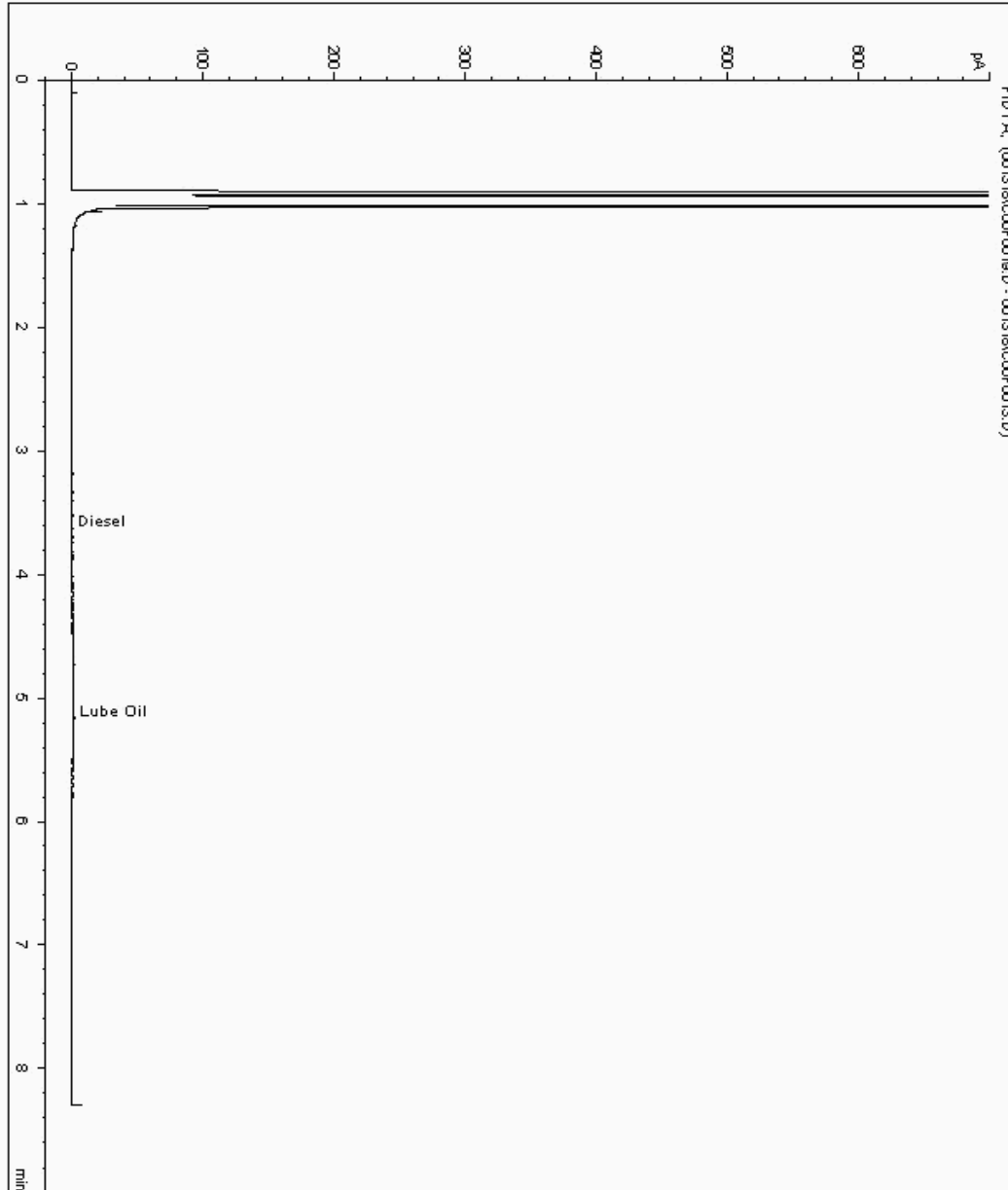
Analysis: TPH c6-40 Value of soil

Sample No : 17713283
Sample ID : OATH 13

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642029-
Date Acquired : 13/06/2018 20:52:26 PM
Units : mg/kg
Sample Multiplier : 2.146
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

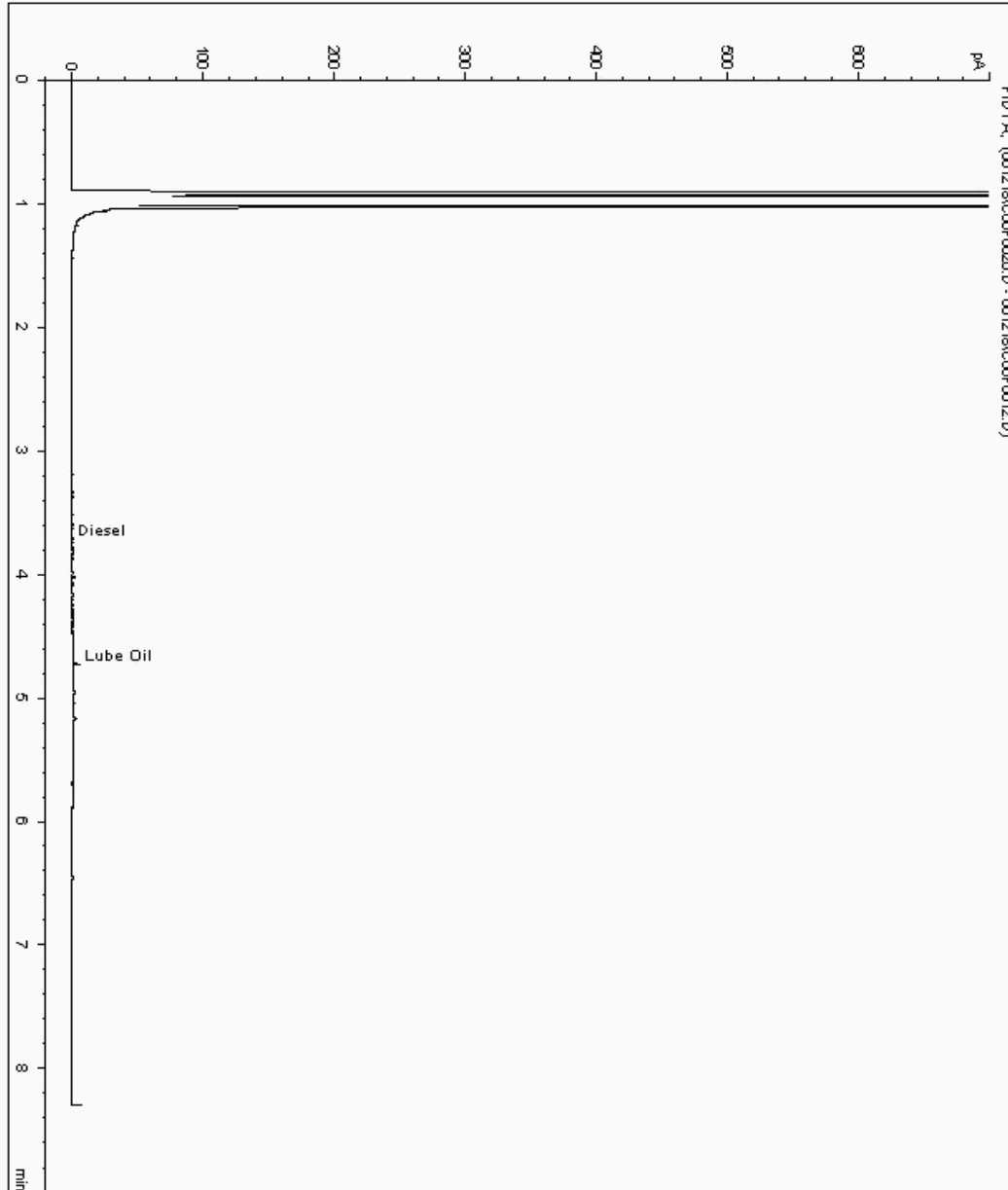
Analysis: TPH c6-40 Value of soil

Sample No : 17713305
Sample ID : OATH 14

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642061-
Date Acquired : 12/06/2018 20:18:08 PM
Units : mg/kg
Sample Multiplier : 2.217
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

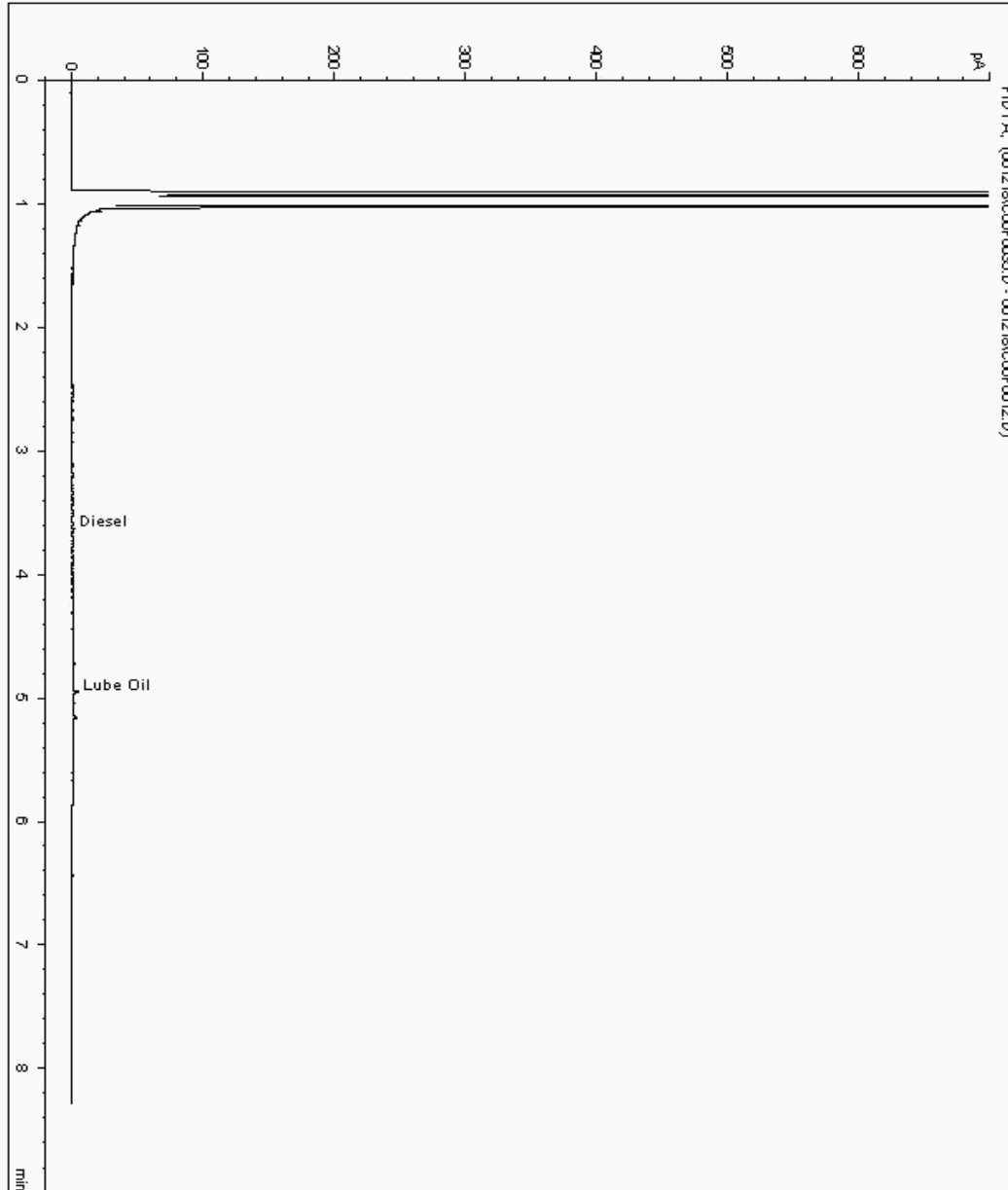
Analysis: TPH c6-40 Value of soil

Sample No : 17713331
Sample ID : OATH 15

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642092-
Date Acquired : 12/06/2018 23:01:23 PM
Units : mg/kg
Sample Multiplier : 2.037
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

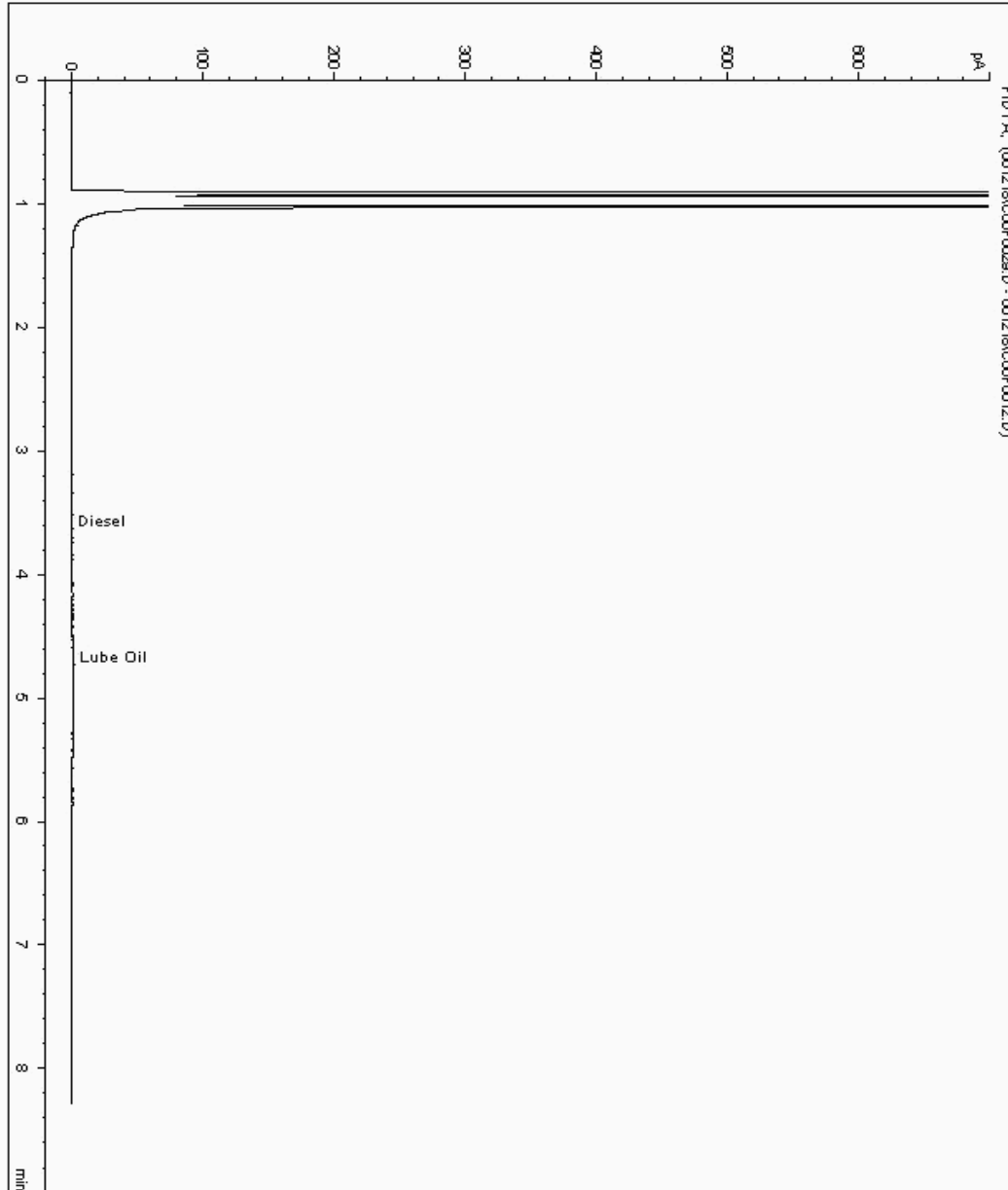
Analysis: TPH c6-40 Value of soil

Sample No : 17713394
Sample ID : OATH 19

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16642176-
Date Acquired : 12/06/2018 21:12:51 PM
Units : mg/kg
Sample Multiplier : 2.012
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

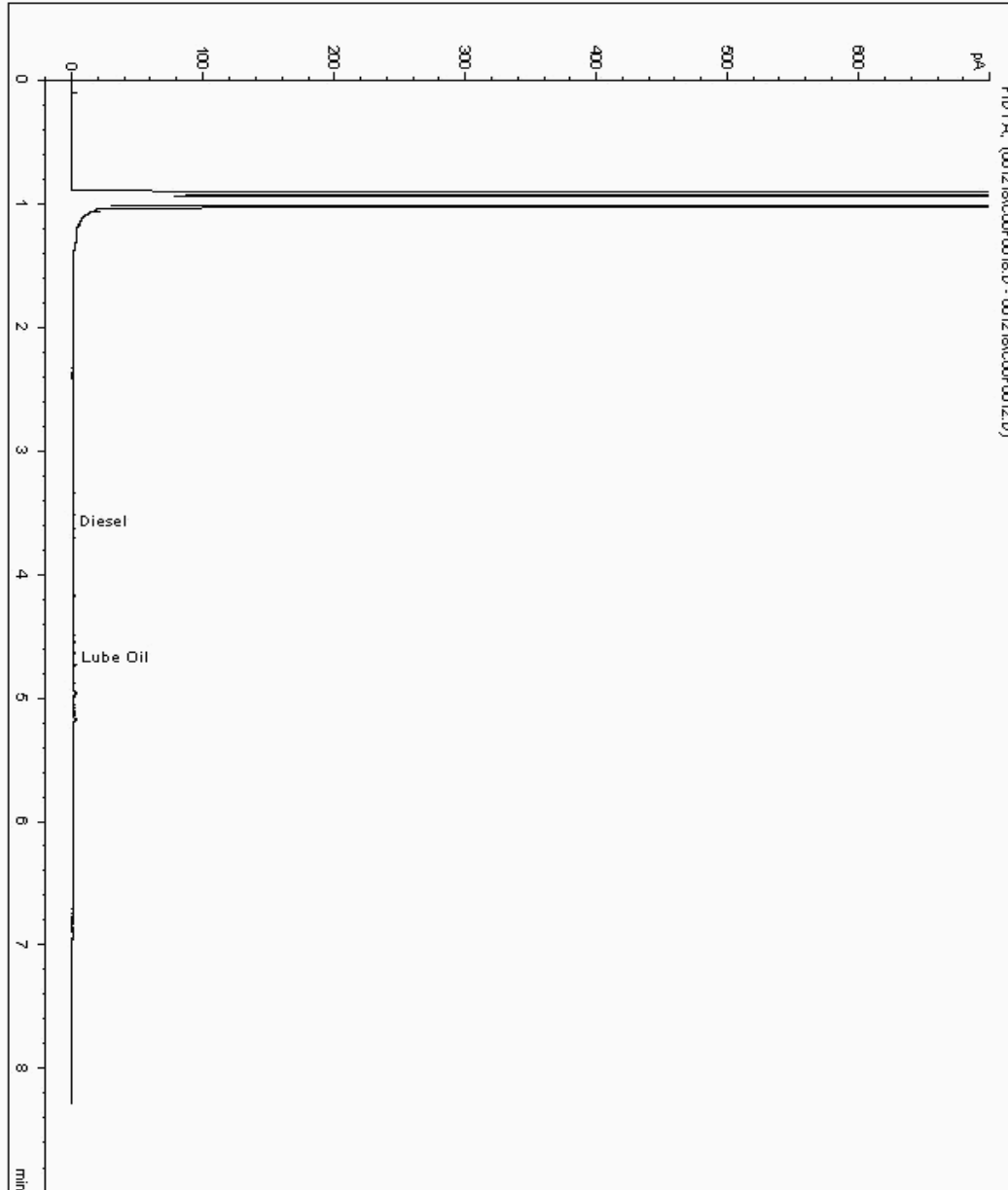
Analysis: TPH c6-40 Value of soil

Sample No : 17713460
Sample ID : OATH 6

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641868-
Date Acquired : 12/06/2018 17:51:12 PM
Units : mg/kg
Sample Multiplier : 1.721
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

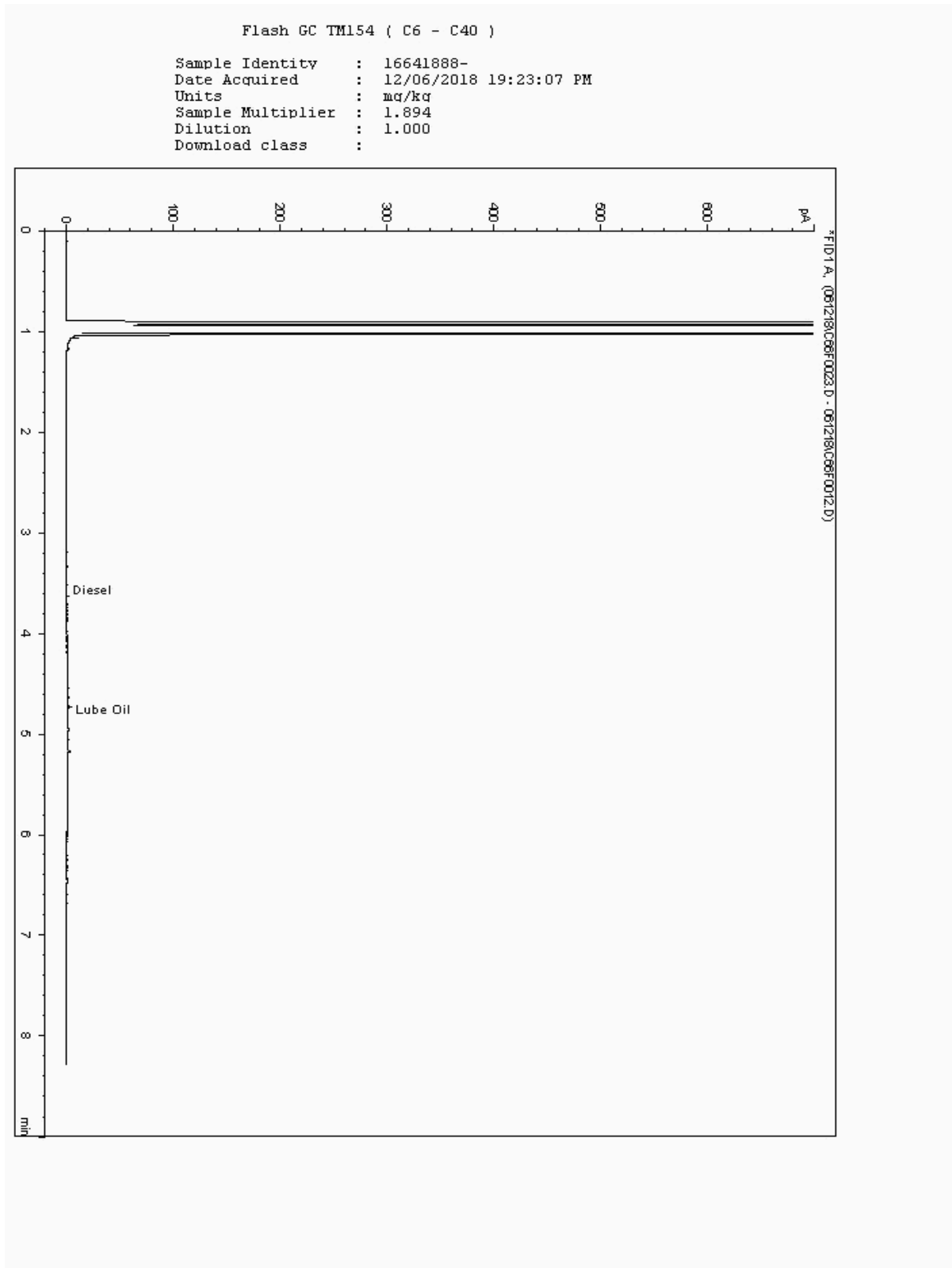
SDG:	180608-108	Client Reference:	J00281	Report Number:	460496
Location:	Oath Burrow Bridge	Order Number:		Superseded Report:	460325

Chromatogram

Analysis: TPH c6-40 Value of soil

Sample No : 17713500
Sample ID : OATH 7

Depth : 1.00 - 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

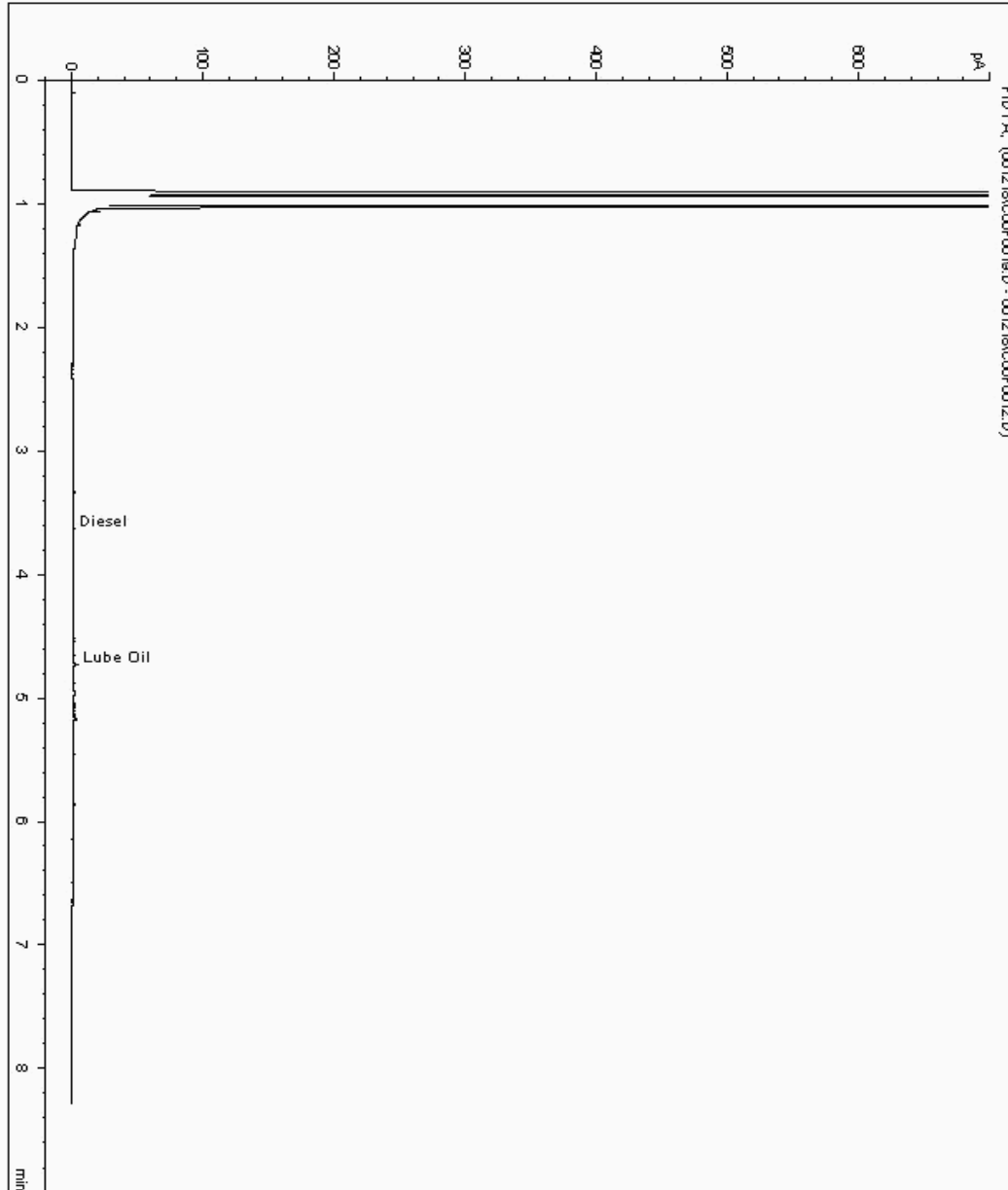
Analysis: TPH c6-40 Value of soil

Sample No : 17713545
Sample ID : OATH 8

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641908-
Date Acquired : 12/06/2018 18:09:35 PM
Units : mg/kg
Sample Multiplier : 2.058
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

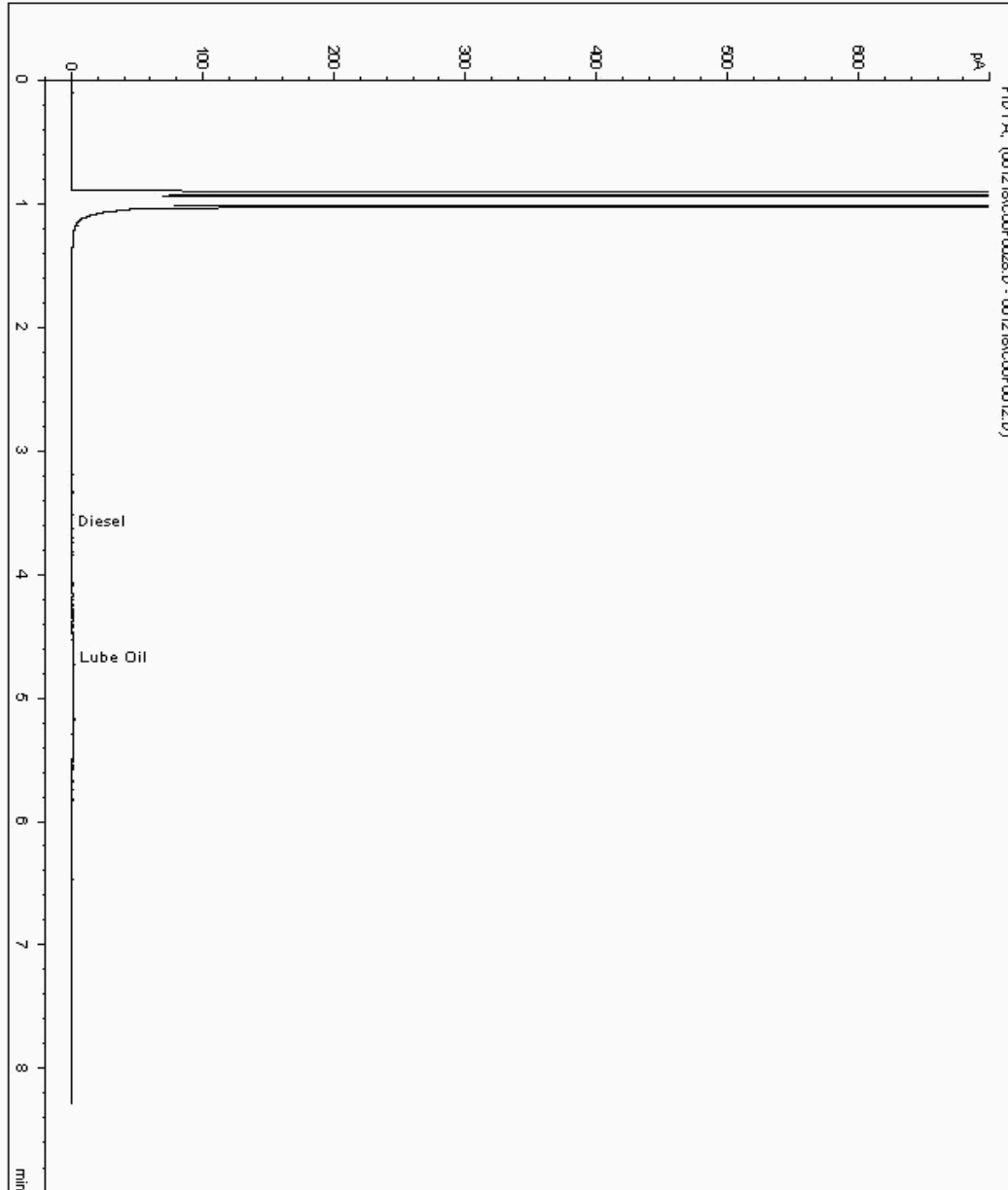
Analysis: TPH c6-40 Value of soil

Sample No : 17713580
Sample ID : OATH 12

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641991-
Date Acquired : 12/06/2018 20:54:36 PM
Units : mg/kg
Sample Multiplier : 1.923
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

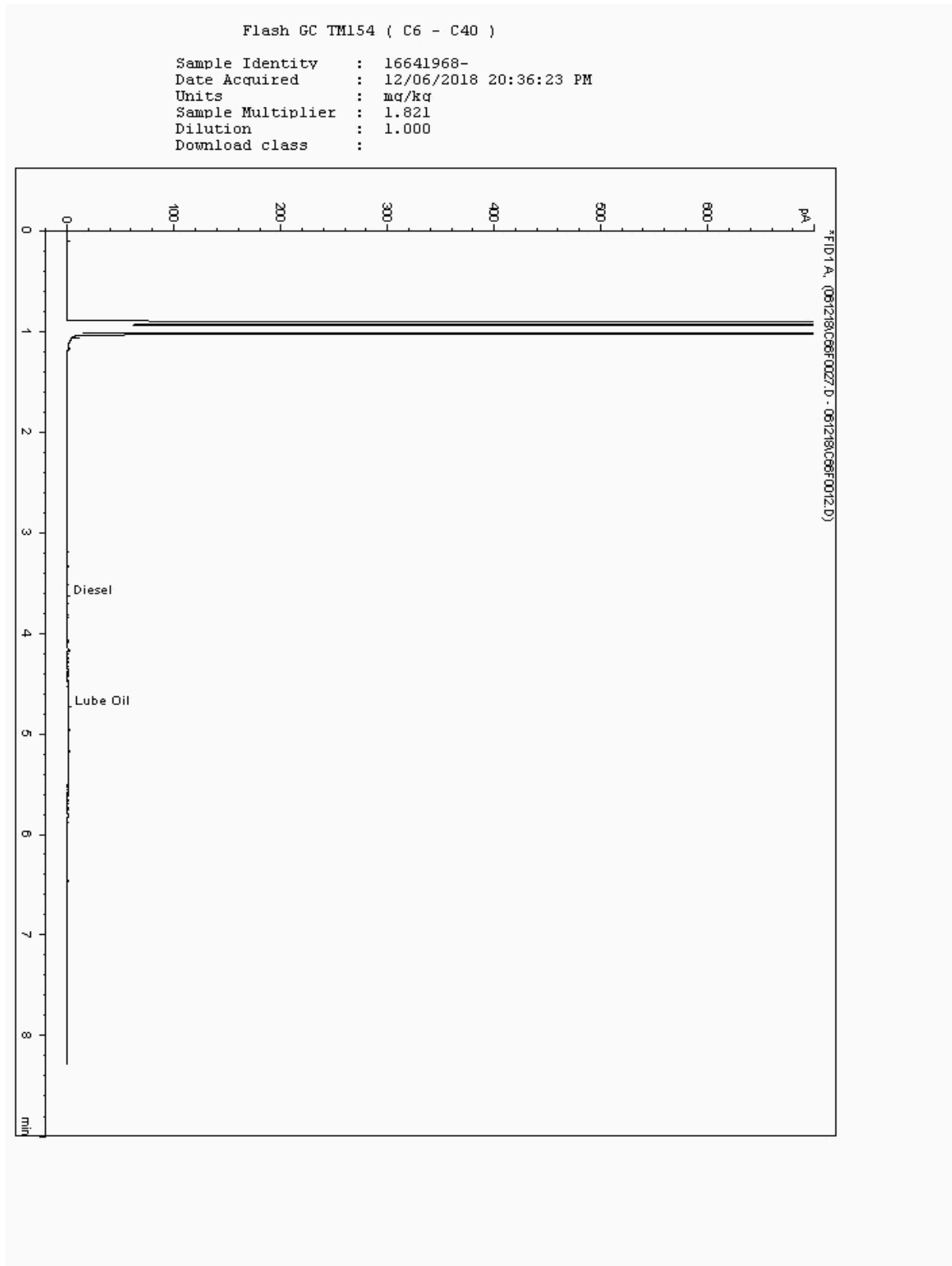
SDG:	180608-108	Client Reference:	J00281	Report Number:	460496
Location:	Oath Burrow Bridge	Order Number:		Superseded Report:	460325

Chromatogram

Analysis: TPH c6-40 Value of soil

Sample No : 17713601
Sample ID : OATH 11

Depth : 1.00 - 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

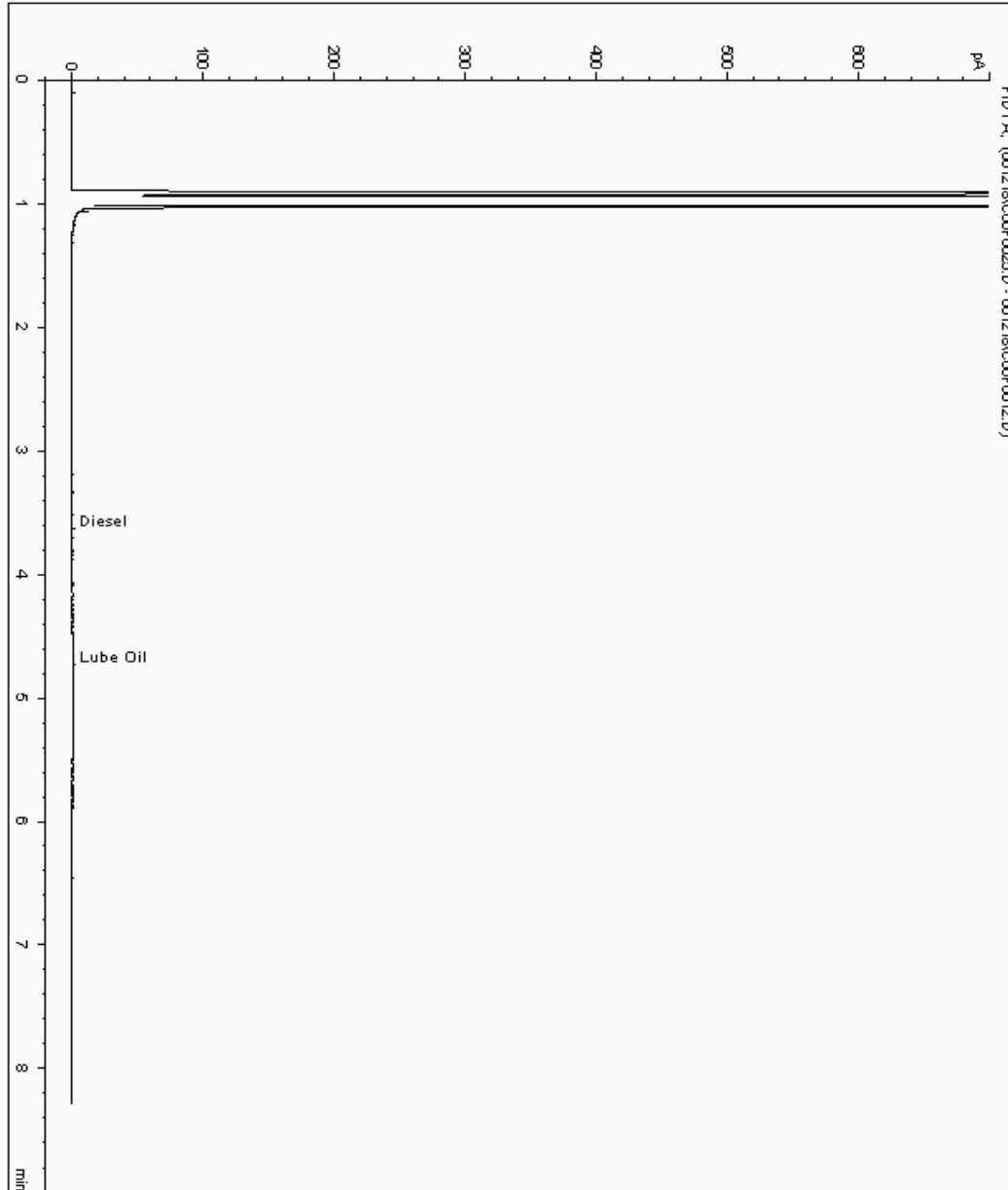
Analysis: TPH c6-40 Value of soil

Sample No : 17713637
Sample ID : OATH 9

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641928-
Date Acquired : 12/06/2018 19:59:52 PM
Units : mg/kg
Sample Multiplier : 1.894
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

Validated

SDG: 180608-108
Location: Oath Burrow Bridge

Client Reference: JOO281
Order Number:

Report Number: 460496
Superseded Report: 460325

Chromatogram

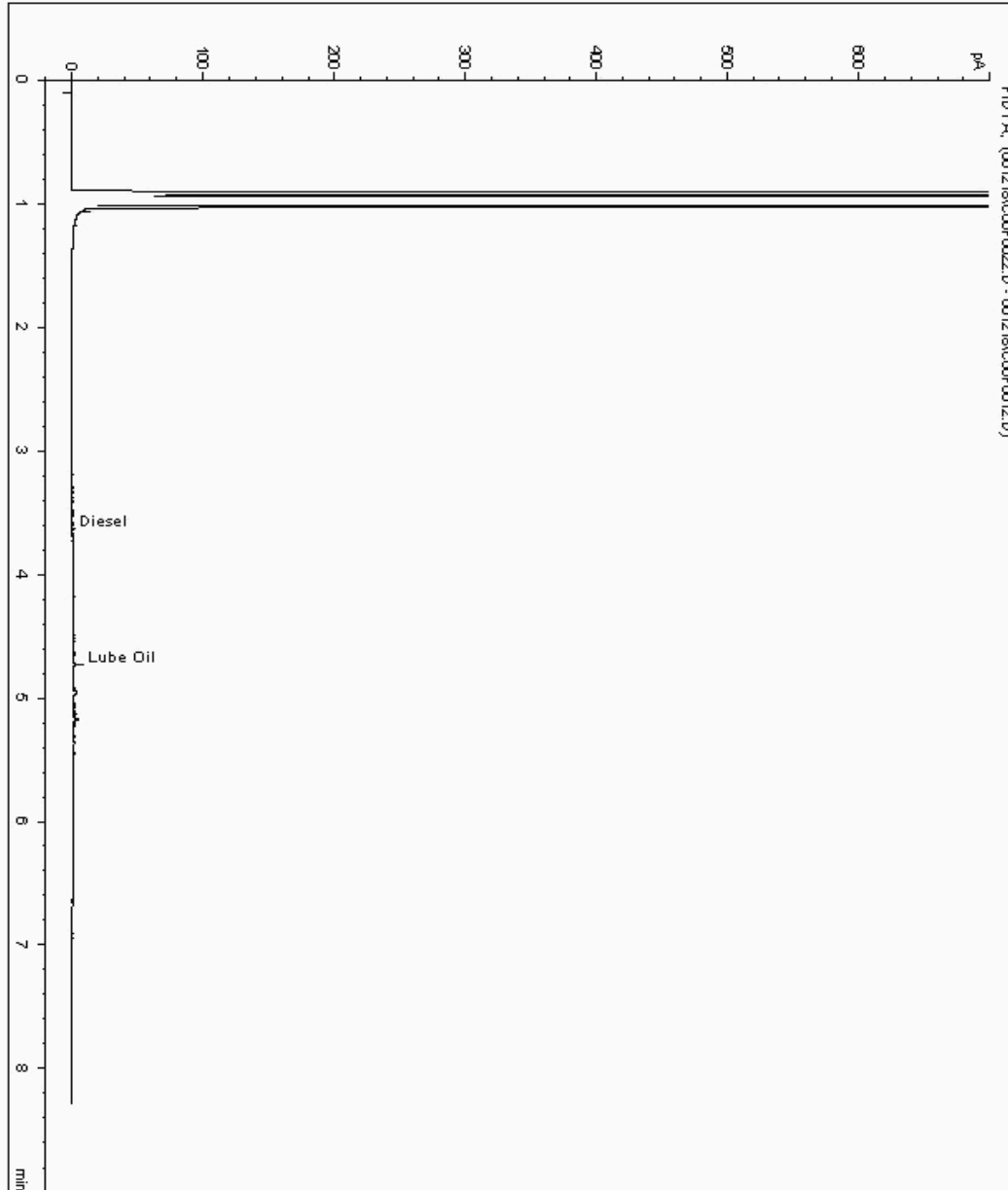
Analysis: TPH c6-40 Value of soil

Sample No : 17713653
Sample ID : OATH 10

Depth : 1.00 - 1.00

Flash GC TM154 (C6 - C40)

Sample Identity : 16641948-
Date Acquired : 12/06/2018 19:04:45 PM
Units : mg/kg
Sample Multiplier : 1.953
Dilution : 1.000
Download class :





CERTIFICATE OF ANALYSIS

SDG:	180608-108	Client Reference:	JOO281	Report Number:	460496
Location:	Oath Burrow Bridge	Order Number:		Superseded Report:	460325

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

General

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asteststos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix B

Soil Screening Tables

ALS								Customer Sample ID	OATH 1	OATH 2	OATH 3	OATH 4	OATH 5	OATH 6	OATH 7	OATH 8	OATH 9	OATH 10	OATH 11	OATH 12	OATH 13	OATH 14	OATH 15	OATH 16	OATH 17	OATH 18	OATH 19	OATH 20	OATH 21	
Hydrogeo Ltd Abergavenny (8818)								Depth	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	
Oath Burrow Bridge								Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	
All results expressed on a dry weight basis								Sampled Date	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	
								Report Completed Date	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Analysis	Units	LOD	Normal Background Conc.	Potentially Toxic Elements (PTEs)	Ecological SSV	S4UL 6% SOM	Max	Average																						
Sample Description																														
Colour	No units								Light Brown	Light Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Light Brown	Light Brown	Dark Brown	Dark Brown	Dark Brown	Light Brown	Dark Brown	Light Brown	Light Brown	
Description	No units								Silt Loam	Silt Loam	Clay Loam	Clay Loam	Clay Loam	Silt Loam	Clay Loam	Clay Loam	Clay Loam	Clay Loam	Clay Loam	Clay Loam	Silt Loam	Silty Clay	Silt Loam	Silt Loam	Clay Loam	Silt Loam	Clay Loam	Silt Loam	Silty Clay	
Inclusion 1)	No units								Stones	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	None	Vegetation	
Inclusion 2)	No units								Vegetation	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Moisture Content Ratio (% of as received sample)	%						32	27.71	26	29	22	26	29	32	27	27	29	25	26	31	29	19	32	26	30	32	28	26	31	
Nutrients																														
Soil Organic Matter (SOM)	%	<0.35				-	7.22	6.12	6.65	6.67	6.76	7.09	5.93	6.26	7.22	5.12	5.88	6.81	5.69	5.78	5.84	6.43	7	4.98	6.05	6.55	5.21	5.31	5.24	
Extractable Potassium (Top Soil)	mg/l	<20					201	140.12	159	165	139	107	140	71.6	86.7	166	96.9	96.3	114	111	158	122	201	123	200	162	165	192	167	
Extractable Magnesium (Top Soil)	mg/l	<40					194	119.10	106	114	108	103	108	71.4	80.9	129	89	86.9	91.7	102	152	92.3	148	131	167	135	145	194	147	
Phosphate (Bicarbonate Extractable) as mg/l P	mg/l	<2					170	77.08	170	137	130	113	93.3	108	48.3	78.9	89.4	128	79.6	69.1	34.6	65.2	37.2	71.7	28.3	31.6	37.1	32.4	36	
Inorganics																														
Chloride (soluble)	mg/kg	<5					44.3	28.67	17.1	20.1	15.6	22.8	35.9	25.8	18	31	21.9	19.1	29.2	24.4	34.2	39.7	37	23.7	37.3	37.3	44.3	44.2	23.4	
pH	pH Units	<1					8.37	7.96	8.06	7.87	7.96	7.72	7.8	7.77	7.92	7.9	8.1	7.81	8.01	7.93	7.88	8.2	8.04	7.94	7.9	7.87	8	8.04	8.37	
Nitrate as N, 2:1 water soluble	mg/kg	<0.226					7.82	3.17	3.85	6.35	3.5	5.33	1.33	3.73	4.21	1.86	4	7.82	2.92	1.29	<0.226	5.3	0.504	2.83	<0.226	0.702	<0.226	0.887	0.579	
Exchangeable Ammonia as N	mg/kg	<12					<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	
Nitrite (soluble) as N	mg/kg	<0.03					2.99	0.53	2.99	2.24	0.426	0.795	0.227	0.459	0.321	0.202	0.127	0.475	0.143	0.157	0.141	1.23	0.213	0.204	0.138	0.277	0.168	0.17	0.125	
Fluoride, 2:1 water soluble	mg/kg	<1		500			1.87	1.32	<1	<1	<1	<1	1.36	<1	1.21	1.32	1.31	1.03	1.41	1.45	1.38	1.16	1.4	1.13	1.18	1.15	1.22	1.59	1.87	
Metals - (Solids)																														
Antimony	mg/kg	<0.6	0.7		37		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	
Arsenic	mg/kg	<0.6	18.4	50.0		37	13.8	9.02	13.8	10.3	8.83	8.45	9.09	9.17	8.51	8.76	8.1	9.3	8.48	8.42	8.54	10.4	8.01	8.36	8.57	8.46	8.13	8.56	9.22	
Cadmium	mg/kg	<0.02	0.5	3.0	0.6	11	0.643	0.33	0.643	0.471	0.424	0.381	0.325	0.37	0.389	0.284	0.292	0.418	0.306	0.298	0.228	0.418	0.226	0.281	0.233	0.232	0.226	0.227	0.22	
Chromium	mg/kg	<0.9	76.8	400.0		910	73.5	27.27	73.5	46	42.3	35.8	26.3	31.6	34.7	22.3	23.6	42.1	21.4	22.3	14.6	24.9	14.8	19.9	15.3	14.2	14.7	15.1	17.3	
Cobalt	mg/kg	<0.1	13.2		4.2		11.1	8.35	11.1	9.74	8.39	7.88	8.63	8.55	7.9	8.5	7.36	8.34	7.85	7.84	8.07	7.56	7.89	8.38	8.17	7.93	7.97	8.17	9.04	
Copper	mg/kg	<1.4	32.3	200.0	35.1	2400	34.5	18.91	34.5	28.1	22.6	21.7	18.8	21.1	20.3	17.2	15.6	22.7	16.7	16.4	15.1	18.8	15.3	15.9	15.3	15.7	14.1	15.4	15.8	
Lead	mg/kg	<0.7	55.8	300.0		C4SL: 200	39.6	29.30	39.6	28.6	27.9	26.6	30.3	29.2	27.6	29.4	25.2	27.5	27.7	27.1	29.6	27.7	29.1	29.2	30.6	29.2	29.2	30.6	33.4	
Mercury	mg/kg	<0.14	-	1.0		1.2	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	
Molybdenum	mg/kg	<0.1	5.8	4.0	5.1		2.11	0.88	2.11	1.8	1.23	1.13	0.738	1.04	0.987	0.686	0.726	1.24	0.725	0.745	0.544	0.868	0.544	0.683	0.535	0.572	0.49	0.552	0.482	
Nickel	mg/kg	<0.2	37.1	110.0	28.2	180	29.2	20.51	29.2	25.2	21	19.9	20.8	21.3	19.6	20.6	18.2	21.2	19.1	19.1	19.2	19.1	18.9	20	19.4	18.8	19	19.5	21.6	
Selenium	mg/kg	<1	1.1	3.0		250	1.09	1.09	1.09	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Silver	mg/kg	<10	-		0.3		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Sodium	mg/kg	<7	-				454	368.14	189	222	314	308	387	330	356	396	393	281	358	416	433	314	454	408	434	439	447	427	425	
Vanadium	mg/kg	<0.2	100.7		2	410	44.8	25.60	44.8	38.3	29.7	26.3	25.6	26.4	25	24.4	20.6	28	22.6	22.4	21.9	23.9	21.5	23.8	22.3	21.1	21.7	22.1	25.3	
Zinc	mg/kg	<1.9	104.0	300.0	35.6	3700	159	114.23	159	151	115	111	118	120	109	116	96.9	116	104	104	108	98	106	111	111	105	106	111	123	
TPH Screen (EZ Flash)																														
TPH >C6-C40	mg/kg	<10					250	170.83	247	195	200	245	243	138	215	127	160	250	159	142	123	158	145	147	185	144	140	145	79.4	
PAH																														
Naphthalene	mg/kg	<0.009				13	0.104	0.06	0.0229	0.0254	0.0571	0.0479	0.0433	0.0473	0.0624	0.0456	0.0607	0.0503	0.0599	0.0466	0.0786	0.0661	0.0591	0.05	0.0501	0.104	0.0719	0.0767	0.0543	
Acenaphthylene	mg/kg	<0.012				920	0.0623	0.04	0.0364	<0.024	0.0588	0.0455	0.0312	0.0378	0.0537	0.034	0.0448	0.0475	0.0475	0.0416	0.0545	0.0468	0.0444	0.0336	0.0345	0.0623	0.043	0.0492	0.0338	
Acenaphthene	mg/kg	<																												

ALS							Customer Sample ID		OATH 1	OATH 2	OATH 3	OATH 4	OATH 5	OATH 6	OATH 7	OATH 8	OATH 9	OATH 10	OATH 11	OATH 12	OATH 13	OATH 14	OATH 15	OATH 16	OATH 17	OATH 18	OATH 19	OATH 20	OATH 21
Hydrogeo Ltd Abergavenny (8818)							Depth	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0
Oath Burrow Bridge							Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
All results expressed on a dry weight basis							Sampled Date	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018
							Report Completed Date	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018
Analysis	Units	LOD	Normal Background Conc.	Potentially Toxic Elements (PTEs)	Ecological SSV	S4UL 6% SOM	Max	Average																					
Semi-Volatile Organic Compounds (SVOCs)																													
Phenol	mg/kg	<0.1				1100	<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Pentachlorophenol	mg/kg	<0.1			0.6	4.5	<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
n-Nitroso-n-dipropylamine	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Nitrobenzene	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Isophorone	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Hexachloroethane	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Hexachlorocyclopentadiene	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Hexachlorobutadiene	mg/kg	<0.1				1.6	<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Hexachlorobenzene	mg/kg	<0.1			0.002		<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
n-Dioctyl phthalate	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Dimethyl phthalate	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Diethyl phthalate	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
n-Dibutyl phthalate	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Dibenzofuran	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Carbazole	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Butylbenzyl phthalate	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
bis(2-Ethylhexyl) phthalate	mg/kg	<0.1			13		0.163	0.16	0.163	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
bis(2-Chloroethoxy)methane	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
bis(2-Chloroethyl)ether	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
Azobenzene	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
4-Nitrophenol	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
4-Nitroaniline	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
4-Methylphenol	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
4-Chlorophenylphenylether	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
4-Chloroaniline	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
4-Chloro-3-methylphenol	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
4-Bromophenylphenylether	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
3-Nitroaniline	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
2-Nitrophenol	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
2-Nitroaniline	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
2-Methylphenol	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
1,2,4-Trichlorobenzene	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
2-Chlorophenol	mg/kg	<0.1				4.5	<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
2,6-Dinitrotoluene	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
2,4-Dinitrotoluene	mg/kg	<0.1					<0.1	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-
2,4-Dimethylphenol	mg/kg	<0.1					<0.																						

ALS							Customer Sample ID		OATH 1	OATH 2	OATH 3	OATH 4	OATH 5	OATH 6	OATH 7	OATH 8	OATH 9	OATH 10	OATH 11	OATH 12	OATH 13	OATH 14	OATH 15	OATH 16	OATH 17	OATH 18	OATH 19	OATH 20	OATH 21
Hydrogeo Ltd Abergavenny (8818)							Depth		0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	
Oath Burrow Bridge							Sample Type		SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	
All results expressed on a dry weight basis							Sampled Date		07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018	07/06/2018		
							Report Completed Date		18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018	18/06/2018		
Analysis	Units	LOD	Normal Background Conc.	Potentially Toxic Elements (PTEs)	Ecological SSV	S4UL 6% SOM	Max	Average																					
Combined Pesticides / Herbicides																													
Tecnazene	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Hexachlorobenzene	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Trifluralin	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Phorate	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
alpha-Hexachlorocyclohexane (HCH)	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Quintozene (PCNB)	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Triallate	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Disulfoton	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Heptachlor	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Aldrin	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Chlorothalonil	mg/kg	<0.5					<1	<1	<1	-	-	<0.5	-	-	-	<0.5	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Telodrin	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
beta-Hexachlorocyclohexane (HCH)	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Isodrin	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Heptachlor epoxide	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Triadimefon	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Pendimethalin	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
o,p-DDE	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Endosulphan I	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Trans-chlordane	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
cis-Chlordane	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
p,p-DDE	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Dieldrin	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
o,p'-DDD (TDE)	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Endrin	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
o,p-DDT	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
p,p-TDE (DDD)	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Endosulphan II	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
p,p-DDT	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
o,p-Methoxychlor	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
p,p-Methoxychlor	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Endosulphan sulphate	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Permethrin I	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	
Permethrin II	mg/kg	<0.25					<0.5	<0.5	<0.5	-	-	<0.25	-	-	-	<0.25	-	-	-	<0.05	-	-	-	<0.05	-	-	-	<0.05	

APPENDIX 2C: DRAFT TEMPLATE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Oath to Burrowbridge Dredging

Construction Environmental Management Plan Report Status (Draft Template)

Client: Parrett Internal Drainage Board

Date: June 2019



DOCUMENT CONTROL

Report prepared for:

Parrett Internal Drainage Board

DRAFT TEMPLATE

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DOCUMENT REVISIONS

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1.0	Draft Template for Inclusion in ES	June 2019

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DRAFT TEMPLATE

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1 INTRODUCTION

1.1 BACKGROUND

This Construction Environmental Management Plan (CEMP) has been prepared by Johns Associates Ltd, working on behalf of Parrett Internal Drainage Board (PIDB) with the aim of providing environmental control and management procedures during dredging works between Stathe and the Confluence of the River Parrett with the River Tone.

This document is submitted as a draft template for consideration in the Environmental Statement to support the decision-making process and its final content will reflect the outcome of further consultation and other details to be finalised through the decision-making process and/or other permitting regimes and by the appointed main contractor.

The dredging will be taking place within the 2.2km of the River Parrett between Stathe Bridge and the confluence with the River Tone (Figure 1.1 below).

This CEMP forms part of the decision making for the proposed dredging works and will be a live document and updated during the life of the project to ensure that it remains suitable and relevant to effectively deliver the project environmental commitments.

The dredging works will be undertaken by an appointed contractor and its sub-contractors, for and on behalf of the PIDB.

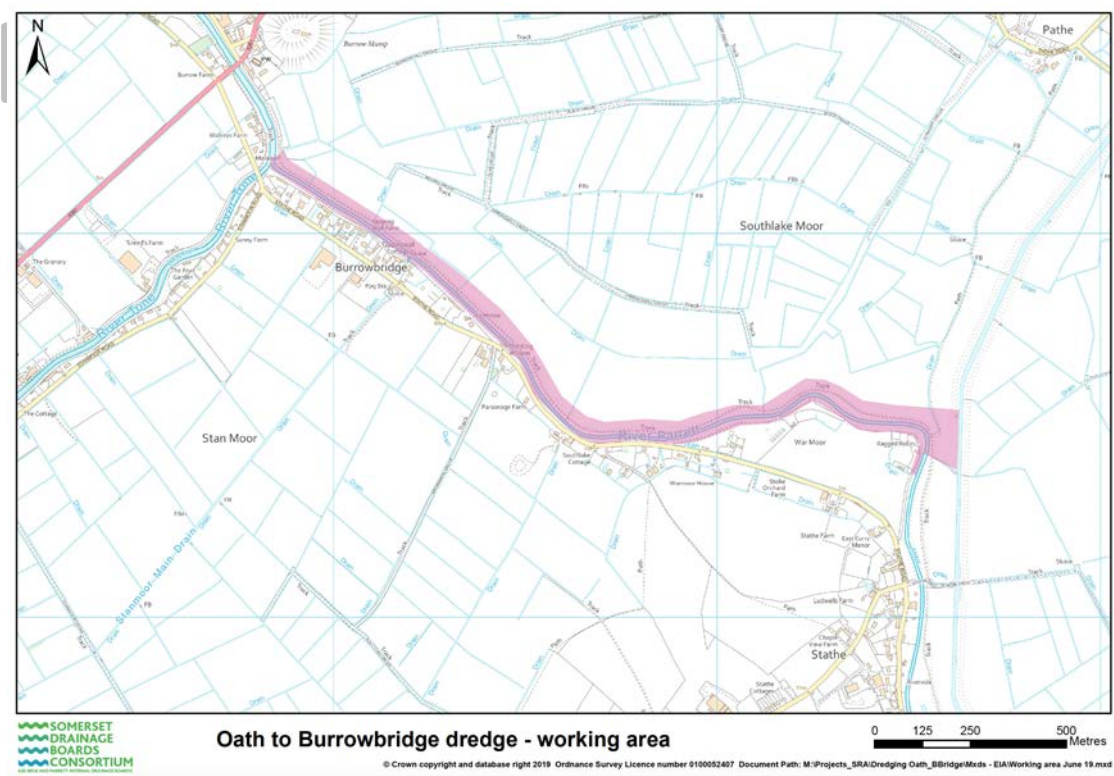


Figure 1.1 Area of Works

1.2 OBJECTIVES OF THE CEMP

The CEMP provides details of the control measures and procedures which PIDB and its principal contractor XXXXXXXX propose to implement to avoid, minimise and mitigate the construction impacts on the environment at the development site and surrounding areas.

The CEMP summarises out the finalised dredging and reinstatement methodology including the control of the dredging process, the dredging process, site operations including access and haulage routes, site compound and storage areas, traffic logistics and the environmental control measures which will be undertaken during dredging.

The primary objective is to guide the implementation of effective environmental management during the dredging and:

- To comply with relevant environmental legislation, duties and obligations and avoid prosecutions for the contravention of environmental law and regulations;
- To maintain and raise the awareness of all contractors of their environmental responsibilities throughout the construction phase. This will be by means of frequent awareness briefings and training sessions and construction 'tool box' talks;
- To achieve zero environmental pollution incidents during the construction phase (i.e. noise and public nuisance, emergency spills, uncontrolled discharges of contaminated runoff, , inadvertent habitat clearance and tree removal etc); and
- To effectively integrate environmental considerations into all aspects of decision-making during the dredging works.

This document had been formed to avoid, minimise and mitigate against any dredging effects on the environment and surrounding community. It should be treated as a living document with reviews being carried out at set intervals and new information added as appropriate.

1.3 OTHER RELEVANT DOCUMENTS

This CEMP should be read in conjunction with the following supporting documents included in the Environmental Statement of the dredging proposals prepared by Johns Associates:

- Description of Development
- Chapters relating to Water Environment, Biodiversity and Population including embedded and additional mitigation, management and monitoring.
- Plans, elevations and site layout
- Precautionary Ecological Method Statements
- Water Vole Licence
- Badger Licence
- D1 and U1 Exemptions from an Environmental Permit
- SSSI Assent

1.4 STRUCTURE OF THE CEMP

This CEMP is divided into the following sections:

- Section 1: Introduction: including the objectives of this CEMP and reference to other relevant documents etc.
- Chapter 2: River Parrett between Stathe Bridge and Confluence with the Tone: provides a background description of the Works Area, its local setting, a summary of the proposed scheme and a summary of the key environmental constraints and opportunities;

- Section 3: Dredging Methodology: describes the dredging methodology associated with the proposed works;
- Section 4: Construction (dredging) Related Environmental Management and Control Procedures: describes the environmental management controls to be implemented by the CEMP.
- Section 5: Construction (dredging) Related Environmental Risks and Control: provides an environmental matrix which summarises the key related environmental effects associated with the dredging works.

1.5 USEFUL CONTACTS

For issues related to the content of this document please contact:

- to be completed once contractor has been appointed.

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2 THE DREDGING SITE

2.1 SITE LOCATION

2.2 EXISTING OPERATION

2.3 SCHEME DESCRIPTION

2.4 KEY ENVIRONMENTAL CONSTRAINTS AND OPPORTUNITIES

DRAFT TEMPLATE

3 CONSTRUCTION METHODOLOGY

3.1 INTRODUCTION

3.2 SITE COMPOUND AND STORAGE AREAS

3.3 ON-SITE PLANT AND EQUIPMENT

3.4 DREDGING TRAFFIC

3.4.1 Construction traffic route

3.4.2 Deliveries

3.4.3 Signing

3.4.4 Condition Survey

3.4.5 Construction Access

3.4.6 Working Hours

3.4.7 Duration

3.5 DREDGING WORKFORCE

3.6 DREDGING PROGRAMME

3.7 ENVIRONMENTAL MITIGATION

4 CONSTRUCTION RELATED ENVIRONMENTAL MANAGEMENT AND CONTROL PROCEDURES

4.1 INTRODUCTION

This section provides a description of the Construction Environmental Management and Control Procedures that will be implemented throughout the duration of the construction phase of the dredging works.

4.2 LEGAL COMPLIANCE

4.3 ENVIRONMENTAL ROLES AND RESPONSIBILITIES

4.4 ENVIRONMENTAL TRAINING, AWARENESS AND COMPETENCY

4.5 DOCUMENT CONTROL AND RECORD KEEPING

4.6 ENVIRONMENTAL MONITORING

4.7 AUDITING AND COMPLIANCE CHECKS

4.8 REVIEW OF ENVIRONMENTAL PERFORMANCE

4.9 HEALTH AND SAFETY MANAGEMENT

4.9.1 Emergency Preparedness and Response

4.10 PUBLIC AND COMMUNITY RELATIONS

4.10.2 Public Complaints Handling

5 CONSTRUCTION RELATED ENVIRONMENTAL RISKS AND CONTROL MEASURES

5.1 INTRODUCTION

This section considers the construction related environmental risks and control measures associated with the dredging works.

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10/05/2019

Pioneer Dredging of the River Parrett – Oath to Burrowbridge

Appendix B - Specification

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1.0 SPECIFICATION

- 1.1 The Specification consists of:
- The ‘Civil Engineering Specification for the Water Industry’, 7th edition (CESWI-7), published by WRc in March 2011 and which is supplemented by the Supplementary Clauses included in section 3.0 below.
 - The General Clauses listed below specific to this specification document.
- 1.2 In so far as the drawings, notes on drawings or General Clauses or Supplementary Clauses may conflict with or be inconsistent with any provision of CESWI-7, the drawings, notes and General Clauses and Supplementary Clauses shall always prevail.
- 1.3 Any clauses in the Specification which relate to work or materials not required by the *works* shall be deemed not to apply.
- 1.4 The following definitions apply to the roles defined in CESWI-7 and/or the following General Special and Clauses:
- The “Client” is the *Employer*;
 - The “Contract Administrator” or the “Supervisor” is the *Employer* or his delegate;
 - The “Constructor” is the *Contractor*.

2.0 GENERAL CLAUSES

2.1 Public Relations

All activities are to be carried out so to minimise any disruption and nuisance to the local population, ensure that adequate notice of any temporary closures or traffic restrictions necessary to carry out works is given and good liaison with landowners and the public is maintained. The *Contractor* shall be responsible for public relations in consultation with the *Employer*. See also section 1.6 of the Supplementary clauses to CESWI relating to consultation with landowners and tenants.

2.2 Access for the Employer

The *Contractor* shall allow access to Board members and staff of the Parrett Internal Drainage Board to inspect the *works*. Access shall be in accordance with the *Contractor’s* health and safety policy. Instructions concerning the *works* shall only be accepted from designated officers of the *Employer* or delegates appointed in accordance with Clause 14.4 of the *conditions of contract*.

2.3 Operations & Maintenance Manual / As-built records

The *Contractor* shall supply as-built records within 2 weeks of completion of the *works*.

3.0 SUPPLEMENTARY CLAUSES to CESWI 7th Edition

The Supplementary Clauses are arranged in sections to generally follow the format of the CESWI-7. Specification requirements related to existing clauses are numbered as additional sub clauses. New clauses unrelated to existing clauses are numbered to follow the last clause of the appropriate Section.

- Where the Works Information refers to the “*Project Manager*” or “*Engineer*”, this is interpreted as meaning the “*Project Manager*” and/ or the “*Supervisor*” as the context demands. If the *Contractor* is in any doubt as to whether a matter should be raised with *Project Manager* or *Supervisor*, he shall ask the *Project Manager* to decide the issue.
- References in the specification to “submission for approval” or to “approval” shall be read as “submission for acceptance” or “acceptance” respectively.
- Where the specification refers to plant or equipment, the following definitions are to apply:
- “Plant” is items which (together with Materials) are intended to be included (incorporated) in the works.
- “Equipment” is items provided by the Contractor and used by him to provide the works.
- References in the Works Information to equipment should be read as references to Plant or Equipment, as the context requires.
- If the *Contractor* is in any doubt as to an interpretation, the matter should be raised with the *Project Manager* who shall decide the issue.
- References in the Works Information to the particular works information shall be read as references to the Works Information.
- References in the Works Information to the client or purchaser shall be read as references to the *Employer*.
- References in the Works Information to the Site shall be read as references to the Working Area.

SECTION 1 GENERAL

1.1 DEFINITIONS

- 7 “Dredging” means the removal and disposal of silt and other deposits from the river banks and channel irrespective of the method used.

1.2 ACCOMMODATION FOR THE CONTRACT

- 5 All temporary offices, sanitary arrangements, stores, compounds, parking areas and the like necessary for use of the staff and workforce engaged in the completion of the works and correction of defects shall be provided, erected, constructed, maintained and subsequently removed by the Contractor.
6. The *Contractor* shall be responsible for the installation, maintenance and removal of all temporary site services required, including liaison with the relevant suppliers and payment of necessary fees and costs. The *Contractor* shall also be responsible for paying any Council Taxes due. Temporary site services shall include a potable water supply, sewage disposal and waste disposal.
7. The instruments provided by the *Contractor* for the proper setting out of the *works* shall be maintained in good working order and properly calibrated at all times and shall be available for the use of the *Employer* as required for checking the setting out or taking measurements.
8. The *Contractor* shall, whenever required during working hours, provide the *Employer* with such facilities and assistance as deemed necessary by the *Employer* for the taking of levels, checking dimensions, examining works and testing, sampling or monitoring related to the *works*. The *Contractor* shall provide a capable experienced person suitable for the task in question.
9. The *Contractor* shall provide and maintain a site office for the exclusive use of the *Employer* comprising:
- Office not less than 12m²
 - Access to toilet facilities
 - Table/desk with 4 chairs
 - Minimum 4^{no}. 220-240V power points
 - Secure, lockable doors with 2 sets of keys issued to the employer
 - Adequate natural lighting and ventilation
 - Electricity, heating and hot & cold potable water supply
 - Appropriate fire fighting appliances

1.6 ENTRY ONTO THE SITE

6. The Employer will contact all landowners and tenants within the site in advance of the contract to agree the principles of entry. A statutory Notice of Entry will be served by the Employer to facilitate entry into working areas.
7. The Contractor shall deliver the works to have a minimum practicable period of occupation of any of the site.

1.7 SURVEY OF HIGHWAYS, PROPERTIES AND LAND

5. The surveys shall consist of digital photographs and a report clearly showing when and where the photographs were taken. Details of the general condition of the surveyed areas together with any specific areas of existing damage or degradation shall also be recorded.

1.8 LEVELS AND REFERENCE POINTS

5. All the levels shown on the drawings are shown in metres relative to Ordinance Survey GNSS Transformation OSTN15 and are based on the topographic survey undertaken as part of the Scheme's development. Unless demonstrated to the contrary, this survey shall be assumed to be an accurate record of the existing ground levels.
6. Before any dredging is commenced, the Contractor shall define, by appropriate means, the reference lines and levels for setting out the works. These reference points shall be regularly checked for accuracy throughout the Contract and where any displacement has occurred due to water action, vandalism, equipment movements, etc., shall be accurately reset in their former positions.

1.9 SITE FENCING AND GATES

7. The Contractor shall include his fencing and security proposals in his method statement
8. On removal of all temporary fencing, all post holes shall be immediately and properly infilled with materials to suit existing surfaces.
9. Where access to the site is required over unpaved land, the Contractor shall ensure that the land remains in a condition no worse than that which existed before commencement of the construction works. All damage caused to any part of the access route(s) and working areas shall be made good as and when directed by the Client.
10. Where additional strengthening of the temporary access and/or working area/compound is required beyond that afforded by the stripping of topsoil, a fabric sheet or Geogrid is to be laid on the sub-soil and then covered with a depth and grading of material to be designed by the Contractor and agreed by the Employer. Upon completion of the construction works the fabric and stone are to be removed and the ground reinstated to the requirements of Specification Clause 3.9.

1.10 INTERFERENCE WITH LAND INTERESTS

4. The works shall be programmed and executed in a manner that causes the least possible interference or disruption to the local community.

1.11 INTERFERENCE WITH ANY ACCESS TO PROPERTY, APPARATUS OR SERVICE

5. Vehicular access along all highways and drives shall be maintained at all times unless subject to a road closure notice. Works must be programmed and executed accordingly so as to cause the least possible disruption to traffic, farmers and the local community.

1.15 WORKS AFFECTING WATERCOURSES

6. The Contractor is to take measures to protect all personnel (employed and visiting the *site*), Plant, Materials and Equipment from harm or damage irrespective of the magnitude of a flood event.

1.17 APPARATUS OF STATUTORY UNDERTAKERS, HIGHWAY AND ROADS AUTHORITY AND OTHERS

5. Notwithstanding any information regarding apparatus supplied by or on behalf of the Client, the Contractor shall be responsible for ascertaining from inspection of the site, and from the respective supply utilities, other relevant companies and any public bodies, the position of all mains, pipes and cables. The Contractor shall carry out thorough searches, including the use on the site of electromagnetic or other suitable locating Equipment, followed by excavation by hand, to exactly locate all apparatus.
6. The Contractor shall exercise the greatest care during the construction of the works to avoid damage to or interference with any existing services and shall be responsible for any such damage caused by him or his agents either directly or arising indirectly from anything done or omitted to be done. The Contractor shall carry out all temporary works necessary to adequately support and protect any existing services.

7. The Contractor shall take any and all measures reasonably required by any Public or Statutory Authority for the support and full protection of its mains, pipe, cables and other apparatus during the progress of the construction works, and shall construct and provide to the satisfaction of the Authority concerned all works necessary for the prevention of damage or interruption of services. If any interruption of or delay to the provision of any service is caused the Contractor shall bear and pay the cost reasonably incurred by the Authority concerned in making good such damage and shall make full compensation to the Authority for any loss sustained by reason of such interruption or delay.
8. The Contractor shall make his own arrangements for any diversion or removal of existing services which he may require for his own convenience or because of his proposed method of working and shall, in all cases, inform the Employer in advance of his proposals.

1.18 TRAFFIC REQUIREMENTS

12. The Contractor shall include in his method statement proposals for:
 - the management of traffic arriving/leaving the site;
 - the management and movement of traffic around the *site*.
13. Due allowance should be made by the Contractor to keep any of the local Highways clear of any debris and mud from vehicles accessing and leaving the site and a methodology contained in his method statements. The Contractor will be directly responsible to the local Highways Authority in this respect.

1.19 EMERGENCY ARRANGEMENTS

3. The Contractor shall provide an Emergency Contact List to include at least two names of responsible representatives of the Contractor and telephone numbers at which they can be contacted at all times outside normal working hours. One of these telephone numbers should be that of the Contractor's Construction Manager.

1.22 CUSTOMER CARE

- 2 The Contractor shall be responsible for notifying local residents and The Local Authority's Environmental Health Officer of any unavoidable disruptive operations, particularly when these are to take place outside the normal working hours, and for fostering good public relations generally in respect of the works, copies shall be notified and available to the Client.
- 3 A contact name within the Contractor's organisation shall be provided to residents who would be available to deal with complaints or queries in relation to the works.
- 4 The Contractor is expected to work to the principles of the Considerate Constructor Scheme (www.ccscheme.org.uk) for the site and dealings with the public.

1.25 SUBMISSIONS TO THE CLIENT

1. The following information shall be submitted to the Client for approval, at 2 weeks before the start of work on site:
 - First Programme for acceptance (if different to that provided with his Tender)
 - Method Statement for the works (if different to that provided with his Tender)
 - CDM Construction Phase Plan (see item 1.34 below)
 - Any other information requested.
2. The following information shall be submitted to the Client for acceptance during the course of the construction works:
 - Method Statements for all types of work. Method statements shall be submitted at least 5

working days before the relevant work begins

- Details of any discussions with the landowner and tenant farmers
- Early warnings and compensation event notifications
- Delays experienced
- Health and Safety incidents
- Environmental incidents
- Any other information requested

1.26 SETTING OUT OF THE WORKS

1. The locations of all new works are shown as precisely as possible on the drawings. It is the responsibility of the Contractor to carry out all levelling and setting out required to complete the work in a satisfactory manner. The setting out of all works in respect of locations shall be agreed with the Client before commencement of the works. The responsibility for the setting out of the works in respect of the final levels shall remain with the Contractor.

1.27 TOLERANCES

1. Unless otherwise specified by the Works Information, the following tolerances on specified levels shall apply:
Final dredged level (as shown by the immediate post dredge survey) within +/-150mm on a section. Average over all sections +/-100mm.

1.28 ENVIRONMENT AND SUSTAINABILITY

1. Specific environmental requirements for these works are detailed in Appendix E: Environmental Report
2. Activities within the watercourse shall be carried out in such a manner as to minimise environmental disturbance and in accordance with Contractor's Method Statements accepted by the Client.
3. The Client is committed to the environmental principles of stewardship and sustainability. The Contractor shall plan and order all his activities to assist the Client to honour these principles. In addition to this general requirement, particular areas for action are:

- Avoidance of pollution of any waters (surface or underground).

In the event of a watercourse being polluted as a result of his work, the Contractor shall be responsible for taking immediate action to prevent the pollution spreading downstream, and to advise the Client immediately. If it proves necessary for the Client to take action concerning any pollution of a watercourse due to the Contractor's works the cost of any such action will be charged to the Contractor. The Contractor shall also inform the Client immediately of any incident.

and:

- Avoidance of pollution of any land;
- Preservation of flora and fauna;
- Avoidance of nuisance of sounds, vibrations and dust;
- Minimise energy and water use.

3. The Contractor shall demonstrate in his written Method Statement his proposals to minimise environmental impact and satisfy the above requirements. The Contractor shall submit all Method Statements to the Client

for acceptance. Reference shall be made to the Environment Agency Pollution Prevention Guidelines 1, 5, 6, 8 and 21. The following should be addressed in the Method Statement(s):

- Equipment which leaks any fuel, lubricant or hydraulic fluid shall not be used.
 - Bio-degradable hydraulic fluid is mandatory
 - Equipment shall be maintained to ensure efficiency and to minimise emissions.
 - Equipment shall be steam cleaned prior to delivery to the *site*.
 - Fuel and oil storage shall be away from watercourses, fully bunded to 110% of the volume stored and maintained in a secure and clean manner. Delivery and vent pipes shall terminate within the bund.
 - Refueling or servicing of Equipment shall be carried out in designated locations away from watercourses.
 - Refueling shall be supervised and shall be carried out by pumping through a trigger type delivery nozzle.
 - An adequate supply of oil absorbent materials shall be readily available onsite at all times (e.g. in cab of Equipment).
 - Any spillage shall be immediately contained, removed from the *site* and disposed to a licensed tip, the Client being promptly informed.
 - Equipment shall be effectively silenced and shall comply with any stated requirements of the Local Authority as well as BS 5228-1: 1997: Noise control on construction and open sites.
5. Where materials arising from or required for the "Works" constitute Controlled Waste under the Environmental Protection Act 1990 (Sections 33 and 34), the Contractor shall provide the Client with a copy of the Carriers' licence to transport the materials, and copies of all Waste transfer notes. The Contractor shall retain a copy of all waste transfer notes onsite for inspection.
6. Imported soil conditioners shall be free from Peat and Coir, be manufactured from composted matter, recycled and renewable materials fully pasteurised and free from weed seeds, disease and fungal organisms. The Contractor shall provide details of any proposed soil conditioner for acceptance prior to commencement of landscaping works.

1.29 WATER VOLES

Water Voles are fully protected under Section 9 of the Wildlife and Countryside Act 1981, which makes it an offence to intentionally kill, injure or take (capture) a water vole, or intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place. Water Vole burrows and other activity has been detected on parts of the left bank where dredging is to take place. This work can be undertaken lawfully by application of the Natural England Class Licence CL24 (Copy included in Appendix E-Environmental Information). As soon as possible after 15th September the Contractor shall clear vegetation from the designated area to initiate water vole displacement and continue in accordance with the conditions of the class licence. Dredging work may not proceed on the left bank before the water vole displacement has been concluded.

1.30 BADGERS

Badgers are protected species and the Contractor must not disturb badger setts. Known locations of active badger setts in the area are shown on drawing GD06-18-103 in Appendix A. The Contractor must fence badger setts, without obstructing badger access, to exclude vehicles and prevent damage to badger setts. If the Contractor finds a badger sett during works, the Contractor must avoid working in the immediate vicinity of the sett and inform the Client, so an assessment can be made of the risks of disturbance and any required mitigation measures can be identified and implemented. Works may be carried out lawfully by application of

the Natural England Class Licence CL27 (Copy included in Appendix E-Environmental Information). The Contractor shall not spread dredged material within 10m of an active badger sett.

1.31 OTTERS

Otters are protected species and the Contractor must not disturb otter Holts. The Client's Project Ecologist will provide the Contractor with the known locations of otter Holts in the area. The Contractor must fence otter Holts, without obstructing otter access, to exclude vehicles and prevent damage to Holts. If the Contractor finds an otter holt during works, the Contractor must avoid working in the immediate vicinity of the holt and inform Client, so an assessment can be made of the risks of disturbance and any required mitigation measures can be identified and implemented. The Contractor shall not spread dredged material within 10m of an otter Holt.

1.32 INVASIVE SPECIES

Invasive Species: The Client's Project Ecologist will undertake pre-construction checks of all working areas and land adjacent to working areas and provide the Contractor with the known locations of invasive species. The Contractor must ensure all dredging equipment (including boats) are not contaminated prior to use and will provide biosecurity measures such as machinery cleaning, on site. If during works the Contractor finds either Giant Hogweed or Japanese Knotweed on site, the Contractor must avoid working in the immediate area and inform the Client, so an assessment can be made and any required mitigation measures can be identified and implemented.

1.33 REMOVAL OF UNSUITABLE PLANT

1. Where any Equipment brought by the Contractor onto the site is deemed by the Client to be unsuitable for any reason, inter alia:
 - (a) it is causing or is likely to cause damage due to weight;
 - (b) it is a source of pollution such as spillage of oil;
 - (c) it is the source of excessive noise;
 - (d) it does not comply with the relevant safety regulation
 then the Client shall have the power to order the removal of such Equipment .

1.34 CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS (CDM)

1. The CDM Pre Construction Information prepared for these works is provided in Appendix C.
2. At least 10 days before the commencement of the construction works the Contractor shall produce a CDM Construction Phase Plan, which will include but not limited to, a Traffic Management Plan, Emergency Plan and the initial site work method statements and risk assessments. The Construction Phase Plan will be reviewed by the Principal Designer. Site work cannot start until the Plan has been accepted by the Client.
3. Subsequent method statements will be reviewed by the Client. The Contractor shall ensure that all method statements are submitted at least 5 days before the work activity is due to commence.
4. The Contractor shall provide the Client with two copies of all information which is required to be placed on the H&S File. It is proposed that a draft of the Health & Safety File will be developed as the work progresses to expedite the production of the final document.

1.35 STATEMENT OF ACCOUNT

1. The Contractor's statements shall detail the following:
 - Work done against the Price List
 - Total value of work done

- Agreed Compensation Events and Day Work items
2. All evidence of expenditure by the Contractor to carry out the construction works shall be held onsite by the Contractor and shall be available for inspection by the Client at any time within working hours.

SECTION 2 MATERIALS

2.40 FIELD GATES

3. Gates shall be securely fixed to prevent removal, e.g. by using opposing hinge bolts.

2.89 PERMANENT FENCING

2. Timber post and rail fencing shall be type SPR 13/4 as specified in BS 1722 Part 7.
3. All posts are to be treated with waterborne preservative by impregnation under pressure or by hot and cold treatment unless cut from the heartwood of oak, larch or sweet chestnut.
4. Staples are to be galvanised 38 mm long x No 8 SWG.
5. Strainers are to be galvanised 250 mm x 9 mm eyebolts.

2.126 TIMBER AND PRESERVATION OF TIMBER

4. Timber preservative treatment shall be carried out away from watercourses and in a manner to avoid any spillage or loss. Creosote shall not be used unless the Contractor can demonstrate that no viable alternative exists.
5. Details of all timber to be used in the works shall be submitted to the Client for acceptance.

SECTION 3 EXCAVATION, BACKFILLING AND RESTORATION

3.9 REINSTATEMENT OF UNPAVED LAND

6. A minimum of 100mm compacted depth of topsoil shall be placed wherever grass seeding is required and lightly compacted with a tracked excavator where slopes allow or the back of a bucket on slopes.
7. The topsoil shall be kept free from weeds and grasses by light cultivation or treatment with a foliar acting herbicide accepted for use near watercourses by the Environment Agency until grass cover has been established or the area is handed back to the landowner for his/her own reinstatement.
8. Prior to grass seeding any stones having one linear dimension in excess of 50 mm shall be removed and disposed of to a location agreed with the Client. The surface should be lightly and uniformly firmed and reduced to a friable tilth by raking or harrowing. An appropriate pre-germination fertiliser shall be applied at the prescribed rates in accordance with Clause 2.39.
9. Grass seed mixture type in accordance with Clause 2.56 shall be sown at the prescribed rates after pre-seeding fertiliser application (see Clause 2.39). Immediately after the application of grass seed, the reinstated area will be lightly harrowed and rolled.
10. Any areas where the seed has not taken will be re-seeded by the Contractor

3.10 TREES

5. Where small trees, hedgerows or large woody shrubs, having an individual girth less than 500mm measured 1m above ground, are to be removed they shall be clearly identified and confirmed for removal by the project manager.
6. Roots shall be thoroughly grubbed out and all arisings removed from site.
7. Holes shall be backfilled with well compacted impermeable material and grass cover established to provide a uniform well-grassed surface to resist erosion from overflow.

SECTION 7 TESTING AND DISINFECTION

7.19 TESTING DISOLVED OXYGEN, TEMPERATURE AND AMMONIA

1. Testing is to be carried out at an agreed mid-channel position downstream of the working area.
2. Testing is to use properly calibrated equipment which is appropriate for the purpose.
3. Testing frequency to be not less than every 15 minutes.
4. Testing to commence at least 24 hours before any dredging commences and continue until at least 24 hours after all dredging has been completed.
5. Test thresholds are:
 - Water temperature exceeding 15°C
 - Dissolved oxygen outside the range 30% to 120%
6. Test time, date, location and readings are to be recorded with data loggers linked to a telemetry system and alarms for threshold exceedance.
7. Satisfactory operation of the testing, recording and telemetry equipment to be checked at least daily during dredging operations.

APPENDIX 2D: DRAFT TEMPLATE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN

Oath to Burrowbridge Dredging

Draft Landscape and Ecological Management Plan Template

Client: Parrett Internal Drainage Board

Date: June 2019

DOCUMENT CONTROL

Report prepared for: Parrett Internal Drainage Board

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DOCUMENT REVISIONS

Version	Details	Date
DRAFT	Template for inclusion in the Environmental Statement	June 2019

Third party disclaimer

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1 INTRODUCTION

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1.2 AIM AND SCOPE OF THIS DOCUMENT

The aim of this document sets out protocols to ensure the long-term management and monitoring of all retained and restored landscape / habitat types and ecological features within the Oath to Burrowbridge Dredging site downstream of Stathe Bridge and the confluence with the River Tone. It seeks to and to restore/maintain and successfully manage these during the long term operational period of the project supported by monitoring. As such it serves as a handbook for landscape and ecological management and maintenance of the restored proposed dredging site.

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1.4 SITE ROLES/SUPERVISION

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1.6 ECOLOGICAL BASELINE

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**Somerset
Ecology
Services**

Oath to Burrowbridge, River Parrett, Somerset

Preliminary Ecological Appraisal April 2018



Prepared for Somerset Drainage Boards Consortium



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Quality Assurance

This report has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (2015) '*Guidelines for Ecological Report Writing*' and with the British Standards Institution (2013) '*BS42020 Biodiversity – A code of practice for planning and development*'. The author is a full member of the Chartered Institute of Ecology and Environmental Management and is covered by CIEEM's '*Code of Professional Conduct*' (available from CIEEM website: <https://www.cieem.net/>). All species surveys conducted specifically to inform this report have been carried out by personnel working under the appropriate licences (where necessary) and by staff possessing the required competencies for the particular survey(s) as defined within the CIEEM's Technical Guidance Series ('*Competencies for Species Surveys*' – see CIEEM website).

Document control

Project details			
Site	Oath to Burrowbridge, River Parrett, Somerset		
Client	Somerset Drainage Boards Consortium		
Document	Preliminary Ecological Appraisal		
Reference	SES_43_17_Oath to Burrowbridge		
Survey dates	3rd rd April 2018		
Surveyor/s	Simon Breeze, County Ecologist, BSc. MCIEEM.		
Document	Author	Checked by	Date
Consultation Draft v. 1.0	Simon Breeze	Larry Burrow	April 2018
Final v 1.0	Simon Breeze	Simon Breeze	April 2018



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Executive summary

Somerset Drainage Boards Consortium are seeking ecological advice to inform vegetation and silt removal works from river slopes, and the placing of cleared material behind the banks. The site is located along a section of the River Parrett, between Burrowbridge (ST 35842 30207) and Oath (ST 38308 27900)

The Preliminary Ecological Appraisal was undertaken on the 4th April 2018 by Simon Breeze, County Ecologist, Bachelor of Science (BSc.), full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) and Class 2 Bat License holder (CL18), and Molly Meikle, Assistant Ecologist, BSc. The survey was carried out between 8.30 and 12.00 under dry, bright and warm conditions.

A desk study revealed seven statutory designated sites located within 2km of the length of River Parrett surveyed. There are also eight non-statutory designated sites within 2km of the survey area.

The survey identified six standard Phase 1 habitat types within the site boundary and 10 Biodiversity Action Plan (BAP) priority habitats or habitats of principal importance within the site boundary or within 2km of the proposed works.

The habitats recorded on site have the potential to support breeding birds and contains commuting and foraging habitat for bats, otters, water vole, reptiles and invertebrates. Mature trees located along the river banks also held potential for roosting bats.

Recommendations:

To avoid direct impacts to habitats and species which are known to be, or may be present, recommendations are as follows:

- The proposed works fall within the River Parrett, Middle Moor to Scree Local Wildlife Site and as such the Somerset Environmental Records Center (SERC) should be consulted on the proposals.
- It is recommended that the trees surrounding the development site are retained and protected.
- Tree should also be retained to avoid potential impacts to roosting bats and nesting birds.
- The river maintenance works will put in place pollution prevention methods in line with the Environment Agency's (EA) Pollution Prevention Guidance (PPG) 6.
- Works will ensure that the river and its immediate surrounds are not fully blocked, allowing space for bats, otters, water voles, reptiles, invertebrates and kingfishers to commute.
- Potential bird nesting habitat will be removed outside of the main breeding season in the period from the 1st September to the 28th February, or if this is not possible, a nesting bird check should be completed by a suitably qualified ecologist/ornithologist in the 24 hour period prior to removal.
- In the event that evidence of otters and water voles are discovered during vegetation and silt removal works, operations must stop immediately and a qualified ecologist contacted.
- The presence of the two non-native plant species should be monitored to avoid further spread along the banks, beyond residential dwellings.

Further ecological consultation should be sought if the scope of the proposed work changes significantly or if the onset of the work is delayed by more than 12 months from the date of this survey.



1.0 Introduction

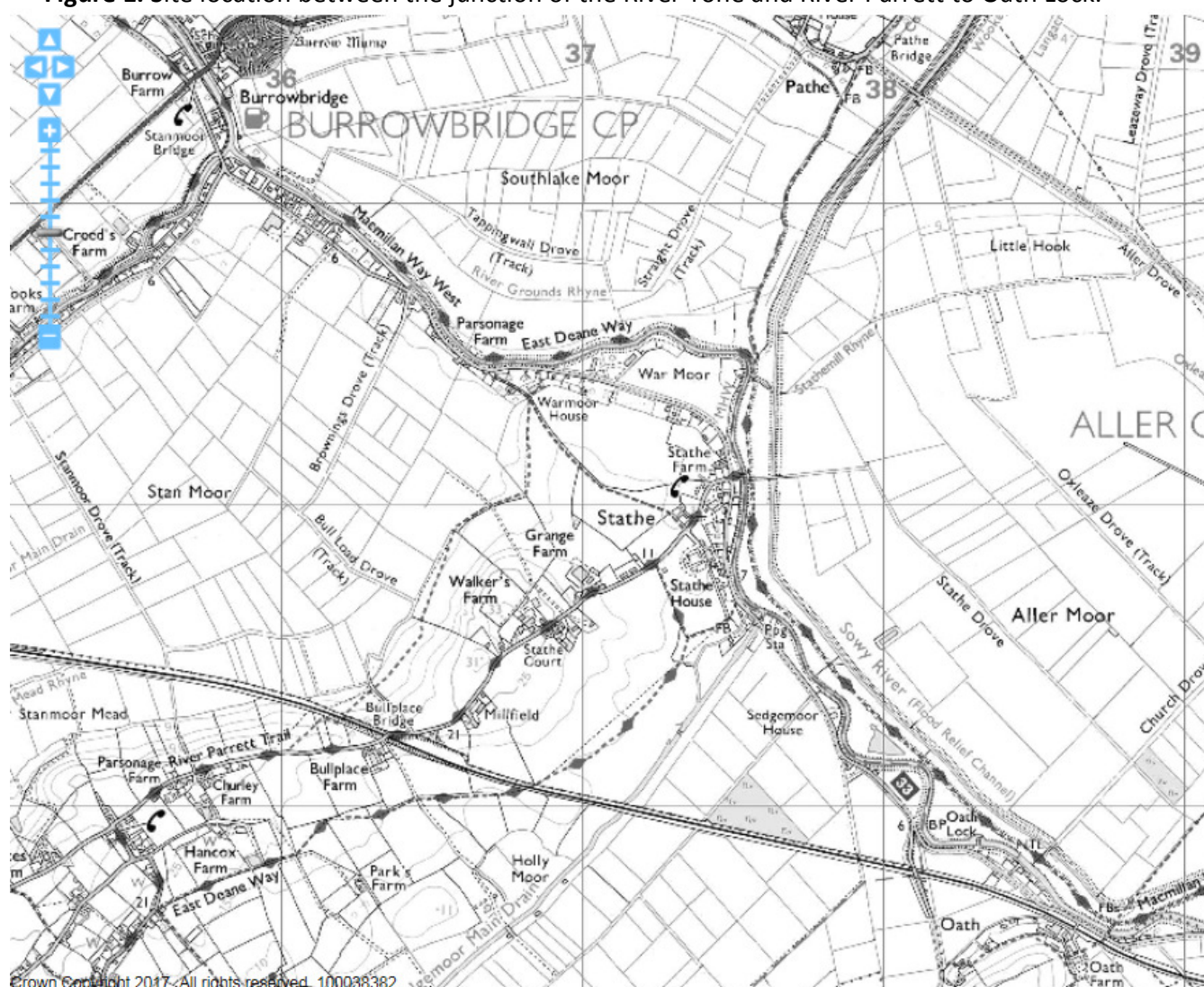
1.1 Site location

The site is located along a section of the River Parrett, between Burrowbridge (ST 35842 30207) and Oath (ST 38308 27900).

The surveyed stretch was approximately 4km in length.

The surrounding landscape is predominantly coastal and floodplain grazing marsh with areas of lowland meadows and semi-improved and improved neutral grassland (Figure 1).

Figure 1. Site location between the junction of the River Tone and River Parrett to Oath Lock.



1.2 Background to activity

Somerset Drainage Boards Consortium are seeking ecological advice to inform vegetation and silt removal works from the river slopes and the placing of cleared material behind the banks on the rear



face. The majority of works are planned on the right hand bank as you look downstream with some sections of the 4km stretch left unmanaged.

Somerset Ecology Services (SES) were commissioned by Somerset Drainage Boards Consortium to undertake an preliminary ecological appraisal of the site to establish the ecological constraints associated with the proposal and provided further recommendations, if applicable, and to enable compliance with planning policy and wildlife legislation.

1.3 Survey objectives

The survey objectives are listed as follows:

- Identify all relevant statutory and non-statutory designated areas of conservation importance and features of ecological significance within the site and within a 2km radius of the site.
- Broadly categorise habitat types within the site in accordance with standard Phase 1 habitat survey techniques.
- Assess the potential for the presence of protected species and species of principal conservation importance within the site.
- Provide recommendations for further surveys, if required.
- Accurately assess the potential ecological impact of the proposed development.
- Inform the design of a mitigation strategy, if possible, to minimise potential impacts on protected species and habitats.
- Advise of any ecological compensation requirements.

1.4 Scope and limitations

The report outlines the results of both a desk top study and an Extended Phase 1 Habitat Survey carried out by SES. The data gathered is used to evaluate the ecological value of the proposed work. Recommendations are made concerning possible impacts on wildlife and how these might be mitigated or off-set (compensated).

As regards the desk top study, Somerset Species Occurrence Mapping has been consulted. This makes use of species records from Somerset Environmental Records Centre (SERC) to identify parts of the county where particular legally protected and priority species may be found. The mapping layers are updated on a regular basis using SERC data.

Phase I Habitat Surveys may be conducted at any time of year, but results will vary depending on the time of year they are carried out. The timing of the survey in this case was such that many plant species would normally be readily identifiable still. Therefore, it has been possible to characterise habitats in terms of the vegetation supported and also to identify woody species and other plants within the hedgerows on the site's boundaries.

The Phase I Habitat Survey was of an 'Extended' type in the sense that the opportunity was taken whilst on site to look for evidence that certain protected species might be present associated with the particular habitats in the area around the site that could be affected by the bridge works. The investigations that were conducted are described in the Methodology section along with any constraints (seasonal or otherwise) that might have had a bearing on the efficacy of searches for signs of particular species.



2.0 Methodology

2.1 Site survey

The Preliminary Ecological Appraisal was undertaken on the 4th April 2018 by Simon Breeze, County Ecologist, Bachelor of Science (BSc.), full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) and Class 2 Bat License holder (CL18), and Molly Meikle, Assistant Ecologist, BSc.

The survey was carried out between 8.30 and 12.00 under dry, bright and warm conditions.

The survey was completed in accordance with best practice methodologies:

- Joint Nature Conservation Committee (2003). Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit. Joint Nature Conservation Committee, Peterborough.
- British Standards Institution (2013). BS42020: Biodiversity Code of Practice for Planning and Development. British Standards Institution, London.
- CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

During the survey the following information was recorded:

- Habitat types classified in accordance with standard Phase 1 habitat categories.
- Dominant, notable and invasive, non-native plant species.
- Direct evidence of protected and notable animal species.
- Features of value for protected and notable animal species.

2.2 Desk top study

The data search involved the compilation of ecological information relating to the site and surrounding area. The resources consulted included the following:

- Statutory designated sites and biodiversity action plan (BAP) priority habitats within proximity of the site were identified using the Natural England/DEFRA web-based MAGIC database (www.MAGIC.gov.uk).
- The Somerset Environmental Records Centre (SERC) was consulted to conduct a data search for statutory and non-statutory designated sites of conservation importance¹ and legally protected and biodiversity priority species, red data book species and county notable species.
- The Natural England² and Joint Nature Conservancy Council³ website was visited to obtain citation details of the statutory designated sites.

¹ Evaluated statutory designated areas are Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar Sites, Sites of Special Scientific Interest (SSSI), Marine Protected Areas (MPA), National Nature Reserves (NNR), Local Nature Reserves (LNR) and National Parks. Evaluated non-statutory designations included Local Wildlife Sites (LWS) and Local Geological Sites (LGS).

² <https://designatedsites.naturalengland.org.uk/>

³ <http://jncc.defra.gov.uk/page-2>



- Somerset Special Alert Mapping: A Somerset County Council GIS resource which maps where protected species are likely to be present based on past records and the scientific literature concerning home ranges.⁴
- Ordnance Survey maps and aerial images of the site were examined online (bing.com/maps and maps.google.co.uk).

2.3 Survey method constraints and limitations

Preliminary ecological appraisals are not intended to produce comprehensive lists of species present but, nevertheless, it is considered that the survey undertaken is sufficient to evaluate the ecological resources within the site and thus to identify potential issues of relevance to the proposal.

The data search provided by SERC presented within the report should not be seen as exhaustive. Data obtained from within the search area is highly unlikely to constitute a complete record of habitats and species present within the search area. It is therefore possible that protected species may occur within the vicinity of the proposed development site that has not been identified within the desk study.

Bats are very small animals, capable of accessing small spaces and it is possible that bats, or their signs, might have been missed during the survey if they are normally present opportunistically or in small numbers for a short period of time each year. Not all features in trees or buildings suitable for use by bats are visible from the ground and there can be no external evidence of use of features by bats; consequently it is only possible to make a best effort when carrying out such a survey.

Preliminary ecological appraisals are not intended to produce comprehensive lists of species present but, nevertheless, it is considered that the survey undertaken is sufficient to evaluate the ecological resources within the site and thus to identify potential issues of relevance to the proposal.

These limitations have been taken into consideration in the recommendations of the assessment.

⁴ Please note that there is no Occurrence Mapping available currently for Badgers or Slow-worms, two species that are often found in urban, semi-rural and rural situations.



3.0 Results

3.1 Statutory and non-statutory designated sites

Seven statutory designated sites were located within 2km of the length of River Parrett surveyed. There are also eight non-statutory designated sites within 2km of the survey area (Table 1 and 2 & Appendix A).

Table 1. Statutory designated sites of conservation importance within a 2km radius of the site

Name	Status	Distance from survey site	Description
Somerset Levels	National Nature reserve (NNR)	0km	Primary habitats include open water and lowland grassland.
Somerset Levels and Moors	Special Protection Area (SPA)	0km	Designated for its internationally important assemblage of birds.
Somerset Levels and Moors	Ramsar Site	0km	Largest area of lowland wet grassland and associated wetland habitat remaining in Britain. An important site for wildfowl in winter and aquatic invertebrates.
Southlake Moor	Site of Special Scientific Interest (SSSI)	0km	An extensive system of grazing marsh and ditches.
West Sedgemoor	SSSI	0km	Comprised of numerous small, low lying fields and meadows separated by water filled rhynes and ditches.
Kings Sedgemoor	SSSI	2km	An extensive system of grazing marsh and ditches, supporting a wide variety of neutral grasslands.
North Moor	SSSI	0.1km	Nationally important site for grazing marsh and ditch systems on the Somerset Levels and Moors.

Table 2. Non-statutory designated sites of conservation importance within a 2km radius of the site.

Name	Status	Distance from survey site	Description
River Parrett, Middle Moor to Scree	Local Wildlife Site (LWS)	0km	River with legally protected species and rare invertebrate species.
River Tone and Tributaries	LWS	0km	Biologically rich river and tributaries with a variety of associated habitats and legally protected species



Aller Moor	LWS	0km	Rhyne and wet meadow site, important wintering bird population.
Athelney Fields	LWS	1km	Fields with rhynes and a Somerset notable specie.
Hellards Copse	LWS	1.5km	Ancient semi-natural broadleaved woodland.
Wick Hill Wood	LWS	1.5km	Ancient semi-natural broadleaved woodland, scrub and unimproved calcareous grassland.
Aller Drove Rhynes	LWS	1.6km	Water course with indicators of high biological quality.
Cox's Wood	LWS	1.7km	Ancient semi-natural broadleaved woodland.

The site is also located within the SSSI Impact Risk Zones along the length of the site surveyed for the aforementioned SSSIs, with overlapping Ramsar and SPA site designations (Somerset Levels and Moors).

Impact risk zones are used in the assessment of planning applications for likely impacts on Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. However, the scale of the proposal and working practices likely to be practiced by the Somerset Drainage Board Consortium indicate that the proposal will not fall into one of the identified risk categories.

3.2 Biodiversity Action Plan priority habitats and habitats of principal importance

There were 10 Biodiversity Action Plan (BAP) priority habitats or habitats of principal importance within the site boundary or within 2km of the proposed development. These include river, hedgerows, coastal and floodplain grazing marsh, traditional orchard, lowland fen, lowland meadows, deciduous woodland, lowland calcareous grassland, purple moor grass and rush pasture.

In relation to planning policy every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity under the NERC Act 2006 (Part 3, Section 40)(Appendix).

3.3 Protected species records

The data search returned records of 14 protected species within a 2km radius of the site, including two bats, six birds, one fish, one invertebrate, three mammals and one reptile. The species in light green bold are considered to be potentially present within the site's habitats throughout the year (Table 3).

Table 3. Summary of protected species records within a 2km radius of the site (table continues).

Common	Scientific	Status
Bats		
Brown Long-eared Bat	<i>Plecotus auritus</i>	BAP-2007, Bern-A2, CMS_A2, England_NERC_S.41, HabDir-A4, HabReg-Sch2, SERC LBAP: 2009, SERC Notable, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	Bern-A2, CMS_A2, HabDir-A4, HabReg-Sch2, SERC Notable, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c



Birds		
Barn Owl	<i>Tyto alba</i>	Bern-A2, SERC LBAP: 2009, SERC Notable, WACA-Sch1_part1
Black Redstart	<i>Phoenicurus ochruros</i>	Bern-A2, Bird-Red, SERC Notable, WACA-Sch1_part1
House Sparrow	<i>Passer domesticus</i>	BAP-2007, Bird-Red, England_NERC_S.41, SERC LBAP: 2009
Kingfisher	<i>Alcedo atthis</i>	Bern-A2, BirdsDir-A1, SERC LBAP: 2009, SERC Notable, WACA-Sch1_part1
Reed Bunting	<i>Emberiza schoeniclus</i>	BAP-2007, Bern-A2, England_NERC_S.41, SERC LBAP: 2009, SERC Notable
Spotted Flycatcher	<i>Muscicapa striata</i>	BAP-2007, Bern-A2, CMS_A2, England_NERC_S.41, SERC LBAP: 2009, SERC Notable
Fish		
European Eel	<i>Anguilla anguilla</i>	BAP-2007, England_NERC_S.41, RedList_Global_post2001-CR, SERC LBAP: 2009
Invertebrates		
Brown Hairstreak	<i>Thecla betulae</i>	BAP-2007, England_NERC_S.41, RedList_GB_post2001-VU, SERC LBAP: 2009, SERC Notable, WACA-Sch5_sect9.5a
Mammals		
Eurasian Badger	<i>Meles meles</i>	Protection_of_Badgers_Act_1992, SERC Notable
European Otter	<i>Lutra lutra</i>	BAP-2007, Bern-A2, England_NERC_S.41, HabDir-A4, HabReg-Sch2, SERC LBAP: 2009, SERC Notable, WACA-Sch5_sect9.4b, WACA-Sch5_sect9.5a, WACA-Sch5Sect9.4c
European Water Vole	<i>Arvicola amphibius</i>	BAP-2007, England_NERC_S.41, SERC LBAP: 2009, SERC Notable, WACA-Sch5_sect9.4.a, WACA-Sch5_sect9.4b, WACA-Sch5Sect9.4c
Reptiles		
Grass Snake	<i>Natrix natrix</i>	BAP-2007, England_NERC_S.41, SERC LBAP: 2009, SERC Notable
Key		
BAP-2007	Biodiversity Action Plan 2007	
Bern-A2	The Convention on the Conservation of European Wildlife and Natural Habitats - Appendix II - Strictly protected fauna species.	
BirdsDir-A1	Birds Directive Annex 1	
Bird-Red	Birds of Conservation Concern Red listed	



HabDir-A4	Habitats Directive Annex 4
HabReg-Sch2	Habitats Regulations (2017) – Schedule 2
NERC_S.41	Natural Environment and Rural Communities Act 2006_Schedule 41 species
SERC Notable	Somerset Environmental Records Centre Notable species
SERC LBAP: 2009	Somerset Environmental Records Centre Local Biodiversity Action Plan
WACA-Sch5	Wildlife & Countryside Act – Schedule 5 species
WACA-Sch1_part1	Wildlife & Countryside Act – Schedule 1 species, Part 1

3.4 Site habitat description

The survey identified six standard Phase 1 habitat types within the site boundary (Table 3).

Table 3. Phase 1 habitat types recorded within the site boundary.

Phase 1 habitat type	Site description
A3.1 – Broadleaved Parkland/scattered trees	A number of trees were scattered along the river banks comprised of hawthorn (<i>Crataegus monogyna</i>), yew (<i>Taxus baccata</i>), crack willow (<i>Salix fragilis</i>) and ash (<i>Fraxinus excelsior</i>), including one ancient ash (Photo 1, 5 and T1, Figure 3).
B2.2 - Neutral grassland - semi-improved	The grassy river banks and footpath backing onto the surrounding fields contained perennial rye grass (<i>Lolium perenne</i>), Yorkshire fog (<i>Holcus lanatus</i>) and cocks foot (<i>Dactylus glomerata</i>) (Photo 2).
C3.1 Other tall herb and fern – tall ruderal	<p>Areas outside of the footpath on the river banks supported the following species: common hogweed (<i>Heracleum spodylinium</i>), broad leaved dock (<i>Rumex obtusifolius</i>), common nettle (<i>Urtica dioica</i>), lesser celandine (<i>Ranunculus ficaria</i>), white dead nettle (<i>Lamium album</i>), herb robert (<i>Geranium robertianum</i>) and fat hen (<i>Chenopodium album</i>).</p> <p>Two non-native plant species were found on the northern bank, pampas grass (<i>Cortaderia selloana</i>) and a cultivar of comfrey (<i>Symphytum</i> sp.) (Photo 9).</p>
F2.1 Marginal and Inundation - Marginal	Stands of willow, umbellifer and reed succession (<5m in width) were located within the water course at marked points along the length of the site surveyed (Photo 7, 10 and Figure 2 and 3).
G2.2 - Running water - mesotrophic	The river Parratt ran along the surveyed site. Sections of the river had burst it's bank, flooding areas of surrounding grassland (Photo 4).
J3.6 - Buildings	Residential dwellings, a weir, barns and sheds and other man made structures were present along the banks of the river (Photo 2 and 3).



3.5 Survey photographs



Photo 1. The mature veteran ash located by the bridge at Stathe (A3.1).



Photo 2. Grassland along the foot path (B2.2) and taller rudderal vegetation of the southern side of the river bank (C3.1).



Photo 3. Man made structure spanning the rivers width (J3.6)



Photo 4. The River Parratt had burst its banks in numerous places along the surveyed site.



Photo 5. Scattered trees along the river banks provide potential nesting habitat for birds (A3.1)



Photo 6. Kestrel recorded on one of the scattered trees along the banks of the river.



Photo 7. Willows succession and the presence of coots (*Fulica atra*) located in the attenuation pond by Sedgemoor House.



Photo 8. Mature trees containing cervices, including wood pecker holes, provide potential nesting opportunities for birds and roosting opportunities for bats.



Photo 9. Non-native Pampas grass has been planted along the southern bank adjacent to residential dwellings.



Photo 10. uUmbellifer and reed succession along the southern banks of the River Rarrett. (F2.1)

3.6 Bats

The river is considered to provide high quality foraging and commuting opportunities for bats. The presence of lines of trees, marginal vegetation and grassland will support invertebrate prey items; however, these areas of habitat are only expected to be minimally impacted by the proposed river works, particularly if the scattered trees are left intact and protected.

The trees in close proximity to the river did not contain evidence of live or dead bats, droppings, feeding remains, perch abrasions, characteristic staining from urine or marks from grease secretions, however had the potential to provide roosts.

All species of bat and their roosts are protected under the Conservation of Habitats and Species Regulations 2017 (listed in Schedule 2 as European Protected Species (EPS)), from intentional or reckless disturbance to individuals under the Wildlife and Countryside Act 1981 (as amended) (Section 9 (4)(b), (1) and (5)), the Countryside and Rights of Way (CROW) Act 2000 and the Wild Mammals Protection Act 1996.

In addition, seven species of bat are cited as priority species, within the 'UK Post-2010 Biodiversity Framework', these comprise: barbastelle (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*) (Appendix B).

3.7 Birds

No signs or evidence of nesting birds, including kingfisher (*Alcedo atthis*), were observed during the survey, however the scattered broadleaved trees have the potential to support bird nesting opportunities. In addition, the areas of willow, umbellifer and reed succession within the river channel have the potential to provide nesting habitats for birds, including waders, wildfowl and passerines.



Species observed and/or heard singing/calling during the survey included skylark (*Alauda arvensis*), kestrel *Falco tinnunculus*), mute swans (*Cygnus olor*), coot (*Fulica atra*), mallard (*Anas platyrhynchos*), meadow pipit (*Anthus pratensis*), great spotted woodpecker (*Dendrocopos major*), chaffinch (*Fringilla coelebs*), greenfinch (*Chloris chloris*), blackbird (*Turdus merula*), wren (*Troglodytes troglodytes*), great tit (*Parus major*), goldfinch (*Carduelis carduelis*), robin (*Erithacus rubecula*), chiffchaff (*Phylloscopus collybita*), magpie (*Pica pica*), pheasant (*Phasianus colchicus*), carrion crow (*Corvus corone*), woodpigeon (*Columba palumbus*), jackdaw (*Corvus monedula*), house sparrow (*Passer domesticus*) and little egret (*Egretta garzetta*).

No evidence of Schedule 1 breeding birds that have the potential to be present within the river corridor, including kingfisher, cetti's warbler (*Cettia cetti*) and peregrine falcon (*Falco peregrinus*), were observed, however the river is highly likely to provide a commuting route for these species, as well as providing foraging opportunities under the right conditions.

All species of bird whilst actively nesting are afforded legal protection under the Wildlife and Countryside Act 1981 (as amended) and birds listed on Schedule 1 (Appendix B) are additionally protected from disturbance when nesting and with dependent young.

3.8 Otters, water vole and invertebrates

The River Parrett, with its connection to other waterbodies, contains the potential as a commuting resource for otters (*Lutra lutra*), water vole (*Arvicola amphibious*) and invertebrates. No notable footprints, spraints, droppings, feeding remains, holts or burrows were observed at the site. However, the flooding and high water level may have concealed any signs of otter or water vole activity.

The otter is afforded legal protection from intentional and reckless disturbance under Schedule 5 of the Wildlife and Countryside Act 1981, (as amended). It is also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 providing it and its resting places full protection and is therefore a European Protected Species (EPS) They are also listed as species of principal importance under section 41 of the NERC Act 2006 (as amended) (Appendix B).

Water voles are afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). They are also listed as species of principal importance under section 41 of the NERC Act 2006 (as amended) (Appendix B).

A range of invertebrates are listed as species of principle importance under Section 41 of the NERC Act 2006 (as amended) (Appendix B).

3.9 Reptiles

No reptiles were identified at the site; however the river and bankside vegetation could provide opportunities for commuting reptiles, primarily comprised of grass snake (*Natrix natrix*). Again, due to the flooding and high water levels evidence of reptile activity may have been concealed.

Common reptiles are afforded limited legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). They are also listed as species of principal importance under section 41 of the NERC Act 2006 (as amended) (Appendix B).



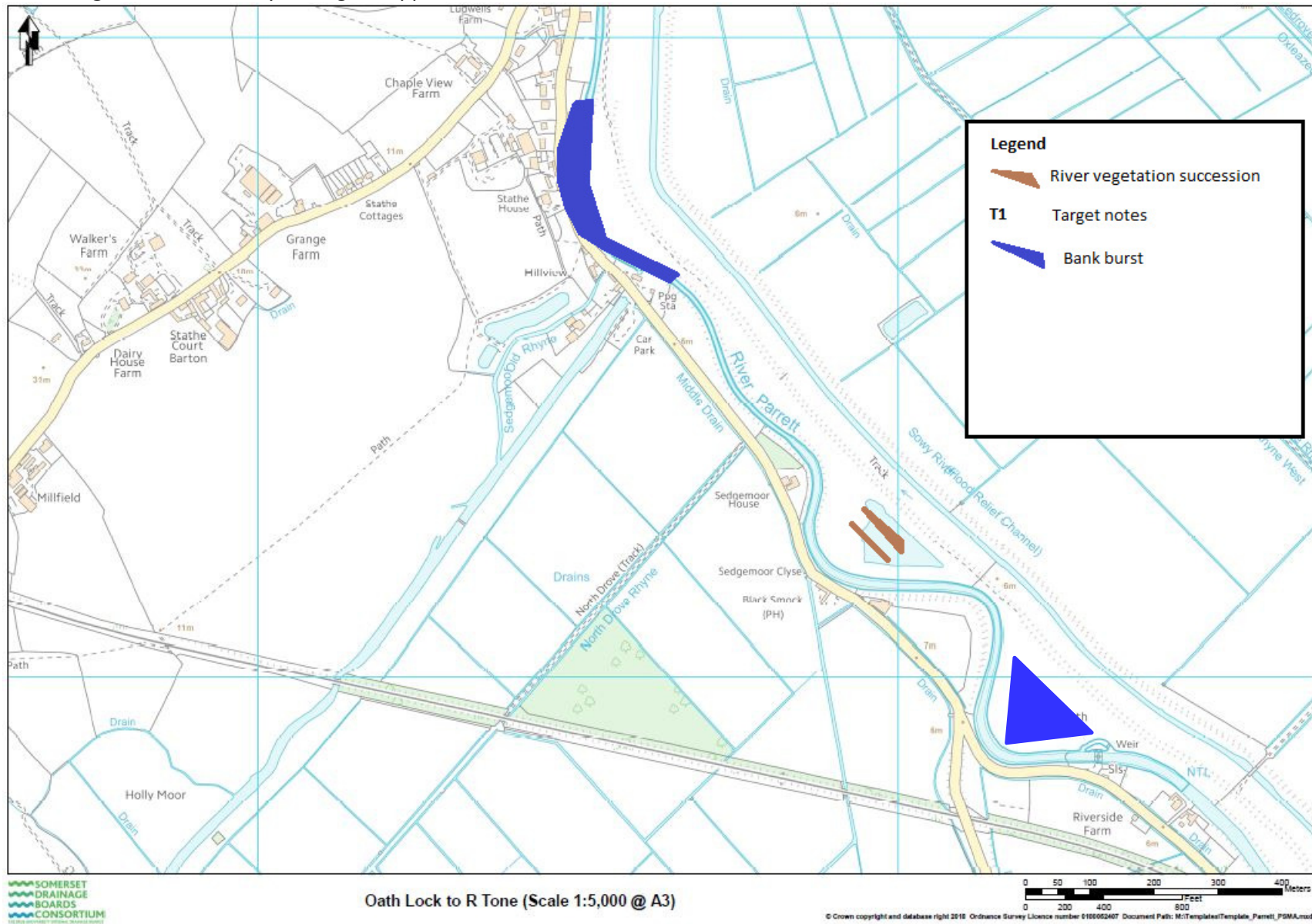
3.10 Other protected species

No protected or invasive, non-native species of plant were identified and the habitats within the site which will be impacted by the proposed works were not deemed to provide critical resources for any other protected or notable species of animal. In particular, species which are considered likely to be absent from the site or may be present but will not be adversely impacted by the proposed development are as follows:

- Great crested newts (*Triturus cristatus*)
- Badgers (*Meles meles*)
- Dormice (*Muscardinus avellanarius*)
- White-clawed crayfish (*Austropotamobius pallipes*)

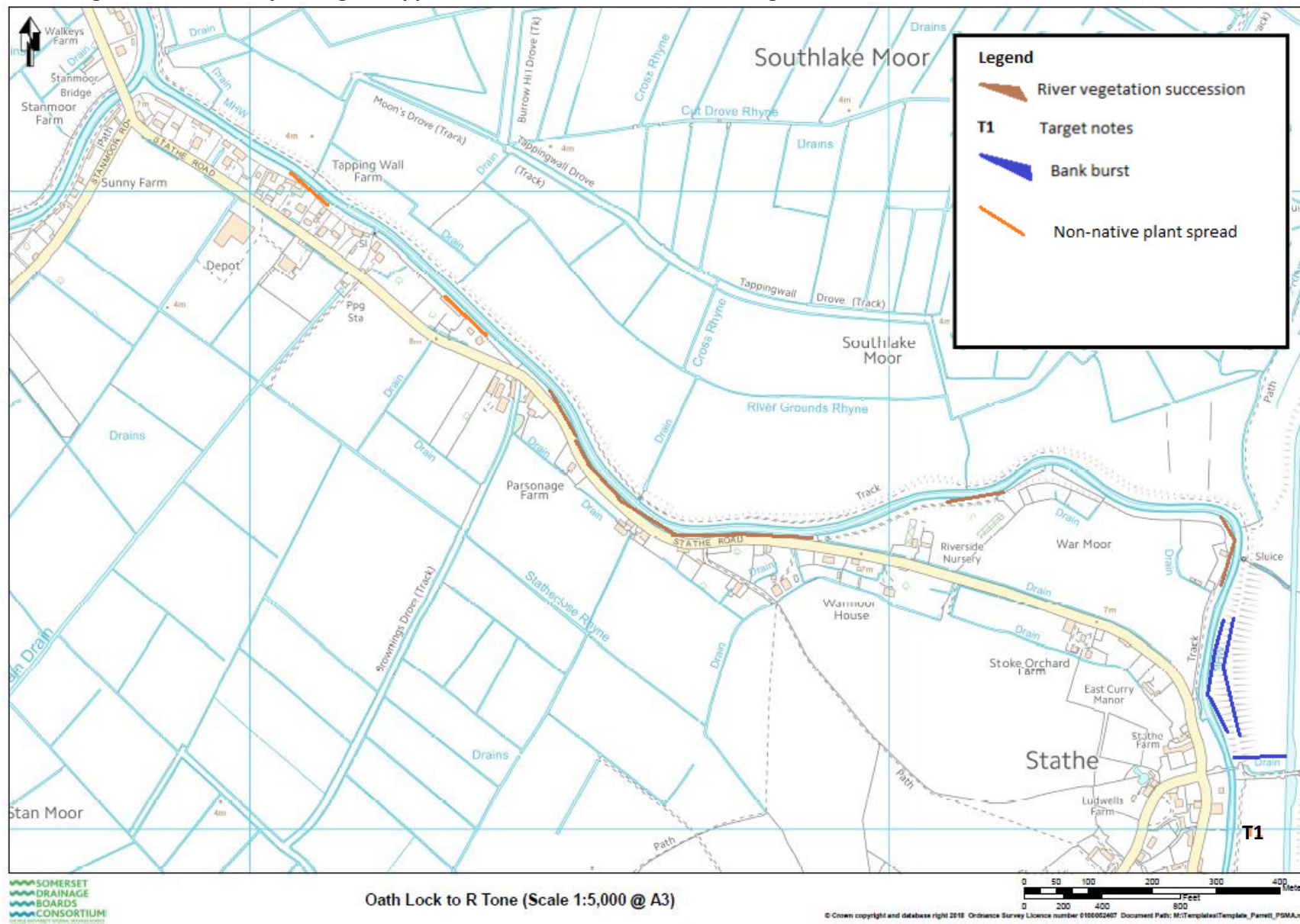


3.11 Figure 2: Preliminary Ecological Appraisal Plan – Oath Lock to Stathe





3.12 Figure 3: Preliminary Ecological Appraisal Plan - Staithe to Burrowbridge





4.0 Discussion and Recommendations

4.1 Phase 1 and UKBAP priority habitat types

The proposed works fall within the River Parrett, Middle Moor to Scree LWS and as such the Somerset Environmental Records Center (SERC) and Somerset Wildlife Trust (SWT) should be consulted on the proposals.

It is advised that the mature trees located on site are retained and protected during river maintenance works. In addition, where possible any standing deadwood should be retained to provide potential foraging opportunities for birds, bats and invertebrates. In the event that any trees are to be removed, or that the works involves processes which may damage the trees, it is recommended that they are effectively protected through an arboricultural survey compliant with BS5837 (2012). The results of this work should inform an arboricultural impact assessment and tree constraints plan and allow the preparation of an arboricultural method statement and tree protection plan, as required.

The river vegetation and silt removal works should put in place pollution prevention methods in line with the Environment Agency's (EA) Pollution Prevention Guidance (PPG) 6, Working at Construction and Demolition Sites, to avoid any pollution impacts on the River Tone

The presence of two non-native plant species found on the southern banks of the River Parrett, Including pampas grass and comfrey cultivar, should be monitored to avoid their potential spread along the banks beyond residential dwellings.

4.2 Bats

The mature trees located on site have the potential to support roosting bats and should therefore be retained and protected during the river maintenance works.

The river works will ensure that the river and its immediate surrounds are not fully blocked, at any given time allowing space for bats to commute along the river and its banks.

4.3 Birds

The mature trees located on site have the potential to support nesting birds and should therefore be retained and protected during the river maintenance works.

Removal of any trees, ruderal and marginal vegetation should be undertaken in the period from the 1st September to the 28th February to avoid impacting breeding birds. It should be noted however that certain species are known to breed throughout the year and remain protected.

If it is necessary to clear vegetation during the main breeding bird period a nesting bird check should be performed in the 24 hour period prior to the works. The check for nesting birds should be undertaken by a suitably qualified ecologist or ornithologist and adhere to the following protocol:

- All vegetation suitable for nesting birds should be observed for 30 minutes for evidence of breeding bird behaviour.



- If no evidence of breeding bird behaviour is observed the vegetation should be closely inspected to ensure there are no active nests present.
- If there are no signs of breeding activity, clearance works may proceed.
- If an active nest is discovered, the nest must remain undisturbed until the young have fledged.

The works will ensure that the river and its immediate surrounds are not fully blocked at any given time, allowing space for kingfishers to commute along the river and its banks.

4.4 Otters, water voles, reptiles and invertebrate

The river bank works will ensure that the river and its banks are not fully blocked, allowing space for otters, water voles, reptiles and invertebrates to commute between potential habitats.

In the event that evidence of otters and water voles in the form of spraint, droppings, tracks, burrows and holts are discovered during vegetation and silt removal works operations must stop immediately and a qualified ecologist contacted to ensure that no injury, disturbance or killing is carried out, and that appropriate avoidance, mitigation and compensation strategies are designed.

If otter and/or water vole evidence is located during works, further surveys should be undertaken to establish presence or absence, allowing an accurate assessment of the potential impacts of the proposed development and to inform the design of a proportionate mitigation strategy as part of a protected species mitigation licence to be submitted to Natural England.

4.5 Survey updates

Further ecological consultation should be sought if the scope of the proposed work changes significantly or if the onset of the work is delayed by more than 12 months from the date of this survey.



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Note to client regarding biological records

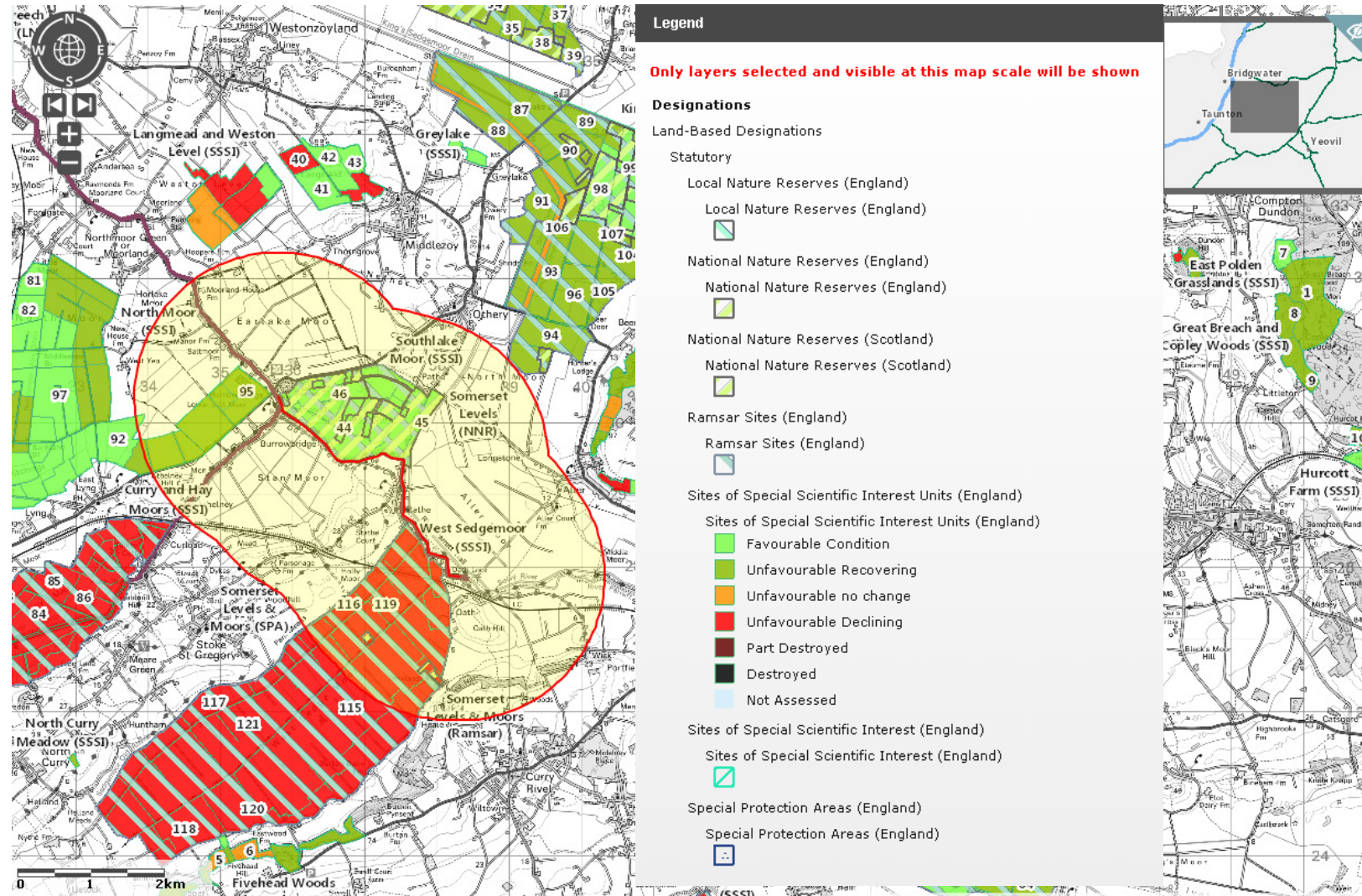
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Appendices

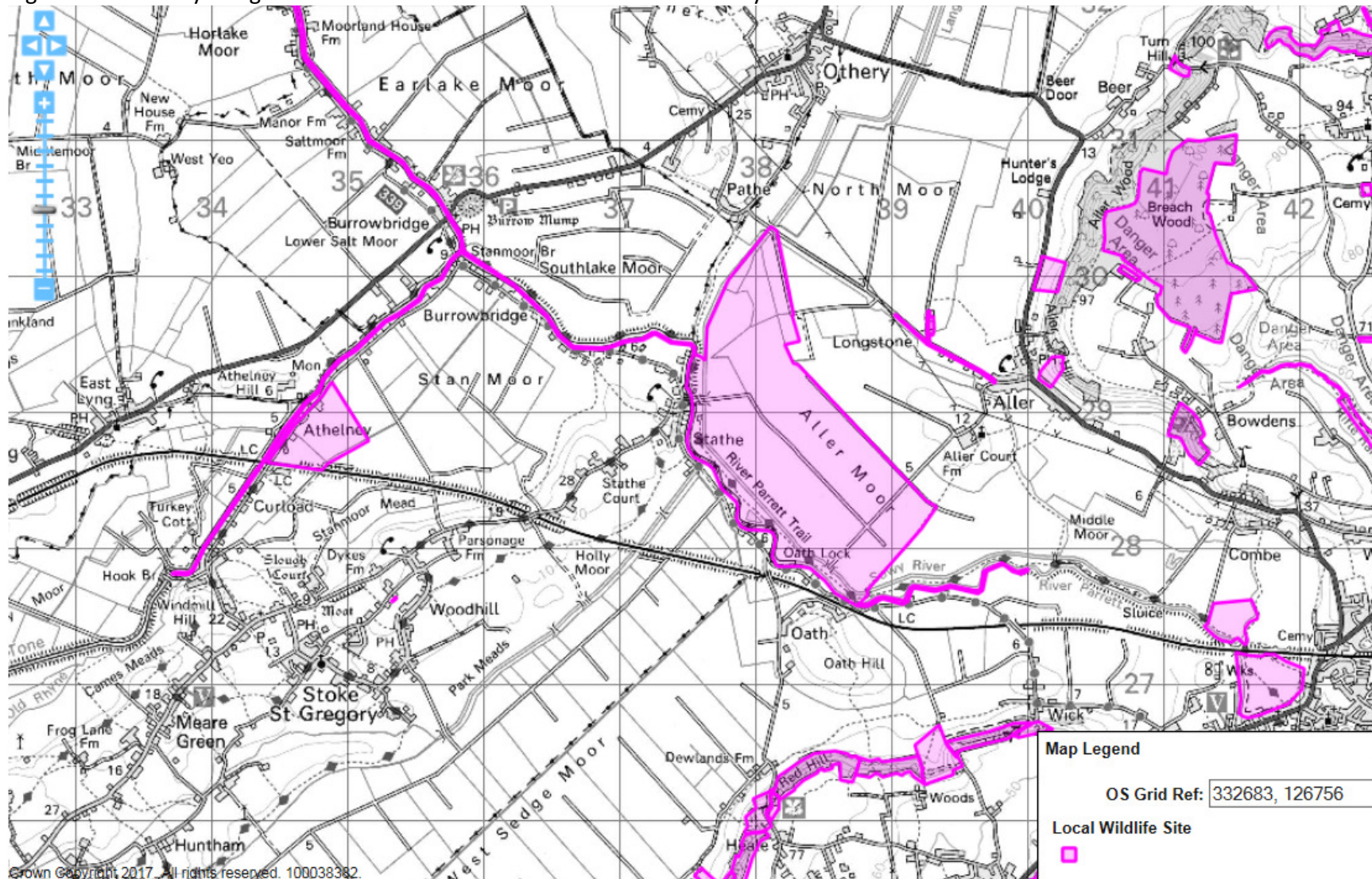
Appendix A Designated sites

Seven statutory designated sites were located within 2km of the length of river Parrett surveyed.



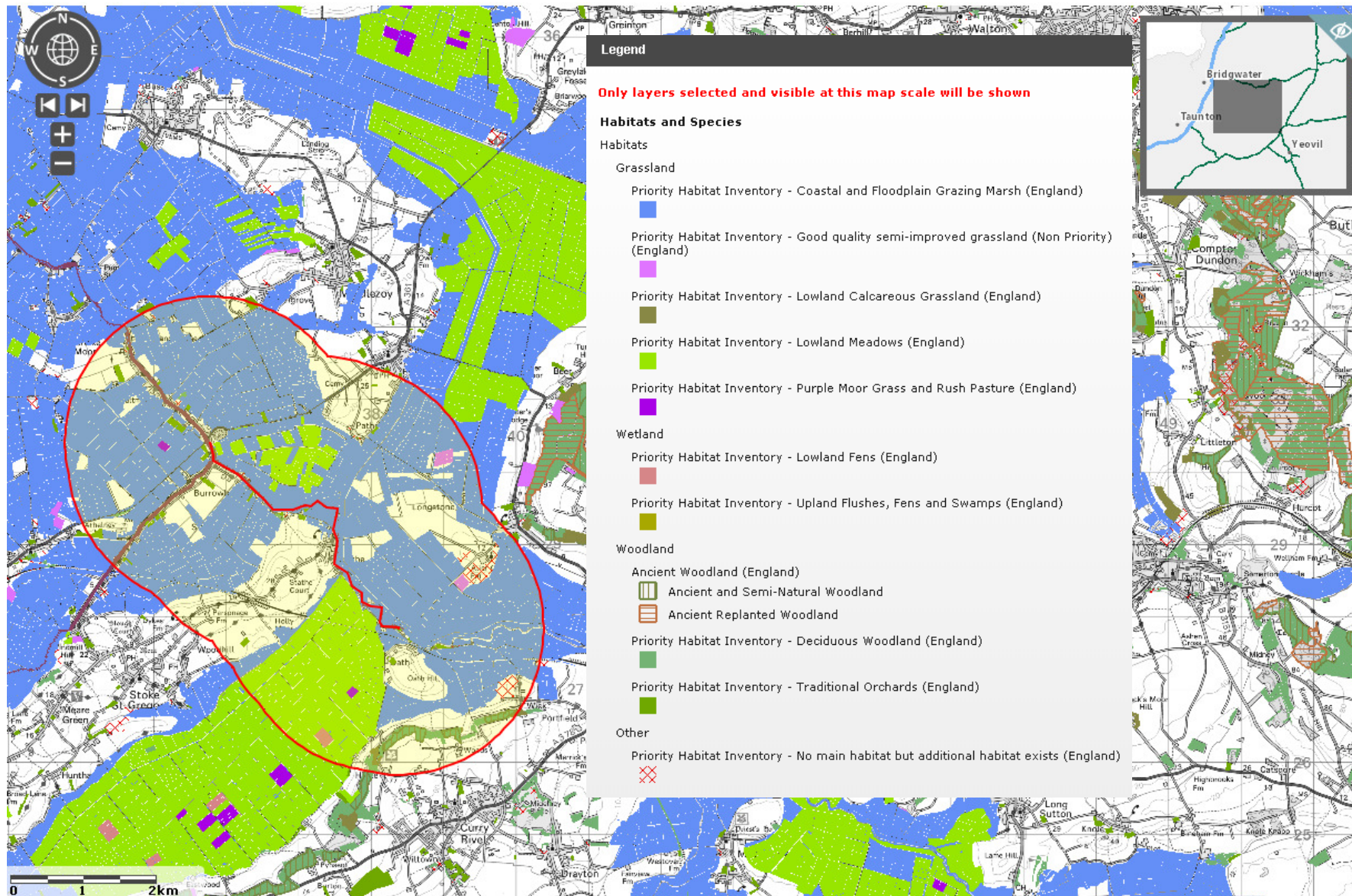


Eight non-statutory designated sites were located within 2km of the survey area.





Priority habitats within 2km of the proposed works





Appendix B Wildlife legislation and planning policy

The following is a summary of wildlife legislation and planning policy which affords protection to plants and animals and seeks to conserve, enhance and restore biodiversity:

Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 (SI No. 2017/1012) are the principal means by which the European Habitats Directive is transposed in England and Wales.

The Regulations provide for the designation and protection of a network of 'European Sites' termed Natura 2000, the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

The Conservation of Habitats and Species Regulations 2017 apply in the terrestrial environment and in territorial waters out to 12 nautical miles.

These Regulations consolidate the Conservation of Habitats and Species Regulations 2010 (S.I. 2010/490) with subsequent amending instruments, and make minor modifications reflecting changes to related legislation.

These Regulations also implement aspects of the Marine and Coastal Access Act 2009 (c. 23) ("the Marine Act).

These Regulations transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (OJ No. L 206, 22.7.1992, p.7) ("the Habitats Directive").

These Regulations consolidate the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (S.I. 2007/1842) with subsequent amending instruments, and make minor modifications reflecting changes to related legislation. The instruments being consolidated by these Regulations made, amongst things, provision for implementing Council Directive 2009/147/EC on the conservation of wild birds (OJ No. L20, 26.01.2010, p.7.) and Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (OJ No. L206, 22.7.92, p.7) in relation to marine areas where the United Kingdom has jurisdiction beyond its territorial sea. The Regulations make provision in relation to the offshore marine area, offshore marine installations and certain ships and aircraft. The "offshore marine area" is defined in regulation 2(1).

Regulation 41 relates to the protection of European protected species listed under Schedule 2 of the Regulations. Taken together it is an offence to undertake the following acts with regard to European Protected Species:

- deliberately capture, injure or kill any wild animal of a European Protected Species;
- deliberately disturb animals of any such species in such a way as to be likely to:
 - impair their ability to survive, breed, rear or nurture their young, hibernate or migrate, or
 - affect significantly the local distribution or abundance of the species to which they belong;
- deliberately take or destroy the eggs of such an animal; or
- damage or destroy a breeding site or resting place of such an animal.



The disturbance offence is generally taken to refer to a discernable effect at population level and biogeographic level, rather than simply to an individual animal. However, in certain circumstances the disturbance of one individual animal may have population level effects.

The Regulations also make it an offence (subject to exceptions) to deliberately pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5.

However, the actions listed above can be made lawful through the granting of licences (European Protected Species Licence) by the appropriate authorities (Natural England in England). Licences may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority has determined that the following regulations are satisfied:

- the works under the licence are being carried out for the purposes of 'preserving public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- there is 'no satisfactory alternative'; and
- the action 'will not be detrimental to the maintenance of the population of the species concerned at favourable conservation status in their natural range'.

To apply for a licence, the following information is required:

- the species concerned;
- the size of the population at the site (note this may require a survey to be carried out at a particular time of the year);
- the impact(s) (if any) that the development is likely to have upon the populations; and
- what measures can be conducted to mitigate for the impact(s).

The Wildlife and Countryside Act 1981

The Wildlife and Countryside Act 1981 (as amended) is the principal piece of UK legislation relating to the protection of wildlife. It consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain.

The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally kill, injure, or take any wild bird or their eggs or nests. Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Special Protection Areas (subject to exceptions) to provide further protection to birds. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

The Act makes it an offence (subject to exceptions) to intentionally kill, injure, or take, possess, or trade in any wild animal listed in Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals listed in Schedule 6.



The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

The Countryside and Rights of Way Act 2000

The Countryside and Rights of Way Act 2000 (CROW) was passed to provide additional levels of protection for wildlife whilst also strengthening the protection afforded to Sites of Special Scientific Interest.

Schedule 12 of the Act amends the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable', create a new offence of 'reckless' disturbance, confer greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities Act 2006 (NERC) is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy.

It was created to make provision in connection with wildlife, Sites of Special Scientific Interest, National Parks and the Broads; to amend the law relating to rights of way; to make provision as to the Inland Waterways Amenity Advisory Council; to provide for flexible administrative arrangements in connection with functions relating to the environment and rural affairs and certain other functions; and for connected purposes.

Section 40 of NERC carries an extension of the earlier CROW Act biodiversity duty to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. Section 41 requires the Secretary of State, as respects England, to publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity. The updated S41 list, published in August 2010, identified 56 habitats and 943 species of principal importance.

The Protection of Badgers Act 1992

In the UK badgers are primarily afforded protection under the Protection of Badgers Act 1992. This makes it illegal to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so and to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it.



Badgers also receive limited protection under Schedule 6 of the Wildlife and Countryside Act 1981 (as amended). This outlaws certain methods of taking or killing animals.

Under Section 10 (1)(d) of the Protection of Badgers Act 1992, a licence may be granted by Natural England to interfere with a badger sett for the purpose of development, as defined by Section 55(1) of the Town and Country Planning Act 1990.

Section 3 of the Protection of Badgers Act 1992 defines interference as:

- damaging a badger sett;
- destroying a badger sett;
- obstructing access to, or any entrance of, a badger sett;
- causing a dog to enter a sett; or
- disturbing a badger when it is occupying a badger sett.

Natural England guidance has suggested that the following operations may disturb badgers in their setts, and therefore unless these can be avoided a licence may be required for:

- excavation within 20m of any entrance to an active sett;
- excavation or other ground disturbance using heavy machinery within 30m of a sett;
- fire or chemicals within 20m of a sett;
- tree felling in the area of a sett – trees should be felled away from setts and cleared away from badger paths; and
- other disturbances such as loud noises or vibrations; some activities such as pile driving and the use of explosives that may result in a disturbance over a much greater distance will require individual consideration.

The Wild Mammals (Protection) Act 1996

The Wild Mammals (Protection) Act 1996 makes it an offence for any person to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

The Animal Welfare Act 2006

Prior to the Animal Welfare Act 2006, people only had a duty to ensure that an animal didn't suffer unnecessarily. The new Act keeps this duty but also imposes a broader duty of care on anyone responsible for an animal to take reasonable steps to ensure that the animal's needs are met. This means that a person has to look after the animal's welfare as well as ensure that it does not suffer. The Act says that an animal's welfare needs include:

- a suitable environment (how it is housed);
- a suitable diet (what it eats and drinks);
- the ability to exhibit normal behaviour patterns;
- any need it has to be housed with, or apart from, other animals; and
- protection from pain, suffering, injury and disease.



With regards to development, this may have implications when translocations of animals are proposed. As such, care must be taken to ensure that any receptor sites are suitable for the species in terms of habitat and carrying capacity.

The Hedgerows Regulations 1997

The Hedgerows Regulations 1997 were introduced to protect hedgerows of importance from destruction. However the legislation does not apply to any hedgerow which is within or marking the boundary of the curtilage of a dwelling house.

For the Regulations to be applicable, the hedgerow must be at least 20m in length or, if less than 20m, it must meet another hedgerow at each end. A hedgerow is deemed to be important if it is more than thirty years old and meets at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

If a hedgerow which qualifies under the Regulations is to be removed, the landowner must contact the local planning authority in writing by submitting a hedgerow removal notice. The local planning authority then has a period of 42 days to decide whether or not the hedgerow meets the importance criteria of the regulations.

Biodiversity Action Plans

Biodiversity Action Plans (BAPs) set out actions for the conservation and enhancement of biological diversity at various spatial scales. They consist of both Habitat Action Plans (HAPs) and Species Action Plans (SAPs).

The UK BAP was the UK's response to the 1992 Convention on Biological Diversity in Rio de Janeiro. Following a review in 2007 a list of 1150 priority species and 65 priority habitats has been adopted, which are given a statutory basis for planning consideration under Section 40 of the NERC Act 2006.

Red Data Books

British Red Data Books (RDB) are an additional method for classifying the rarity of species, and are often seen as a natural progression from Biodiversity Action Plans.

RDB species have no automatic legal protection (unless they are protected under any of the legislation previously mentioned). Instead they provide a means of assessing rarity and highlight areas where resources may be targeted. Various categories of RDB species are recorded based on the IUCN criteria and the UK national criteria based on presence within certain numbers of 10x10km grid-squares (<http://www.jncc.gov.uk/page-3425>). As with Biodiversity Action Plans, where possible, steps should be taken to conserve RDB species which are to be affected by development.

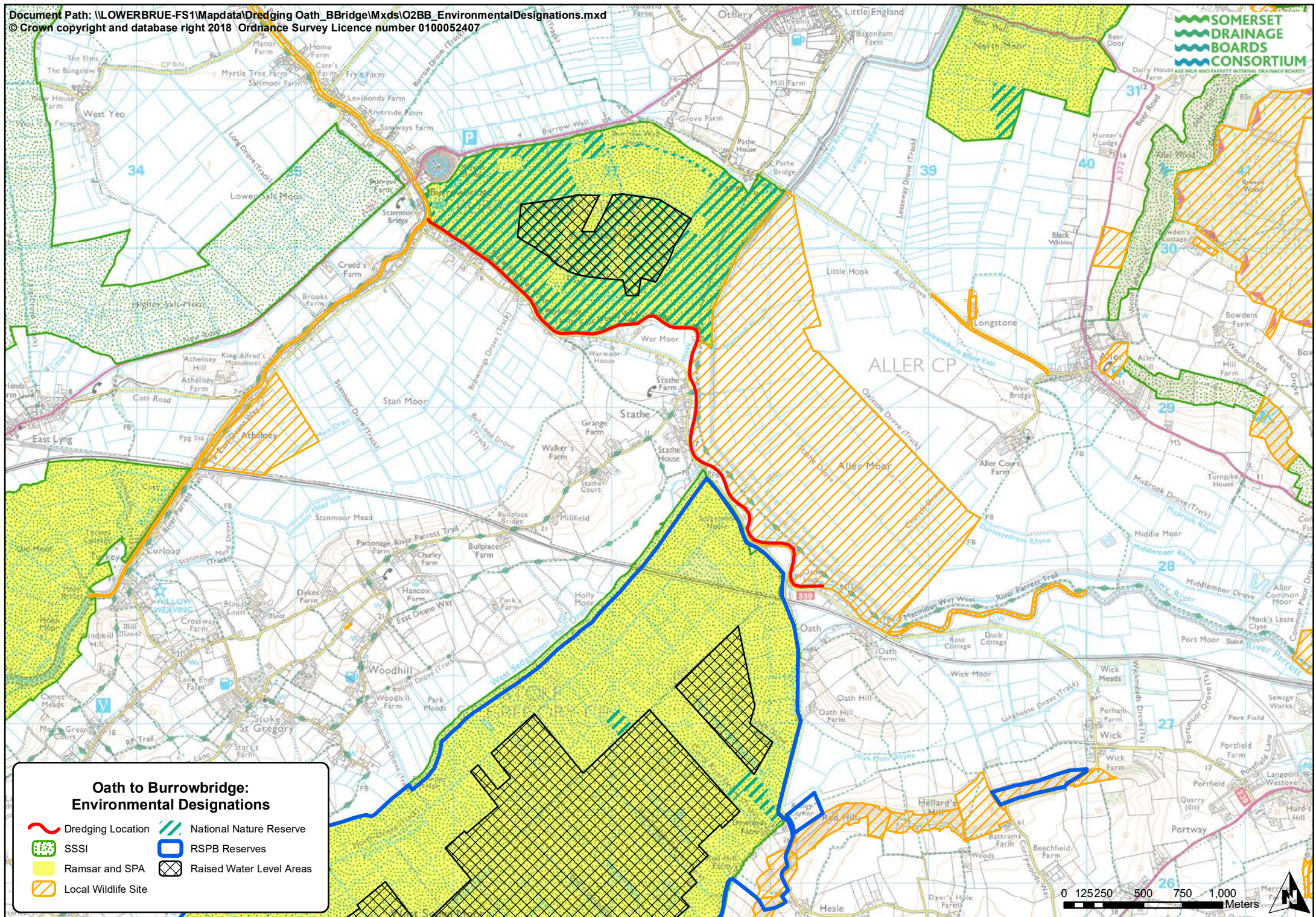


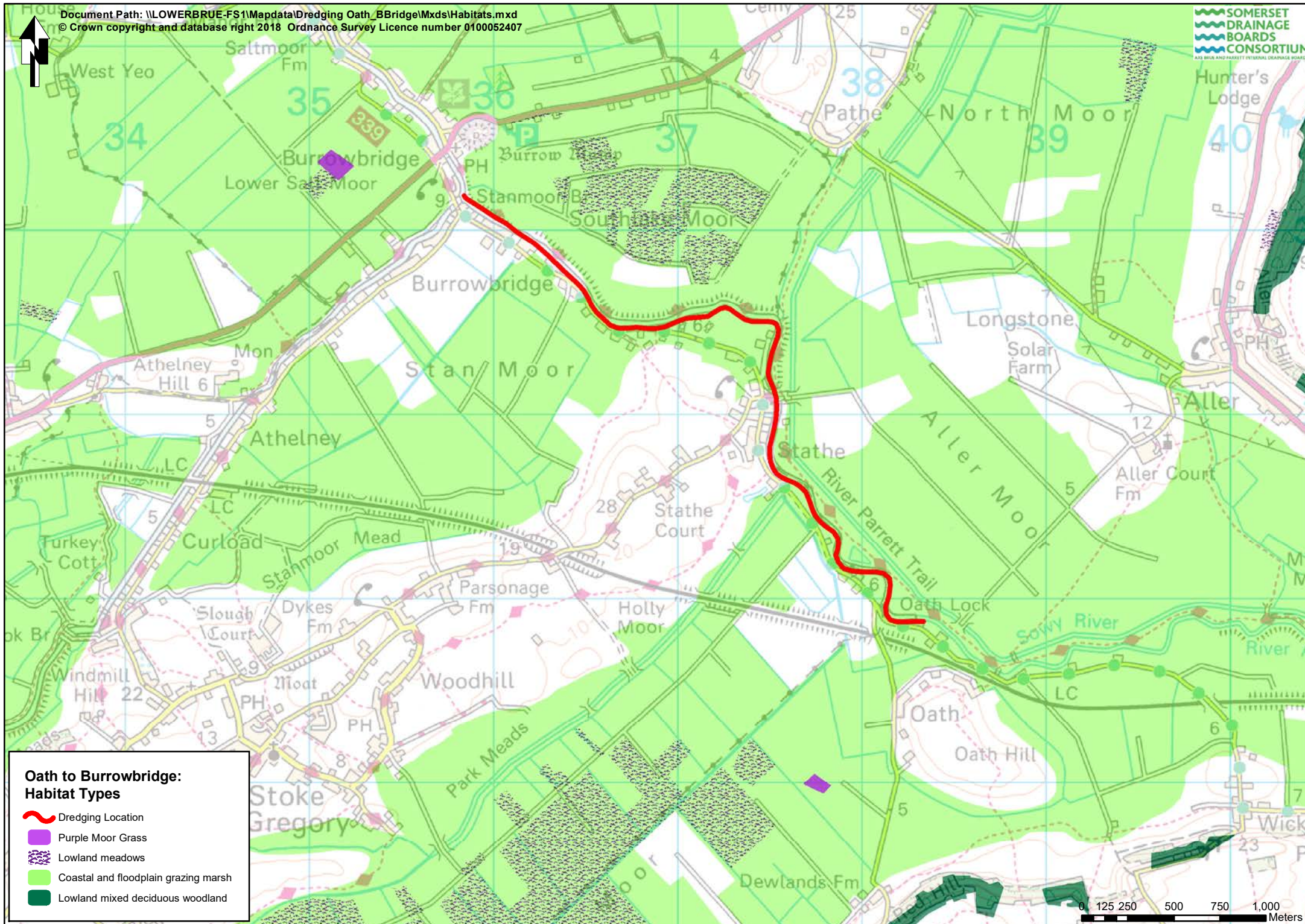
Somerset Ecology Services

Somerset County Council
County Hall
Taunton
Somerset
TA1 4DY






W: www.somerset.gov.uk
T: 07832 130370
E: SES@somerset.gov.uk







**Oath to Burrowbridge:
Habitat Types**

-  Dredging Location
-  Purple Moor Grass
-  Lowland meadows
-  Coastal and floodplain grazing marsh
-  Lowland mixed deciduous woodland

Wessex Fisheries, Biodiversity & Geomorphology Screening and Walkover Survey Report: River Parrett at Southlake Moor

16th May 2017

Summary

Three areas of the River Parrett between Beazleys Spillway NGR: ST 37546 29423 and a point east of Burrowbridge NGR: ST 36106 30039 have been identified for works to repair low points in the flood bank. This stretch of the river runs along the boundary of Southlake Moor SSSI, which is also part of the Somerset Levels and Moors Special Protection Area and Ramsar Site.

Following consultation with Wessex Partnerships and Strategic Overview team, a routine biodiversity screening exercise of the proposal was carried out, this included a walkover of the area on Friday 12/05/2017.

Widespread field signs of protected species activity were found, including Water Vole, Otter and Badger. A number of potential bird nesting sites were noted. In addition the EA holds records of Hairy Click Beetle along this stretch of the River Parrett and habitat along much of this length was identified as potentially suitable for this species.

Any work within this area will require further protected species assessment and consultation with Natural England. The provision of appropriate mitigation and/or compensation will also be required if an impact on protected species is identified. Protected Species licensing may be required.

A Habitats Regulations Assessment to determine Likely Significant Effect on the European Designation will also be required as will a Countryside and Rights of Way Assessment of Operations Likely to Damage a SSSI.

A Water Framework Directive Assessment may also be required.

Further consultation with FB&G officers is recommended before proceeding with these works.

Survey Extent and Method

The right hand bank of the River Parrett was surveyed between Beazleys Spillway NGR: ST 37546 29423 to a point east of Burrowbridge NGR: ST 36106 30039. The survey consisted of walking the river bank, assessing the quality of the habitat of the riparian zone and searching for field signs of animals using this area. A broad assessment of the grassland bordering the river was also made. Notes were made during the survey and points of interest marked on a map.

The survey was carried out on Friday 12th May 2017 between 10.30 and 14:00 hours. The weather conditions were fine and dry and did not impose any constraints on the information gathered.

The scope of the survey was to identify any features of potential biodiversity value, not to carry out a detailed survey of individual habitats or species.

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
03459 88 11 88

Results

This section of the River Parrett flows through steep sided earth flood embankments. The river is unfenced and open to livestock. Plants along the water's edge had been heavily grazed by cattle and disturbance to the earth bank by trampling was widespread. Cattle trampling has resulted in bank slippage and the subsequent establishment of vegetated berms for much of the length surveyed. This has inadvertently created some structural diversity to the bank profile which is lacking along other areas of the river. Habitat quality is therefore higher than typically associated with much of the Parrett. The face of the flood bank was vegetated with rough grasses, nettles, dock and thistles. The river edge was dominated by the aquatic Reed Canary Grass *Phalaris arundinace*.

Evidence of activity by elver fisherman and domestic dogs was also noted, with further localised trampling of marginal vegetation near fishing pegs.

A public right of way exists along the top of the flood bank. Two people walking the route were met during the survey.

The adjoining grassland consisted of fairly species poor grazing marsh habitat. No botanical species of note were identified on the flood bank. However, a full vegetation survey was beyond the scope of this survey and more detailed study of this area may be required.

Protected Species

- Water Vole

Field signs of water vole were noted for much of a 1km length to the west of Beazley's Spillway. Latrines and feeding signs were recorded. Tracks were also seen in the soft mud at the edge of the river. The stepped bank with vegetated berms provide good habitat for water voles. No burrows or runs were found, however, disturbance and heavy trampling by cattle and fisherman made such features difficult to identify. In addition due to the width and density of the emergent vegetation it was often difficult to see water's edge on the river side. Further detailed investigation will be required in this respect. The extent of water vole activity is shown in figure 1.

Water Vole is fully protected under the Wildlife and Countryside Act 1981 and is a Section 41 Species of Principal Importance under The Natural Environment and Rural Communities (NERC) Act 2006.

- Otter

Otter field signs of were noted in several areas. Otter prints (adults and young) were found at the water's edge along the survey length and a likely haul out point marked with spraint and a track leading up the flood bank was also found near a sluice at the confluence with a field drain. The track lead up and over the flood bank and into dense scrub vegetation lining the drain. This provides good habitat for otter and potential for a holt or lay-up area. Areas of otter activity are shown in figure 1.

Otter is protected under the Bern Convention (Appendix II), Annex II of the Habitats Directive, Schedule 5 of the Wildlife and Countryside Act 1981, and as a Section 41 Species of Principal Importance under The Natural Environment and Rural Communities (NERC) Act 2006.

- Hairy Click Beetle

The Environment Agency has records of the notable Hairy Click Beetle *Synaptus filiformis* from the River Parrett near Burrowbridge. This species requires specialist survey methodology to confirm its absence or presence, which was beyond the scope of this survey. This species is associated with Reed Canary grass *Phalaris arundinace*, the site therefore potentially provides optimum habitat for this species. The extent of potential Hairy Click Beetle habitat is shown in figure 1.

Hairy Click Beetle is protected under the Natural Environment and Rural Communities (NERC) Act 2006, as a Section 41 Species of Principal Importance and is classified as endangered in Great Britain. The River Parrett is one of only four confirmed sites for this species in Great Britain. Further survey will be required to determine status and extent of this species in the survey reach.

- Badger

Feeding signs of badger were noted with a single Badger snuffle hole, found on top of the flood embankment. The location of this is shown on Figure 1. No further badger activity was recorded in the walk over survey, however increased survey effort will be required to establish the status of this species along the stretch.

Badgers are protected under the Bern Convention (Appendix III), the Protection of Badgers Act, 1992 and the Wildlife and Countryside Act 1981, Schedule 6 (Animals which may not be killed or taken by certain methods).

- Breeding Birds

Birds displaying breeding behaviour were seen at many locations along the survey length. A sedge warbler displaying alarm and carrying food was observed to the western end of the survey area. A breeding bird survey would be required to establish the exact location of bird nests and this was beyond the scope of this survey. All breeding birds are protected under the Schedule 1 of the Wildlife and Countryside Act 1981. Further survey will be required if works are to be conducted during the bird breeding season; March to September.

Protected Sites

This stretch of the river marks the boundary of Southlake Moor Site of Special Scientific Interest (SSSI), which is also part of the Somerset Levels and Moors Special Protection Area (SPA). This area is designated to protect internationally important numbers of birds under the Conservation of Habitats and Species Regulations 2010. It is also designated as a wetland of international importance under the Ramsar Convention, which gives legal protection to its species rich ditch habitat and botanically important wet grassland. The top of the flood bank is included within the designated site.

As a 'competent authority' under the Habitats Regulations the Environment Agency has a legal duty to consider the requirements of the Habitats Directive in everything we do. We must make sure that any activities, either our own or those we regulate, will not adversely affect the integrity of any European site. We are obliged to assess whether there may be a significant effect on a European site, either alone or in combination with any other activities.

In this instance a Stage 1 Habitats Regulations Assessment will be required to assess Likely Significant Effect from the proposed work on the designated site. If the assessment shows that there will be an adverse effect, a Stage 2 Appropriate Assessment will be required. A suitable package of mitigation will need to be agreed with Natural England before works can begin.

An assessment of Operations Likely to Damage the features of a SSSI will also be required under the Countryside and Rights of Way Act 2000. Assent for the works will be required from Natural England.

The Water Framework Directive

The Water Framework Directive (WFD) is a European directive that imposes legal requirements to protect and improve the water environment. The Environment Agency must secure compliance with the requirements of the WFD and meet other environmental duties when undertaking physical works in rivers. WFD Screening may be required for the proposed works or any in combination impacts. Consultation with the FB&G Geomorphology lead officer is recommended in this instance.

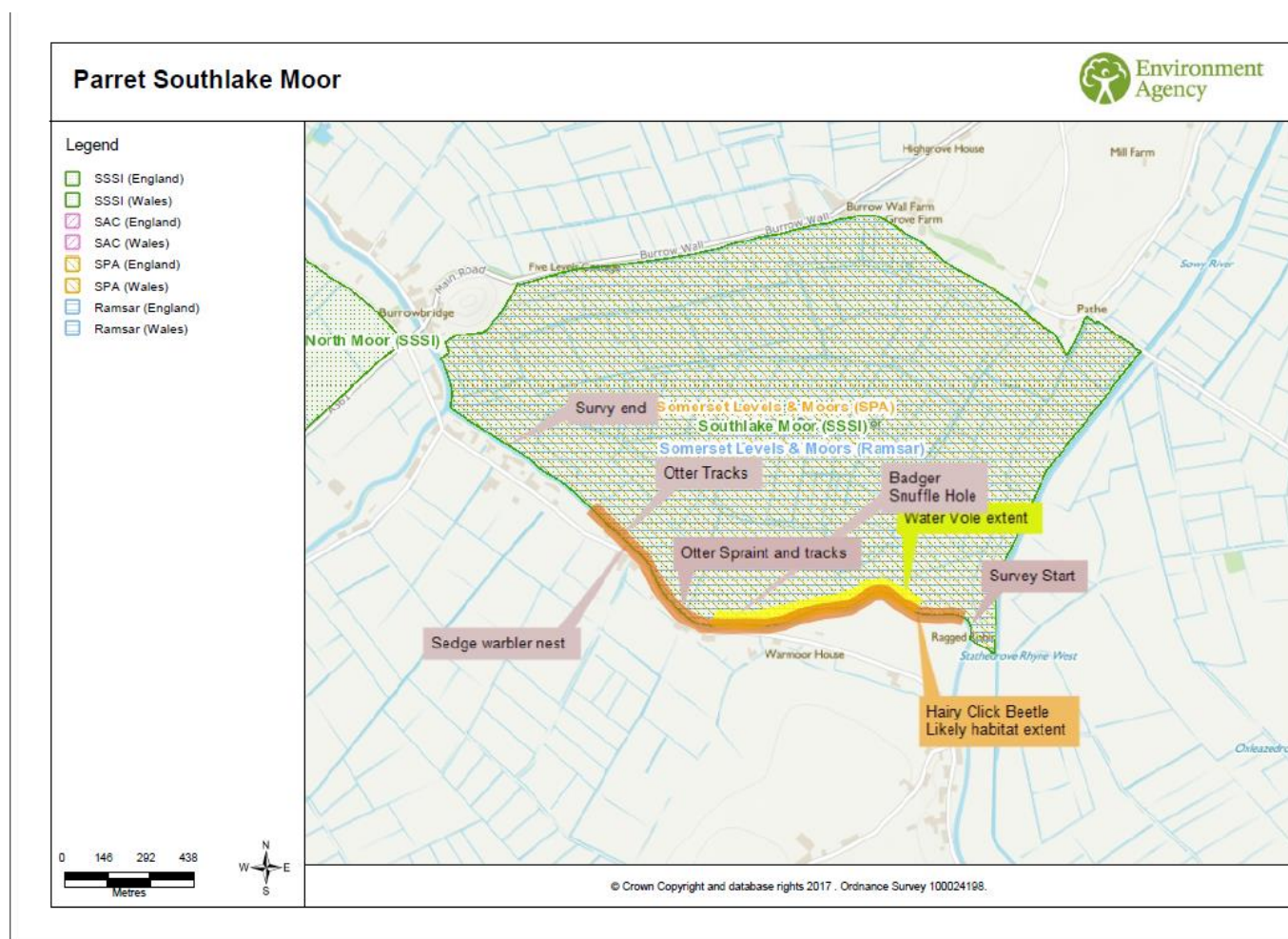


Figure 1. Extent of survey, Southlake Moor SSSI boundary and location of features of interest.

Conclusions and Recommendations

This short screening exercise has identified significant statutory nature conservation interest in the area of the proposed works.

Work should not proceed without conducting appropriate habitat and protected species assessments as detailed above. The following will be required to complete the assessment process and for consultation with Natural England

1. Full details about the scope, extent, timing and duration of works
2. Protected species surveys to determine the status and extent of Water Vole, Otter, Badger, breeding birds and Hairy Click Beetle
3. A Habitat Regulation Assessment to determine if there will be a Likely Significant Effect on the Somerset Levels and Moors SPA and Ramsar Site.
4. A CROW Assessment to determine if the operation is likely to damage the features of Southlake Moor SSSI
5. Consultation with the Wessex Geomorphology lead to determine the level of WFD Screening required

Images taken during survey



Typical habitat type



Cattle trampling/grazing



Water Vole
latrine/feeding



Water Vole prints



Otter haul-out



Otter and dog prints



Otter Spraint

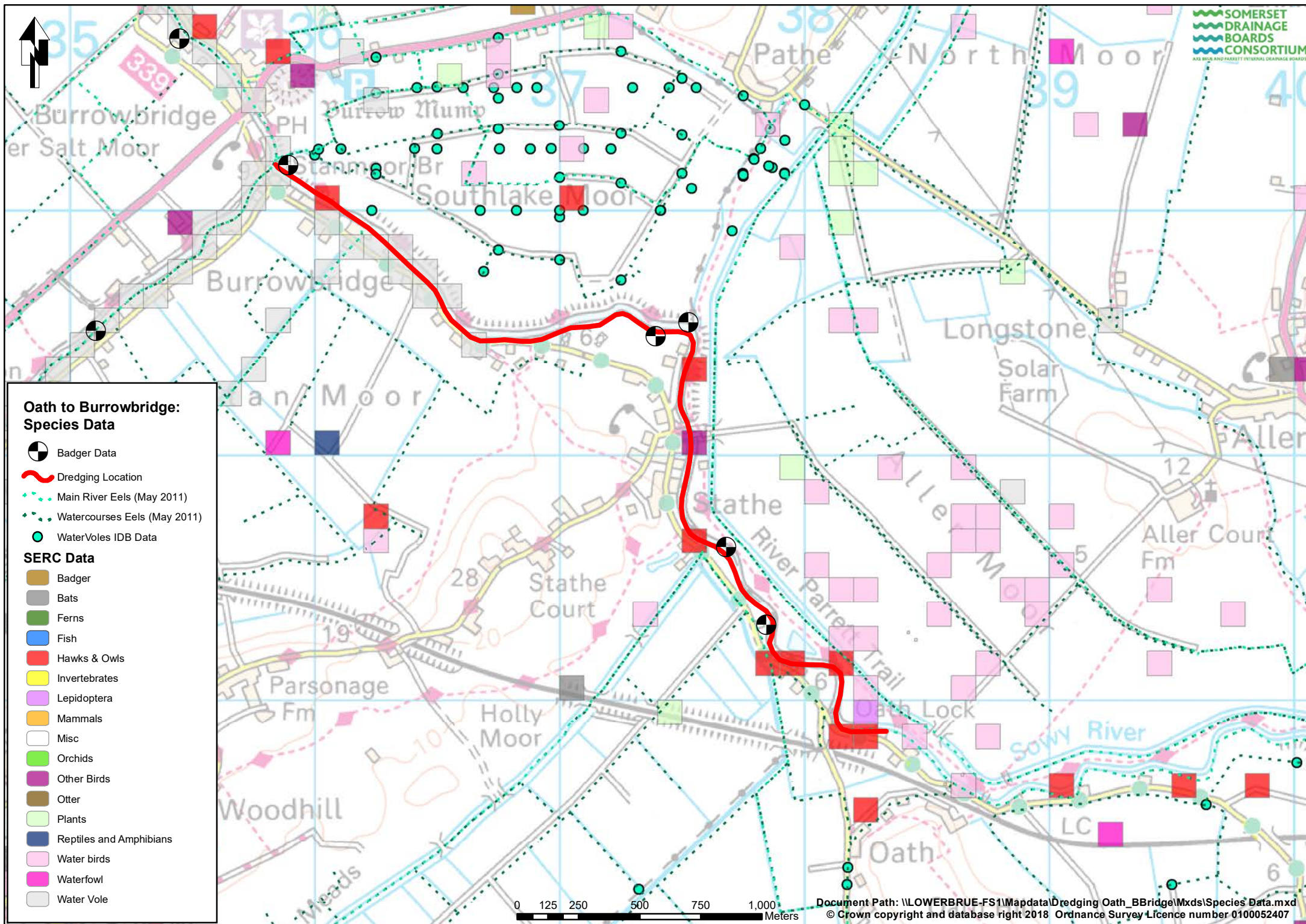


Animal track from river



Badger 'snuffle' hole

Andrew Goodman MICEEM
Biodiversity Technical Officer
Wessex FB&G



FID	SCIENTIFIC	COMMON	SITE	LOCATION	GRID	START_DATE	END_DATE	ABUNDANCE
0	Vanellus vanellus	Lapwing		Wick Moor	ST392274	01/06/1998	31/08/1998	2 pairs Count of proved breeding
1	Motacilla flava subsp. flavissima	Yellow Wagtail	Aller Moor		ST387287	08/06/2002	08/06/2002	1 Count of juvenile; 3 Count of male; 4 Coun
2	Alcedo atthis	Kingfisher	Aller Moor		ST387287	01/06/1999	31/08/1999	
3	Motacilla flava subsp. flavissima	Yellow Wagtail	Aller Moor		ST387287	01/03/1999	31/05/1999	5 pairs Count of proved breeding
4	Saxicola torquata	Stonechat	Aller Moor		ST387287	01/03/2002	31/05/2002	1 Count of singing/mating calls
5	Alcedo atthis	Kingfisher	Aller Moor		ST387287	01/03/2003	31/05/2003	1 Count of possible breeding
6	Falco tinnunculus	Kestrel	Aller Moor		ST387287	01/06/2003	31/08/2003	
7	Emberiza schoenioides	Reed Bunting	Aller Moor		ST387287	01/06/2003	31/08/2003	6 pairs Count of proved breeding
8	Numenius arquata	Curlew	Aller Moor		ST387287	01/06/2003	31/08/2003	1 pair Count of proved breeding
9	Bucephala clangula	Goldeneye	Aller Moor		ST387287	06/12/1998	06/12/1998	1 Count of female
10	Saxicola rubetra	Whinchat	Aller Moor		ST387287	01/03/1999	31/05/1999	family party Count of present
11	Lymnocyrtus minimus	Jack Snipe	Aller Moor		ST387287	01/09/2000	30/11/2000	1 Count of wintering
12	Alauda arvensis	Skylark	Aller Moor		ST387287	01/03/2003	31/05/2003	pairs Count of present
13	Saxicola torquata	Stonechat	Aller Moor		ST387287	01/06/2003	31/08/2003	1 Count of singing/mating calls; 1 pair Coun
14	Motacilla flava subsp. flavissima	Yellow Wagtail	Aller Moor		ST387287	01/06/2003	31/08/2003	1 Count of male
15	Gallinago gallinago	Snipe	Aller Moor		ST386289	01/01/1977	31/12/1977	3 Count of probable breeding
16	Anas clypeata	Shoveler	Aller Moor		ST386289	01/07/1995	31/12/1995	1 Count of present
17	Vanellus vanellus	Lapwing	Aller Moor		ST386289	01/01/1977	31/12/1977	18 Count of probable breeding
18	Gallinago gallinago	Snipe	Aller Moor		ST386289	01/01/1983	31/12/1983	3 Count of probable breeding
19	Vanellus vanellus	Lapwing	Aller Moor		ST386289	01/01/1983	31/12/1983	19 Count of probable breeding
20	Gallinago gallinago	Snipe	Aller Moor		ST386289	01/01/1985	31/12/1985	2 Count of probable breeding
21	Vanellus vanellus	Lapwing	Aller Moor		ST386289	01/01/1987	31/12/1987	3 Count of probable breeding
22	Lutra lutra	Otter		West Sedgemoor	ST382270	20/07/1978	21/07/1978	2 Count of droppings
23	Lutra lutra	Otter		West Sedgemoor	ST382270	22/06/1978	23/06/1978	2 Count of droppings
24	Lutra lutra	Otter		West Sedgemoor	ST382270	06/07/1978	07/07/1978	2 Count of droppings
25	Lutra lutra	Otter		West Sedgemoor	ST382270	03/08/1978	04/08/1978	1 Count of droppings
26	Lutra lutra	Otter		West Sedgemoor	ST382270	14/09/1978	15/09/1978	1 Count of droppings
27	Lutra lutra	Otter		Pathe Bridge	ST381304	01/08/1995	01/08/1995	2 Count of droppings
28	Lutra lutra	Otter		Pathe Bridge	ST381304	25/08/1996	25/08/1996	3 Count of droppings
29	Lutra lutra	Otter		Pathe Bridge	ST381304	31/03/1997	31/03/1997	4 Count of droppings
30	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	14/10/1997	14/10/1997	1 Count of droppings
31	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	13/02/1998	13/02/1998	0 Count of droppings
32	Lutra lutra	Otter		Pathe, Sowry River	ST381304	09/05/1998	09/05/1998	0 Count of anal jelly; 6 Count of droppings
33	Lutra lutra	Otter		Pathe, Sowry River	ST381304	25/06/1998	25/06/1998	0 Count of anal jelly; 5 Count of droppings
34	Lutra lutra	Otter		Pathe, Sowry River	ST381304	19/08/1998	19/08/1998	0 Count of anal jelly; 14 Count of droppings
35	Lutra lutra	Otter		Pathe Bridge	ST381304	20/01/1996	20/01/1996	6 Count of droppings
36	Lutra lutra	Otter		Pathe Bridge	ST381304	02/01/1997	02/01/1997	6 Count of droppings
37	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	10/05/1997	10/05/1997	1 Count of droppings
38	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	27/12/1997	27/12/1997	2 Count of droppings
39	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	30/03/1998	30/03/1998	11 Count of droppings
40	Lutra lutra	Otter		Pathe, Sowry River	ST381304	10/05/1998	10/05/1998	0 Count of droppings; 3 Count of anal jelly
41	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	13/10/1997	13/10/1997	19 Count of droppings
42	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	15/09/1997	15/09/1997	3 Count of droppings
43	Lutra lutra	Otter		Pathe Bridge	ST381304	26/09/1995	26/09/1995	4 Count of droppings
44	Lutra lutra	Otter		Pathe Bridge	ST381304	14/11/1995	14/11/1995	2 Count of droppings
45	Lutra lutra	Otter		Pathe Bridge	ST381304	12/10/1996	12/10/1996	10 Count of droppings
46	Lutra lutra	Otter		Pathe Bridge	ST381304	23/02/1997	23/02/1997	7 Count of droppings
47	Lutra lutra	Otter		Pathe Bridge	ST381304	24/04/1997	24/04/1997	1 Count of droppings
48	Lutra lutra	Otter		Pathe Bridge/Sowry River	ST381304	18/07/1997	18/07/1997	1 Count of droppings
49	Hydaticus transversalis	Hydaticus transversalis	SL3		ST380304	01/09/1994	30/09/1994	2-5 Count of present
50	Synaptus filiformis	Click beetle	Southlake Moor SSSI		ST382278	04/06/2000	04/06/2000	1 Count of present
51	Hirundo rustica	Swallow	River Parrett, Middle Moor to Screech Owl section		ST378281	04/06/2000	04/06/2000	
52	Buteo buteo	Buzzard	River Parrett, Middle Moor to Screech Owl section		ST378281	04/06/2000	04/06/2000	
53	Motacilla cinerea	Grey Wagtail	River Parrett, Middle Moor to Screech Owl section		ST381281	04/06/2000	04/06/2000	
54	Hirundo rustica	Swallow	River Parrett, Middle Moor to Screech Owl section		ST381281	04/06/2000	04/06/2000	
55	Buteo buteo	Buzzard	River Parrett, Middle Moor to Screech Owl section		ST381281	04/06/2000	04/06/2000	
56	Hirundo rustica	Swallow	River Parrett, Middle Moor to Screech Owl section		ST382278	04/06/2000	04/06/2000	
57	Buteo buteo	Buzzard	River Parrett, Middle Moor to Screech Owl section		ST382278	04/06/2000	04/06/2000	
58	Motacilla cinerea	Grey Wagtail	River Parrett, Middle Moor to Screech Owl section		ST382278	04/06/2000	04/06/2000	
59	Motacilla cinerea	Grey Wagtail	River Parrett, Middle Moor to Screech Owl section		ST378281	04/06/2000	04/06/2000	
60	Geranium pusillum	Small-Flowered Crane's-Bill		Oath, Redhill [RCDR-IPG GAC PRG @ (381278 ST32Y) On 19	ST381278	01/01/1985	31/12/1995	
61	Vanellus vanellus	Lapwing	Aller Moor		ST394284	15/04/1982	15/04/1982	1 pair Count of probable breeding
62	Lutra lutra	Otter		near Oath, R. Parrett	ST39722786	24/10/2002	24/10/2002	1 Count of Tracks
63	Vanellus vanellus	Lapwing	Aller Moor		ST394281	21/04/1983	21/04/1983	1 pair Count of probable breeding
64	Falco tinnunculus	Kestrel	Aller Moor		ST390285	07/03/1983	07/03/1983	1 Count of present
65	Gallinago gallinago	Snipe	Aller Moor		ST390285	07/03/1983	07/03/1983	5 Count of present
66	Accipiter nisus	Sparrowhawk	Aller Moor		ST390285	24/02/1983	24/02/1983	1 Count of present
67	Buteo buteo	Buzzard	Aller Moor		ST390285	24/02/1983	24/02/1983	3 Count of present
68	Vanellus vanellus	Lapwing	Aller Moor		ST390285	24/02/1983	24/02/1983	601 Count of present
69	Buteo buteo	Buzzard	Aller Moor		ST390285	07/03/1983	07/03/1983	4 Count of present
70	Athene noctua	Little Owl	Aller Moor		ST390285	07/03/1983	07/03/1983	1 Count of present
71	Tringa totanus	Redshank	Aller Moor		ST390285	07/03/1983	07/03/1983	8 Count of present
72	Numenius phaeopus	Whimbrel	Aller Moor		ST390285	21/04/1983	21/04/1983	24 Count of present
73	Saxicola torquata	Stonechat	Aller Moor		ST390285	24/02/1983	24/02/1983	3 Count of present
74	Gallinago gallinago	Snipe	Aller Moor		ST390285	24/02/1983	24/02/1983	88 Count of present
75	Pluvialis apricaria	Golden Plover	Aller Moor		ST390285	24/02/1983	24/02/1983	227 Count of present
76	Accipiter nisus	Sparrowhawk	Aller Moor		ST390285	07/03/1983	07/03/1983	3 Count of present
77	Falco columbarius	Merlin	Aller Moor		ST390285	07/03/1983	07/03/1983	1 Count of male
78	Vanellus vanellus	Lapwing	Aller Moor		ST390285	07/03/1983	07/03/1983	287 Count of present
79	Saxicola rubetra	Whinchat	Aller Moor		ST390285	07/03/1983	07/03/1983	1 Count of present
80	Tringa totanus	Redshank	Aller Moor		ST390285	21/04/1983	21/04/1983	2 pairs Count of probable breeding
81	Tringa totanus	Redshank	Aller Moor		ST390285	21/04/1983	21/04/1983	4 Count of present
82	Vanellus vanellus	Lapwing	Aller Moor		ST390285	21/04/1983	21/04/1983	8 pairs Count of probable breeding
83	Vanellus vanellus	Lapwing	Aller Moor		ST390285	21/04/1983	21/04/1983	21 Count of present
84	Vanellus vanellus	Lapwing	Aller Moor		ST390285	21/04/1983	21/04/1983	1 pair Count of probable breeding
85	Circus cyaneus	Hen Harrier	Aller Moor		ST386289	08/02/1995	08/02/1995	1 Count of wintering
86	Vanellus vanellus	Lapwing	Aller Moor		ST386289	21/04/1983	21/04/1983	1 pair Count of probable breeding
87	Vanellus vanellus	Lapwing	Aller Moor		ST387286	21/04/1983	21/04/1983	1 pair Count of probable breeding
88	Lymnocyrtus minimus	Jack Snipe	Aller Moor		ST386289	01/12/1992	28/02/1993	3 Count of wintering
89	Hydrocharis morsus-ranae	Frogbit	Aller Moor		ST386289	01/08/1994	31/08/1994	occasional Count of present
90	Tringa ochropus	Green Sandpiper	Aller Moor		ST386289	01/12/1993	28/02/1994	2 Count of wintering
91	Hototia palustris	Water-Violet	Aller Moor		ST386289	06/04/1972	06/04/1972	
92	Hydrocharis morsus-ranae	Frogbit	Aller Moor		ST386289	06/04/1972	06/04/1972	
93	Groenlandia densa	Opposite-Leaved Pondweed	Aller Moor		ST386289	06/04/1972	06/04/1972	
94	Oenanthe fluviatosa	Tubular Water-Dropwort	Aller Moor		ST386289	06/04/1972	06/04/1972	
95	Cygnus columbianus	Lewis's Swan	Aller Moor		ST387287	14/02/1996	14/02/1996	14 Count of in flight
96	Vanellus vanellus	Lapwing	Aller Moor		ST379298	01/12/1981	28/02/1982	123 Count of present
97	Asio flammeus	Short-Eared Owl	Aller Moor		ST385299	03/01/2005	03/01/2005	3 Count of in flight
98	Alcedo atthis	Kingfisher	River Parrett, Middle Moor to Screech Owl section	Oath	ST382280	21/08/1996	21/08/1996	1 Count of present; 5 Count of present; fami
99	Pluvialis apricaria	Golden Plover	Aller Moor		ST383289	01/12/1981	28/02/1982	28 Count of present
100	Vanellus vanellus	Lapwing	Aller Moor		ST383289	01/12/1981	28/02/1982	114 Count of present
101	Tringa totanus	Redshank	Aller Moor		ST382282	21/04/1983	21/04/1983	1 pair Count of probable breeding
102	Tringa totanus	Redshank	Aller Moor		ST386289	01/01/1993	31/12/1993	1 Count of probable breeding
103	Vanellus vanellus	Lapwing	Aller Moor		ST386289	16/12/1996	16/12/1996	600 Count of wintering
104	Cygnus olor	Mute Swan	Aller Moor		ST386289	12/01/1997	12/01/1997	44 Count of wintering
105	Tringa totanus	Redshank	Aller Moor		ST386289	01/01/1985	31/12/1985	4 Count of probable breeding
106	Tringa totanus	Redshank	Aller Moor		ST386289	01/01/1987	31/12/1987	1 Count of probable breeding
107	Numenius arquata	Curlew	Aller Moor		ST386289	01/01/1992	31/12/1992	1 Count of probable breeding
108	Tringa totanus	Redshank	Aller Moor		ST386289	01/01/1992	31/12/1992	2 Count of probable breeding
109	Numenius arquata	Curlew	Aller Moor		ST386289	01/01/1993	31/12/1993	1 Count of probable breeding
110	Alcedo atthis	Kingfisher	Aller Moor		ST386289	01/07/1993	31/12/1993	1 Count of present
111	Vanellus vanellus	Lapwing	Aller Moor		ST386289	01/01/1993	31/12/1993	7 Count of probable breeding
112	Gallinago gallinago	Snipe	Aller Moor		ST386289	01/01/1992	31/12/1992	1 Count of probable breeding
113	Cygnus olor	Mute Swan	Aller Moor		ST386289	16/12/1996	16/12/1996	15 Count of wintering

114	Vanelius vanelius	Lapwing	Aller Moor	ST386289	01/01/1985	31/12/1985	8 Count of probable breeding
115	Numenius arquata	Curlew	Aller Moor	ST386289	01/01/1987	31/12/1987	1 Count of probable breeding
116	Tringa ochropus	Green Sandpiper	Aller Moor	ST386289	01/12/1990	28/02/1991	2 Count of wintering
117	Vanelius vanelius	Lapwing	Aller Moor	ST386289	01/01/1992	31/12/1992	2 Count of probable breeding
118	Vanelius vanelius	Lapwing	Aller Moor	ST383289	21/04/1983	21/04/1983	1 pair Count of probable breeding
119	Sum latifolium	Greater Water-pansnip	North Somerses	ST36983062	19/07/2008	19/07/2008	3 Count
120	Sum latifolium	Greater Water-pansnip	North Somerses	ST370305	19/07/2008	19/07/2008	+ Count
121	Sum latifolium	Greater Water-pansnip	North Somerses	ST374302	29/07/2000	29/07/2000	1 Count of Flowering
122	Sum latifolium	Greater Water-pansnip	North Somerses	ST370305	06/07/2005	06/07/2005	+ Count
123	Sum latifolium	Greater Water-pansnip	North Somerses	ST36983063	19/07/2008	19/07/2008	+ Count
124	Sum latifolium	Greater Water-pansnip	North Somerses	ST36983061	25/07/2009	25/07/2009	+ Count
125	Lutra lutra	Otter	Aller Moor, Sowry River	ST380302	18/10/2005	18/10/2005	Present Count of adult
126	Mergus merganser	Goosander	Wick Moor	ST392274	30/12/1996	30/12/1996	2 Count of wintering
127	Lutra lutra	Otter	near West Sedgemoor	ST389275	19/12/2001	19/12/2001	1 Count of female
128	Lutra lutra	Otter	near Oath, R. Parrett	ST38982766	24/10/2002	24/10/2002	1 Count of Tracks
129	Lutra lutra	Otter	near Oath, R. Parrett	ST38982776	24/10/2002	24/10/2002	1 Count of Tracks
130	Phoenicurus phoenicurus	Redstart	Aller Moor	ST386289	01/01/1982	31/12/1988	
131	Phoenicurus phoenicurus	Redstart	Aller Moor	ST386289	01/01/1983	31/12/1983	1 Count of probable breeding
132	Gallinago gallinago	Snipe	Aller Moor	ST386289	01/01/1983	31/12/1983	1 Count of proved breeding
133	Saxicola rubetra	Whinchat	Aller Moor	ST386289	01/01/1983	31/12/1983	1 Count of proved breeding
134	Cygnus columbianus	Bewick's Swan	Aller Moor	ST386289	01/01/1982	31/12/1988	
135	Gallinago gallinago	Snipe	Aller Moor	ST386289	01/01/1982	31/12/1988	
136	Numenius phaeopus	Whimbrel	Aller Moor	ST386289	01/01/1982	31/12/1988	
137	Alcedo atthis	Kingfisher	Aller Moor	ST386289	01/01/1982	31/12/1988	1 Count of proved breeding
138	Vanelius vanelius	Lapwing	Aller Moor	ST386289	01/06/1991	31/08/1991	32 Count of proved breeding
139	Lutra lutra	Otter		ST385279	19/05/1992	19/05/1992	1 Count of present
140	Arvicola amphibius	Water Vole	R. Sowry	ST38642769	01/04/2007	31/05/2007	
141	Lutra lutra	Otter	R. Parrett, near Oath Bridge	ST382279	19/12/2001	19/12/2001	1 Count of mature
142	Motacilla flava subsp. flavissima	Yellow Wagtail	Road by Oath Lock - within 25-30 ft of river	ST386276	01/06/1996	31/08/1996	1 Count of juvenile
143	Alcedo atthis	Kingfisher	Oath	ST386276	01/06/1996	31/08/1996	family party Count of proved breeding
144	Synaptus filiformis	Click beetle	Oath Lock	ST382278	08/06/1992	08/06/1992	1 Count of present
145	Lasiommata megera	Wall	Oath.	ST382279	01/01/1992	31/12/1992	
146	Lutra lutra	Otter	near Oath, R. Parrett	ST3892768	24/10/2002	24/10/2002	1 Count of Tracks
147	Arvicola amphibius	Water Vole	R. Parrett, near Poplar House	ST38572765	01/04/2007	31/05/2007	1 Count of Tracks; 1 Count of droppings; 1 C
148	Lutra lutra	Otter	R. Parrett, near Poplar House	ST38572765	01/04/2007	31/05/2007	1 Count of feeding signs
149	Alcedo atthis	Kingfisher	River Parrett.	ST384278	13/09/1991	13/09/1991	1 Count of in flight
150	Tyto alba	Barn Owl	Aller Moor	ST386289	01/01/1982	31/12/1988	
151	Tringa totanus	Redshank	Aller Moor	ST386289	01/01/1983	31/12/1983	1 Count of proved breeding
152	Vanelius vanelius	Lapwing	Aller Moor	ST386289	01/01/1983	31/12/1983	1 Count of proved breeding
153	Motacilla flava	Yellow Wagtail	Aller Moor	ST386289	01/01/1983	31/12/1983	1 Count of proved breeding
154	Asio flammeus	Short-Eared Owl	Aller Moor	ST386289	01/01/1982	31/12/1988	
155	Falco columbarius	Merlin	Aller Moor	ST386289	01/01/1982	31/12/1988	
156	Pluvialis apricaria	Golden Plover	Aller Moor	ST386289	01/01/1982	31/12/1988	
157	Arvicola amphibius	Water Vole		ST38452824	01/04/2007	31/05/2007	1 Count of droppings; 1 Count of feeding sig
158	Lutra lutra	Otter	Sowry R.	ST38462826	01/04/2007	31/05/2007	1 Count of Tracks
159	Arvicola amphibius	Water Vole	Sowry R.	ST38422827	01/04/2007	31/05/2007	1 Count of droppings; 1 Count of feeding sig
160	Cygnus columbianus	Bewick's Swan	Aller Moor	ST387287	22/02/1997	22/02/1997	22 Count of in flight
161	Tyto alba	Barn Owl	Aller Moor	ST387287	01/06/1996	31/08/1996	1 Count of proved breeding
162	Podiceps auritus	Slavonian Grebe	Aller Moor	ST387287	10/11/1996	10/11/1996	1 Count of present
163	Cygnus cygnus	Whooper Swan	Aller Moor	ST387287	14/12/1997	14/12/1997	1 Count of juvenile
164	Cygnus columbianus	Bewick's Swan	Aller Moor	ST387287	21/12/1997	21/12/1997	30 Count of in flight
165	Motacilla flava subsp. flavissima	Yellow Wagtail	Aller Moor	ST387287	01/06/1998	31/08/1998	several Count of juvenile
166	Branta leucopsis	Barnacle Goose	Aller Moor	ST387287	06/12/1998	06/12/1998	1 Count of wintering
167	Lutra lutra	Otter	WSM, North Drove	ST377284	21/09/1975	21/09/1975	1 Count of droppings
168	Lutra lutra	Otter	West Sedgemoor, North Drove	ST377284	28/11/1977	28/11/1977	1 Count of droppings
169	Lutra lutra	Otter	West Sedgemoor, North Drove	ST377284	23/01/1978	23/01/1978	1 Count of Tracks; 2 Count of droppings
170	Lutra lutra	Otter	North Drove, West Sedgemoor	ST377284	04/07/1981	06/07/1981	1 Count of droppings
171	Motacilla flava subsp. flava	Blue-Headed Wagtail	Aller Moor	ST387287	08/06/2002	08/06/2002	
172	Lutra lutra	Otter	Sowry River, KSD	ST381304	08/01/1995	08/01/1995	1 Count of droppings
173	Lutra lutra	Otter	Pathe Bridge	ST381304	15/05/1999	15/05/1999	1 Count of droppings
174	Lutra lutra	Otter	Pathe, Sowry River	ST381304	24/09/1998	24/09/1998	0 Count of anal jelly; 9 Count of droppings
175	Hydrocharis morsus-ranae	Frogbit	Aller Moor	ST381301	17/09/1998	17/09/1998	
176	Odontomyia ornata		Aller Moor	ST381302	17/09/1998	17/09/1998	
177	Hydrocharis morsus-ranae	Frogbit	Aller Moor	ST381302	17/09/1998	17/09/1998	
178	Hottonia palustris	Water-Violet	Aller Moor	ST381302	17/09/1998	17/09/1998	
179	Hydrocharis morsus-ranae	Frogbit	Aller Moor	ST381303	17/09/1998	17/09/1998	
180	Sum latifolium	Great Water-Pansnip	Aller Moor	ST382301	17/09/1998	17/09/1998	
181	Hydrocharis morsus-ranae	Frogbit	Aller Moor	ST382301	17/09/1998	17/09/1998	
182	Lutra lutra	Otter	Pathe, Sowry River	ST381304	21/11/1998	21/11/1998	0 Count of anal jelly; 3 Count of droppings
183	Lutra lutra	Otter	Pathe, Sowry River	ST381304	09/02/1999	09/02/1999	0 Count of anal jelly; 1 Count of droppings
184	Lutra lutra	Otter	Sowry River, KSD	ST381304	07/10/1994	07/10/1994	5 Count of droppings
185	Synaptus filiformis	Click beetle	River Parrett	ST381279	01/05/1991	31/05/1991	1 Count of present
186	Numenius phaeopus	Whimbrel	Aller Moor	ST382284	13/05/1997	13/05/1997	2 Count of in flight
187	Lutra lutra	Otter	near Oath, R. Parrett	ST38132815	25/10/2002	25/10/2002	1 Count of Tracks
188	Lutra lutra	Otter	Sowry R., near bend in R. Parrett	ST3822815	01/04/2007	31/05/2007	1 Count of Tracks
189	Lutra lutra	Otter	West Sedgemoor, near Oath Hill	ST382270	24/01/1978	24/01/1978	5 Count of droppings
190	Lutra lutra	Otter	West Sedgemoor, near Oath Hill	ST382270	14/02/1978	14/02/1978	1 Count of droppings
191	Lutra lutra	Otter	West Sedgemoor, near Oath Hill	ST382270	20/03/1978	20/03/1978	1 Count of droppings
192	Lutra lutra	Otter	West Sedgemoor, near Oath Hill	ST382270	20/03/1978	20/03/1978	1 Count of droppings
193	Lutra lutra	Otter	West Sedgemoor, near Oath Hill	ST382270	25/05/1978	25/05/1978	7 Count of droppings
194	Tyto alba	Barn Owl		ST381278	01/12/1989	31/12/1989	
195	Tyto alba	Barn Owl		ST381278	01/01/1990	31/01/1990	
196	Athene noctua	Little Owl		ST382275	16/02/1990	16/02/1990	
197	Hydrocharis morsus-ranae	Frogbit	Aller Moor	ST381299	17/09/1998	17/09/1998	
198	Populus nigra subsp. betulifolia	Black Poplar	Pathe Black Poplars	ST379305	01/01/1989	31/12/1989	
199	Lutra lutra	Otter	Sowry River, KSD	ST381304	19/11/1994	19/11/1994	4 Count of droppings
200	Lutra lutra	Otter	Sowry River, KSD	ST381304	30/03/1995	30/03/1995	2 Count of droppings
201	Lutra lutra	Otter	Sowry River, KSD	ST381304	23/04/1995	23/04/1995	4 Count of droppings
202	Motacilla flava	Yellow Wagtail	Aller Moor	ST382295	13/05/1997	13/05/1997	1 Count of droppings
203	Lutra lutra	Otter	Aller Moor, near Stathe	ST377291	21/09/1975	21/09/1975	1 Count of droppings
204	Lutra lutra	Otter	Aller Moor near Stathe	ST377291	28/11/1977	28/11/1977	4 Count of droppings
205	Lutra lutra	Otter	Aller Moor near Stathe	ST377291	27/01/1978	27/01/1978	5 Count of droppings
206	Lutra lutra	Otter	Aller Moor near Stathe	ST377291	16/02/1978	16/02/1978	2 Count of droppings
207	Lutra lutra	Otter	Aller Moor near Stathe	ST377291	03/04/1978	03/04/1978	1 Count of droppings
208	Lutra lutra	Otter	Aller Moor near Stathe	ST377291	20/03/1978	20/03/1978	3 Count of droppings
209	Lutra lutra	Otter	Aller Moor near Stathe	ST377291	25/05/1978	25/05/1978	3 Count of droppings
210	Tyto alba	Barn Owl		ST375993	26/02/1990	26/02/1990	
211	Synaptus filiformis	Click beetle	near Stathe	ST374293	01/05/1992	31/05/1992	1 Count of present
212	Lutra lutra	Otter	North Drove, Railway bridge	ST374279	28/11/1977	28/11/1977	1 Count of Tracks
213	Tyto alba	Barn Owl		ST379281	09/03/1990	09/03/1990	
214	Synaptus filiformis	Click beetle	River Parrett	ST381279	01/05/1992	31/05/1992	1 Count of present
215	Lutra lutra	Otter	Sowry R., Southlake Moor	ST37223032	01/04/2007	31/05/2007	several Count of droppings
216	Saxicola torquata	Stonechat	Aller Moor	ST390285	12/01/1983	12/01/1983	2 Count of present
217	Buteo buteo	Buzzard	Aller Moor	ST390285	26/01/1983	26/01/1983	1 Count of present
218	Gallinago gallinago	Snipe	Aller Moor	ST390285	10/02/1983	10/02/1983	4 Count of present
219	Pluvialis apricaria	Golden Plover	Aller Moor	ST390285	10/02/1983	10/02/1983	85 Count of present
220	Falco tinnunculus	Kestrel	Aller Moor	ST390285	24/02/1983	24/02/1983	3 Count of present
221	Saxicola rubetra	Whinchat	Aller Moor	ST390285	24/02/1983	24/02/1983	1 Count of present
222	Alcedo atthis	Kingfisher		ST373283	20/11/1991	20/11/1991	
223	Lutra lutra	Otter	West Sedgemoor Main Drain.	ST371290	20/05/1992	20/05/1992	1 Count of present
224	Tringa totanus	Redshank	Sedgemoor Old Rhyme	ST390285	12/01/1983	12/01/1983	2 Count of present
225	Falco tinnunculus	Kestrel		ST390285	20/12/1982	20/12/1982	1 Count of present
226	Tringa totanus	Redshank		ST389284	15/04/1982	15/04/1982	1 pair Count of probable breeding
227	Vanelius vanelius	Lapwing		ST390285	15/04/1982	15/04/1982	1 pair Count of probable breeding
228	Gallinago gallinago	Snipe		ST388284	01/12/1981	28/02/1982	13 Count of present

229	Vanellus vanellus	Lapwing	Aller Moor	ST389283	01/12/1981	28/02/1982	90 Count of present
230	Vanellus vanellus	Lapwing	Aller Moor	ST390285	20/12/1982	20/12/1982	9 Count of present
231	Gallinago gallinago	Snipe	Aller Moor	ST390285	20/12/1982	20/12/1982	23 Count of present
232	Asio flammeus	Short-Eared Owl	Aller Moor	ST390285	20/12/1982	20/12/1982	1 Count of present
233	Buteo buteo	Buzzard	Aller Moor	ST390285	12/01/1983	12/01/1983	4 Count of present
234	Falco tinnunculus	Kestrel	Aller Moor	ST390285	12/01/1983	12/01/1983	2 Count of present
235	Vanellus vanellus	Lapwing	Aller Moor	ST386287	15/04/1982	15/04/1982	1 pair Count of probable breeding
240	Vanellus vanellus	Lapwing	Aller Moor	ST387287	15/04/1982	15/04/1982	1 pair Count of probable breeding
237	Tringa totanus	Redshank	Aller Moor	ST387281	15/04/1982	15/04/1982	1 pair Count of probable breeding
238	Vanellus vanellus	Lapwing	Aller Moor	ST386280	15/04/1982	15/04/1982	1 pair Count of probable breeding
239	Vanellus vanellus	Lapwing	Aller Moor	ST387278	01/12/1981	28/02/1982	90 Count of present
240	Tringa totanus	Redshank	Aller Moor	ST386289	01/01/1983	31/12/1983	4 Count of probable breeding
241	Falco tinnunculus	Kestrel	Aller Moor	ST386289	17/11/1996	17/11/1996	1 Count of wintering
242	Cygnus olor	Mute Swan	Aller Moor	ST386289	13/10/1996	13/10/1996	25 Count of wintering
243	Falco columbarius	Merlin	Aller Moor	ST386289	01/09/1995	30/11/1995	1 Count of present
244	Tringa ochropus	Green Sandpiper	Aller Moor	ST386289	30/04/1996	30/04/1996	4 Count of present
245	Falco tinnunculus	Kestrel	Aller Moor	ST386289	13/10/1996	13/10/1996	1 Count of wintering
246	Alcedo atthis	Kingfisher	Aller Moor	ST386289	13/10/1996	13/10/1996	1 Count of wintering
247	Vanellus vanellus	Lapwing	Aller Moor	ST386289	13/10/1996	13/10/1996	5 Count of wintering
248	Pluvialis apricaria	Golden Plover	Aller Moor	ST386289	17/11/1996	17/11/1996	500 Count of wintering
249	Cygnus olor	Mute Swan	Aller Moor	ST386289	17/11/1996	17/11/1996	8 Count of wintering
250	Vanellus vanellus	Lapwing	Aller Moor	ST386289	17/11/1996	17/11/1996	700 Count of wintering
251	Tringa totanus	Redshank	Aller Moor	ST386289	01/01/1977	31/12/1977	4 Count of probable breeding; 4 Count of pro
252	Oenanthe isabellae	Wheatear	Aller Moor	ST385285	15/04/1982	15/04/1982	1 Count of male
253	Vanellus vanellus	Lapwing	Aller Moor	ST385285	15/04/1982	15/04/1982	23 Count of adult
254	Tringa totanus	Redshank	Aller Moor	ST385285	15/04/1982	15/04/1982	5 Count of adult
255	Tringa totanus	Redshank	Aller Moor	ST381282	15/04/1982	15/04/1982	1 pair Count of probable breeding
256	Vanellus vanellus	Lapwing	Aller Moor	ST380288	15/04/1982	15/04/1982	1 pair Count of probable breeding
257	Pluvialis apricaria	Golden Plover	Aller Moor	ST381295	01/12/1981	28/02/1982	31 Count of present
258	Synaptus filiformis	Click beetle	West Sedgemoor SSSI	ST381278	01/11/1991	30/11/1991	
259	Tyto alba	Barn Owl		ST395276	23/02/2003	23/02/2003	1 Count of hunting
260	Tyto alba	Barn Owl		ST390276	13/02/2003	13/02/2003	1 Count of perching
261	Lutra lutra	Otter		ST397275	23/12/2005	23/12/2005	Present Count of adult
262	Lutra lutra	Otter	Wick, between Wick bridge and Duck cottage.	ST398277	19/12/2001	19/12/2001	1 Count of female; 1 Count of dead
263	Aythya ferina	Pochard	Aller Moor	ST390285	24/02/1983	24/02/1983	1 Count of present
264	Gallinago gallinago	Snipe	Aller Moor	ST390285	12/01/1983	12/01/1983	50 Count of present
265	Falco tinnunculus	Kestrel	Aller Moor	ST390285	26/01/1983	26/01/1983	1 Count of present
266	Vanellus vanellus	Lapwing	Aller Moor	ST390285	26/01/1983	26/01/1983	82 Count of present
267	Vanellus vanellus	Lapwing	Aller Moor	ST390285	10/02/1983	10/02/1983	1522 Count of present
268	Falco tinnunculus	Kestrel	Aller Moor	ST390285	10/02/1983	10/02/1983	1 Count of present
269	Athene noctua	Little Owl	Aller Moor	ST390285	24/02/1983	24/02/1983	1 Count of present
270	Tringa totanus	Redshank	Aller Moor	ST390285	24/02/1983	24/02/1983	1 Count of present
271	Buteo buteo	Buzzard	Aller Moor	ST390285	10/02/1983	10/02/1983	2 Count of present
272	Saxicola torquata	Stonechat	Aller Moor	ST390285	10/02/1983	10/02/1983	1 Count of present
273	Vanellus vanellus	Lapwing	Aller Moor	ST390285	12/01/1983	12/01/1983	20 Count of present
274	Gallinago gallinago	Snipe	Aller Moor	ST390285	26/01/1983	26/01/1983	21 Count of present
275	Saxicola torquata	Stonechat	Aller Moor	ST390285	26/01/1983	26/01/1983	2 Count of present
276	Accipiter nisus	Sparrowhawk	Aller Moor	ST390285	26/01/1983	26/01/1983	2 Count of present
277	Alcedo atthis	Kingfisher	Aller Moor	ST390285	26/01/1983	26/01/1983	1 Count of present
278	Accipiter nisus	Sparrowhawk	Aller Moor	ST390285	10/02/1983	10/02/1983	2 Count of present
279	Motacilla flava	Yellow Wagtail	Aller Moor	ST390287	13/05/1997	13/05/1997	4 Count of present
280	Arvicola amphibius	Water Vole	Athelney Fields*	ST388288	01/01/1998	31/12/1998	
281	Branta canadensis	Canada Goose	Aller Moor	ST386289	11/03/1997	11/03/1997	12 Count of wintering
282	Tringa ochropus	Green Sandpiper	Aller Moor	ST386289	11/03/1997	11/03/1997	2 Count of wintering
283	Anas penelope	Wigeon	Aller Moor	ST386289	10/02/1997	10/02/1997	64 Count of wintering
284	Phalacrocorax pugnax	Ruff	Aller Moor	ST386289	10/02/1997	10/02/1997	1 Count of wintering
285	Pluvialis apricaria	Golden Plover	Aller Moor	ST386289	10/02/1997	10/02/1997	30 Count of wintering
286	Anas crecca	Teal	Aller Moor	ST386289	10/02/1997	10/02/1997	1 Count of wintering
287	Falco tinnunculus	Kestrel	Aller Moor	ST386289	11/03/1997	11/03/1997	1 Count of wintering
288	Lepus europaeus	Brown Hare	Aller Moor	ST386289	13/05/1997	13/05/1997	1 Count of present
289	Hydrocharis morsus-ranae	Frogbit	Aller Moor SE	ST386289	17/09/1998	17/09/1998	
290	Arvicola amphibius	Water Vole	Aller Moor	ST386289	17/09/1998	17/09/1998	
291	Cygnus olor	Mute Swan	Aller Moor	ST386289	11/03/1997	11/03/1997	10 Count of wintering
292	Anas platyrhynchos	Mallard	Aller Moor	ST386289	10/02/1997	10/02/1997	3 Count of wintering
293	Vanellus vanellus	Lapwing	Aller Moor	ST386289	10/02/1997	10/02/1997	1215 Count of wintering
294	Callidris alpina	Dunlin	Aller Moor	ST386289	10/02/1997	10/02/1997	1 Count of wintering
295	Cygnus olor	Mute Swan	Aller Moor	ST386289	10/02/1997	10/02/1997	1 Count of wintering
296	Alcedo atthis	Kingfisher	Aller Moor	ST386289	11/03/1997	11/03/1997	5 Count of wintering
297	Tringa totanus	Redshank	Aller Moor	ST386289	11/03/1997	11/03/1997	1 Count of wintering
298	Anas crecca	Teal	Aller Moor	ST386289	11/03/1997	11/03/1997	2 Count of wintering
299	Anas penelope	Wigeon	Aller Moor	ST386289	11/03/1997	11/03/1997	23 Count of wintering
300	Motacilla flava	Yellow Wagtail	Aller Moor	ST385283	13/05/1997	13/05/1997	2 Count of probable breeding
301	Groenlandia densa	Opposite-leaved Pondweed	Aller Moor	ST379289	01/01/1975	31/12/1975	+ Count
302	Cercyon (Cercyon) granarius	Quadrat SE South Somerset BAP (50m.)		ST37802705	01/08/1997	01/08/1997	
303	Hydrocharis morsus-ranae	Frogbit	South Somerset	ST374279	03/09/2000	03/09/2000	+ Count
304	Plecotus auritus	Brown Long-eared Bat		ST370280	01/10/2002	31/10/2002	+ Count
305	Gallinago gallinago	Snipe	Calders Cottage, Stathes, Bridgwater [house]	ST362286	01/01/1977	31/12/1977	2 Count of probable breeding
306	Athene noctua	Little Owl		ST362287	01/01/1989	31/12/1989	
307	Athene noctua	Little Owl		ST362287	01/01/1990	31/12/1990	
308	Vanellus vanellus	Lapwing	Aller Moor	ST381284	21/04/1983	21/04/1983	3 pairs Count of probable breeding
309	Vanellus vanellus	Lapwing	Aller Moor	ST380285	26/05/1983	26/05/1983	24 Count of present
310	Vanellus vanellus	Lapwing	Aller Moor	ST380285	26/05/1983	26/05/1983	1 pair Count of probable breeding
311	Vanellus vanellus	Lapwing	Aller Moor	ST380285	26/05/1983	26/05/1983	8 pairs Count of probable breeding
312	Tringa totanus	Redshank	Aller Moor	ST380285	26/05/1983	26/05/1983	1 pair Count of probable breeding
313	Tringa totanus	Redshank	Aller Moor	ST380285	26/05/1983	26/05/1983	4 Count of present
314	Sum latifolium	Greater Water-parsnip	North Somerset	ST36993060	25/07/2009	25/07/2009	+ Count
315	Sum latifolium	Greater Water-parsnip	North Somerset	ST36993060	19/08/2008	19/08/2008	+ Count
316	Sum latifolium	Greater Water-parsnip	North Somerset	ST370305	25/07/2009	25/07/2009	3 Count
317	Alcedo atthis	Kingfisher	Southlake Moor SSSI	ST378303	11/08/1993	11/08/1993	1 Count of present
318	Sum latifolium	Greater Water-parsnip	North Somerset	ST36983061	29/07/2007	29/07/2007	+ Count
319	Sum latifolium	Greater Water-parsnip	North Somerset	ST36993060	29/07/2007	29/07/2007	+ Count
320	Sum latifolium	Greater Water-parsnip	North Somerset	ST370305	29/07/2007	29/07/2007	+ Count
321	Hydrocharis morsus-ranae	Frogbit	North Somerset	ST365305	18/09/2002	18/09/2002	Not in Count of Flowering
322	Sum latifolium	Greater Water-parsnip	North Somerset	ST365305	23/07/2004	23/07/2004	+ Count
323	Sum latifolium	Greater Water-parsnip	North Somerset	ST365305	06/07/2005	06/07/2005	+ Count
324	Sum latifolium	Greater Water-parsnip	North Somerset	ST36423026	29/07/2000	29/07/2000	+ Count of Flowering
325	Sum latifolium	Greater Water-parsnip	North Somerset	ST365305	18/09/2002	18/09/2002	1 Count of Flowering
326	Sum latifolium	Greater Water-parsnip	North Somerset	ST36423026	29/07/2007	29/07/2007	
327	Pteriselinum segetum	Com Parsley	Burrow Mump	ST359305	07/06/1998	07/06/1998	+ Count
328	Torilis nodosa	Knotted Hedge-parley	Burrow Mump	ST359305	28/06/2007	28/06/2007	+ Count
329	Torilis nodosa	Knotted Hedge-parley	Burrow Mump	ST359305	07/06/1998	07/06/1998	+ Count
330	Lutra lutra	Otter	BurrowBridge	ST359305	06/07/1998	06/07/1998	Present Count of Tracks
331	Arvicola amphibius	Water Vole	Ditch by car park for Burrow Mump	ST362304	06/07/2000	06/07/2000	2 Count of present
332	Forficula lesnei	Forficula lesnei		ST359306	09/10/1993	09/10/1993	21-100 Count of present
333	Forficula lesnei	Forficula lesnei		ST360306	09/10/1993	09/10/1993	21-100 Count of present
334	Lutra lutra	Otter	Tone / Parrett confluence	ST359301	23/11/2004	23/11/2004	1 Count of Tracks
335	Lutra lutra	Otter	Tone / Parrett confluence	ST359301	25/10/2004	25/10/2004	1 Count of Tracks
336	Tyto alba	Barn Owl		ST360300	01/12/1989	31/12/1989	
337	Falco peregrinus	Peregrine		ST360300	01/01/1992	31/12/1992	1 Count of present
338	Actitis hypoleucos	Common Sandpiper	Burrowbridge	ST360300	09/11/1994	09/11/1994	1 Count of wintering
339	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	09/11/2003	09/11/2003	1 Count of droppings
340	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	09/06/2003	09/06/2003	1 Count of Tracks
341	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	24/04/2004	24/04/2004	1 Count of Tracks
342	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	25/08/2004	25/08/2004	1 Count of Tracks
343	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	10/01/2006	10/01/2006	1 Count of Tracks

344	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	14/04/2006	14/04/2006	1 Count of droppings
345	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	26/03/2007	26/03/2007	1 Count of droppings
346	Lutra lutra	Otter	King Alfred, R. Parrett	ST358302	05/08/2007	05/08/2007	1 Count of Tracks
347	Lutra lutra	Otter	King Alfred, R. Parrett	ST358302	27/08/2007	27/08/2007	1 Count of Tracks
348	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	26/04/2008	26/04/2008	1 Count of Tracks
349	Lutra lutra	Otter	Stannoor Bridge	ST358302	27/01/1978	27/01/1978	1 Count of Tracks
350	Lutra lutra	Otter	R. Tone	ST358302	17/06/1992	17/06/1992	1 Count of present
351	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	10/06/2006	10/06/2006	1 Count of Tracks
352	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	23/06/2002	23/06/2002	1 Count of Tracks
353	Lutra lutra	Otter	Stathe Bridge, R. Tone	ST358302	22/04/2003	22/04/2003	1 Count of Tracks
354	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	13/06/2003	13/06/2003	1 Count of Tracks
355	Alcedo althius	Kingfisher	Tone / Parrett confluence	ST358302	25/07/2004	25/07/2004	1 Count of present
356	Lutra lutra	Otter	Tone / Parrett	ST358302	27/01/2005	27/01/2005	1 Count of Tracks
357	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	12/03/2006	12/03/2006	1 Count of Tracks
358	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	07/05/2006	07/05/2006	1 Count of Tracks
359	Lutra lutra	Otter	Stannoor Bridge/River Tone	ST358301	23/09/1997	23/09/1997	1 Count of Tracks
360	Lutra lutra	Otter	Stannoor Bridge/River Tone	ST358301	16/03/1998	16/03/1998	Present Count of Tracks
361	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	15/09/1998	15/09/1998	0 Count of anal jelly; 1 Count of droppings
362	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	14/02/1999	14/02/1999	0 Count of droppings; 0 Count of anal jelly
363	Lutra lutra	Otter	RIVER TONE/PARRETT AT STANMOOR BRIDGE	ST358301	18/06/2000	18/06/2000	1 Count of Tracks
364	Lutra lutra	Otter	RIVER TONE/PARRETT AT STANMOOR BRIDGE	ST358301	08/10/2000	08/10/2000	1 Count of Tracks
365	Lutra lutra	Otter	Tone / Parrett confluence	ST358301	08/07/2005	08/07/2005	1 Count of Tracks
366	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	11/08/1998	11/08/1998	0 Count of droppings; 0 Count of anal jelly
367	Lutra lutra	Otter	Stannoor Bridge/River Tone	ST358301	15/12/1997	15/12/1997	Present Count of Tracks
368	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	10/05/1998	10/05/1998	0 Count of anal jelly; 5 Count of droppings
369	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	17/11/1998	17/11/1998	0 Count of anal jelly; 1 Count of droppings
370	Lutra lutra	Otter	RIVER TONE/PARRETT AT STANMOOR BRIDGE	ST358301	20/05/2000	20/05/2000	1 Count of droppings
371	Lutra lutra	Otter	RIVER TONE/PARRETT AT STANMOOR BRIDGE	ST358301	07/10/2000	07/10/2000	1 Count of Tracks
372	Lutra lutra	Otter	Tone / Parrett confluence	ST358301	07/05/2005	07/05/2005	1 Count of Tracks
373	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	25/07/2004	25/07/2004	1 Count of Tracks
374	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	23/06/2002	23/06/2002	1 Count of Tracks
375	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	01/02/2003	28/02/2003	1 Count of Tracks
376	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	09/05/2003	09/05/2003	1 Count of Tracks
377	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	11/07/2003	11/07/2003	1 Count of Tracks
378	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	12/09/2003	12/09/2003	1 Count of Tracks
379	Lutra lutra	Otter	Tone / Parrett confluence	ST358302	21/05/2004	21/05/2004	1 Count of Tracks
380	Lutra lutra	Otter	Stathe Bridge, R. Tone	ST358302	09/06/2003	09/06/2003	1 Count of droppings
381	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	22/08/2002	22/08/2002	1 Count of Tracks
382	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	27/09/2002	27/09/2002	5 Count of droppings
383	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	20/12/2002	20/12/2002	1 Count of droppings
384	Lutra lutra	Otter	Parrett / Tone confluence	ST358302	20/03/2003	20/03/2003	1 Count of Tracks
385	Lutra lutra	Otter	Stathe Bridge, R. Tone	ST358302	09/05/2003	09/05/2003	1 Count of droppings
386	Lutra lutra	Otter	Stathe Bridge, R. Tone	ST358302	09/05/2003	09/05/2003	1 Count of droppings
387	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	16/12/1998	16/12/1998	0 Count of anal jelly; 1 Count of droppings
388	Lutra lutra	Otter	Stannoor Bridge/River Tone	ST358301	18/04/1998	18/04/1998	3 Count of droppings; Present Count of Track
389	Lutra lutra	Otter	Stannoor Bridge/River Tone	ST358301	07/07/1997	07/07/1997	Present Count of Tracks
390	Lutra lutra	Otter	Stannoor Bridge/River Tone	ST358301	13/02/1998	13/02/1998	Present Count of Tracks
391	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	21/06/1998	21/06/1998	0 Count of anal jelly; 2 Count of droppings
392	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	15/07/1998	15/07/1998	0 Count of droppings; 0 Count of anal jelly
393	Lutra lutra	Otter	Motorway to Burrowbridge, River Tone	ST358301	13/10/1998	13/10/1998	0 Count of droppings; 0 Count of anal jelly
394	Lutra lutra	Otter	River Parrett, W Sedgemoor	ST377283	03/08/2002	03/08/2002	1 Count of juvenile male
395	Arvicola amphibius	Water Vole	Burrow Mump Car park	ST362304	06/07/2000	06/07/2000	2 Count of present
396	Alauda arvensis	Skyllark	Burrow Wall Rhine opposite Little Orchard	ST367305	01/06/2005	01/06/2005	1 Count of in flight
397	Alcedo althius	Kingfisher	Burrow Wall Rhine opposite Little Orchard	ST367306	01/06/2005	01/06/2005	1 Count of in flight
398	Arvicola amphibius	Water Vole	Stathe	ST375286	20/01/2006	20/01/2006	Present Count
399	Tyto alba	Barn Owl		ST360290	01/09/2001	30/09/2001	1 Count of present
400	Natrix natrix	Grass Snake	River Parrett, Middle Moor to Screech Owl section	ST371304	12/01/1992	12/01/1992	70 Count of wintering
401	Calidris alpina	Dunlin	Southlake Moor SSSI	ST371304	11/11/1992	11/11/1992	1 Count of wintering
402	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	30/01/1993	30/01/1993	4 Count of wintering
403	Cygnus columbianus	Bewick's Swan	Southlake Moor SSSI	ST370302	01/01/1990	31/12/1990	2 Count of probable breeding
404	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	01/01/1991	31/12/1991	1 Count of probable breeding
405	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	01/01/1992	31/12/1992	2 Count of probable breeding
406	Vanellus vanellus	Lapwing	Southlake Moor SSSI	ST370302	01/01/1994	31/12/1994	4 Count of probable breeding
407	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	01/08/1994	31/08/1994	occasional Count of present
408	Hydrocharis morsus-ranae	Frogbit	Southlake Moor SSSI	ST370302	01/01/1983	31/12/1983	1 Count of proved breeding
409	Motacilla flava	Yellow Wagtail	Southlake Moor SSSI	ST370302	01/01/1983	31/12/1983	1 Count of proved breeding
410	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	01/01/1983	31/12/1983	1 Count of proved breeding
411	Gallinago gallinago	Snipe	Southlake Moor SSSI	ST370302	01/01/1983	31/12/1983	1 Count of proved breeding
412	Vanellus vanellus	Lapwing	Southlake Moor SSSI	ST370302	01/01/1983	31/12/1983	1 Count of proved breeding
413	Numenius phaeopus	Whimbrel	Southlake Moor SSSI	ST370302	01/01/1987	31/12/1989	
414	Vanellus vanellus	Lapwing	Southlake Moor SSSI	ST370302	01/01/1995	31/12/1995	4 Count of probable breeding
415	Cygnus columbianus	Bewick's Swan	Southlake Moor SSSI	ST370302	16/02/1994	16/02/1994	4 Count of wintering
416	Vanellus vanellus	Lapwing	Southlake Moor SSSI	ST370302	01/01/1993	31/12/1993	1 Count of probable breeding
417	Falco subbuteo	Hobby	Southlake Moor SSSI	ST370302	01/01/1990	31/12/1990	
418	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	01/01/1992	31/12/1992	3 Count of probable breeding
419	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	01/01/1993	31/12/1993	2 Count of probable breeding
420	Vanellus vanellus	Lapwing	Southlake Moor SSSI	ST370302	01/01/1994	31/12/1994	3 Count of probable breeding
421	Tringa totanus	Redshank	Southlake Moor SSSI	ST370302	01/01/1995	31/12/1995	4 Count of probable breeding
422	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST364297	01/09/2001	30/09/2001	1 Count of Tracks
423	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST364296	05/10/1999	05/10/1999	1 Count of Tracks
424	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST364297	05/10/1999	05/10/1999	1 Count of Tracks
425	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST365296	05/10/1999	05/10/1999	1 Count of Tracks
426	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST364297	01/05/2000	31/05/2000	1 Count of Tracks
427	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST366294	01/05/2000	31/05/2000	1 Count of Tracks
428	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST363297	01/09/2001	30/09/2001	1 Count of Tracks
429	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST363298	01/09/2001	30/09/2001	1 Count of Tracks
430	Hydrophilus piceus	Great Silver Water Beetle	Southlake Moor NNR	ST370300	21/02/1992	21/02/1992	
431	Hydrocharis morsus-ranae	Frogbit	Southlake Moor NNR	ST370300	21/02/1992	21/02/1992	
432	Hottonia pelustrius	Water-Violet	Southlake Moor NNR	ST370300	21/02/1992	21/02/1992	
433	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST357300	01/03/1999	31/03/1999	
434	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST360300	05/10/1999	05/10/1999	1 Count of Tracks; 1 Count of droppings
435	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST360300	01/09/2001	30/09/2001	1 Count of Tracks
436	Tringa totanus	Redshank	Southlake Moor SSSI	ST366301	01/01/1990	31/12/1990	1 pair Count of proved breeding
437	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST357301	05/10/1999	05/10/1999	1 Count of Tracks
438	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST358302	05/10/1999	05/10/1999	1 Count of Tracks
439	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST358302	01/09/2001	30/09/2001	1 Count of Tracks
440	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST358301	01/05/2002	31/05/2002	1 Count of Tracks
441	Psidium pseudosphaerium	Psidium pseudosphaerium	Southlake Moor SSSI	ST361305	30/06/1992	30/06/1992	1 Count of present
442	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST357304	05/10/1999	05/10/1999	1 Count of Tracks
443	Alcedo althius	Kingfisher	River Parrett, Middle Moor to Screech Owl section	ST357304	01/09/2001	30/09/2001	1 Count of present
444	Lutra lutra	Otter	River Parrett, Middle Moor to Screech Owl section	ST357304	01/09/2001	30/09/2001	1 Count of Tracks; 1 Count of droppings
445	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST357304	09/04/2002	10/04/2002	1 Count of Tracks
446	Lutra lutra	Otter	Burrow Farm	ST357304	26/07/2003	26/07/2003	1 Count of present
447	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST356305	01/05/2002	31/05/2002	1 Count of Tracks
448	Arvicola amphibius	Water Vole	Riverside Farm	ST355306	08/04/2002	10/04/2002	1 Count of Tracks
449	Falco columbianus	Merlin	Burrowbridge	ST358306	01/12/1996	31/12/1996	1 Count of present
450	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST353296	01/09/2001	30/09/2001	1 Count of Tracks
451	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST350294	01/03/1999	31/03/1999	
452	Arvicola amphibius	Water Vole	The Cottage	ST351295	01/03/1999	31/03/1999	
453	Arvicola amphibius	Water Vole	Black Gate	ST352296	01/03/1999	31/03/1999	
454	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST353296	01/03/1999	31/03/1999	
455	Arvicola amphibius	Water Vole	The Firs	ST355298	01/03/1999	31/03/1999	
456	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST356299	01/03/1999	31/03/1999	
457	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST356299	01/03/1999	31/03/1999	
458	Arvicola amphibius	Water Vole	River Tone and Tributaries	ST351295	01/09/2001	30/09/2001	1 Count of Tracks

459 Arvicola amphibius	Water Vole	River Tone and Tributaries	River Tobe reach 11	ST354297	01/09/2001	30/09/2001	1 Count of Tracks
460 Arvicola amphibius	Water Vole	River Tone and Tributaries	River Tone reach 11	ST355298	01/09/2001	30/09/2001	1 Count of Tracks; 1 Count of feeding signs
461 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	Stannmoor Main Drain	ST357293	01/09/2001	30/09/2001	1 Count of feeding signs; 1 Count of Tracks
462 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	River Parrett reach 4	ST354307	01/05/2002	31/05/2002	1 Count of Tracks
463 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section		ST354307	05/10/1999	05/10/1999	1 Count of Tracks
464 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	Riverside Farm	ST354308	05/10/1999	05/10/1999	1 Count of Tracks
465 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	River Parrett reach 3	ST354307	01/09/2001	30/09/2001	1 Count of Tracks
466 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	Saltmoor Farm	ST353309	09/04/2002	10/04/2002	1 Count of Tracks
467 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	Riverside Farm	ST354307	09/04/2002	10/04/2002	1 Count of Tracks
468 Luscinia megarhynchos	Nightingale		Stan Moor	ST358290	01/03/1999	31/05/1999	3 Count of singing/mating calls
469 Lutra lutra	Otter		stannmoor br	ST358301	10/05/1998	10/05/1998	2 Count of droppings
470 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	River Parrett reach 2	ST358301	01/08/2000	31/08/2000	1 Count of feeding signs
471 Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	River Parrett reach 3	ST358302	01/08/2000	31/08/2000	1 Count of feeding signs
472 Arvicola amphibius	Water Vole		Stannmoor Main Drain	ST358295	01/08/2000	31/08/2000	1 Count of Tracks
473 Bucephala clangula	Goldeneye		Stan Moor	ST358290	06/01/2001	06/01/2001	5 Count of wintering
474 Aythya ferina	Pochard		Stan Moor	ST358290	30/11/2002	30/11/2002	212 Count of wintering
475 Odontomyia ornata	Odontomyia ornata	Southlake Moor SSSI		ST375302	01/01/1983	31/12/1983	1 Count of present
476 Odontomyia ornata	Odontomyia ornata	Southlake Moor SSSI		ST376304	01/01/1983	31/12/1983	1 Count of present
477 Synaptus filiformis	Click beetle		West Sedgemoor pumping station	ST375287	08/06/1992	08/06/1992	1 Count of present
478 Synaptus filiformis	Click beetle	River Parrett, Middle Moor to Screech Owl section	Stathe	ST375289	25/05/2005	25/05/2005	1 Count of adult
479 Synaptus filiformis	Click beetle		Near Stathe	ST374293	26/05/1992	26/05/1992	1 Count of present
480 Lutra lutra	Otter			ST377291	13/09/1983	11/10/1983	3 Count of droppings
481 Hydatiscus transversalis	Hydatiscus transversalis	Quadrat S24 Taunton Deane BAP (50m.)		ST375296	20/08/1996	20/08/1996	1 Count of present
482 Lutra lutra	Otter		Aller Moor near Stathe	ST377291	08/06/1978	09/06/1978	3 Count of droppings
483 Lutra lutra	Otter		Aller Moor near Stathe	ST377291	22/06/1978	23/06/1978	2 Count of droppings
484 Lutra lutra	Otter		STATHE (PARRETT/TONE)	ST376291	04/05/1998	04/05/1998	2 Count of droppings
485 Phoenicurus ochruros	Black Redstart		Stathe	ST375290	30/11/2002	30/11/2002	1 Count of female
486 Synaptus filiformis	Click beetle	River Parrett, Middle Moor to Screech Owl section	West (left) bank of river near Stathe	ST374293	04/06/2000	04/06/2000	1 Count of present
487 Synaptus filiformis	Click beetle	River Parrett, Middle Moor to Screech Owl section	Upstream of Stathe Bridge on north side of River Parre	ST375287	04/06/2000	04/06/2000	1 Count of present
488 Synaptus filiformis	Click beetle	River Parrett, Middle Moor to Screech Owl section	Ranelagh Cottage, Stathe	ST375290	04/06/2000	04/06/2000	1 Count of present
489 Synaptus filiformis	Click beetle		WEST SEDGEMOOR MAIN DRAIN (TONE)	ST372295	26/05/1992	26/05/1992	2 Count of present
490 Lutra lutra	Click beetle	River Parrett, Middle Moor to Screech Owl section	On south bank along the War Moor stretch of the river.	ST372280	09/05/1998	09/05/1998	10 Count of droppings
491 Synaptus filiformis	Click beetle	River Parrett, Middle Moor to Screech Owl section		ST372295	04/06/2000	04/06/2000	2 Count of present
492 Lepus europaeus	Brown Hare	West Sedgemoor SSSI		ST370300	16/04/1997	16/04/1997	1 Count of present
493 Lepus europaeus	Brown Hare	West Sedgemoor SSSI		ST373275	16/04/1997	16/04/1997	2 Count of present
494 Lepus europaeus	Brown Hare	West Sedgemoor SSSI		ST374271	16/04/1997	16/04/1997	2 Count of present
495 Arvicola amphibius	Water Vole	Southlake Moor SSSI		ST367306	01/01/1986	31/12/1986	1 Count of present
496 Odontomyia ornata	Odontomyia ornata	Southlake Moor SSSI		ST368305	01/01/1983	31/12/1983	1 Count of present
497 Sium latifolium	Great Water-Parsnip	Southlake Moor SSSI		ST369305	01/01/1983	31/12/1983	1 Count of present
498 Odontomyia ornata	Odontomyia ornata	Southlake Moor SSSI		ST374305	01/01/1983	31/12/1983	1 Count of present
499 Cygnus columbianus	Bewick's Swan	Southlake Moor SSSI		ST370300	13/01/2001	13/01/2001	1 Count of wintering; 13 Count of juvenile;
500 Gallinago gallinago	Snipe	Southlake Moor NNR		ST370300	09/02/1997	10/03/1997	1 Count of wintering
501 Gallinula chloropus	Moorhen	Southlake Moor NNR		ST370300	09/02/1997	10/03/1997	1 Count of wintering
502 Anas platyrhynchos	Mallard	Southlake Moor NNR		ST370300	09/02/1997	10/03/1997	10 Count of wintering
503 Buteo buteo	Buzzard	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	
504 Falco tinnunculus	Kestrel	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	
505 Vanellus vanellus	Lapwing	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	210 Count of wintering
506 Cygnus olor	Mute Swan	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	16 Count of wintering
507 Buteo buteo	Buzzard	Southlake Moor NNR		ST370300	09/02/1997	10/03/1997	
508 Saxicola torquata	Stonechat	Southlake Moor SSSI		ST370300	01/03/2000	31/05/2000	1 Count of singing/mating calls; family part
509 Lymnocyrtus minimus	Jack Snipe	Southlake Moor SSSI		ST370300	01/12/1999	28/02/2000	3 Count of wintering
510 Tadorna tadorna	Shelduck	Southlake Moor SSSI		ST370300	13/01/2001	13/01/2001	3 Count of wintering
511 Saxicola torquata	Stonechat	Southlake Moor SSSI		ST370300	01/03/2002	31/05/2002	1 Count of singing/mating calls
512 Cygnus olor	Merlin	Southlake Moor NNR		ST370300	01/09/1999	30/11/1999	1 Count of present
513 Cygnus olor	Mute Swan	Southlake Moor NNR		ST370300	09/02/1997	10/03/1997	6 Count of wintering
514 Accipiter nisus	Sparrowhawk	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	
515 Gallinago gallinago	Snipe	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	17 Count of wintering
516 Gallinula chloropus	Moorhen	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	3 Count of wintering
517 Anas platyrhynchos	Mallard	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	2 Count of wintering
518 Cygnus columbianus	Bewick's Swan	Southlake Moor NNR		ST370300	13/10/1996	14/12/1996	3 Count of wintering
519 Hydatiscus transversalis	Hydatiscus transversalis	Southlake Moor NNR		ST370300	01/01/1983	31/12/1983	1 Count of present
520 Paederus calgatus	Paederus calgatus	Southlake Moor NNR		ST370300	01/01/1983	31/12/1983	1 Count of present
521 Hydrophilus piceus	Great Silver Water Beetle	Southlake Moor NNR		ST370300	01/01/1983	31/12/1983	1 Count of present
522 Hydrophilus piceus	Great Silver Water Beetle	Southlake Moor NNR		ST370300	01/08/1986	31/08/1986	1 Count of present
523 Hydatiscus transversalis	Hydatiscus transversalis	Southlake Moor NNR		ST370300	01/08/1992	31/08/1992	1 Count of present
524 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370300	01/12/1999	31/12/1999	218 Count of wintering
525 Tolyptus proflera	Great Tassel Stonewort	Southlake Moor SSSI		ST370302	01/01/2000	31/12/2000	occasional Count of present
526 Sium latifolium	Great Water-Parsnip	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	
527 Cygnus columbianus	Bewick's Swan	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	
528 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	2 Count of probable breeding
529 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370302	01/01/1987	31/12/1987	2 Count of probable breeding
530 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/06/1991	31/08/1991	Present Count of possible breeding
531 Odontomyia ornata	Odontomyia ornata	Southlake Moor SSSI		ST370302	01/05/1994	30/06/1994	1 Count of present
532 Dytiscus dimidiatus	Dytiscus dimidiatus	Southlake Moor SSSI		ST370302	01/05/1994	30/06/1994	1 Count of present
533 Coenagrion pulchellum	Variable Damselfly	Southlake Moor SSSI		ST370302	01/05/1994	30/06/1994	occasional Count of present
534 Hydrophilus piceus	Great Silver Water Beetle	Southlake Moor SSSI		ST370302	01/05/1994	30/06/1994	1 Count of present
535 Hydatiscus transversalis	Hydatiscus transversalis	Southlake Moor SSSI		ST370302	01/05/1994	30/06/1994	occasional Count of present
536 Vanellus vanellus	Lapwing	Southlake Moor SSSI		ST370302	01/01/1977	31/12/1977	7 Count of probable breeding
537 Vanellus vanellus	Lapwing	Southlake Moor SSSI		ST370302	01/01/1983	31/12/1983	7 Count of probable breeding
538 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/06/1995	31/08/1995	3 pairs Count of possible breeding
539 Numerius arquata	Curlew	Southlake Moor SSSI		ST370302	01/06/1991	31/08/1991	1 Count of possible breeding; Present Count
540 Sium latifolium	Great Water-Parsnip	Southlake Moor SSSI		ST370302	01/01/1984	31/12/1984	
541 Odontomyia ornata	Odontomyia ornata	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	
542 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	2 Count of probable breeding
543 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1987	31/12/1987	3 Count of probable breeding
544 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1989	31/12/1989	4 Count of probable breeding
545 Vanellus vanellus	Lapwing	Southlake Moor SSSI		ST370302	01/06/1995	31/08/1995	3 pairs Count of proved breeding
546 Saxicola rubetra	Whinchat	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	3 pairs Count of proved breeding
547 Motacilla flava	Yellow Wagtail	Southlake Moor SSSI		ST370302	01/01/1976	31/12/1977	1 Count of proved breeding
548 Lutra lutra	Otter	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	
549 Hottotia palustris	Water-Violet	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	
550 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	1 Count of proved breeding
551 Hydrocharis morsus-ranae	Frogbit	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	
552 Coenagrion pulchellum	Variable Damselfly	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	
553 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	2 Count of probable breeding
554 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1976	31/12/1977	1 Count of proved breeding
555 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1983	31/12/1983	6 Count of probable breeding
556 Oenanthe fistulosa	Tubular Water-Dropwort	Southlake Moor SSSI		ST370302	01/01/1984	31/12/1984	
557 Vanellus vanellus	Lapwing	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	1 Count of proved breeding
558 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	1 Count of proved breeding
559 Vanellus vanellus	Lapwing	Southlake Moor SSSI		ST370302	01/01/1985	31/12/1985	2 Count of probable breeding
560 Hydrocharis morsus-ranae	Frogbit	Southlake Moor SSSI		ST370302	01/01/1984	31/12/1984	
561 Saxicola rubetra	Whinchat	Southlake Moor SSSI	fields 6, 46	ST370302	28/04/1997	28/04/1997	2 Count of singing/mating calls
562 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1977	31/12/1977	1 Count of probable breeding
563 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370302	01/01/1976	31/12/1977	1 Count of proved breeding
564 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370302	01/01/1983	31/12/1983	5 Count of probable breeding
565 Lutra lutra	Otter	Southlake Moor SSSI		ST370302	14/09/1983	14/09/1983	
566 Wolffia arrhiza	Rootless Duckweed	Southlake Moor SSSI		ST370302	01/01/1984	31/12/1984	
567 Hottotia palustris	Water-Violet	Southlake Moor SSSI		ST370302	01/01/1984	31/12/1984	
568 Tringa totanus	Redshank	Southlake Moor SSSI		ST370302	01/01/1977	31/12/1977	6 pairs Count of proved breeding
569 Oenanthe fistulosa	Tubular Water-Dropwort	Southlake Moor SSSI		ST370302	01/01/1996	31/12/1996	1 Count of present
570 Hydrocharis morsus-ranae	Frogbit	Southlake Moor SSSI		ST370302	01/09/1998	30/09/1998	locally dominant Count of present
571 Sium latifolium	Great Water-Parsnip	Southlake Moor SSSI		ST370302	01/06/2002	31/08/2002	1 Count of present
572 Gallinago gallinago	Snipe	Southlake Moor SSSI		ST370302	01/01/1977	31/12/1977	3 Count of probable breeding
573 Vanellus vanellus	Lapwing	Southlake Moor SSSI		ST370302	01/01/1976	31/12/1977	1 Count of proved breeding

574	Cygnus columbianus	Bewick's Swan	Southlake Moor SSSI	ST370302	01/01/1976	31/12/1977	
575	Motacilla flava	Yellow Wagtail	Southlake Moor SSSI	ST370302	01/01/1977	31/12/1983	2 pairs Count of proved breeding
576	Lejops vittatus	Lejops vittatus	Southlake Moor SSSI	ST368300	01/01/1983	31/12/1983	rare Count of present
577	Lejops vittatus	Lejops vittatus	Southlake Moor SSSI	ST368300	01/01/1983	31/12/1983	rare Count of present
578	Acrocephalus schoenobaenus	Sedge Warbler	River Parrett, Middle Moor to Screech Owl section	ST368294	04/06/2000	04/06/2000	1 Count of calling/vocalising
579	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST360299	01/08/2000	31/08/2000	1 Count of feeding signs; 1 Count of Tracks
580	Lutra lutra	Otter	Hook Bridge to River Parrett	ST358302	17/10/1999	17/10/1999	1 Count of Tracks
581	Lutra lutra	Otter	Hook Bridge to River Parrett	ST358302	19/11/1999	19/11/1999	1 Count of Tracks
582	Lutra lutra	Otter	Hook Bridge to River Parrett	ST358302	17/03/2000	17/03/2000	1 Count of Tracks
583	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST360300	01/08/2000	31/08/2000	1 Count of feeding signs
584	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST362298	01/08/2000	31/08/2000	1 Count of droppings; 1 Count of feeding sig
585	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST362297	01/08/2000	31/08/2000	1 Count of feeding signs
586	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST365296	01/08/2000	31/08/2000	1 Count of feeding signs
587	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST360297	01/08/2000	31/08/2000	
588	Arvicola amphibius	Water Vole	River Parrett, Middle Moor to Screech Owl section	ST361298	01/08/2000	31/08/2000	1 Count of Tracks
589	Slum laticollum	Great Water-Pansip	Stannor Main Drain	ST365299	01/01/1985	31/12/1985	
590	Slum laticollum	Great Water-Pansip	Stannor Main Drain	ST365300	01/01/1985	31/12/1985	
591	Vanellus vanellus	Lapwing	Stannor Main Drain	ST362286	01/01/1977	31/12/1977	2 Count of probable breeding
592	Arvicola amphibius	Water Vole	Stannor Main Drain	ST361306	01/11/1996	30/11/1996	
593	Lutra lutra	Otter	Stannor Main Drain	ST357304	16/05/1999	16/05/1999	1 Count of Tracks
594	Lutra lutra	Otter	Stannor Main Drain	ST357304	19/08/1999	19/08/1999	1 Count of Tracks
595	Lutra lutra	Otter	Stannor Main Drain	ST357304	17/10/1999	17/10/1999	1 Count of Tracks; 2 Count of droppings
596	Lutra lutra	Otter	Stannor Main Drain	ST357304	19/11/1999	19/11/1999	1 Count of droppings; 1 Count of Tracks
597	Lutra lutra	Otter	Stannor Main Drain	ST357304	17/03/2000	17/03/2000	1 Count of Tracks
598	Hirundo rustica	Swallow	Stannor Main Drain	ST359305	23/08/2004	23/08/2004	several Count of present
599	Delichon urbicum	House Martin	Stannor Main Drain	ST359305	23/08/2004	23/08/2004	frequent Count of present
600	Carduelis carduelis	Goldfinch	Stannor Main Drain	ST359305	23/08/2004	23/08/2004	2 Count of in flight
601	Synaptus filiformis	Click beetle	Stannor Main Drain	ST357304	25/05/2005	25/05/2005	1 Count of adult
602	Valvata (Tropidina) macrostoma	Valvata macrostoma	Stannor Main Drain	ST371278	23/04/1996	23/04/1996	1 Count of present
603	Valvata (Tropidina) macrostoma	Valvata macrostoma	Stannor Main Drain	ST371278	24/04/1996	24/04/1996	1 Count of present
604	Valvata (Tropidina) macrostoma	Valvata macrostoma	Stannor Main Drain	ST373279	24/04/1996	24/04/1996	1 Count of present
605	Valvata (Tropidina) macrostoma	Valvata macrostoma	Stannor Main Drain	ST374279	24/04/1996	24/04/1996	1 Count of present
606	Arvicola amphibius	Water Vole	Stannor Main Drain	ST355298	01/08/2000	31/08/2000	1 Count of feeding signs
607	Arvicola amphibius	Water Vole	Stannor Main Drain	ST356292	01/08/2000	31/08/2000	
608	Lutra lutra	Otter	Stannor Main Drain	ST357304	12/09/2003	12/09/2003	1 Count of Tracks
609	Lutra lutra	Otter	Stannor Main Drain	ST357304	07/05/2005	07/05/2005	1 Count of droppings
610	Lutra lutra	Otter	Stannor Main Drain	ST357304	10/10/2005	10/10/2005	1 Count of Tracks
611	Lutra lutra	Otter	Stannor Main Drain	ST357304	07/05/2006	07/05/2006	1 Count of droppings
612	Lutra lutra	Otter	Stannor Main Drain	ST357304	12/07/2006	12/07/2006	1 Count of Tracks
613	Lutra lutra	Otter	Stannor Main Drain	ST357304	26/03/2007	26/03/2007	1 Count of droppings
614	Lutra lutra	Otter	Stannor Main Drain	ST357304	27/08/2007	27/08/2007	1 Count of droppings
615	Lutra lutra	Otter	Stannor Main Drain	ST357304	03/11/2007	03/11/2007	1 Count of droppings
616	Lutra lutra	Otter	Stannor Main Drain	ST357304	26/04/2008	26/04/2008	1 Count of Tracks
617	Lutra lutra	Otter	Stannor Main Drain	ST357304	25/06/2008	25/06/2008	1 Count of Tracks
618	Lutra lutra	Otter	Stannor Main Drain	ST357304	17/06/1992	17/06/1992	1 Count of present
619	Lutra lutra	Otter	Stannor Main Drain	ST357304	05/08/2007	05/08/2007	1 Count of Tracks
620	Lutra lutra	Otter	Stannor Main Drain	ST357304	01/08/2000	31/08/2000	1 Count of Tracks; 1 Count of droppings
621	Lutra lutra	Otter	Stannor Main Drain	ST357304	25/08/2004	25/08/2004	1 Count of Tracks
622	Lutra lutra	Otter	Stannor Main Drain	ST357304	11/09/2005	11/09/2005	1 Count of droppings
623	Lutra lutra	Otter	Stannor Main Drain	ST357304	12/03/2006	12/03/2006	1 Count of Tracks
624	Lutra lutra	Otter	Stannor Main Drain	ST357304	10/06/2006	10/06/2006	1 Count of Tracks
625	Lutra lutra	Otter	Stannor Main Drain	ST357304	14/11/2006	14/11/2006	1 Count of Tracks
626	Lutra lutra	Otter	Stannor Main Drain	ST357304	28/04/2007	28/04/2007	1 Count of droppings
627	Lutra lutra	Otter	Stannor Main Drain	ST357304	14/04/2006	14/04/2006	1 Count of Tracks
628	Lutra lutra	Otter	Stannor Main Drain	ST357304	09/11/2003	09/11/2003	1 Count of Tracks
629	Lutra lutra	Otter	Stannor Main Drain	ST357304	21/06/2004	21/06/2004	1 Count of droppings
630	Lutra lutra	Otter	Stannor Main Drain	ST357304	25/10/2004	25/10/2004	1 Count of Tracks
631	Lutra lutra	Otter	Stannor Main Drain	ST357304	26/03/2005	26/03/2005	1 Count of Tracks
632	Lutra lutra	Otter	Stannor Main Drain	ST357304	11/09/2005	11/09/2005	1 Count of Tracks
633	Lutra lutra	Otter	Stannor Main Drain	ST357304	10/01/2006	10/01/2006	1 Count of Tracks
634	Lutra lutra	Otter	Stannor Main Drain	ST357304	23/11/2004	23/11/2004	1 Count of droppings
635	Lutra lutra	Otter	Stannor Main Drain	ST357304	20/12/2002	20/12/2002	1 Count of Tracks
636	Lutra lutra	Otter	Stannor Main Drain	ST357304	07/10/2000	07/10/2000	1 Count of Tracks
637	Lutra lutra	Otter	Stannor Main Drain	ST357304	10/08/2003	10/08/2003	1 Count of adult; 1 Count of juvenile
638	Lutra lutra	Otter	Stannor Main Drain	ST357304	24/04/2004	24/04/2004	1 Count of Tracks
639	Lutra lutra	Otter	Stannor Main Drain	ST357304	25/07/2004	25/07/2004	2 Count of droppings
640	Lutra lutra	Otter	Stannor Main Drain	ST357304	25/08/2004	25/08/2004	1 Count of Tracks
641	Lutra lutra	Otter	Stannor Main Drain	ST357304	25/02/2005	25/02/2005	1 Count of Tracks
642	Lutra lutra	Otter	Stannor Main Drain	ST357304	23/05/2004	23/05/2004	2 Count of droppings
643	Lutra lutra	Otter	Stannor Main Drain	ST357304	24/07/2002	24/07/2002	1 Count of Tracks
644	Lutra lutra	Otter	Stannor Main Drain	ST357304	19/08/2000	19/08/2000	1 Count of Tracks
645	Lutra lutra	Otter	Stannor Main Drain	ST357304	22/08/2002	22/08/2002	1 Count of droppings
646	Lutra lutra	Otter	Stannor Main Drain	ST357304	11/07/2003	11/07/2003	1 Count of Tracks
647	Lutra lutra	Otter	Stannor Main Drain	ST357304	13/08/2003	13/08/2003	1 Count of droppings
648	Lutra lutra	Otter	Stannor Main Drain	ST357304	10/10/2003	10/10/2003	1 Count of droppings
649	Lutra lutra	Otter	Stannor Main Drain	ST357304	20/03/2003	20/03/2003	1 Count of Tracks
650	Lutra lutra	Otter	Stannor Main Drain	ST357304	27/09/2002	27/09/2002	2 Count of droppings
651	Lutra lutra	Otter	Stannor Main Drain	ST357304	18/06/2000	18/06/2000	1 Count of Tracks
652	Lutra lutra	Otter	Stannor Main Drain	ST357304	20/05/2000	20/05/2000	2 Count of droppings
653	Lutra lutra	Otter	Stannor Main Drain	ST357304	17/09/2000	17/09/2000	1 Count of Tracks
654	Lutra lutra	Otter	Stannor Main Drain	ST357304	08/10/2000	08/10/2000	1 Count of Tracks
655	Lutra lutra	Otter	Stannor Main Drain	ST357304	23/06/2002	23/06/2002	1 Count of Tracks
656	Synaptus filiformis	Click beetle	Stannor Main Drain	ST357303	10/06/2000	10/06/2000	2 Count of present
657	Arvicola amphibius	Water Vole	Stannor Main Drain	ST355306	01/08/2000	31/08/2000	1 Count of feeding signs
658	Arvicola amphibius	Water Vole	Stannor Main Drain	ST356305	01/08/2000	31/08/2000	1 Count of Tracks; 1 Count of feeding signs
659	Athene noctua	Little Owl	Stannor Main Drain	ST355307	01/01/1990	31/12/1990	
660	Tyto alba	Barn Owl	Stannor Main Drain	ST355307	02/01/1990	02/01/1990	
661	Arvicola amphibius	Water Vole	Stannor Main Drain	ST355299	01/08/2000	31/08/2000	1 Count of feeding signs
662	Hydaticus transversalis	Hydaticus transversalis	Stannor Main Drain	ST34953040	07/08/1996	07/08/1996	1 Count of present
663	Valvata (Tropidina) macrostoma	Valvata macrostoma	Stannor Main Drain	ST34953040	07/08/1996	07/08/1996	1 Count of present
664	Odontomyia ornata	Odontomyia ornata	Stannor Main Drain	ST34953040	07/08/1996	07/08/1996	1 Count of present
665	Oenanthe isabellae	Oenanthe isabellae	Stannor Main Drain	ST34953040	07/08/1996	07/08/1996	1 Count of present
666	Lemna trisulca	Lemna trisulca	Stannor Main Drain	ST34953040	07/08/1996	07/08/1996	
667	Hydrocharis morsus-ranae	Frogbit	Stannor Main Drain	ST34953040	07/08/1996	07/08/1996	1 Count of present
668	Arvicola amphibius	Water Vole	Stannor Main Drain	ST353308	01/08/2000	31/08/2000	1 Count of feeding signs