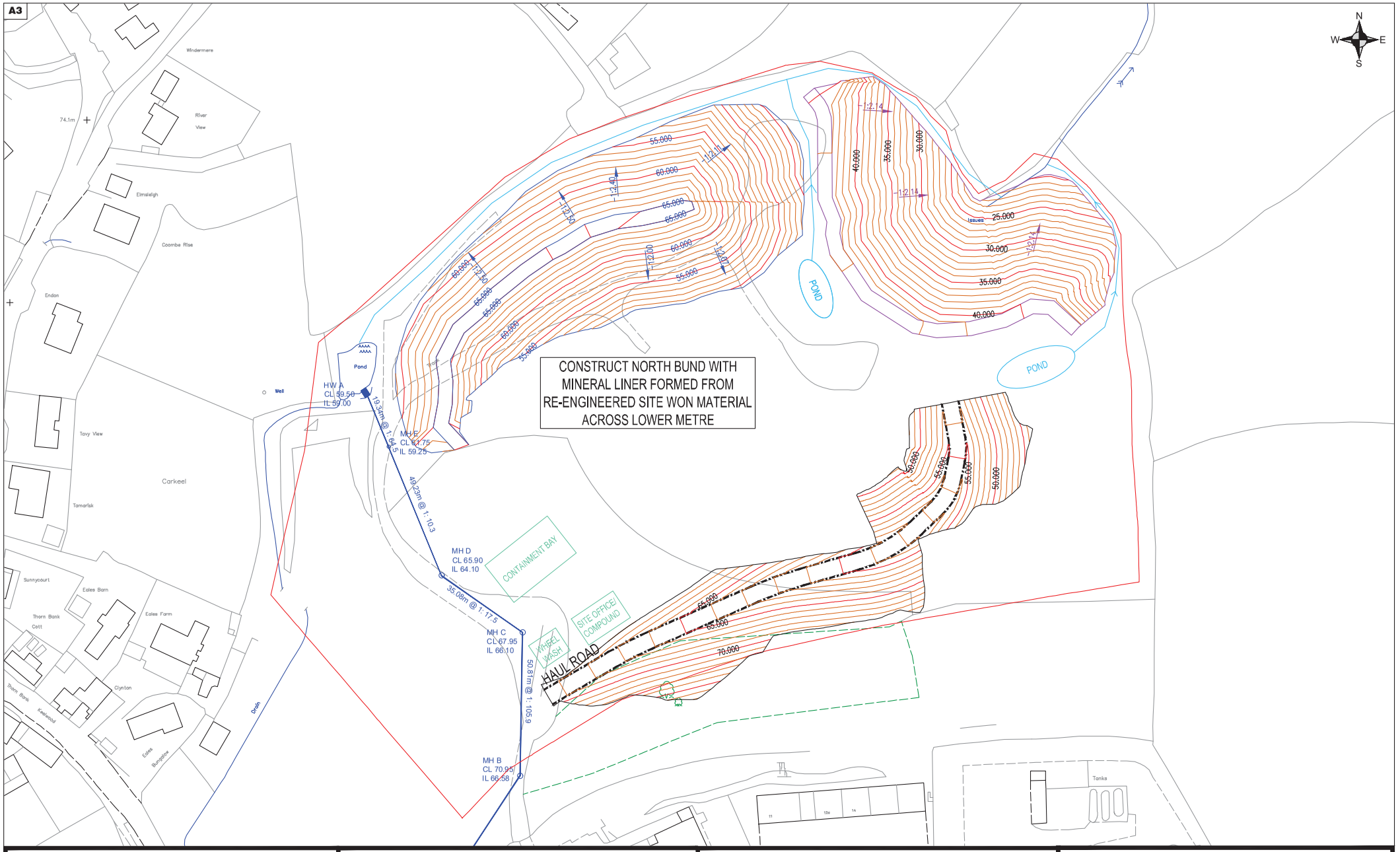

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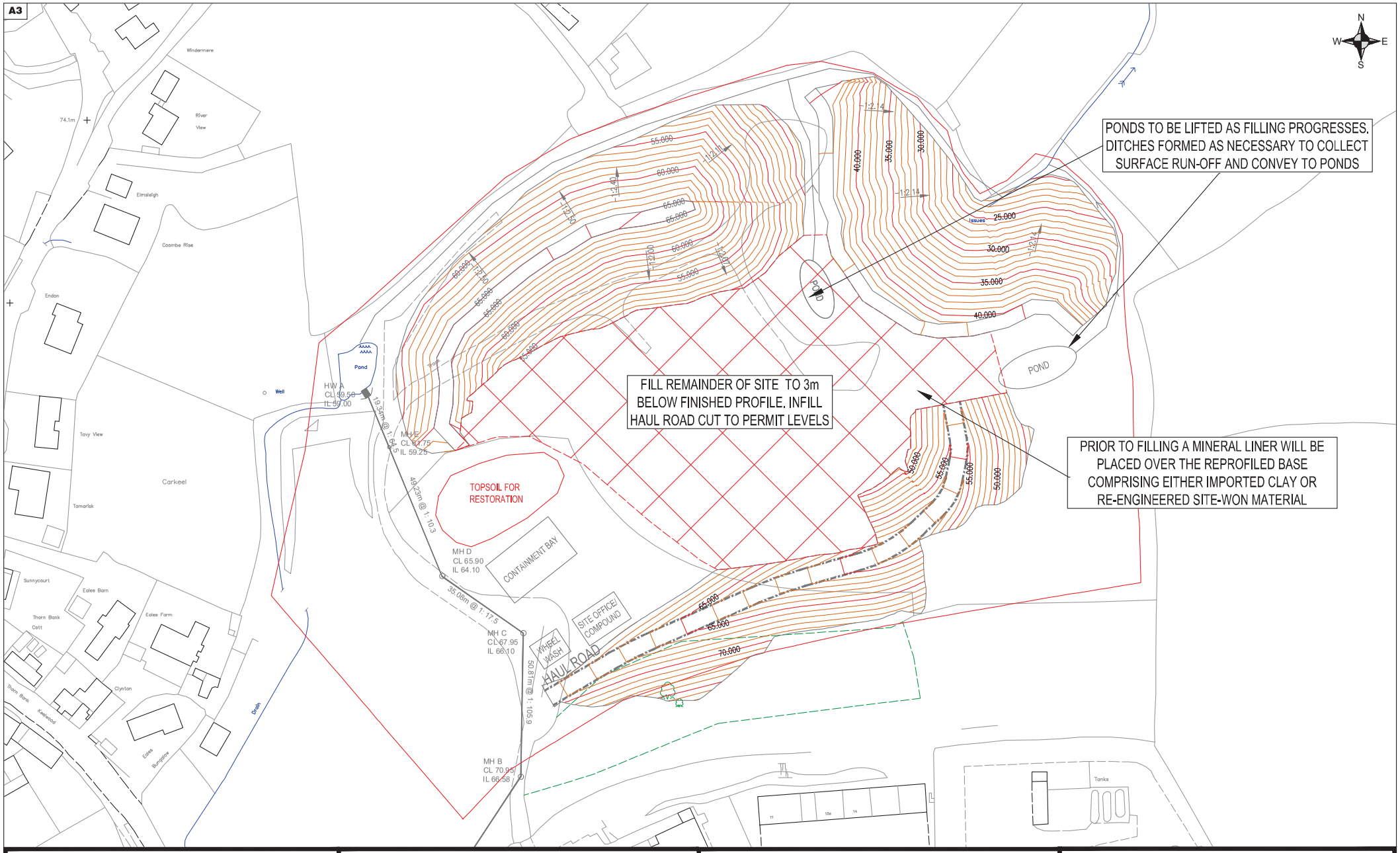

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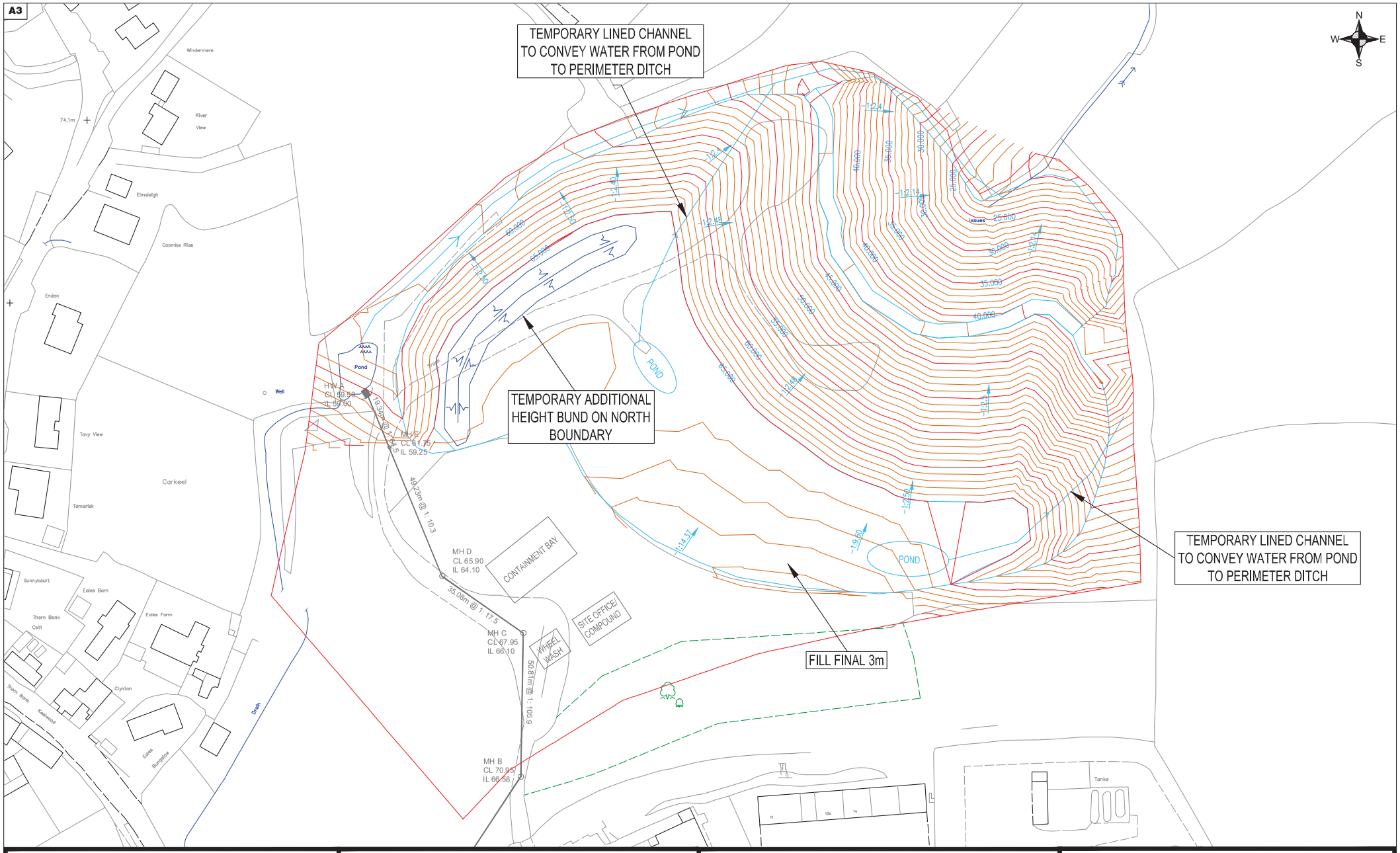

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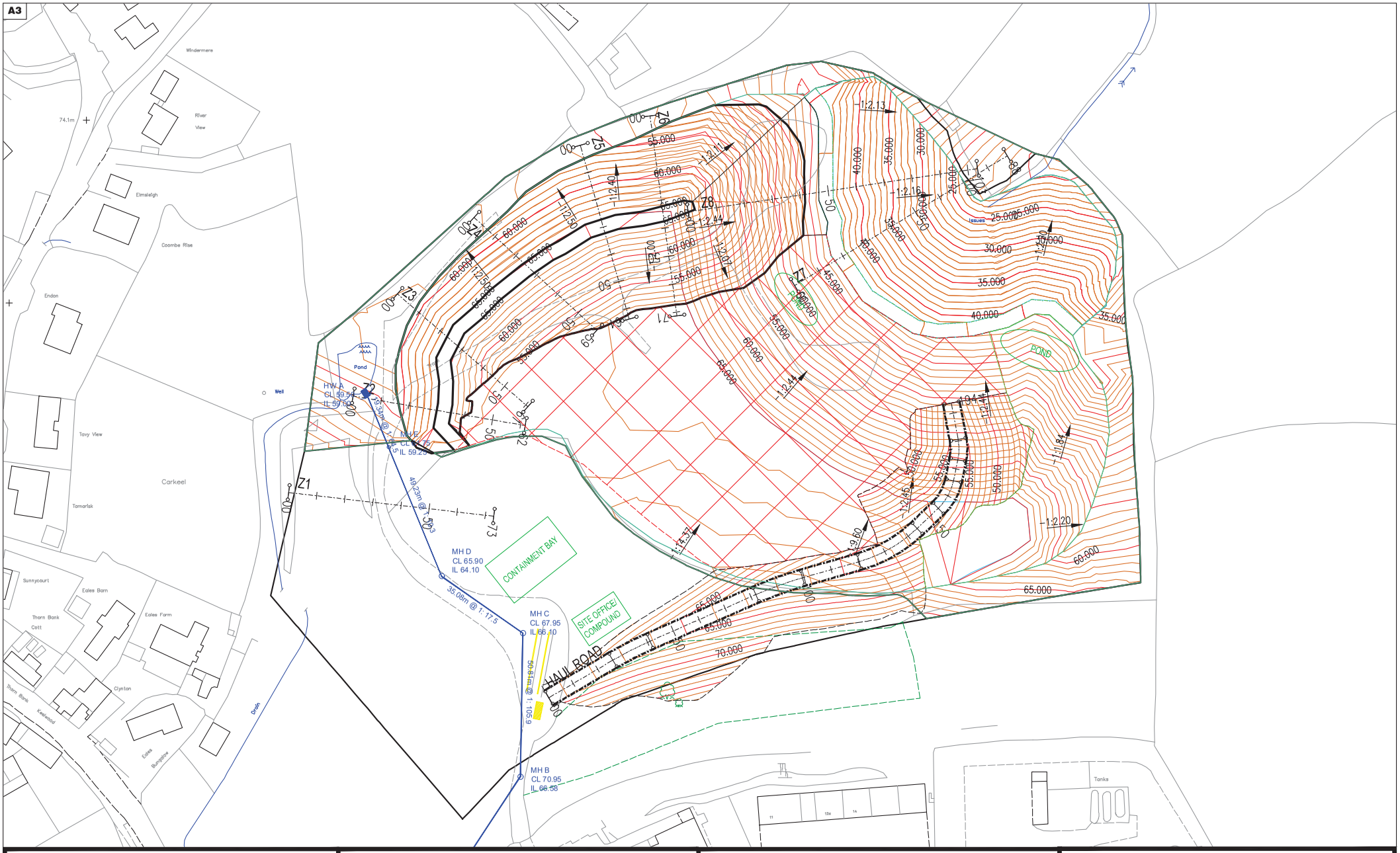
A3



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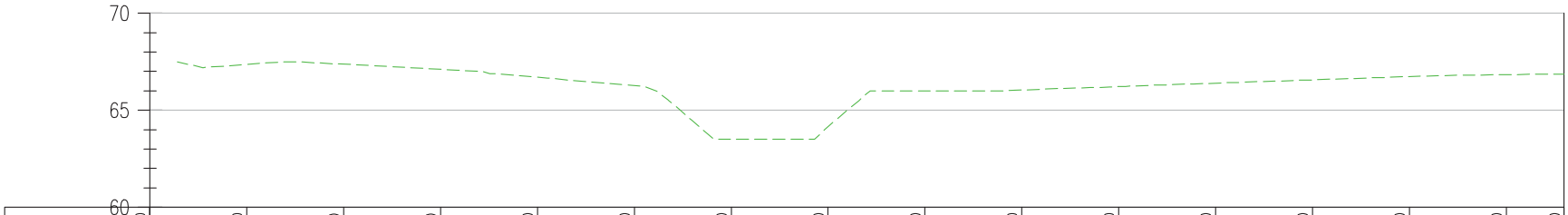

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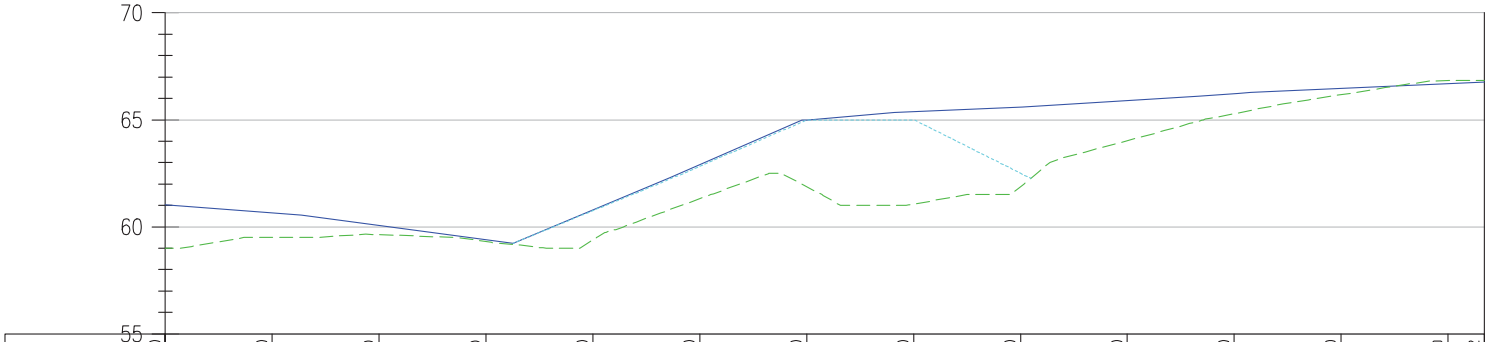

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PROPOSED LEVELS	61.033	60.659	60.072	59.405	60.792	62.911	65.000	65.377	65.599	65.908	66.231	66.468	66.690	66.766

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Drawing Status: **For Information**

Job Title: **Eales Farm Landfill**

Dwg Title: **Cross Section Z1 and Z2**

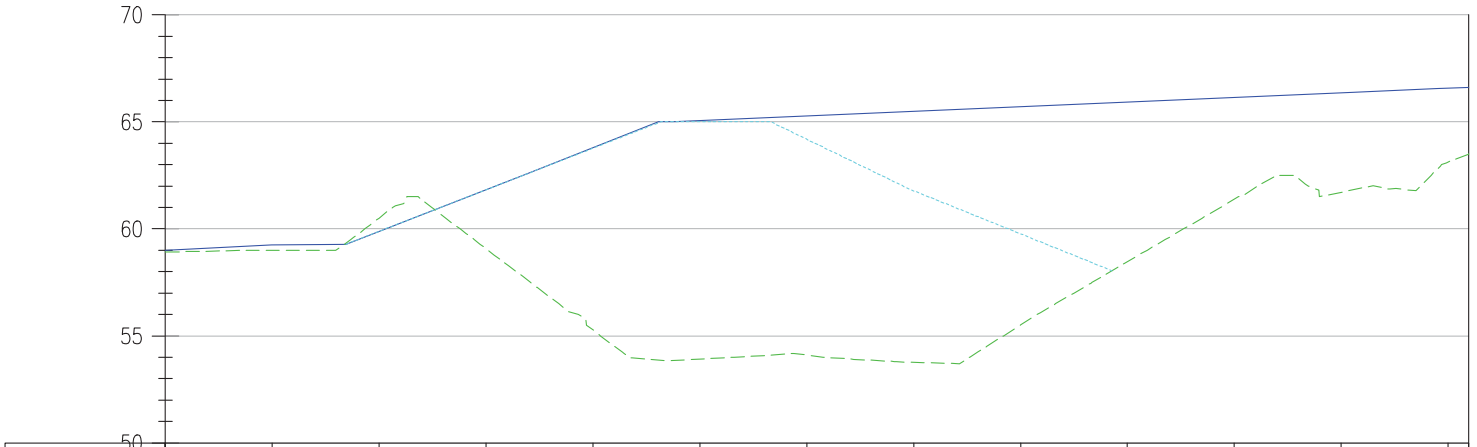
Scale 1:250 at A3 Drawn DLJ

Date Feb 2021 Checked DLJ

Drawing no: **GCE00692-F21-Fig2**

Rev -

A3



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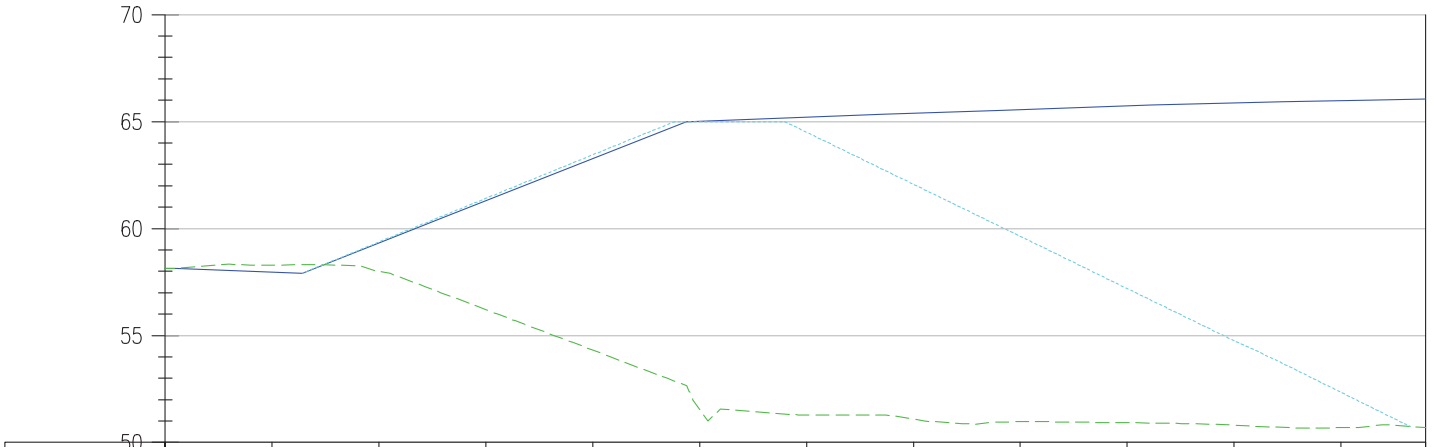
PROPOSED LEVELS	59.003	59.252	59.888	61.828	63.787	65.051	65.269	65.488	65.707	65.926	66.145	66.364	66.570	66.600



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EXISTING LEVELS	58.139	58.292	57.985	56.206	54.317	51.532	51.286	51.085	50.965	50.919	50.803	50.693	50.686
PROPOSED LEVELS	58.124	57.968	59.329	61.303	63.277	65.024	65.209	65.391	65.563	65.737	65.876	65.989	66.067

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Drawing Status: **For Information**

Job Title: **Eales Farm Landfill**

Dwg Title: **Cross Section Z3 and Z4**

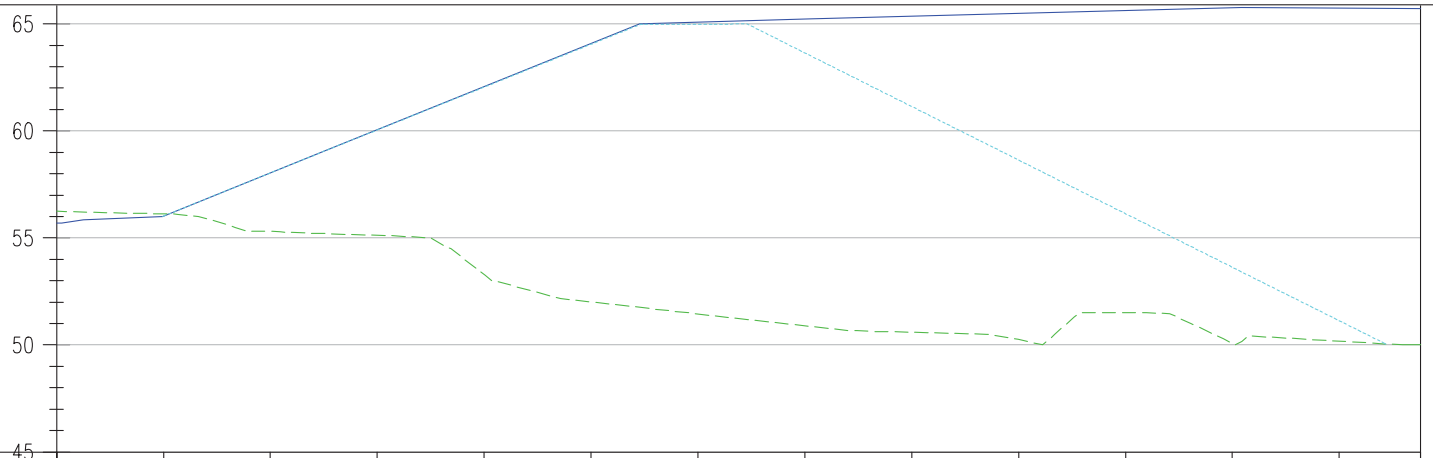
Scale: 1:250 at A3 Drawn: DLJ

Date: Feb 2021 Checked: DLJ

Drawing no: **GCE00692-F21-Fig3**

Rev: -

A3



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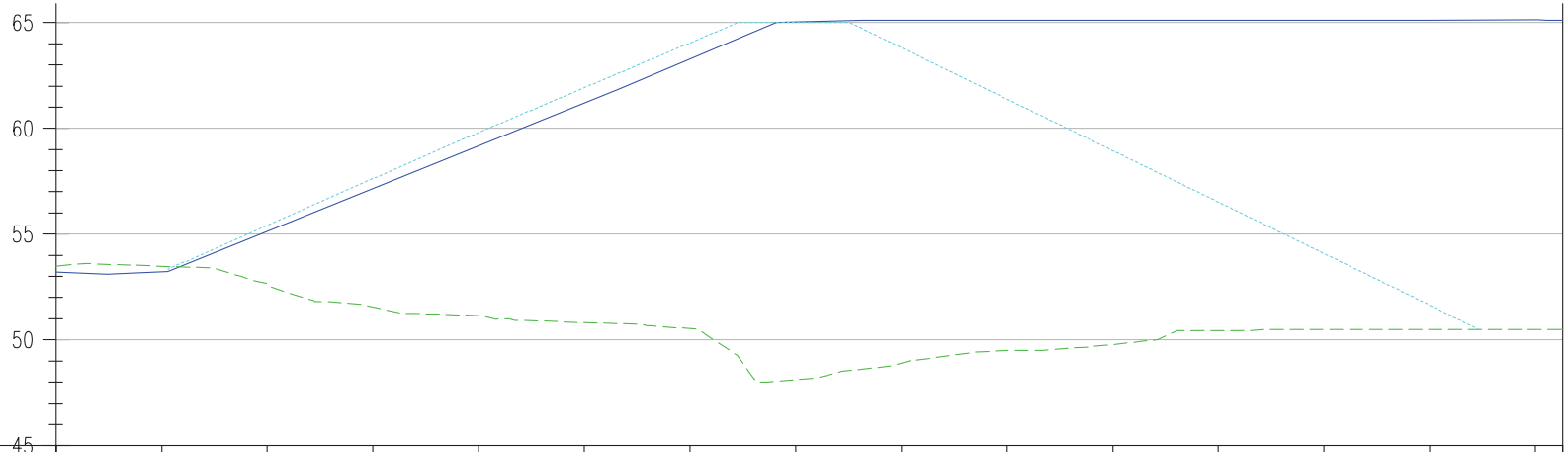
PROPOSED LEVELS	55.688	56.021	58.035	60.049	62.063	64.077	65.079	65.229	65.361	65.493	65.624	65.751	65.741	65.724



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EXISTING LEVELS	53.487	53.483	52.662	51.557	51.150	50.819	50.527	48.110	48.901	49.490	49.784	50.433	50.496	50.491	50.479	50.476
PROPOSED LEVELS	53.209	53.218	55.133	57.153	59.174	61.195	63.277	65.023	65.103	65.106	65.108	65.111	65.114	65.117	65.140	65.122

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Client:
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Drawing Status
For Information

Job Title:
Eales Farm Landfill

Dwg Title:
Cross Section Z5 and Z6

Scale 1:250 at A3 Drawn DLJ

Date Feb 2021 Checked DLJ

Drawing no:
GCE00692-F21-Fig4

Rev
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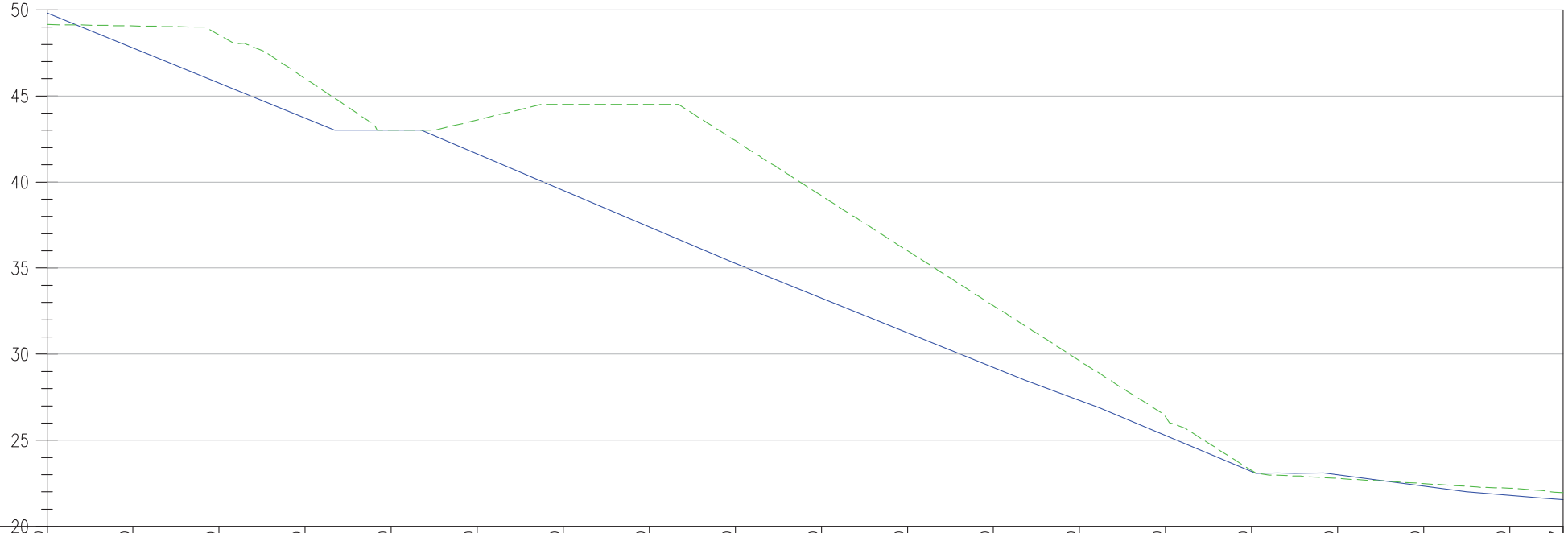
A3



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EXISTING LEVELS	49.148	49.069	48.546	46.012	43.000	43.607	44.500	44.500	42.398	39.205	36.011	32.818	29.625	26.354	23.238	22.782	22.485	22.219	21.954
PROPOSED LEVELS	49.804	47.770	45.735	43.701	43.000	41.617	39.496	37.376	35.260	33.250	31.239	29.229	27.315	25.277	23.189	23.003	22.336	21.798	21.546

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Client:
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Drawing Status
For Information

Job Title:
Eales Farm Landfill

Dwg Title:
Cross Section Z7

Scale 1:250 at A3 Drawn DLJ

Date Feb 2021 Checked DLJ

Drawing no:
GCE00692-F21-Fig5

Rev
-

A3

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EXISTING LEVELS	49.500	49.500	49.175	47.641	46.579	46.244	45.936	45.599	44.797	43.487	43.500	43.936	44.500	43.546	40.554	37.473	34.381	31.242	28.163
PROPOSED LEVELS	62.518	60.466	58.431	56.416	54.401	52.386	50.371	48.356	46.341	44.326	43.632	42.181	39.996	38.057	36.126	34.108	31.790	29.458	27.102

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Client:
Tamar Valley Projects Ltd

Drawing Status
For Information

Job Title:
Eales Farm Landfill

Dwg Title:
Cross Section Z8

Scale 1:250 at A3 Drawn DLJ

Date Feb 2021 Checked DLJ

Drawing no:
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Rev
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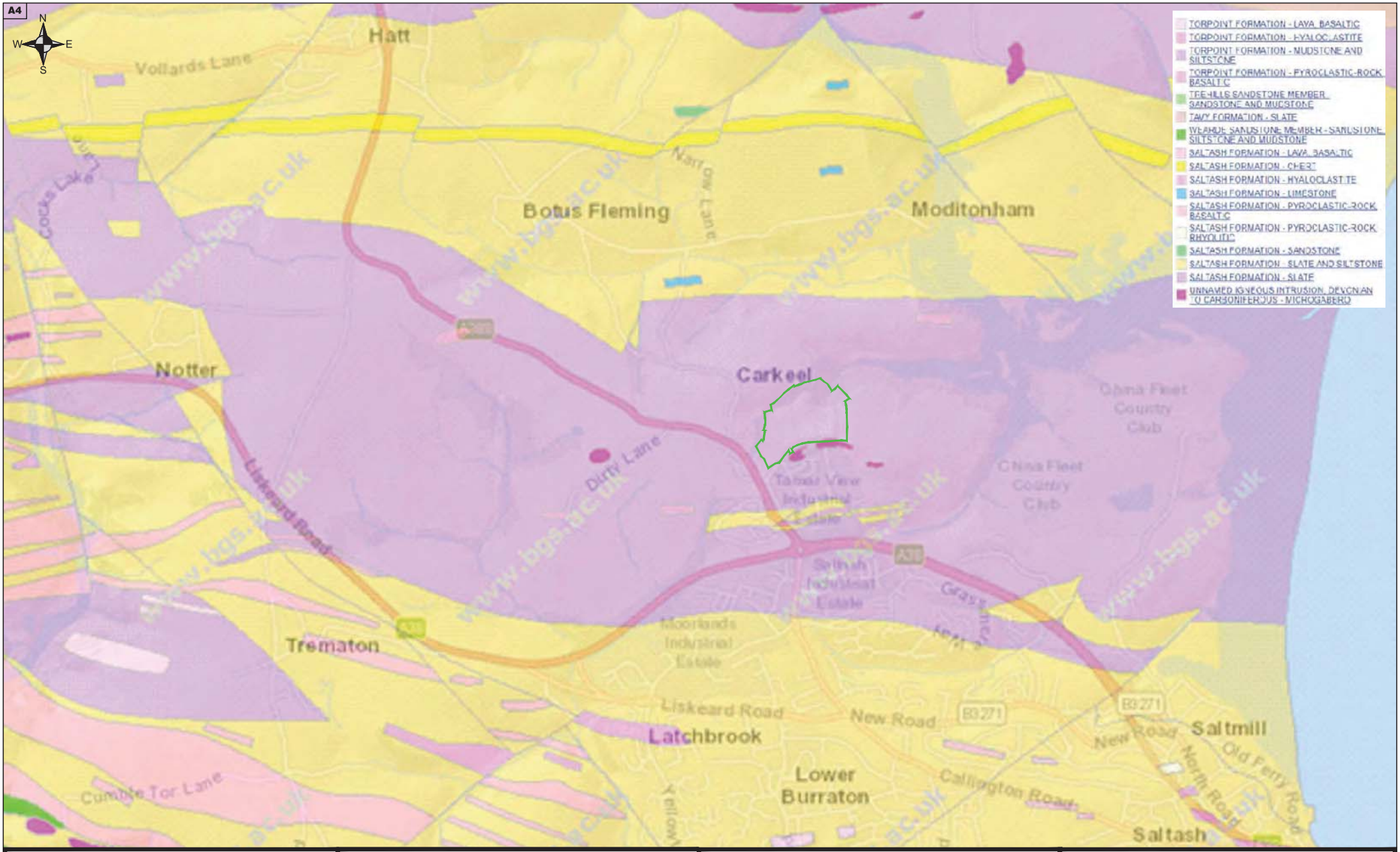

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Client:
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Drawing Status
For Information

Job Title:
Eales Farm Landfill

Dwg Title:
Regional Geology

Scale 1:20000 @ A4 Drawn RA

Date Apr 2020 Checked DLJ

Drawing no:
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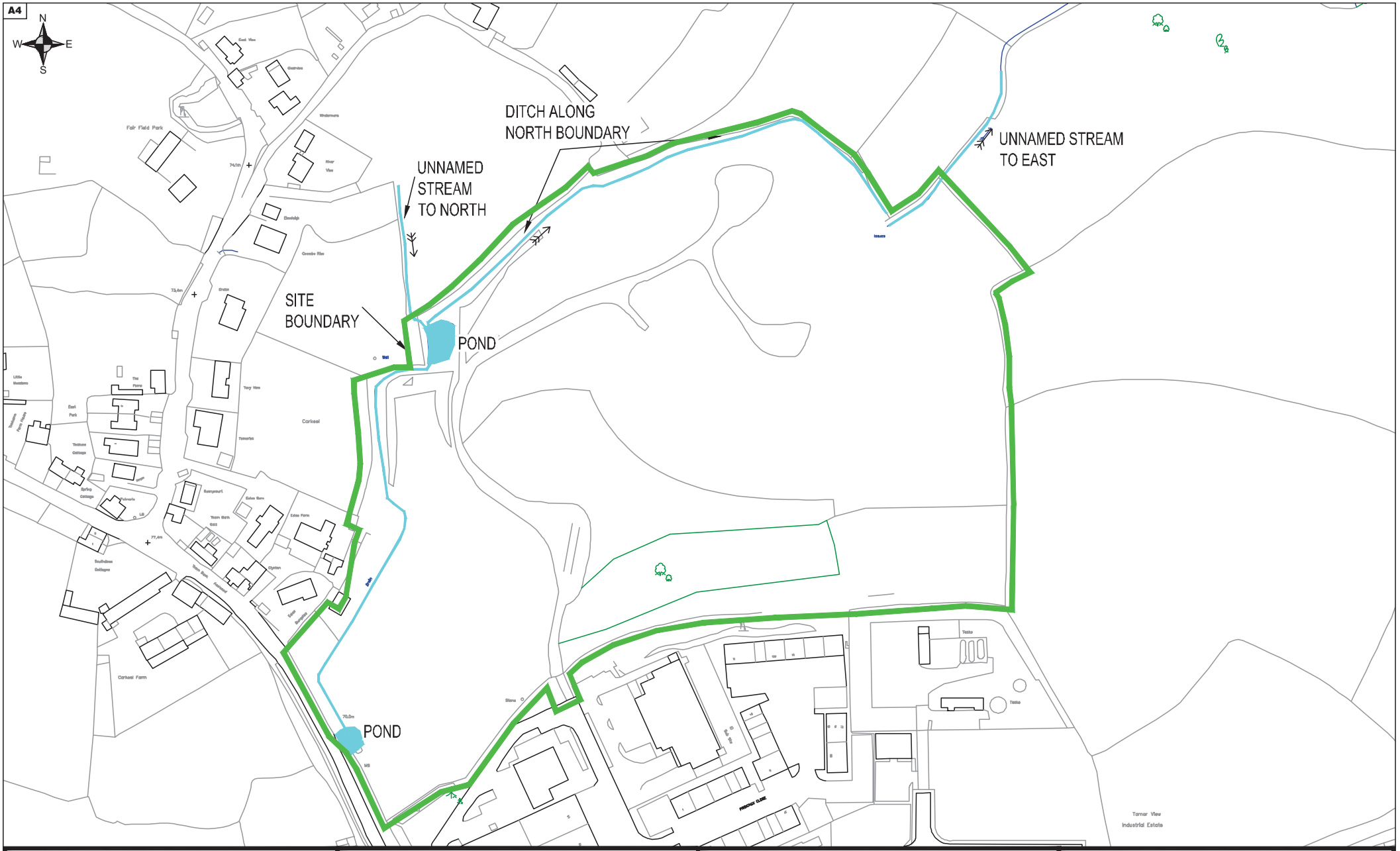
Rev



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Drawing Status
For Information

Job Title:
Eales Farm Landfill

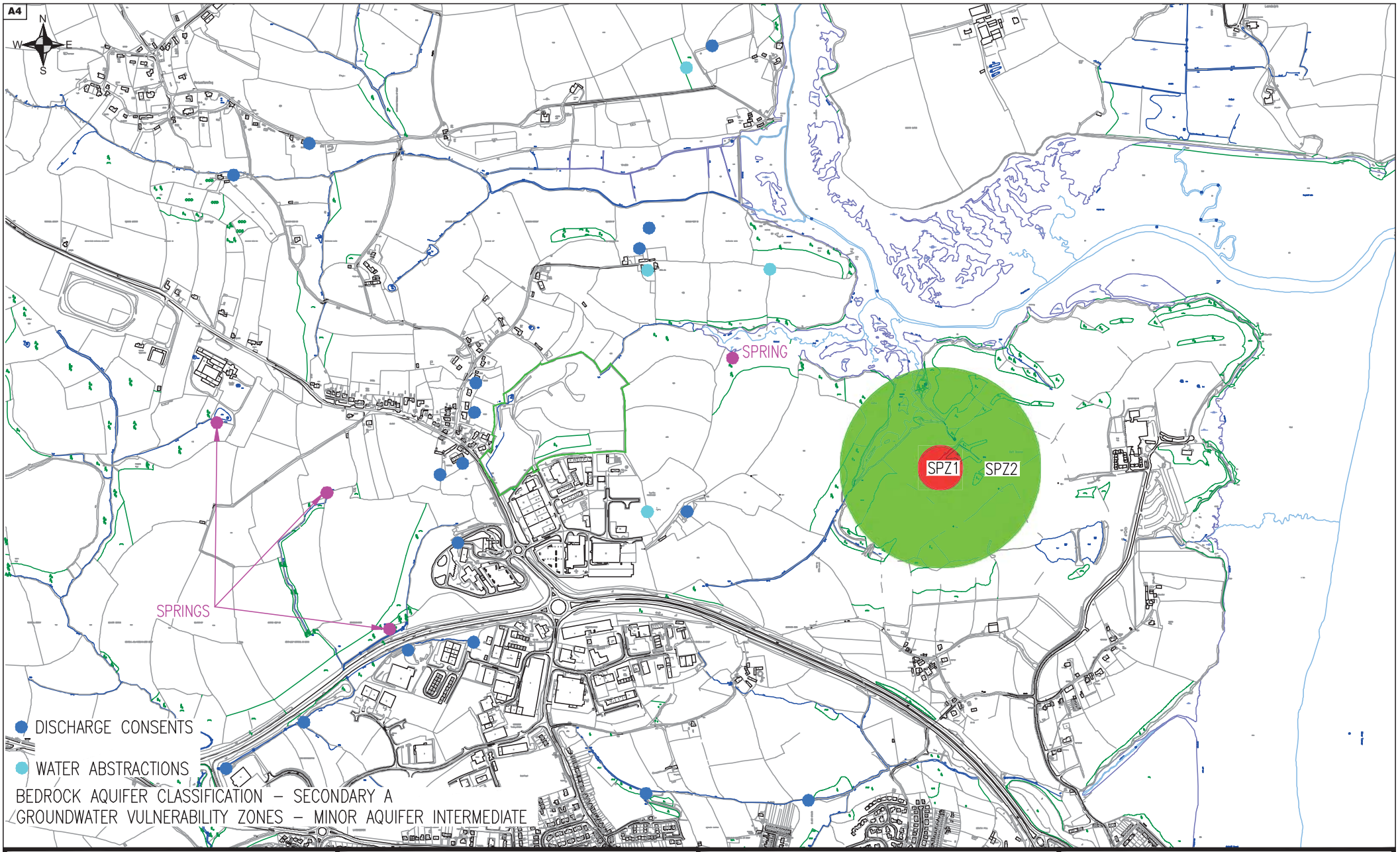
Dwg Title:
Water Courses

Scale 1:2500 @ A4 Drawn RA

Date Apr 2020 Checked DLJ

Drawing no:
GCE00692/A/Fig9

Rev



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Client:
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Drawing Status
For Information

Job Title:
Eales Farm Landfill

Dwg Title:
Regional Hydrology and Hydrogeology

Scale 1:12500 @ A4 Drawn RA

Date Apr 2020 Checked DLJ

Drawing no:
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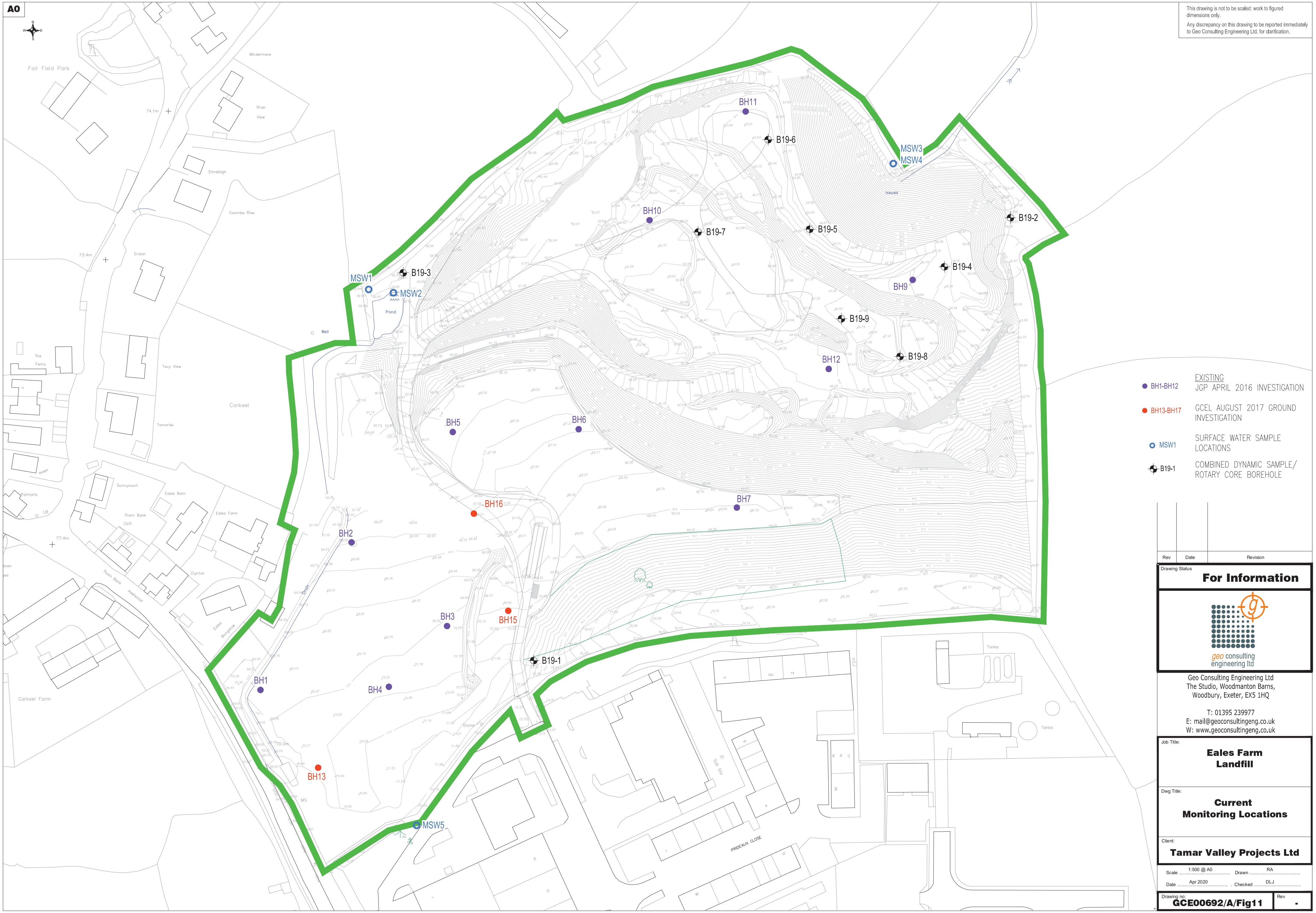
Rev



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B19-6
MSW3
MSW4
Issues
B19-2
BH10
B19-7
B19-5
B19-4
MSW1
B19-3
MSW2
Pond
Well
BH9
B19-9
B19-8
BH12
BH5
BH6
BH16
BH7
BH2
Drain
BH3
BH15
B19-1
BH1
BH4
BH13
MSW5
Stone
Fair Field Park
Windermere
River View
Elmsleigh
Coombe Rise
Endon
Tavy View
Corkeel
Tamarisk
Sunnycourt
Eales Barn
Eales Farm
Thorn Bank
Clynton
Kentwood
Corkeel Farm
Tanks
El Sub Sta
PRIDEAUX CLOSE
74.1m
73.4m
77.4m
70.0m
EXISTING
BH1-BH12 JGP APRIL 2016 INVESTIGATION
BH13-BH17 GCEL AUGUST 2017 GROUND INVESTIGATION
MSW1 SURFACE WATER SAMPLE LOCATIONS
B19-1 COMBINED DYNAMIC SAMPLE/ ROTARY CORE BOREHOLE
Rev
Date
Revision
Drawing Status
For Information
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Job Title:
Eales Farm Landfill
Dwg Title:
Current Monitoring Locations
Client:
Tamar Valley Projects Ltd
Scale 1:500 @ A0
Drawn RA
Date Apr 2020
Checked DLJ
Drawing no:
GCE00692/A/Fig11
Rev
-

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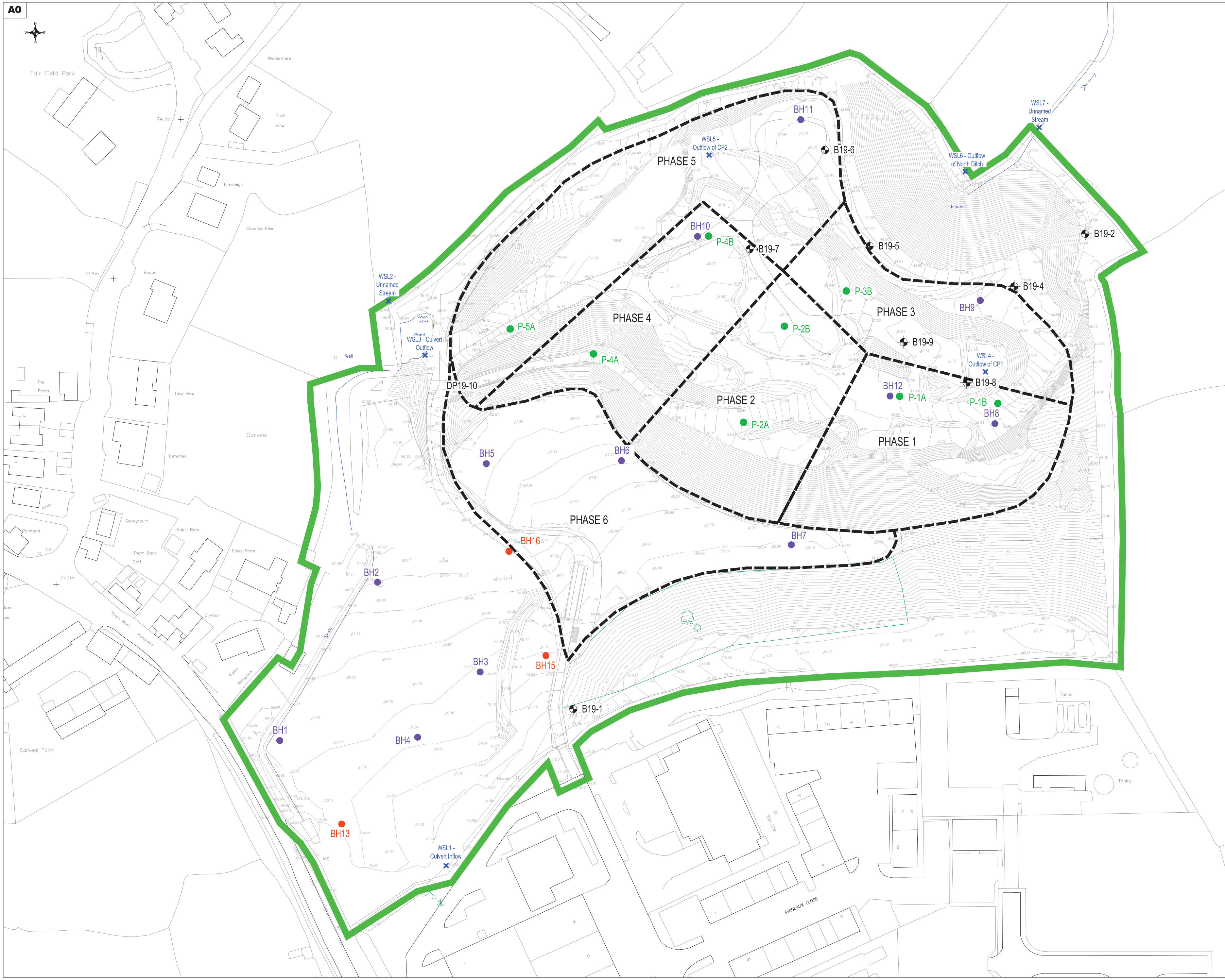

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PROPOSED

B19-1 COMBINED DYNAMIC SAMPLE/ ROTARY CORE BOREHOLE

P-1A NEW IN-WASTE MONITORING LOCATIONS

WSL6 WATER SAMPLE LOCATIONS

EXISTING

BH1-BH12 JGP APRIL 2016 INVESTIGATION

BH13-BH17 GCEL AUGUST 2017 GROUND INVESTIGATION

Rev	Date	Revision

Drawing Status

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Job Title: **Eales Farm Landfill**

Dwg Title: **Proposed Monitoring Locations**

Client: **Tamar Valley Projects Ltd**

Scale: 1:500 @ A0 Drawn: RA
Date: Apr 2020 Checked: DLJ

Drawing no: **GCE00692/A/Fig12** Rev: -

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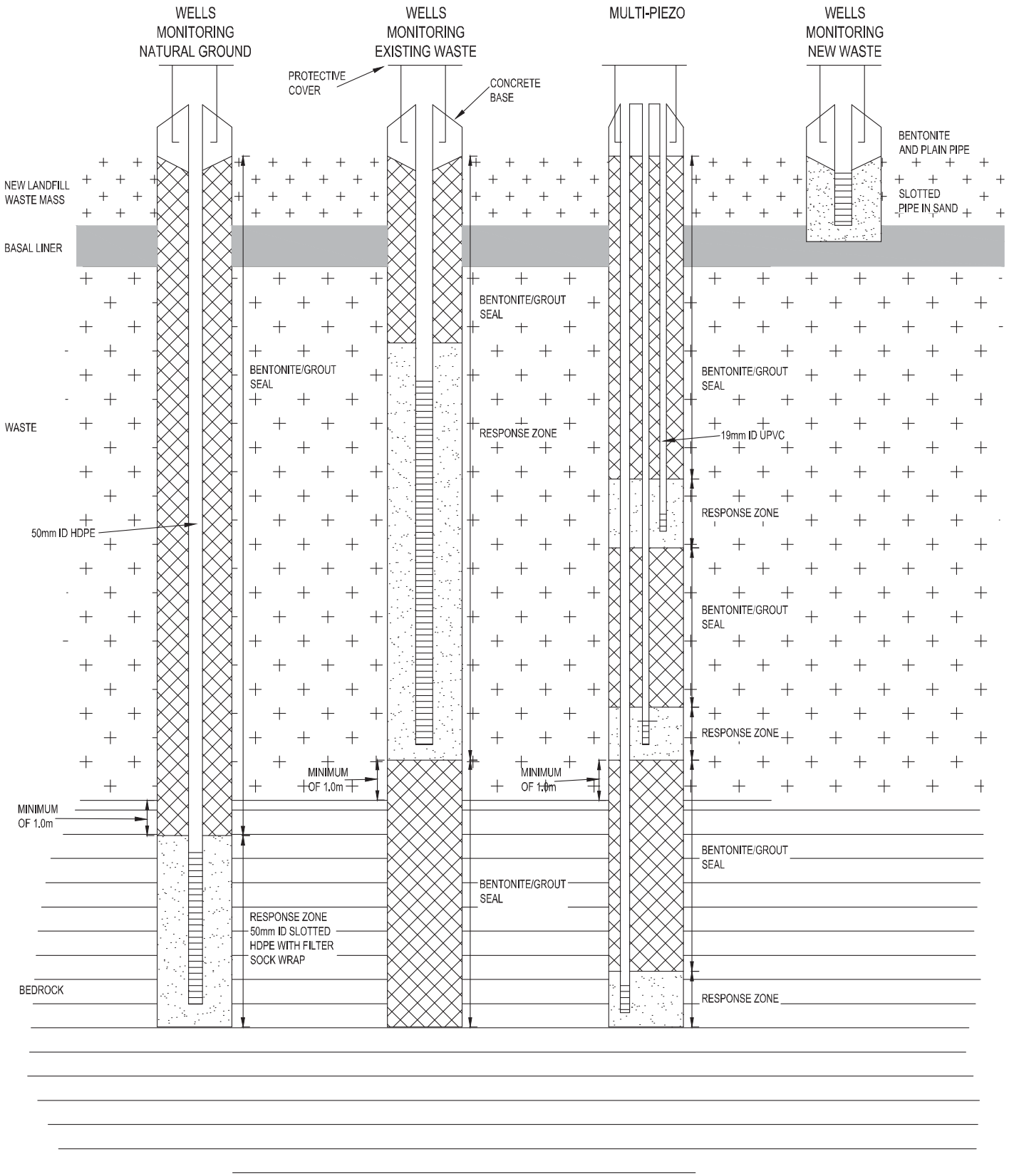

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Job Title: **Eales Farm Landfill**

Dwg Title: **Monitoring Well Installation Designs**

Client: **Tamar Valley Projects Ltd**

Scale NTS Drawn RA

Date Jan 2020 Checked DLJ

Drawing no: **GCE00692-Fig2** Rev .

Rev	Date	Revision

Drawing Status: **For Information**

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Client:
Tamar Valley Projects Ltd

Drawing Status
For Information

Job Title:
Eales Farm Landfill

Dwg Title:
Permeability Test Locations

Scale 1:2500 @ A4 Drawn RA

Date Apr 2020 Checked DLJ

Drawing no:
GCE00692/A/Fig14

Rev

Appendix B Review of EA October 2018 Feedback

Table B1

Review of Environment Agency October 2018 Response

Proposed Eales Farm Landfill Extension, Saltash

No.	EA Comment	EA Rationale	Response*
1	Review the SCM to take account of the waste in the EFL being part sub-water table in the western part of the Eales farm landfill (EFL)	The schematic drawings in the HRA report Figure 1 (developed from D-ESSD11), and Figure 3, show two sets of groundwater surface contours in D-ESSD10A. The upper set of contours reflect groundwater - saturated waste. It is important that the SCM is based on site specific information so that this can be taken into account in the quantitative modelling.	As shown in Table D0 (Appendix D), the water level in all monitoring wells screened in the mudstone is generally below the base of the waste. The principal exceptions here are newly installed wells BH19-5a and BH19-7a where the water level recorded in the monitoring wel suggests the piezometric surface is within the waste deposits. However, as discussed in Section 4 of the report, these two wells have been drilled along the line of the historical stream (now culverted) that ran along the base of the valley floor, and the water recorded in the wells is interpreted to be due to the water flowing in the culvert backfill (i.e. the water sampled from monitoring point MSW3) as opposed to groundwater. The conceptual model has been refined slightly to take into account the additional data, with the unsaturated zone pathway thickness reduced to a minimum of 0m (from 1m) in the Eales Farm Landfill model (see Table D9A in Appendix D). However the overarching assumption remains that the waste mass in the existing Eales Farm landfill is generally unsaturated.
2a	Justify in detail the choice of model software, CONSIM, in relation to the revised SCM, and justify why this is a more appropriate model to use instead of the industry standard Landsim, or any other model.	Use of Consim is inadequately justified. The industry standard model, Landsim, is normally used for landfills. Separate models have been run in CONSIM - one for the EFL, and a separate one just for TVL. The TVL scenario model does not account for the fact that there will be a perched leachate head above the EFL, and that the seepages from TVL will pass through the lining system which will be constructed of suitable inert waste, and from the toe into the EFL below. It is not clear why CONSIM is the applicant's preferred model over the industry standard model Landsim which was developed specifically for groundwater risk assessment at landfills.	ConSim and LandSim ConSim is identified in Environment Agency guidance on undertaking groundwater risk assessment for your environmental permit as an appropriate tool for undertaking probabilistic calculations. Additional discussion on the rationale for utilising ConSim is presented in Section 8.3. Of particular importance to this project, using CONSIM allowed the large dataset on existing soil quality within the Eales Farm Landfill to be input directly to the model. For consistency it was elected to continue with CONSIM as opposed to using an alternative model (e.g. LandSim) for the placement of additional waste as part of the proposed Eales Farm Landfill Extension.
2b	Revise model scenarios, and develop them for a) the existing EFL, and b) the combined effects of the proposed TVL and the EFL such that the total waste thicknesses of both landfills are included.		The potential effects of both landfills have been taken into account in the existing model scenarios. The proposed Eales Farm Landfill Extension model includes background water quality data sourced from the Existing Eales Farm Landfill model. The background water quality data entered is presented in Table D11 of Appendix D.
2c	A detailed water balance for each of the revised model scenarios, including groundwater, rainfall, surface water and leachate aspects, because none has been presented		Relevant details of the relevant fluxes into and out of the landfill (i.e. the water balance) are presented throughout the report including assumptions. For example, relating to rainfall see Tables D9a, D9b and D10 in Appendix D, surface water (Section 5 of the report), groundwater (Section 4 of the report plus Tables D9a, D9b, D10).
2d	A detailed rogue load assessment because none has been provided.		The potential impact of a rogue load is considered in Sections 8.10 and 8.12.
2e	Present electronic copies of the models and modelled scenarios.		Paper copies of the model outputs are presented in Appendix I with electronic copies of the models provided. As noted in the previous report, these were available upon request.
3	Table titles. Make it clear in the titles of the tables which landfill and model scenario it is linked to, and how the tables are linked or connected	It is not clear what parameters and their values have been used for the sources, the pathways, and the receptors, in the model scenarios. For example, it is not clear if table 6 source term data relates to the model scenario for Eales Farm Landfill (EFL), and whether Table 7 source term data relates to the model scenario for Tamar View Landfill (TVL), and it is not clear how Table 8 source term data for TVL relates to Table 7 source term data etc.	All table titles in Appendix D are identified as relating to the historically deposited waste (Existing Eales Farm Landfill) or the proposed landfill (Proposed Eales Farm Landfill Extension). For clarity, Table 8-4 in the report text summarises the table in Appendix D with the relevant model and associated data.
4	Table 6 Source Term. Give detailed description and explanation for justification of how the pdf distributions and values have been derived for each substance.	Data units are quoted as mg/kg. For example for arsenic, data quoted are a normal distribution, mean of 67 mg/kg and standard deviation (SD) of 71 mg/kg, the justification given is "Elevated concentrations of arsenic considered to represent naturally occurring background concentrations. Outlier removed from dataset." It is not clear: a. how data for all substances in the table have been calculated b. whether waste compositions in mg/kg have been input into the model c. how a SD can be greater than the mean for these data d. why the applicant considers data are representative of background quality in groundwater e. how these data relate to those quoted in Table 7, and vice versa Also in Section 3.6 Naturally Occurring Contaminants, it is not clear what the purpose of the information serves. The report asserts Mn, Pb and As are naturally present in the locality's soils, the applicant's assertion largely based on 3 maps published by BGS soil observatory (Appendix D). It is not clear what objective this information serves. However looking at the maps the location of the EFL is located in an area that has less than average concentrations of these substances. The fact that these are elevated in samples taken from the existing waste (see Appendix C Table 1 waste analysis) in concentrations of As upto 2600 mg/kg and Pb upto 420 mg/kg confirms that these substances are present in the waste and should be factored in the leachate source term accordingly. The report suggests that these are hotspots but this assertion has not been substantiated and considering the size of the landfill and the distribution and number of samples obtained (only 10 were leach tested, far fewer than were analysed for solid composition) and tested throughout the waste mass. A conservative assumption would be that these are present in leachate at concentrations upto 260 mg/l for As and 42 mg/l assuming leaching at a liquid to solid ratio of 10. Mn is not analysed for in the waste, and we must assume that because there are no monitoring boreholes outside the landfilled waste area that the concentrations monitored in water are due to leaching from the waste. Also in report section "3.4 Imported waste (Eales farm landfill)", it is not clear what objective classifying the waste according to the guidance viz. " Environment Agency (May 2015) Guidance on the Classification and Assessment of Waste WM3 Version1" serves. It more relevant and important to determine the leachate source concentrations for input to the model.	Statistical distribution for all contaminants of concern has been calculated based on relevant site-specific dataset presented in Tables D1 to D5 of Appendix D. Units adopted for waste composition entry into the model are presented in Table D6 (Existing Eales Farm Landfill model) and Table D7 (Proposed Eales Farm Landfill Extension model) in Appendix D. The Existing Eales Farm Landfill model (Table D6) is primarily based on the measured concentrations of contaminants of concern in soil, with all concentrations entered in mg/kg, apart from ammoniacal nitrogen. By contrast the waste to be placed in the Proposed Eales Farm Landfill Extension model is based on a range between the laboratory reporting limit and the inert WAC limits, with concentrations entered in mg/l, apart from PAHs and TPH, where concentrations are entered in mg/kg. A low standard deviation means that most of the numbers are close to the average. A high standard deviation means that the numbers are more spread out. This is taken into account in the distributions adopted for modelling purposes. In the absence of site-specific data on manganese concentrations in material placed historically in the Eales Farm Landfill, reference was made to typical concentrations of naturally occurring contaminants in soil in Revision 1 of this report. This was in response to a query from the Environment Agency on the November 2017 Hydrogeological Risk Assessment (see Section 1.3.5 of the report). Notwithstanding the site-specific data on manganese obtained by GCE in 2020 (see Table D1 in Appendix D) details of the concentrations of naturally occurring contaminants in the vicinity of the Site has been retained (see Section 3.6). The majority of the waste placed within a landfill is derived from a surrounding area, typically a 20 mile radius, and information on potentially elevated naturally occurring contaminants provides useful context when deriving source terms and likely contaminant distributions for modelling purposes. By way of example, with reference to the maps provided and the nominal 20 mile radius, its noted that significantly elevated concentrations of arsenic are found in the area around Gunnislake, approximately 12 miles to the north of the Site (the English Arsenic Company historic established a substantial processing works in this area). However, looking at the overall dataset relating to arsenic in soils at the Eales Farm Landfill (Table D1 of Appendix D), based on 79No. samples, the highest concentration was 2,600 mg/kg, with the second highest concentration 400 mg/kg. Removing the highest concentration from the dataset reduces the standard deviation from 294mg/kg to 75mg/kg. The data on normal background concentrations shows that its not unreasonable to assume that elevated concentrations of arsenic may be present in the waste mass. However a large dataset of samples has shown that significantly elevated concentrations are not routinely encountered. On that basis, it was originally elected to remove the outlier from the dataset given the overarching aim is to understand the likely concentrations in arsenic leachate from the overall waste mass. Notwithstanding this, to be conservative and taking into account EA comments, the outlier arsenic concentration has now been included in the dataset. Section 3.7 of the report is part of the overarching work undertaken to identify contaminants within the existing Eales Farm Landfill source with the potential to leach and therefore warrant further assessment as part of this hydrogeological risk assessment. An assessment of the waste with reference to WM3 was undertaken as the first part of an assessment of the leachate source term in response to a query from the Environment Agency on the November 2017 Hydrogeological Risk Assessment (See Section 1.3.5 of the report). This assessment provides useful context on potentially elevated concentrations of arsenic in the current inert landfill, but which were reasonably accepted on a dilute and disperse facility, and warrant additional assessment in terms of background quality in water. Separately a review of water quality data (both surface water and groundwater) was undertaken which identified manganese as a potential contaminant of concern (manganese had not been sampled in soils prior to the recent testing in 2020).
5	Table 7 Source Term. Give detailed description and explanation of how the pdf distributions and values have been derived for each substance.	It is not clear why are the data quoted in mg/l units here, but mg/kg in Table 6. Table 7 proposed source term data - uniform distribution between the LRL and the inert WAC limit needs to be adequately justified. Also, the operator could accept all inert waste containing substances at the respective inert WAC maximum limits, so this must be reflected in the leachate source term. Also see reasons given in the preceding item.	As noted above, the Eales Farm Landfill model (Table D6) is primarily based on the measured concentrations of contaminants of concern in soil, with all concentrations entered in mg/kg, apart from ammoniacal nitrogen. By contrast the waste to be placed in the Proposed Eales Farm Landfill Extension model is based on a range between the laboratory reporting limit and the inert WAC limits, with concentrations entered in mg/l, apart from PAHs and TPH, where concentrations are entered in mg/kg. It is theoretically possible for the operator to accept all inert waste containing substances at the respective inert WAC maximum limits, however this is not realistic, not representative of the material that was placed in the Eales Farm Landfill historically. Additional discussion regarding the rationale for PDF distribution selection is presented in the report.
6	Table 8 Source Term. Give detailed description and explanation of how the pdf distributions and values have been derived for each substance. Explain how these data relate to those in Table 6 and Table 7 and to which model (s) they are linked.	It is not clear what the data in this table relate to and how they have been derived in detail. Also see reasons given in the preceding item.	Table D6 sets out the contaminants of concern (i.e. the source term) used in the Existing Eales Farm Landfill model. Table D7 sets out the contaminants of concern (i.e. the source term) used in the Proposed Eales Farm Landfill Extension model. Both table D6 and D7 include the units (i.e. mg/l or mg/kg) that the source data have been entered into the model, along with the assumed distribution in contaminant concentrations for the purposes of the model. Section 8.8 of the report sets out the approach to obtaining input parameters and associated rationale. For clarity Table D8 has been split into D8a (Existing Eales Farm Landfill model) and Table D8b (Proposed Eales Farm Landfill Extension Model). Much of the data, which relates to the properties of the contaminants of concern, is reproduced in both tables. In most cases the default CONSIM values have been utilised, in the absence of data within CONSIM reference has been made to alternative data sources.
7	Table 9A EFL model assumptions, and Table 9B EFL model assumptions for hydrocarbon hotspot. Give detailed description and explanation of how the pdf distributions and values have been derived for each parameter, particularly Effective rainfall Air filled porosity Water filled porosity FOC Unsaturated zone thickness Unsaturated zone pathway (UZP) UZP thickness UZP vertical dispersivity UZP hydraulic conductivity Aquifer thickness Aquifer hydraulic conductivity Aquifer mixing zone thickness Aquifer physical properties – bulk density etc	Effective rainfall. A mean 404.8 mm/a, SD 40.5 mm/a, is quoted as being calculated from met office data 1980-2010 from a nearby weather station. But where is this weather station, what are the data, and the calculations? Why is a 0.8 factor applied to the data because a clay layer will be put over "majority of EFL". Further justification based on actual coverage is needed for how 0.8 is derived. And there will be leakage through the separation barrier placed over part of the EFL, which will vary according to its' actual / as-built permeability. Also there have been some very wet years since 2010, and these need to be taken into account and in light of a changing climate. Air filled porosity and water filled porosity. The normal distributions, and data need to be adequately justified beyond the justification given viz. "Not a sensitive parameter. Value adopted based on Horizon professional experience on earthworks projects". FOC. The triangular distribution and data – please show the data used and calculations how the data have been derived. Unsaturated zone thickness. Clarify what this refers to. A single value of 7m is not adequately justified; it seems to refer to waste thicknesses and not the sub-grade or aquifer beneath the waste. The unsaturated zone range of the sub-grade varies greatly, from zero (because the northern half is sub-water table) to several metres elsewhere Unsaturated zone pathway (UZP). Clarify what this parameter refers to – it should be the sub-grade below the waste and in the aquifer. UZP thickness. The range 1-3-7 m does not reflect the conditions at the site since a large part of the landfill is sub-water table. UZP Vertical dispersivity. It is assumed to be 10% of unsaturated pathway - please justify the relevance of this parameter for the UZP. UZP hydraulic conductivity. Clarify whether you mean hydraulic conductivity or permeability, since the justification given refers to permeability data. Please clarify what these data relate to - the aquifer or the waste? Also give reference to the specific boreholes at which tests were carried out and the horizons they relate to and the permeability data. N.B. The hydraulic conductivity of the UZP will be variable and for most times of the year lower than that in the saturated zone, because it is dependent on the moisture content which varies according to the aquifer recharge conditions. The Torpoint aquifer has been proven by investigation boreholes GCEL BH13, BH14, BH15, BH16 (BH 17 did not) that have penetrated the stratum by two to three metres. Also the few boreholes that penetrated the sub-grade beneath the waste only did so to several metres, and therefore the results would reflect the upper weathered zone and therefore we would expect higher permeability in the weathered zone compared to the non-weathered rock below. Hydraulic gradient. Confirm that the data take into account the fact that the northern part of the EFL is sub-water table, and re-calculate accordingly if necessary. Aquifer thickness. The justification given for a mean 30m thick aquifer with SD of 3m is not clear. The aquifer thickness should be based on the available geological information including ground investigations, BGS maps, and site specific mapping. Mixing zone thickness. The justification given is that it is "calculated by CONSIM", but the value has not been stated. In reality this parameter is better estimated by an experienced hydrogeologist; the mixing zone at the site will be no more than the weathered zone thickness of around 1m. The aquifer physical properties. Dry bulk density has been derived from equating it to weathered and unweathered Mercia Mudstone, yet effective porosity values are assumed to be based on values for "siltstone as in CONSIM" . It is not clear how these relate to the Torpoint formation and there is a mismatch in rock types mudstone vs siltstone. Clarify the appropriateness of these comparisons. BGS aquifer physical properties manual could be referred to.	Effective Rainfall Reference to weather station (Plymouth, Mountbatten, https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gbvn6nxjm) included in report. As noted in the report (Section 8.8) the effective rainfall has been reduced to take into account the planned low permeability clay layer proposed to be placed over the majority of the Eales Farm Landfill (see drawings in Appendix A showing phasing of works). Assuming the proposed Eales Farm Landfill Extension occupies an area of approximately 4.41 Hectares, then approximately 58% of the existing Eales Farm Landfill will be covered by the low permeability clay layer (maximum permeability 1 / 10^{-7} m/s) which will effectively reduce infiltration of water as a result of rainfall into the existing Eales Farm Landfill waste mass to negligible levels over this 4.41 Hectare area. However, to provide a suitability conservative model, only a nominal factor was included to account for the low permeability layer. This is considered sufficient to account for any climate-change related risks. Air Filled Porosity and Water Filled Porosity Additional justification included in Tables D9A, D9b and D10 plus sensitivity analysis in report. Its noted this is not a sensitive parameter in the model. FOC The raw data and summary statistics used for the FOC are presented in Table D1 (Appendix D). Unsaturated Zone Thickness The SCM developed for the Existing Eales Farm Landfill model is shown on the drawing in Appendix I and described in Section 8.4 of the report. The length of the Unsaturated Zone Pathway (i.e. the depth to groundwater beneath the existing waste mass) has been modelled to take into account the variation in the depth to groundwater beneath the Site. For the purposes of the model, the waste is not considered to be sub water table, however as described above, the model has been revised to assume groundwater levels in the mudstone may be consistent with the base of the waste mass. With reference to the CONSIM manual, "*Vertical dispersivity (in the direction of advective movement, assumed to be vertical in the unsaturated zone) is important when considering the early breakthrough time of contaminants at the water table. When considering movement in the unsaturated zone ConSim reduces the path length by the value of the longitudinal dispersivity to approximate the early arrival of the dispersed front. Longitudinal dispersion is a scale dependent variable increasing with the pathway length and probably levelling off at the approximate scale of between 100 m and 1000 m.*" The ConSim manual suggests that the vertical dispersitivity in the unsaturated zone is approximately 10% of the unsaturated zone thickness, and this value has been adopted in the Eales Farm Landfill model. UZP Hydraulic Conductivity The parameter in question is the capacity of a soil to allow water to pass through it. Permeability is a property of the porous medium whilst hydraulic conductivity takes into account properties of the flowing fluid. Given the fluid in question is water, the two terms can be used interchangeably in this instance. Site specific data on permeability of the bedrock is presented in the ESSD and is summarised in Section 4.6 of the report. Since issue of revision 1 of this report additional laboratory based testing of the permeability of the waste mass has been undertaken, however additional data on the bedrock has not been obtained therefore the values adopted for this parameter in the model are unchanged. Aquifer Thickness The thickness of the Torpoint Formation is not known; the BGS estimates it may be 100m to 200m thick (BGS, 2018, COMMISSIONED REPORT CR/17/095). For modelling purposes, the mixing zone thickness will be significantly less than the aquifer thickness, therefore this is not a sensitive parameter and the value adopted (30m for the purposes of this model as set out in Section 8.4.1 of the report, based on approximately the elevation of the base of the waste mass above sea level) is considered reasonable. Mixing Zone Thickness CONSIM has the option of either inputting the mixing zone thickness directly, or alternatively it can be calculated within CONSIM. CONSIM calculates the mixing zone based on the source geometry plus other parameters including aquifer hydraulic properties and infiltration rate. Given the lack of knowledge relating to the Torpoint Formation, including other contaminant plumes in the area to allow comparison and model validation, use of the CONSIM model is considered reasonable. This is not a sensitive parameter in the model (see sensitivity analysis in Section 8.11 of report). Aquifer Physical Properties The Torpoint Formation is described by the BGS as "*brownish purple to purplish red cleaved mudstone and fine-grained siltstone, yellowish to blue-green, fine- to coarse-grained siltstone and fine-grained sandstone*." Details of the aquifer properties are presented in Section 4.5, including reference to the BGS Aquifer Physical Properties Manual.
8	Table 10 – TVL model assumptions Give detailed description and explanation of how the pdf distributions and values have been derived for each parameter, particularly Effective rainfall Air filled porosity Water filled porosity FOC Unsaturated zone thickness Unsaturated zone pathway (UZP) UZP thickness UZP vertical dispersivity UZP hydraulic conductivity Aquifer thickness Aquifer hydraulic conductivity Aquifer mixing zone thickness Aquifer physical properties – bulk density etc	Unsaturated zone thickness The triangular distribution for 5.6 m is quoted but no other data are specified. This seems to suggest that it is assumed the waste is part of the unsaturated zone. This is an incorrect assumption since it is generating the leachate source term. The model appears to assume that the TVL sits on top of the aquifer and incorporates background data from the EFL model outputs in Table 11. This should be clarified. This appears to be confused with the UZP thickness which is given as 1m and assumed to be equivalent to the 1m thick clay barrier that will be placed over the EFL. The most appropriate model set up for the combined effect of the two landfills one on top of the other would be to model the full thicknesses of waste of existing and proposed landfills and ignore the presence of the clay AEGB, since this will be composed of waste itself. However from a water balance angle the clay AEGB separating the two will be influential in controlling leachate build up over it if the permeability is lower than the waste above it, but also leak to an extent dependent on the as-built permeability.	Unsaturated Zone Thickness An error has been corrected here. Assuming the waste (250,000 m^3) is distributed evenly over an area of 4.41 hectares, an average thickness of 5.7m is estimated. However, given a 1m artificially enhanced geological barrier (AEGB) is to be placed at the Site, the average thickness of waste overlying the AEGB will be 4.7m. It is acknowledged that the AEGB will be formed from imported waste material, however this material is required to meet the specification set out in the ESSD and is to comprise clean naturally occurring cohesive soils. The Proposed Eales Farm Landfill Extension model is described in Section 8.5 of the report and shown graphically on the drawing in Appendix I. As stated in Section 8.5, "*underlying the imported deposition* [i.e. the 2.5m of waste placed in the Eales Farm Landfill] *a 1.0 m clay layer is assumed to be placed. This is intended to be consistent with the low permeability clay layer to be placed on top of the Existing Eales Farm Landfill waste material. Conservatively the model does not take into account the presence of the waste comprising the Existing Eales Farm Landfill, nor unsaturated underlying bedrock which would act to further attenuate contaminant migration.*" Modelling the two landfills as one combined waste mass is considered to be an overly simplistic conceptual model. The model as designed is more refined taking into account the available dataset describing the existing Eales Farm Landfill, plus the proposed AEGB underlying waste to be placed as part of the Proposed Eales Farm Landfill Extension. From a water balance perspective, the model does not allow for hardstanding overlying the areas of the Existing Eales Farm Landfill which are outwith the Proposed Eales Farm Landfill Extension, however in the short to medium term it is the Client's aim to develop these areas, which will further reduce infiltration and potential leaching from the existing Eales Farm Landfill waste mass.

Notes:

Revision 1 of this report (the subject of Environment Agency feedback) referred to the proposed additional waste as the "Tamar View Landfill". Following the meeting on-Site and subsequent discussions between GCE and the Environment Agency it is now proposed that the Site's existing Environmental Permit be varied (as opposed to obtaining a new Environmental Permit). On that basis, this report refers to the additional waste being accepted at the Site as the proposed Eales Farm Landfill extension as opposed to the Tamar View Landfill.

* Sections, Table numbers and Appendices refer to current (June 2020) revision of HRA.

Appendix C Exploratory Hole Logs

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Borehole No: **MBH1**

Hole Type: Cable/Rotary

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 07/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.00	SPT					MADE GROUND comprising medium dense light brown slightly sandy gravelly CLAY. Gravel of fine to coarse medium strong subrounded irregular mudstone and siltstone.
		0.00-1.00	B					
		1.00	ES		1.20			Weak purplish brown moderately weathered slaty MUDSTONE. Arisings are of a weak fine to coarse GRAVEL (TORPOINT FORMATION). Drill penetration rate rapidly reduces.
		2.00	CPT	50 (8,9/14,14,14 ,8 for 50mm)	2.40			Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
			Type	Results				

Continued next sheet

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 11.0m - 6.3m, sand bridge 6.3m - 6.0m, bentonite seal 6.0m - 3.0m, sand bridge 3.0m - 2.7m, clean 10mm gravel 2.7m - 1.8m, sand bridge 1.8m - 1.5m, bentonite seal 1.5m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 1.8m-2.7m (MBH1-A) and 7.3m - 10.4m (MBH1-B).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150 and Commachio	**Scale** 1:50
	Sheet 1 of 2

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Borehole No: **MBH1**

Hole Type: Cable/Rotary

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 07/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
					11.00			End of Borehole at 11.00 m
			Type	Results				

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 11.0m - 6.3m, sand bridge 6.3m - 6.0m, bentonite seal 6.0m - 3.0m, sand bridge 3.0m - 2.7m, clean 10mm gravel 2.7m - 1.8m, sand bridge 1.8m - 1.5m, bentonite seal 1.5m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 1.8m-2.7m (MBH1-A) and 7.3m - 10.4m (MBH1-B).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150 and Commachio	Scale: 1:50
	Sheet 2 of 2

HoleBASE 3.1 (Rel 429.72), Standard Borehole Log v2 dated 27th Nov 03

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Borehole No: **MBH2**

Hole Type: Cable/Rotary

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 07/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.35			MADE GROUND comprising medium dense light brown slightly sandy gravelly CLAY. Gravel of fine to coarse subrounded irregular medium strong mudstone and siltstone. Stratum contains occasional fragments of red brick.
		1.00	CPT	N=17 (3,3/11,3,1,2)				MADE GROUND comprising dense reddish brown sandy clayey GRAVEL. Gravel of fine to coarse subrounded to subangular irregular medium strong mudstone and siltstone. Stratum contains occasional fragments of red brick porcelain and clinker.
		1.00	ES		1.20			
		1.50	ES					MADE GROUND comprising soft bluish grey and orange mottled slightly sandy gravelly CLAY. Gravel of fine to coarse subrounded irregular medium strong mudstone and siltstone. Stratum contains occasional fragments of clinker.
		3.00	B					
					5.80			
		6.00	B					MADE GROUND comprising dense purplish brown slightly sandy very clayey GRAVEL. Gravel of fine to coarse subangular irregular weak slate and siltstone.
					8.50			
		9.00	B					Weak purple weathered slaty MUDSTONE. Arisings are of a slightly clayey weak coarse angular slate GRAVEL. Drill penetration rate rapidly decreases (TORPOINT FORMATION).
					9.30			Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
			Type	Results				

Continued next sheet

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 26.0m - 10.0m, sand bridge 10.0m - 9.5m, bentonite seal 9.5m - 7.5m, sand bridge 7.5m - 7.0m, clean 10mm gravel 7.0m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 2.6m - 6.8m (MBH2-A) and 11.0m - 26.0m (MBH2-B).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150 and Commachio	**Scale** 1:50
	Sheet 1 of 3

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Borehole No: **MBH2**

Hole Type: Cable/Rotary

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 07/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).

11 12 13 14 15 16 17 18 19

Type Results

Continued next sheet

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 26.0m - 10.0m, sand bridge 10.0m - 9.5m, bentonite seal 9.5m - 7.5m, sand bridge 7.5m - 7.0m, clean 10mm gravel 7.0m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 2.6m - 6.8m (MBH2-A) and 11.0m - 26.0m (MBH2-B).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150 and Commachio	Scale: 1:50
	Sheet 2 of 3

JOHN GRIMES PARTNERSHIP

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Borehole No: **MBH2**

Hole Type: Cable/Rotary

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 07/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
					26.00			End of Borehole at 26.00 m
			Type	Results				

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 26.0m - 10.0m, sand bridge 10.0m - 9.5m, bentonite seal 9.5m - 7.5m, sand bridge 7.5m - 7.0m, clean 10mm gravel 7.0m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 2.6m - 6.8m (MBH2-A) and 11.0m - 26.0m (MBH2-B).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150 and Commachio	**Scale** 1:50
	Sheet 3 of 3

JOHN GRIMES PARTNERSHIP

Consulting Engineers
www.johngrimes.co.uk

Borehole No: **MBH3**

Hole Type: Cable

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 14/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								MADE GROUND comprising medium dense light brown slightly sandy clayey GRAVEL. Gravel of fine to coarse medium strong subrounded tabular medium strong grey mudstone and siltstone.
		1.00	ES		1.20			
								MADE GROUND comprising medium dense light grey very clayey occasionally sandy GRAVEL. Gravel of fine to coarse subangular irregular weak purple slaty mudstone.
		2.00	CPT	N=14 (2,2/4,3,3,4)				
		3.00	B					
		3.00	ES					
					6.50			
								MADE GROUND comprising dense yellowish brown clayey sandy GRAVEL with occasional cobbles. Gravel of fine to coarse subrounded cubic strong geen and blue hornfelsed slate.
		7.00	B					
		7.00	ES					
					8.80			
								MADE GROUND comprising dense purple very clayey GRAVEL. Gravel of fine to coarse subangular irregular weak purple slaty mudstone (stratum interpreted as reworked site derived natural ground).
			Type	Results				

Continued next sheet

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 12.2m - 10.3m, sand bridge 10.3m - 10.00m, clean 10mm gravel 10.0m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.7m - 9.85m (MBH3-A).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150	Scale: 1:50
	Sheet 1 of 2

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Borehole No: **MBH3**

Hole Type: Cable

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 14/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		10.00	B					MADE GROUND comprising dense purple very clayey GRAVEL. Gravel of fine to coarse subangular irregular weak purple slaty mudstone (stratum interpreted as reworked site derived natural ground).
		10.00	ES					
					11.30			Medium strong purple moderately weathered slaty MUDSTONE. Arisings are of a slightly clayey sandy fine to coarse gravel (TORPOINT FORMATION).
		12.00	B					
					12.20			End of Borehole at 12.20 m
			Type	Results				

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 12.2m - 10.3m, sand bridge 10.3m - 10.00m, clean 10mm gravel 10.0m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.7m - 9.85m (MBH3-A).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150	Scale: 1:50
	Sheet 2 of 2

JOHN GRIMES PARTNERSHIP

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Borehole No: **MBH4**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 07/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.50	B					MADE GROUND comprising medium dense light brown slightly sandy gravelly CLAY. Gravel of fine to coarse medium strong subrounded irregular mudstone and siltstone. Stratum contains occasional fragments of red brick.
		0.50	ES					
					0.90			
		1.20	CPT	N=18 (1,2/3,3,5,7)				MADE GROUND comprising dense purplish brown slightly sandy very clayey GRAVEL. Gravel of fine to coarse subangular irregular weak slate and siltstone.
		3.00	B					
		7.50	ES					
					9.50			Medium strong purple weathered slaty MUDSTONE. Arisings are of a clayey fine to coarse GRAVEL (TORPOINT FORMATION).
			Type	Results				

Continued next sheet

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 11.0m - 8.5m, sand bridge 8.5m - 8.2m, clean 10mm gravel 8.2m - 2.0m, sand bridge 2.0m - 1.7m, bentonite seal 1.7m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 3.0m - 7.7m (MBH4-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	**Scale** 1:50
	Sheet 1 of 2

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Borehole No: **MBH4**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 07/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Medium strong purple weathered slaty MUDSTONE. Arisings are of a clayey fine to coarse GRAVEL (TORPOINT FORMATION).
					11.00			End of Borehole at 11.00 m

Type	Results

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 11.0m - 8.5m, sand bridge 8.5m - 8.2m, clean 10mm gravel 8.2m - 2.0m, sand bridge 2.0m - 1.7m, bentonite seal 1.7m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 3.0m - 7.7m (MBH4-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	**Scale** 1:50
	Sheet 2 of 2

HoleBASE 3.1 (Rpt 429.72), Standard Borehole Log v2 dated 27th Nov 03

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Borehole No: **MBH5**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 08/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								MADE GROUND comprising medium dense very clayey sandy GRAVEL. Gravel of fine to coarse subrounded irregular medium strong mudstone and siltstone. Stratum contains occasional pieces of brick, concrete, plastic and tile.
		2.00	B					
		2.00	ES					
		3.00	CPT	N=41 (8,17 for 55mm/9,6,20,6)				
					3.50			
		3.60	ES					MADE GROUND comprising medium dense light grey very sandy GRAVEL with occasional cobbles. Gravel of fine to coarse subangular cubic strong limestone and crushed concrete.
					4.00			
		4.10	ES		4.20			MADE GROUND comprising firm dark grey very clayey GRAVEL. Gravel of fine to coarse subrounded irregular medium strong mudstone and siltstone.
		5.00	B					MADE GROUND comprising medium dense light grey very sandy GRAVEL with occasional cobbles. Gravel of fine to coarse subangular cubic strong limestone and crushed concrete.
					6.00			
		7.00	B					MADE GROUND comprising dense very clayey slightly sandy GRAVEL. Gravel of fine to coarse subrounded irregular medium strong purple slaty mudstone.
		8.00	CPT	N=9 (6,5/2,2,3,2)	8.00			MADE GROUND comprising dense light yellowish brown and light grey silty clayey sandy GRAVEL. Gravel of fine to coarse predominantly medium angular irregular weak to medium strong slaty mudstone.
			Type	Results				

Continued next sheet

Remarks: On completion a groundwater and gas monitoring instalation was installed. Clean 10mm gravel 16.3m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 13.6m (MBH5-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	**Scale** 1:50
	Sheet 1 of 2

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Borehole No: **MBH5**

Hole Type: Cable

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 08/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								MADE GROUND comprising dense light yellowish brown and light grey silty clayey sandy GRAVEL. Gravel of fine to coarse predominantly medium angular irregular weak to medium strong slaty mudstone.
								Occasional cobble sized pieces of concrete.
					16.30			End of Borehole at 16.30 m
			Type	Results				

Remarks: On completion a groundwater and gas monitoring instalation was installed. Clean 10mm gravel 16.3m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 13.6m (MBH5-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	Scale: 1:50
	Sheet 2 of 2

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Borehole No: **MBH6**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 06/04/2006	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								MADE GROUND comprising dense light grey slightly clayey sandy GRAVEL. Gravel of fine to coarse subrounded to subangular irregular medium strong mudstone, siltstone, quartzite. Stratum contains occasional fragments of red brick and macadam.
		2.00	ES		2.00			MADE GROUND comprising dense light grey very clayey matrix supported GRAVEL varying to a soft very gravelly CLAY. Gravel of fine to coarse subrounded to subangular irregular medium strong mudstone, siltstone, quartzite. Stratum contains occasional fragments of red brick.
		4.00	CPT	N=4 (1,1/1,1,1,1)				
		5.00	ES					
					6.00			MADE GROUND comprising dense light grey slightly clayey occasionally very clayey sandy GRAVEL with fragments of macadam.
		7.00	ES					
		8.00	CPT	N=35 (4,8/11,10,7, 7)				
			Type	Results				

1 2 3 4 5 6 7 8 9

Continued next sheet

Remarks: On completion a groundwater and gas monitoring instalation was installed. Clean 10mm gravel 15.0m - 2.0m, sand bridge 2.0m - 1.7m, bentonite seal 1.7m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 3.0m - 14.65m (MBH6-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	**Scale** 1:50
	Sheet 1 of 2

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Borehole No: **MBH6**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 06/04/2006	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
		10.00	ES					MADE GROUND comprising dense light grey slightly clayey occasionally very clayey sandy GRAVEL with fragments of macadam.	
		11.00	CPT	N=18 (3,7/10,3,3,2)	11.00			MADE GROUND comprising dense light bluish grey sandy very clayey occasionally very sandy GRAVEL. Gravel of fine to coarse subrounded irregular weak to medium strong mudstone siltstone and quartzite. Stratum contains occasional fragments of brick and macadam and wood.	11
		13.00	ES						12 13 14
		15.00	CPT	23 (7,3/3,8,12 for 20mm)	15.00				15
		15.00	ES					End of Borehole at 15.00 m	
									16 17 18 19
			Type	Results					

Remarks: On completion a groundwater and gas monitoring instalation was installed. Clean 10mm gravel 15.0m - 2.0m, sand bridge 2.0m - 1.7m, bentonite seal 1.7m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 3.0m - 14.65m (MBH6-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	**Scale** 1:50
	Sheet 2 of 2

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Borehole No: **MBH7**

Hole Type: Cable/Rotary

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 06/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								MADE GROUND comprising light brown very clayey slightly sandy matrix supported GRAVEL varying to a soft to firm slightly sandy very gravelly CLAY. Gravel of fine to coarse subangular irregular weak slaty mudstone and siltstone.
		1.00	ES					
					1.70			MADE GROUND comprising dense light greenish grey slightly gravelly sandy CLAY. Gravel of fine to coarse weak subangular irregular slaty mudstone and siltstone.
		3.00 3.00	CPT B	N=8 (8,6/3,2,2,1)				
					4.50			MADE GROUND comprising dense purplish brown slightly sandy slightly gravelly CLAY. Gravel of fine to coarse subangular irregular weak slaty mudstone and siltstone.
		5.00	B					
					5.60			Weak purplish brown highly to completely weathered slaty MUDSTONE. Arisings are of a slightly gravelly CLAY. Gravel of weak fine to coarse angular irregular slaty mudstone. Stratum becomes increasingly gravelly with depth (TORPOINT FORMATION).
					5.80			
					6.40			Medium strong purplish brown moderately weathered SLATE. Arisings are of a slightly clayey sandy fine to coarse GRAVEL (TORPOINT FORMATION). Drill penetration rate rapidly reduces.
								Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
			Type	Results				

Continued next sheet

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 17.0m - 7.0m, sand bridge 7.0m - 6.6m, bentonite seal 6.6m - 4.5m, sand bridge 4.5m - 4.2m, clean 10mm gravel 4.2m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 2.6m - 4.0m (MBH7-A) and 7.3m - 16.8m (MBH1-B).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150 and Commachio	Scale: 1:50
	Sheet 1 of 2

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Borehole No: **MBH7**

Hole Type: Cable/Rotary

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 06/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
					17.00			End of Borehole at 17.00 m
			Type	Results				

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 17.0m - 7.0m, sand bridge 7.0m - 6.6m, bentonite seal 6.6m - 4.5m, sand bridge 4.5m - 4.2m, clean 10mm gravel 4.2m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 2.6m - 4.0m (MBH7-A) and 7.3m - 16.8m (MBH1-B).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150 and Commachio	Scale: 1:50
	Sheet 2 of 2

HoleBASE 3.1 (Rel 429.72), Standard Borehole Log v2 dated 27th Nov 03

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Borehole No: **MBH8**

Hole Type: Cable

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 11/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		1.00 1.00	B ES					MADE GROUND comprising medium dense light grey slightly clayey sandy GRAVEL. Gravel of fine to coarse subrounded to subangular irregular medium strong grey slaty mudstone, siltstone.
					2.10			Weak purple slaty MUDSTONE. Arisings are of a slightly clayey fine to coarse weak angular irregular slaty mudstone gravel (TORPOINT FORMATION).
		2.50	B					
					2.90			End of Borehole at 2.90 m
			Type	Results				

Remarks:

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150	Scale: 1:50
	Sheet 1 of 1

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Borehole No: **MBH9**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 13/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								MADE GROUND comprising medium dense light grey and light brown sandy clayey GRAVEL. Gravel of fine to coarse subrounded to subangular grey slaty mudstone and siltstone.
								Occasional fragments of red brick and macadam
		2.00	B					
		2.00	ES					
		3.00	CPT	N=6 (1,1/1,1,2,2)	3.00			MADE GROUND comprising medium dense light grey sandy very clayey GRAVEL. Gravel of fine to coarse subrounded tabular grey weak to medium strong grey mudstone and siltstone.
		5.00	B					Occasional fragments of red brick
		5.00	ES					
		6.00	CPT	N=7 (2,2/2,1,2,2)	6.00			MADE GROUND comprising dense light brown slightly sandy very clayey GRAVEL. Gravel of fine to coarse subangular irregular medium strong grey mudstone, siltstone and slate.
		7.00	B					
		7.00	ES					
					9.00			MADE GROUND comprising dense purple slightly clayey silty GRAVEL. Gravel of fine to coarse angular irregular weak purple slaty mudstone (stratum interpreted as reworked site derived natural ground)
			Type	Results				

Continued next sheet

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 13.3m - 11.0m, sand bridge 11.0m - 10.7m, clean 10mm gravel 10.7m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 10.6m (MBH9-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	**Scale** 1:50

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Borehole No: **MBH9**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933

Location:	Contractor:	Ground level:
Saltash	Geologic Boreholes	-

Client:	Dates:	Orientation: / Inclination:
Downderry Construction Ltd	13/04/2016	0 / 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		10.00 10.00 10.00	CPT B ES	N=16 (2,3/3,3,4,6)				MADE GROUND comprising dense purple slightly clayey silty GRAVEL. Gravel of fine to coarse angular irregular weak purple slaty mudstone (stratum interpreted as reworked site derived natural ground)
					12.00			Medium strong purple moderately weathered slaty MUDSTONE. Arisings are of a slightly clayey sandy fine to coarse gravel (TORPOINT FORMATION).
					13.30			End of Borehole at 13.30 m
			Type	Results				

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 13.3m - 11.0m, sand bridge 11.0m - 10.7m, clean 10mm gravel 10.7m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 10.6m (MBH9-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	Scale 1:50
	Sheet 2 of 2

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Borehole No: **MBH10**

Hole Type: Cable

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 13/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								MADE GROUND comprising medium dense light brown sandy clayey GRAVEL. Gravel of fine to coarse subrounded irregular medium strong grey mudstone and siltstone. Stratum contains occasional fragments of macadam. Pieces of concrete
		2.00	B					
		2.00	ES					Stratum occasionally becomes very clayey
		4.00	CPT	N=4 (2,2/1,1,1,1)				
					5.50			MADE GROUND comprising dense light brownish grey slightly clayey very sandy GRAVEL. Gravel of fine to coarse subangular irregular strong limestone mixed with light grey building sand and occasional medium strong subrounded irregular mudstone and siltstone. Stratum contains pieces of crushed concrete and red brick.
		6.00	ES					
		7.00	B					
		8.00	CPT	N=9 (4,6/3,2,2,2)				
			Type	Results				

Continued next sheet

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 16.7m - 15.0m, sand bridge 15.0m - 14.7m, clean 10mm gravel 14.7m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 14.35m (MBH10-A).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150	Scale: 1:50
	Sheet 1 of 2

JOHN GRIMES PARTNERSHIP

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Borehole No: **MBH10**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 13/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					10.00			MADE GROUND comprising dense yellowish brown very clayey GRAVEL occasionally varying to a very gravelly CLAY. Gravel of fine to coarse subrounded to subangular mudstone, siltstone and slate.
		12.00	CPT	N=12 (1,2/2,3,3,4)				
		13.00	B					Stratum contains occassional pieces of limestone gravel and crushed concrete
		13.00	ES					
					14.00			MADE GROUND comprising medium dense light purplish brown slightly sandy very clayey GRAVEL. Gravel of fine to coarse subangular irregular weak purple slaty mudstone (stratum interpreted as reworked site derived natural ground).
		15.00	B					
		15.00	ES					
					16.70			End of Borehole at 16.70 m
			Type	Results				

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 16.7m - 15.0m, sand bridge 15.0m - 14.7m, clean 10mm gravel 14.7m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 14.35m (MBH10-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	**Scale** 1:50
	Sheet 2 of 2

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Borehole No: **MBH11**

Hole Type: Cable/Rotary

Project Name	Co-ords:	Project No.
Eales Farm	-	12933
Location: Saltash	**Contractor:** Geologic Boreholes	**Ground level:** -
Client: Downderry Construction Ltd	**Dates:** 11/04/2016-14/04/2016	**Orientation:** 0 **Inclination:** 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.50	ES					MADE GROUND comprising medium dense light brown slightly sandy clayey GRAVEL. Gravel of fine to coarse subrounded to subangular grey mudstone and siltstone. Stratum contains occasional fragments of red brick, concrete macadam and metal.
					1.50			MADE GROUND comprising medium dense light grey slightly sandy clayey GRAVEL with cobbles. Gravel of fine to coarse subangular irregular medium strong grey mudstone and siltstone. Stratum contains occasional fragments of red brick, concrete, plastic and metal.
		2.00 2.00	ES B					
					3.00			MADE GROUND comprising medium dense light brown sandy very clayey GRAVEL with occasional fragments of macadam red brick and concrete. Gravel of fine to coarse subrounded irregular medium strong grey mudstone and siltstone.
		3.50	CPT	N=10 (2,3/2,2,3,3)				
		4.00 4.00	ES B					
					5.50			MADE GROUND comprising dense light grey slightly clayey silty GRAVEL. Gravel of fine to coarse angular irregular weak purple slaty mudstone (stratum interpreted as reworked site derived natural ground)
		6.00 6.00	ES B					
					6.40			Medium strong purple moderately weathered slaty MUDSTONE. Arisings are of a slightly clayey sandy fine to coarse gravel (TORPOINT FORMATION).
					6.60			Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
			Type	Results				

Continued next sheet

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 15.27m - 7.5m, sand bridge 7.5m - 7.2m, bentonite seal 7.2m - 5.7m, sand bridge 5.7m - 5.5m, clean 10mm gravel 5.5m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 2.6m - 5.35m (MBH11-A) and 8.5m - 15.2m (MBH11-B).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150 and Commachio	**Scale** 1:50
	Sheet 1 of 2

JOHN GRIMES PARTNERSHIP

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Borehole No: **MBH11**

Hole Type: Cable/Rotary

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 11/04/2016-14/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Rotary follow on. Constant hammer engagment with returns of purple and grey dust and chippings (TORPOINT FORMATION).
					15.27			End of Borehole at 15.27 m
			Type	Results				

Remarks: On completion a dual groundwater and gas monitoring instalation was installed. Clean 10mm gravel 15.27m - 7.5m, sand bridge 7.5m - 7.2m, bentonite seal 7.2m - 5.7m, sand bridge 5.7m - 5.5m, clean 10mm gravel 5.5m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zones 2.6m - 5.35m (MBH11-A) and 8.5m - 15.2m (MBH11-B).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150 and Commachio	Scale: 1:50
	Sheet 2 of 2

JOHN GRIMES PARTNERSHIP

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Borehole No: **MBH12**

Hole Type: Cable

Project Name: Eales Farm	Co-ords: -	Project No.: 12933
Location: Saltash	Contractor: Geologic Boreholes	Ground level: -
Client: Downderry Construction Ltd	Dates: 13/04/2016	Orientation: 0 / Inclination: 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.20			MADE GROUND comprising soft light brown gravelly CLAY. Gravel of fine to medium subangular irregular weak purple slate
		1.00	B					MADE GROUND comprising medium dense light grey slightly clayey very sandy GRAVEL. Gravel of fine to coarse subangular irregular medium strong mudstone and siltstone. Stratum contains occasional fragments of red brick.
		1.00	ES					
					1.80			MADE GROUND comprising medium dense light purplish brown slightly sandy to sandy clayey occasionally very clayey GRAVEL. Gravel of fine to coarse subrounded tabular medium strong mudstone and siltstone and occasional subrounded irregular weak slaty mudstone.
		3.00	CPT	N=8 (2,2/2,1,2,3)				
		3.00	B					
		3.00	ES					
								Occassional fragments of red brick, macadam and concrete
					5.50			MADE GROUND comprising medium dense light greyish brown very clayey very sandy GRAVEL. Gravel of fine to coarse subangular irregular medium strong slaty mudstone and siltstone.
		6.00	ES					Occasional pieces of macadam
		7.00	CPT	N=9 (3,2/3,2,2,2)				
		8.00	B					
			Type	Results				

Continued next sheet

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 11.4m - 9.5m, sand bridge 9.5m - 9.2m, clean 10mm gravel 9.2m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 9.0m (MBH12-A).

Logged By: MW	Checked By: MO
Equipment Used: Pilcon 150	Scale: 1:50
	Sheet 1 of 2

JOHN GRIMES PARTNERSHIP

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Borehole No: **MBH12**

Hole Type: Cable

Project Name	Co-ords:	Project No.
Eales Farm	-	12933

Location:	Contractor:	Ground level:
Saltash	Geologic Boreholes	-

Client:	Dates:	Orientation: / Inclination:
Downderry Construction Ltd	13/04/2016	0 / 90

Installation Backfill	Water Strikes	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		10.00	ES					MADE GROUND comprising medium dense light greyish brown very clayey very sandy GRAVEL. Gravel of fine to coarse subangular irregular medium strong slaty mudstone and siltstone.
					10.80			Medium strong purple moderately weathered slaty MUDSTONE. Arisings are of a slightly clayey sandy fine to coarse gravel (TORPOINT FORMATION).
					11.40			End of Borehole at 11.40 m
			Type	Results				

Remarks: On completion a groundwater and gas monitoring instalation was installed. Bentonite seal 11.4m - 9.5m, sand bridge 9.5m - 9.2m, clean 10mm gravel 9.2m - 1.6m, sand bridge 1.6m - 1.3m, bentonite seal 1.3m - 0.3m and top hat cover 0.3m to 0.0m. Response zone 2.6m - 9.0m (MBH12-A).

Logged By	Checked By
MW	MO
Equipment Used: Pilcon 150	Scale: 1:50

Sheet 2 of 2

Borehole Log

Borehole No. **BH13**

Sheet 1 of 2

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241231E - 60386N	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:50
Client: Burcombe Haulage		Dates: 18/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND comprising weeds over firm friable brown slightly sandy gravelly CLAY with abundant rootlets. Gravel comprises angular mudstone (LANDFILL WASTE).
		0.50	D		0.65			MADE GROUND comprising firm to stiff light brown slightly sandy very gravelly CLAY with some roots and organic matter. Gravel comprises angular mudstone and siltstone and occasional brick fragments. High abundance of black top and clinker between 0.65m and 0.95m (LANDFILL WASTE).
		1.50		N=14 (4,3/3,3,3,5)				MADE GROUND comprising brown (locally stained yellow) medium dense slightly clayey slightly sandy GRAVEL. Gravel comprises angular platey extremely weak mudstone and siltstone. Occasional fragments of black top and organic matter (LANDFILL WASTE).
		1.50	D		2.00			MADE GROUND comprising soft to firm brown slightly sandy very gravelly CLAY tending to slightly sandy very clayey GRAVEL. Gravel comprises of angular platey mudstone. Concrete and black top fragments from 2.3m to 2.5m (LANDFILL WASTE).
		2.20	D		2.60			MADE GROUND comprising soft wet brown slightly sandy gravelly (locally very gravelly) CLAY with occasional organic matter (roots). Gravel comprises angular to subangular siltstone and mudstone with some brick fragments (LANDFILL WASTE).
		2.90	D					MADE GROUND comprising soft to firm brown slightly sandy very gravelly CLAY with occasional plastic fragments. Gravel comprises angular mudstone and subangular quartz and sandstone (LANDFILL WASTE).
		3.00		N=5 (1,3/1,1,1,2)	3.10			MADE GROUND comprising firm purple very gravelly CLAY tending to very clayey GRAVEL. Gravel comprises angular platey mudstone (in random orientation). Metal wire at 4.3m (LANDFILL WASTE).
		3.30	D		3.70			
		4.10	D					
		4.50		N=10 (2,1/2,4,2,2)				
		5.00		N=26 (6,6/7,6,7,6)	5.00			Open hole rotary with arisings of wood chippings with some brown clay. Possible tree trunk/branch (LANDFILL WASTE).
	▼	5.00	D					
		6.00		N=9 (2,1/2,2,3,2)	6.00			MADE GROUND comprising soft to firm purplish brown slightly gravelly CLAY with some organic matter (roots). Gravel comprises angular to sub angular platey weak mudstone. Possible relic topsoil (LANDFILL WASTE).
		6.00	D					
		6.40	D		6.60			MADE GROUND comprising medium dense very closely fractured purple (locally stained pale blue, black and dark orange) clayey GRAVEL tending to extremely weathered very weak MUDSTONE. Fracture predominantly at 30° (TORPOINT FORMATION).
		7.30	D					
		7.50		N=24 (5,5/5,5,7,7)	7.50			Medium strong distinctly weathered closely fractured MUDSTONE (TORPOINT FORMATION).
		8.20		N=64 (6,11/15,17,17,15)	8.20			Arisings of fine purple dust with clast of angular MUDSTONE (TORPOINT FORMATION).
								Continued on Next Sheet

Remarks

Groundwater was encountered at 5.6m. Dynamic sampling hit refusal at a depth of 8.2m, the borehole was continued by rotary open hole drilling and the arising were logged. Borehole infilled with bentonite from base to 6.5m, gravel and slotted 50mm standpipe from 6.5m to 1.0m, and bentonite with plain 50mm standpipe from 1.0m to ground level.

Borehole Log

Borehole No. **BH13**

Sheet 2 of 2

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	241231E - 60386N	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:		Scale 1:50
Client:	Burcombe Haulage		Dates:	18/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					11.20			End of Borehole at 11.200m

Remarks

Groundwater was encountered at 5.6m. Dynamic sampling hit refusal at a depth of 8.2m, the borehole was continued by rotary open hole drilling and the arising were logged. Borehole infilled with bentonite from base to 6.5m, gravel and slotted 50mm standpipe from 6.5m to 1.0m, and bentonite with plain 50mm standpipe from 1.0m to ground level.

Borehole Log

Borehole No. **BH14**

Sheet 1 of 2

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241271E - 60404N	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:50
Client: Burcombe Haulage		Dates: 18/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40	D					MADE GROUND comprising dense brown clayey sandy GRAVEL with abundant roots. Gravel comprises weak angular platey mudstone and occasional brick and clinker (LANDFILL WASTE).
					0.90			MADE GROUND comprising very dense black slightly clayey sandy GRAVEL comprising fragments of blacktop, broken glass, brick fragments and concrete (LANDFILL WASTE).
		1.20	D					
		1.40	D		1.35			
					1.50			MADE GROUND comprising firm to stiff purplish brown (locally pale blue and orange staining) clayey GRAVEL. Gravel comprises angular platey mudstone and occasional fragments of clay pipe (LANDFILL WASTE).
		1.80	D					MADE GROUND comprising medium dense purple (locally pale grey) clayey GRAVEL. Gravel comprises weak angular mudstone in random orientation. Lenses of very gravelly CLAY (LANDFILL WASTE).
					3.00			MADE GROUND comprising stiff purple (locally mottled grey and orange) very gravelly CLAY tending to very clayey GRAVEL. Gravel comprises angular mudstone with occasional subrounded quartz (LANDFILL WASTE).
		3.20	D					
					3.60			MADE GROUND comprising medium dense purple very clayey gravel. Gravel comprises mudstone and quartz with occasional fragments of concrete (LANDFILL WASTE).
					4.20			MADE GROUND comprising soft purplish brown gravelly CLAY. Gravel comprises angular mudstone with occasional plant matter and white putty (LANDFILL WASTE).
		5.10	D					
					5.80			MADE GROUND comprising medium dense to dense purplish brown very clayey GRAVEL with plant matter. Possible relic topsoil (LANDFILL WASTE).
		6.20	D					
					6.80			Dense purple slightly clayey GRAVEL. Gravel comprises weak angular platey mudstone in uniform orientation, dipping approximately 10° off horizontal. Extremely weak distinctly weathered MUDSTONE (TORPOINT FORMATION).
		7.30	D		7.40			Arisings of fine purple dust with clast of angular MUDSTONE (TORPOINT FORMATION).
	▼							
								Continued on Next Sheet

Remarks

Groundwater was encountered at 9.56m. Dynamic sampling hit refusal at a depth of 7.4m, the borehole was continued by rotary open hole drilling and the arising were logged. Borehole was filled with bentonite from 10.5m to 4.0m followed by arising to ground level.

Borehole Log

Borehole No. **BH14**

Sheet 2 of 2

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	241271E - 60404N	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:		Scale 1:50
Client:	Burcombe Haulage		Dates:	18/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.50			End of Borehole at 10.500m

Remarks

Groundwater was encountered at 9.56m. Dynamic sampling hit refusal at a depth of 7.4m, the borehole was continued by rotary open hole drilling and the arising were logged. Borehole was filled with bentonite from 10.5m to 4.0m followed by arising to ground level.

Borehole Log

			Borehole No. **BH15** Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241313E - 60455N	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:50
Client: Burcombe Haulage		Dates: 19/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15			MADE GROUND comprising firm brown very clayey GRAVEL tending to very gravelly CLAY with occasional concrete fragments. Gravel comprises angular mudstone and subrounded sandstone (LANDFILL WASTE).
					1.00			MADE GROUND comprising medium dense to dense purple slightly sandy clayey GRAVEL. Gravel comprises angular platey mudstone with occasion subrounded sandstone (LANDFILL WASTE).
		1.20	ES					
		1.50	SS	N=13 (6,4/4,4,3,2)				MADE GROUND comprising medium dense to dense light brown slightly clayey slightly sandy GRAVEL. Gravel comprises platey angular mudstone and siltstone in random orientations (LANDFILL WASTE).
					2.00			MADE GROUND comprising loose purple slightly clayey slightly sandy GRAVEL. Gravel comprises platey angular mudstone in random orientation and occasional subangular quartzite (LANDFILL WASTE).
		2.50	ES					
		3.00	SS	N=6 (2,2/1,2,1,2)				
					4.10			MADE GROUND comprising medium dense to dense light brown mottled purple slightly sandy clayey GRAVEL. Gravel comprises of platey angular mudstone in random orientation (LANDFILL WASTE).
		4.20	ES					
		4.50	SS	N=10 (2,2/2,3,2,3)				
					5.10			MADE GROUND comprising firm to stiff purple slightly sandy gravelly CLAY. Gravel comprises platey angular mudstone in random orientation with occasional organic matter (LANDFILL WASTE).
		5.30	ES					
					5.50			Dense purple slightly clayey GRAVEL of medium strong partially weathered very closely fractured MUDSTONE (TORPOINT FORMATION).
		5.80	ES					
		6.00	SS	N=83 (6,8/12,19,24,28)	6.00			Arisings of fine purple dust with clast of angular MUDSTONE (TORPOINT FORMATION).
					9.00			End of Borehole at 9.000m

1 2 3 4 5 6 7 8 9 10

Remarks

No groundwater encountered. Dynamic sampling hit refusal at a depth of 6.0m, the borehole was continued by rotary open hole drilling and the arising were logged. Borehole infilled with bentonite from base to 4.9m, gravel and slotted 50mm standpipe from 4.9m to 1.9m, and bentonite with plain 50mm standpipe from 1.9m to ground level.

Borehole Log

Borehole No. **BH16**

Sheet 1 of 2

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241308E - 60497N	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:50
Client: Burcombe Haulage		Dates: 19/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Rotary drilling through MADE GROUND comprising concrete (LANDFILL WASTE).
					0.70			MADE GROUND comprising loose brown slightly clayey sandy GRAVEL. Gravel comprises subangular limestone, concrete and occasional brick fragments and sandstone (LANDFILL WASTE).
					1.00			MADE GROUND comprising stiff to very stiff purplish brown slightly sandy very gravelly CLAY with occasional cobbles and organic matter. Gravel comprises mudstone, granite and quartz (LANDFILL WASTE).
		1.40	D					
		2.00	D					
					3.15			MADE GROUND comprising dense light brown (locally mottled purple and light grey) sandy very clayey GRAVEL with low cobble content. Cobbles comprise medium strong mudstone. Gravel comprises platey angular mudstone in random orientation. Occasional fragments of concrete, subangular quartz and plant matter below 4.0m (LANDFILL WASTE).
		3.80	D					
					5.00			MADE GROUND comprising loose to medium dense brown clayey sandy GRAVEL with occasional cobble of granite. Gravel comprises angular mudstone with occasional brick fragments (LANDFILL WASTE).
					5.40			MADE GROUND comprising dense and very dense brown mottled purple and grey slightly sandy clayey GRAVEL with occasional cobble of granite. Gravel comprises angular mudstone in random orientation (LANDFILL WASTE).
		5.80	D					
					6.00			MADE GROUND comprising light brown (locally mottled light grey) slightly clayey slightly sandy GRAVEL. Gravel comprises medium strong angular mudstone in random orientation with occasional sandstone (LANDFILL WASTE).
		6.50	D					
					7.40			MADE GROUND comprising firm purple very clayey GRAVEL with low cobble content of granite. Gravel comprises mudstone with occasional quartz and sandstone (LANDFILL WASTE).
					7.90			Rotary drilling through MADE GROUND comprising concrete (LANDFILL WASTE).
					9.80			MADE GROUND comprising medium dense to dense
		10.00	D					
								Continued on Next Sheet

Remarks

No groundwater encountered. Dynamic sampling hit refusal at a depth of 15.4m, the borehole was continued by rotary open hole drilling and the arising were logged. Borehole infilled with bentonite from base to 14.4m, gravel and slotted 50mm standpipe from 14.4m to 2.4m, and bentonite with plain 50mm standpipe from 2.4m to ground level.

Borehole Log

Borehole No. **BH16**

Sheet 2 of 2

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241308E - 60497N	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:50
Client: Burcombe Haulage		Dates: 19/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								purplish grey slightly sandy very clayey GRAVEL with some plant matter. Gravel comprises angular mudstone and some limestone (LANDFILL WASTE).
					10.50			MADE GROUND comprising stiff brown slightly sandy very gravelly CLAY tending to very clayey GRAVEL with occasional metal wire fragments. Gravel comprises angular mudstone, subrounded granite and occasional sandstone (LANDFILL WASTE).
		11.00	D					
					11.90			MADE GROUND comprising very dense purple slightly clayey GRAVEL. Gravel comprises weak to medium strong mudstone in random orientation (LANDFILL WASTE).
		12.50	D					
					13.80			MADE GROUND comprising stiff to very stiff gravelly CLAY with occasional metal wire fragments and cobble of granite. Gravel comprises angular mudstone (LANDFILL WASTE).
		14.40	ES		14.60			Dense purple very clayey GRAVEL. Gravel comprises medium strong closely fractured platey angular mudstone in uniform orientation. Residual or reworked TORPOINT FORMATION.
		15.20	ES		15.40			Arisings of fine purple dust with clast of angular MUDSTONE (TORPOINT FORMATION).
					18.60			End of Borehole at 18.600m

Remarks

No groundwater encountered. Dynamic sampling hit refusal at a depth of 15.4m, the borehole was continued by rotary open hole drilling and the arising were logged. Borehole infilled with bentonite from base to 14.4m, gravel and slotted 50mm standpipe from 14.4m to 2.4m, and bentonite with plain 50mm standpipe from 2.4m to ground level.

Borehole Log

Borehole No. **BH17**

Sheet 1 of 2

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241256E - 60449N	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:50
Client: Burcombe Haulage		Dates: 23/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.25			MADE GROUND comprising firm brown slightly sandy gravelly CLAY with abundant roots and some broken glass. Gravel comprises platey angular mudstone (LANDFILL WASTE).
		0.40	ES					
					0.70			MADE GROUND comprising firm yellowish brown slightly sandy gravelly CLAY with medium cobble content of block sandstone, along with some concrete fragments, plant matter and nails (LANDFILL WASTE).
		0.90	ES					
					1.20			MADE GROUND comprising firm to stiff dark brown gravelly CLAY with some plant matter. Abundant rootlets to 0.85m. Gravel comprises of mudstone with some quartz, granite and sandstone (LANDFILL WASTE).
		1.50		N=12 (2,3/3,3,3,3)				
		1.80	ES					
					2.20			MADE GROUND comprising medium dense purple (locally stained orange and light grey) slightly sandy very clayey GRAVEL. Gravel comprises platey angular mudstone with occasional blocky sandstone (LANDFILL WASTE).
		3.00		N=14 (2,2/4,3,4,3)				MADE GROUND comprising medium dense purple (locally stained light grey) clayey GRAVEL. Gravel of weak to medium strong platey angular mudstone in random orientation (LANDFILL WASTE).
					3.70			MADE GROUND comprising medium dense yellowish brown slightly sandy clayey GRAVEL with medium cobble content of blocky siltstone and sandstone. Gravel comprises mudstone, siltstone and sandstone with occasional granite. Occasional fragments of broken glass (LANDFILL WASTE).
		4.10	ES					
		4.50		N=6 (2,/2,1,2,1)	4.50			MADE GROUND comprising loose light brown slightly sandy clayey GRAVEL with low cobble content of platey mudstone. Gravel comprises mudstone with some granite and sandstone (LANDFILL WASTE).
		5.50	ES					
		6.00		N=5 (2,1/1,1,2,1)				
		7.50		N=9 (2,2/3,2,2,2)				
					7.90			MADE GROUND comprising medium dense purple (locally pale grey) slightly sandy clayey GRAVEL. Gravel comprises platey angular mudstone in random orientation with occasional quartz clasts (LANDFILL WASTE).
		9.00		N=10 (3,4/3,2,2,3)				
		9.20	ES					
					10.00			Continued on Next Sheet

Remarks

Groundwater was encountered at 14.42m. Borehole ceased at 15m due to window sample refusal and concrete fragments suggesting the top of the culvert. Borehole filled with bentonite from 15.0m to 9.6m followed by arising to ground level.

Borehole Log

Borehole No. **BH17**

Sheet 2 of 2

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	241256E - 60449N	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:		Scale 1:50
Client:	Burcombe Haulage		Dates:	23/08/2016	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50		N=18 (6,3/6,6,3,3)				MADE GROUND comprising dense purple slightly clayey GRAVEL. Gravel comprises platey angular mudstone (LANDFILL WASTE).
					11.40			
		12.00		N=10 (4,3/3,3,3,1)				MADE GROUND comprising firm purple gravelly (locally very gravelly) CLAY. Gravel comprises platey angular mudstone with occasional quartz. Concrete fragments at 15m and refusal, believed to the top of the culvert (LANDFILL WASTE).
		13.50		N=16 (4,4/5,3,4,4)				
	▼	14.50	ES					
					15.00			End of Borehole at 15.000m

11 12 13 14 15 16 17 18 19 20

Remarks

Groundwater was encountered at 14.42m. Borehole ceased at 15m due to window sample refusal and concrete fragments suggesting the top of the culvert. Borehole filled with bentonite from 15.0m to 9.6m followed by arising to ground level.

Borehole Log

Borehole No. **B19-1**

Sheet 1 of 9

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	JG					MADE GROUND comprising firm brown slightly gravelly slightly sandy CLAY with occasional rootlets and plastic fragments. Gravel comprises mixture of mudstone and quartz. (Possible reworked mudstone of the Torpoint Formation)
		0.30 - 1.50	B		0.30			Extremely weak cleaved purple MUDSTONE weathering to clayey gravel. Rock breaks in fine gravel in hand. Gravel platey with smooth surfaces along cleavage planes. Cleavage dipping at roughly 10 degrees. (Completely weathered mudstone of the Torpoint Formation)
		0.90	JP					
					1.50			TO BE LOGGED
								Continued on Next Sheet

1

2

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 2 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								3
								Continued on Next Sheet
								4

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 3 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								5
								Continued on Next Sheet
								6

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 4 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								Continued on Next Sheet

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 5 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								9
								Continued on Next Sheet
								10

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 6 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								11
								Continued on Next Sheet
								12

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 7 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								13
								Continued on Next Sheet
								14

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 8 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								TO BE LOGGED	
									15
								Continued on Next Sheet	16

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-1**

Sheet 9 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 25/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								TO BE LOGGED	
									17
					18.00			End of Borehole at 18.00m	18

Remarks

Dynamic sample to refusal at 1.5m, rotary cored from 1.5m to 8.1m, ODEX drilled from 8.1m to 18.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 13.0m to 18.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 1 of 8

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	JG					Soft to firm brown sandy slightly gravelly silty CLAY with occasional cobble of quartz. Gravel comprises mudstone and quartz. (Possible wash down from slope)
		0.50	JP		0.45			Extremely weak cleaved extremely closely fractured purple MUDSTONE weathering to very clayey gravel. Cleavage near horizontal. (Completely weathered mudstone of the Torpoint Formation)
		0.90	JG					
		1.00	JP					
		1.50	JP					
		1.90	JP					
								Continued on Next Sheet

1

2

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 2 of 8

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		2.30	JP		2.40			Extremely weak cleaved extremely closely fractured purple MUDSTONE weathering to very clayey gravel. Cleavage near horizontal. (Completely weathered mudstone of the Torpoint Formation)
								Extremely weak to very weak cleaved extremely closely to very closely fractured purple MUDSTONE with thick green laminations from 2.6m to 3.45m. Weak zone at 3.6m to 3.95m mudstone weathered to gravelly clay. Very closely to closely spaced fractures (50, 200, 350mm) along cleavage planes. Surfaces planar rough with minor light brown clay infill. Minor deformation of cleavage planes around 2.9m. Near vertical fractures at 3.25m and 3.45m with irregular (undulating/stepped) rough surfaces. Near horizontal fractures closely spaced (20, 150, 300mm) with planar rough surfaces. Locally low persistence (terminating at cleavage plane fractures) and occasional clay infill. Fractures from 4.3m to 4.45m dipping at roughly 60 degrees against cleavage orientation with planar rough surfaces. At 4.95m to 5.3m light grey weathering orange undulating thick laminations.
								3
								Continued on Next Sheet
								4

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 3 of 8

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak to very weak cleaved extremely closely to very closely fractured purple MUDSTONE with thick green laminations from 2.6m to 3.45m. Weak zone at 3.6m to 3.95m mudstone weathered to gravelly clay. Very closely to closely spaced fractures (50, 200, 350mm) along cleavage planes. Surfaces planar rough with minor light brown clay infill. Minor deformation of cleavage planes around 2.9m. Near vertical fractures at 3.25m and 3.45m with irregular (undulating/stepped) rough surfaces. Near horizontal fractures closely spaced (20, 150, 300mm) with planar rough surfaces. Locally low persistence (terminating at cleavage plane fractures) and occasional clay infill. Fractures from 4.3m to 4.45m dipping at roughly 60 degrees against cleavage orientation with planar rough surfaces. At 4.95m to 5.3m light grey weathering orange undulating thick laminations.
					5.30			Extremely weak to very weak closely fractured light green SILTSTONE with occasional purple and orange thick laminations and closely spaced (60-90mm) quartz veins 5-10mm thick locally containing inclusions of black minerals (possibly manganese or iron). Fracture at 5.45m stepped with rough surface with dark reddish-brown staining.
					5.87			Extremely weak to very weak cleaved very closely fracture thickly laminated purple MUDSTONE. Laminations light green becoming dark green below 6.3m. Cleavage planes dip at roughly 50 degrees.

Continued on Next Sheet

5

6

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 4 of 8

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak to very weak cleaved very closely fracture thickly laminated purple MUDSTONE. Laminations light green becoming dark green below 6.3m. Cleavage planes dip at roughly 50 degrees. Small zone containing quartz veins at base contact from 6.5m to 6.6m. Some orange staining between 5.9m and 6.0m. Fractures along cleavage planes very closely spaced (5, 25, 35mm) surfaces generally planar rough but locally slightly undulating. Fracture at 5.95m dipping at roughly 50 to 60 degrees with planar smooth surface.
					6.60			Very weak to weak cleaved thinly bedded light green SILTSTONE with occasional thin orange laminations. Quartz veins (7-10mm thick) from 7.55m to 7.9m with inclusions of black minerals (possibly manganese or iron). Cleavage dipping roughly 40 degrees. Fractures along cleavage planes very closely spaced (10, 40, 100mm) generally with smooth planar surfaces. Orange staining along fracture planes.
								Continued on Next Sheet

7

8

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 5 of 8

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very weak to weak cleaved thinly bedded light green SILTSTONE with occasional thin orange laminations. Quartz veins (7-10mm thick) from 7.55m to 7.9m with inclusions of black minerals (possibly manganese or iron). Cleavage dipping roughly 40 degrees. Fractures along cleavage planes very closely spaced (10, 40, 100mm) generally with smooth planar surfaces. Orange staining along fracture planes.
					8.15			Very weak cleaved light pinkish grey weathering dark reddish-brown MUDSTONE. Rock broken into gravel and cobble size clasts on recovery. Fractures appear along cleavage planes to be smooth planar surfaces extremely closely to very closely spaced.
					8.40			

9

10

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 6 of 8

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									11
								Continued on Next Sheet	12

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 7 of 8

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									13
								Continued on Next Sheet	14

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-2**

Sheet 8 of 8

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 20/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								End of Borehole at 15.00m

15

16

Remarks

Dynamic sample to refusal at 2.4m, rotary cored from 2.4m to 8.4m, ODEX drilled from 8.4m to 15.0m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 10.0m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 10.0m.

Borehole Log

Borehole No. **B19-3**

Sheet 1 of 9

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak cleaved purple MUDSTONE weathering to very gravelly clay. Gravel comprises fine clasts of angular platey mudstone. (Completely weathered mudstone of the Torpoint Formation)
					0.27			Extremely weak cleaved purple MUDSTONE weathering to slightly clayey (locally clayey) sandy fine to medium gravel. (Completely weathered mudstone of the Torpoint Formation)
					0.80			TO BE LOGGED
								Continued on Next Sheet

1

2

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 2 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								Continued on Next Sheet

3

4

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 3 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								Continued on Next Sheet

5

6

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 4 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								Continued on Next Sheet

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 5 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								Continued on Next Sheet

9

10

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 6 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								11
								Continued on Next Sheet
								12

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 7 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								TO BE LOGGED	13
								Continued on Next Sheet	14

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 8 of 9

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								TO BE LOGGED
								15
								Continued on Next Sheet
								16

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-3**

Sheet 9 of 9

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 24/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								TO BE LOGGED	
					16.50			End of Borehole at 16.50m	17
									18

Remarks

Dynamic sample to refusal at 0.8m, rotary cored from 1.2m to 6.4m, ODEX drilled from 6.4m to 16.5m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 9.2m to 15.0m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 9.2m.

Borehole Log

Borehole No. **B19-4**

Sheet 1 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40	PP	100.00				Moss over MADE GROUND comprising soft to firm (locally stiff) brown mottled grey slightly sandy very gravelly CLAY locally tending to gravel. Gravel dominated by angular platey dark grey mudstone with some clasts of blacktop and concrete. Occasional rootlets within top 0.5m. Occasional fragments of sandstone, quartz and brick fragment throughout. (Landfill Waste)
		0.40	PP	100.00				
		0.40	PP	125.00				
		0.50	JP					
		1.00	JP					
		1.40	PP	50.00				
		1.40	PP	50.00				
		1.40	PP	62.50				
		1.50	JP					
		1.50	SPT	N=6 (1,1/2,1,2,1)				
		2.00	JP					

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 2 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.50	JP					Moss over MADE GROUND comprising soft to firm (locally stiff) brown mottled grey slightly sandy very gravelly CLAY locally tending to gravel. Gravel dominated by angular platey dark grey mudstone with some clasts of blacktop and concrete. Occasional rootlets within top 0.5m. Occasional fragments of sandstone, quartz and brick fragment throughout. (Landfill Waste)	
		2.75	JG		2.70			MADE GROUND comprising stiff dark brown very gravelly CLAY with low cobble content of mudstone and quartz. Gravel dominated my angular platey mudstone with some quartz, limestone, sandstone and concrete fragments. Occasional organic matter (plant matter such as twigs and roots) with slight organic odour. Wet soft wet clay 3.0m, possibly due to SPT testing. (Landfill Waste)	
		3.00	JP						3
		3.00	SPT	N=53 (6,9/10,10,15,18)					
		3.50	JP						
					3.60			ODEX arisings contained brown clay with occasional fragments of concrete and brick. (Landfill Waste)	
								Continued on Next Sheet	4

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 3 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								ODEX arisings contained brown clay with occasional fragments of concrete and brick. (Landfill Waste)
		4.50	SPT	N=46 (4,6/9,9,10,18)	4.50			MADE GROUND comprising firm to stiff (becoming very stiff from 6.0m) brown slightly sandy gravelly (locally very gravelly) CLAY with occasional cobble of concrete and mudstone. Gravel comprises a mix of mudstone, concrete, quartz, blacktop and occasional pieces of plastic and brick fragments. (Landfill Waste)
		4.70	JP					
		5.10	PP	100.00				
		5.10	PP	75.00				
		5.10	PP	75.00				
		5.20	JP					
		5.40	PP	100.00				
		5.40	PP	75.00				
		5.40	PP	75.00				
		5.70	JP					
		5.90	PP	100.00				
		5.90	PP	62.50				
		5.90	PP	87.50				
		6.00 - 8.70	B					

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 4 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		6.00	SPT	N=32 (3,6/7,7,8,10)				MADE GROUND comprising firm to stiff (becoming very stiff from 6.0m) brown slightly sandy gravelly (locally very gravelly) CLAY with occasional cobble of concrete and mudstone. Gravel comprises a mix of mudstone, concrete, quartz, blacktop and occasional pieces of plastic and brick fragments. (Landfill Waste)
		6.20	JP					
		6.30	PP	150.00				
		6.60	JG					
		6.60	PP	100.00				
		6.60	PP	125.00				
					6.90			MADE GROUND comprising predominantly firm with soft lenses brown very gravelly slightly sandy CLAY with occasional cobble size fragments of concrete and blacktop. Gravel comprises mixture of mudstone, granite, limestone, sandstone, concrete, blacktop and brick with occasional fragments of slag. No recovery from 7.5 to 8.0m. (Landfill Waste)
		7.00	JP					
		7.20	JG					
		7.50	SPT	N=20 (4,4/4,5,5,6)				

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 5 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		8.20	JP					MADE GROUND comprising predominantly firm with soft lenses brown very gravelly slightly sandy CLAY with occasional cobble size fragments of concrete and blacktop. Gravel comprises mixture of mudstone, granite, limestone, sandstone, concrete, blacktop and brick with occasional fragments of slag. No recovery from 7.5 to 8.0m. (Landfill Waste)
					8.70			
		8.90	JP					MADE GROUND comprising stiff purple very gravelly CLAY. Gravel dominated with angular platey clasts of mudstone with occasional brick fragments and quartz. (Possibly reworked mudstone of the Torpoint Formation)
		9.00	JG					
		9.00 - 11.50	B					
		9.00	SPT	N=21 (4,4/4,6,6,5)				
		9.50	JP					
		9.70	JG					
		9.70	PP	100.00				
		9.70	PP	100.00				
		9.70	PP	100.00				
		10.00	JP					

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 6 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.30	PP	100.00				MADE GROUND comprising stiff purple very gravelly CLAY. Gravel dominated with angular platey clasts of mudstone with occasional brick fragments and quartz. (Possibly reworked mudstone of the Torpoint Formation)	
		10.30	PP	125.00					
		10.30	PP	125.00					
		10.50	SPT	N=21 (2,4/6,4,5,6)					
		11.00	JP						11
		11.10	PP	100.00					
		11.10	PP	87.50					
		11.10	PP	87.50					
					11.50			Stiff to very stiff purple very gravelly CLAY tending to very clayey gravel. Gravel comprises angular platey fine sized clasts of mudstone. Some relic structure present. (Possibly completely weathered mudstone of the Torpoint Formation)	
		11.60	PP	125.00					
		11.60	PP	150.00					
		11.60	PP	162.50					
		11.70	JG						
		11.80	JP						
		12.00	SPT	N=40 (8,8/9,9,10,12)	12.00			Continued on Next Sheet	12

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 7 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		12.50	JP					Extremely weak cleaved purple MUDSTONE weathering to clayey fine gravel. Occasional light beige/grey very thin bands. (Mudstone of the Torpoint Formation)	13
		13.40	JP						
		13.50	SPT	50 (25 for 145mm/50 for 135mm)					
					13.75			Extremely weak cleaved purple MUDSTONE weathering to very gravely CLAY. Occasional thick laminations of orange sandstone. (Mudstone of the Torpoint Formation)	
								Continued on Next Sheet	14

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 8 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak cleaved purple MUDSTONE weathering to very gravely CLAY. Occasional thick laminations of orange sandstone. (Mudstone of the Torpoint Formation)
	▼				14.30			Very weak cleaved very closely fractured purple MUDSTONE. Cleavage dipping roughly 40 to 50 degrees. Two main fracture sets. Set 1 along cleavage planes very closely spaced (5, 30, 100mm) with planar rough surfaces. Set 2 cutting across cleavage dipping roughly 40 degrees medium spaced (20, 300, 500mm), with stepped rough surfaces. Set 2 become less frequent below 15.5m. At 14.85m fracture dipping 20 to 30 degrees along top thick light greenish grey lamination. Fracture infilled with soft brown clay. At 15.5m fracture dipping roughly 70 degrees with planar rough surface with infill of soft light brown clay.
								Continued on Next Sheet

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Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 9 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					16.25			Very weak cleaved very closely fractured purple MUDSTONE. Cleavage dipping roughly 40 to 50 degrees. Two main fracture sets. Set 1 along cleavage planes very closely spaced (5, 30, 100mm) with planar rough surfaces. Set 2 cutting across cleavage dipping roughly 40 degrees medium spaced (20, 300, 500mm), with stepped rough surfaces. Set 2 become less frequent below 15.5m. At 14.85m fracture dipping 20 to 30 degrees along top thick light greenish grey lamination. Fracture infilled with soft brown clay. At 15.5m fracture dipping roughly 70 degrees with planar rough surface with infill of soft light brown clay. Very weak to weak cleaved closely fractured purple MUDSTONE. Cleavage dipping 40 to 50 degrees. Occasional thick light greenish grey laminations throughout. Weak zone from 16.6m to 16.72m of extremely closely fractured mudstone weathering to clayey gravel. Fractures along cleavage planes closely spaced (50, 150, 300mm) with planar smooth surfaces and some orange staining. At 16.3m fracture along cleavage undulating rough with orange staining. Wet soft clay at 16.8m (possible fall in during drilling). (Mudstone of the Torpoint Formation)

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Continued on Next Sheet

18

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-4**

Sheet 10 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 07/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very weak to weak cleaved closely fractured purple MUDSTONE. Cleavage dipping 40 to 50 degrees. Occasional thick light greenish grey laminations throughout. Weak zone from 16.6m to 16.72m of extremely closely fractured mudstone weathering to clayey gravel. Fractures along cleavage planes closely spaced (50, 150, 300mm) with planar smooth surfaces and some orange staining. At 16.3m fracture along cleavage undulating rough with orange staining. Wet soft clay at 16.8m (possible fall in during drilling). (Mudstone of the Torpoint Formation)
					18.60			End of Borehole at 18.60m

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20

Remarks

Dynamic sample to refusal at 13.5m and rotary cored from 13.5m to 18.6m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 16.6m to 18.6m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 16.6m.

Borehole Log

Borehole No. **B19-5**

Sheet 1 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	JP					Moss over MADE GROUND comprising stiff to very stiff brown (locally light brown/grey) slightly sandy very gravelly CLAY with low cobble content. Gravel dominated by angular platey clasts of purple and greenish grey mudstone with some fragments of concrete, brick and blacktop. Some organic matter throughout (plant matter i.e. roots and sticks). (Landfill Waste)	
		0.80	JG						
		1.00	JP						1
		1.50	JP						
		1.50	SPT	N=8 (3,1/1,4,1,2)					
		1.70 - 4.20	B		1.70			MADE GROUND comprising predominantly firm (locally soft) brown slightly sandy gravelly CLAY. Gravel predominantly fine angular platey clasts of mudstone with some quartz and limestone. No recovery from 2.5m to 3.4m or 4.5m to 5.1m (possibly due to large cobble size fragment of concrete being pushed through surrounding wet soft clays by end of sample tube). (Landfill Waste)	
		2.00	JP						2

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 2 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		2.20	JG					MADE GROUND comprising predominantly firm (locally soft) brown slightly sandy gravelly CLAY. Gravel predominantly fine angular platey clasts of mudstone with some quartz and limestone. No recovery from 2.5m to 3.4m or 4.5m to 5.1m (possibly due to large cobble size fragment of concrete being pushed through surrounding wet soft clays by end of sample tube). (Landfill Waste)
		2.50	JP					
		3.00	SPT	N=6 (2,3/2,1,1,2)				
		3.50	JP					
		3.85	PP	25.00				
		3.85	PP	75.00				
		3.85	PP	75.00				

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 3 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.20	PP	100.00				MADE GROUND comprising predominantly firm (locally soft) brown slightly sandy gravelly CLAY. Gravel predominantly fine angular platey clasts of mudstone with some quartz and limestone. No recovery from 2.5m to 3.4m or 4.5m to 5.1m (possibly due to large cobble size fragment of concrete being pushed through surrounding wet soft clays by end of sample tube). (Landfill Waste)
		4.20	PP	100.00				
		4.20	PP	75.00				
		4.40	JP					
		4.50	SPT	N=18 (25 for 145mm/4,6,4,4)				
					5.10			MADE GROUND comprising firm brown gravelly sandy CLAY with occasional fragments of blacktop. Gravel dominated by mudstone with occasional sandstone. (Landfill waste)
		5.30	JP					
		5.40	JG					
					5.70			MADE GROUND comprising firm to stiff brown/light brown slightly sandy gravelly CLAY with occasional cobble size fragments of blacktop and limestone. Gravel dominated by fine clasts of mudstone. No recovery from 7.5m to 7.9m. (Landfill Waste)
		5.90	JP					
		5.90	PP	50.00				
		5.90	PP	75.00				
		6.00	SPT	N=4 (1,1/1,1,1,1)				

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 4 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND comprising firm to stiff brown/light brown slightly sandy gravelly CLAY with occasional cobble size fragments of blacktop and limestone. Gravel dominated by fine clasts of mudstone. No recovery from 7.5m to 7.9m. (Landfill Waste)
		6.40	JP					
		6.55	PP	25.00				
		6.55	PP	50.00				
		6.55	PP	75.00				
		6.90	JG					
		6.90	PP	50.00				
		6.90	PP	50.00				
		6.90	PP	75.00				
		7.40	JP					
		7.40	PP	62.50				
		7.40	PP	62.50				
		7.40	PP	62.50				
		7.50	SPT	N=30 (1,3/3,4,5,18)				
					7.90			MADE GROUND comprising cobble size clasts of limestone and concrete. ODEX from 8.2m to 9.0m: arisings contain brown clay with chippings of concrete

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 5 of 15

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								MADE GROUND comprising cobble size clasts of limestone and concrete. ODEX from 8.2m to 9.0m: arisings contain brown clay with chippings of concrete and brick. (Landfill Waste)	
		9.00	SPT	N=26 (3,4/6,6,7,7)	9.00				9
		9.30	JP					MADE GROUND comprising brown (locally pinkish brown) predominantly firm sandy gravelly CLAY containing cobble size fragments of brick, concrete and black top. Gravel comprises mix of brick, concrete, blacktop with some mudstone and limestone and occasional pieces of pottery. (Landfill Waste)	
		9.30	PP	50.00					
		9.30	PP	75.00					
		10.00	JP						10

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 6 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.30	JG					MADE GROUND comprising brown (locally pinkish brown) predominantly firm sandy gravelly CLAY containing cobble size fragments of brick, concrete and black top. Gravel comprises mix of brick, concrete, blacktop with some mudstone and limestone and occasional pieces of pottery. (Landfill Waste)
		10.30	PP	100.00				
		10.30	PP	50.00				
		10.30	PP	75.00				
		10.50	JP		10.50			
		10.50	SPT	N=57 (5,9/13,13,14,17)				ODEX arisings contained brown clay with chippings of concrete and brick. (Landfill Waste)
		11.50 - 12.00	JP					
					12.00			Continued on Next Sheet

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Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 7 of 15

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		12.20	JP		12.30			MADE GROUND comprising firm brown clay with cobble size fragments of blacktop and bricks. (Landfill Waste)
		13.20 - 13.80	JP					ODEX arisings contained brown sandy clay with chippings of brick and concrete. (Landfill Waste)
		13.50	JP		13.50			MADE GROUND comprising firm brown (locally light brown) sandy gravelly CLAY. Gravel is a mixture of mudstone, quartz, sandstone with fragments of blacktop and brick and some fragments of wood (possible old planks/pallets). Soft zone from 14.8m to 14.9m. Blacktop layer from 15.65m to 15.75m. Slight petrol odour at 14.5m. (Landfill Waste)
		13.50	SPT	N=18 (7,3/4,4,3,7)				
		13.60	JP					
		13.90	PP	100.00				
		13.90	PP	100.00				
		13.90	PP	150.00				
		14.00	JP					

Continued on Next Sheet

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Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 8 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		14.50	JG					MADE GROUND comprising firm brown (locally light brown) sandy gravelly CLAY. Gravel is a mixture of mudstone, quartz, sandstone with fragments of blacktop and brick and some fragments of wood (possible old planks/pallets). Soft zone from 14.8m to 14.9m. Blacktop layer from 15.65m to 15.75m. Slight petrol odour at 14.5m. (Landfill Waste)	
		15.00	SPT	N=48 (6,11/12,12,14,10)					15
		15.50	JP						
					15.90			ODEX arisings contained wood chippings and fragments of plastic.	
								Continued on Next Sheet	16

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 9 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								ODEX arisings contained wood chippings and fragments of plastic.
		16.50	SPT	N=38 (8,7/8,6,12,12)	16.50			
		16.60	JP					MADE GROUND comprising firm to stiff dark brown slightly sandy gravelly CLAY with medium cobble content. Gravel and cobbles comprise brick, concrete, limestone and mudstone. Some organic matter (plant matter i.e. twigs/roots). (Landfill Waste)
		16.65	PP	100.00				
		16.65	PP	100.00				
		16.85	JG					
					16.90			ODEX with no recovery
		18.00 - 19.10	B		18.00			

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 10 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		18.00	SPT	N=30 (3,5/8,6,7,9)				MADE GROUND comprising stiff (locally firm) light brown gravelly to very gravelly slightly sandy CLAY with occasional cobble size fragments of concrete and granite. Gravel contains mix of mudstone, limestone, brick and concrete with occasional sandstone and blacktop. (Landfill Waste)
		18.50	JP					
					19.10			ODEX arisings contained brown clay with fragments of quartz, limestone and mudstone along with wood chippings (likely to be from old planks/pallets). (Landfill Waste)
		19.50 - 21.00	JP					

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 11 of 15

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								ODEX arisings contained brown clay with fragments of quartz, limestone and mudstone along with wood chippings (likely to be from old planks/pallets). (Landfill Waste)	
		21.00 - 21.45 21.00 - 22.10 21.00	JP B SPT	N=42 (11,5/8,11,11,12)	21.00			MADE GROUND comprising very stiff purple (locally grey) gravelly silty CLAY with occasional organic matter (plant matter/ fossil roots). Gravel dominated by mudstone with occasional limestone and quartz. Refused at 22.1m on piece of light grey thinly cleaved mudstone. (Landfill Waste/ possibly reworked mudstone of the Torpoint Formation)	21
	▼	21.50	JG						
		21.90	JP						
								Continued on Next Sheet	22

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 12 of 15

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		22.30	SPT	50 (18,7/50 for 150mm)	22.30			MADE GROUND comprising very stiff purple (locally grey) gravelly silty CLAY with occasional organic matter (plant matter/ fossil roots). Gravel dominated by mudstone with occasional limestone and quartz. Refused at 22.1m on piece of light grey thinly cleaved mudstone. (Landfill Waste/ possibly reworked mudstone of the Torpoint Formation)
								Very weak cleaved greenish grey MUDSTONE weathering orange brown. Fractures along cleavage planes dipping approximately 80 degrees, extremely closely spaced (10-30mm) with rough planar surfaces. At 23m cleavage planes curved indicating some deformation. (Mudstone of the Torpoint Formation)
					23.20			Very weak cleaved extremely closely fractured purple MUDSTONE with very thick laminations of orange brown mudstone. Cleavage very steeply dipping at 80 to 90 degrees. From 23.2m to 23.4m thin bands of extremely weak mudstone weathering to gravelly clay. Fractures along cleavage planes with rough planar surfaces containing minor infill of light brown soft clay. At 24.7m, 23.95m, and 24.15m near horizontal fractures cutting across cleavage with stepped rough surface. At 24.2m sharp boundary between strata separated by 5mm thick infill of soft light brown clay. (Mudstone of the Torpoint Formation)
								Continued on Next Sheet

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Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 13 of 15

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					24.20			Very weak cleaved extremely closely fractured purple MUDSTONE with very thick laminations of orange brown mudstone. Cleavage very steeply dipping at 80 to 90 degrees. From 23.2m to 23.4m thin bands of extremely weak mudstone weathering to gravelly clay. Fractures along cleavage planes with rough planar surfaces containing minor infill of light brown soft clay. At 24.7m, 23.95m, and 24.15m near horizontal fractures cutting across cleavage with stepped rough surface. At 24.2m sharp boundary between strata separated by 5mm thick infill of soft light brown clay. (Mudstone of the Torpoint Formation)
								Very weak cleaved closely fractured greenish grey SILTSTONE with very thin purple banding from 24.2m to 24.5m. Cleavage steeply dipping 80 to 90 degrees. Fractures along cleavage planes with rough planar surfaces and some orange staining. At 24.65m, 24.9m, 24.95m, and 25.0m fractures cutting across cleavage with stepped rough surface and orange/ pinkish brown staining. Weak zone at 25.75m (20mm thick and dipping roughly 30 degrees) of siltstone weathering to gravelly clay. (Siltstone of the Torpoint Formation)
					26.00			Continued on Next Sheet

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Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 14 of 15

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very weak cleaved blueish grey SILTSTONE containing very thin veins (1-2mm thick) of quartz generally dipping at 80 degrees. Zone of extremely weak siltstone weathering to orange brown gravelly clay from 26.6m to 26.8m. Contact at 26.6m dipping at 70 degrees. Very closely spaced fractures at 26.8m to 27.2m along cleavage planes dipping at roughly 80 degrees with rough planar surfaces and some orange/ dark orange staining. Near horizontal fractures at 26.95m and 27.06m cutting across cleavages with low persistence and orange brown staining. Fracture at 27.45m cuts across cleavage with stepped rough surface. Cleavage planes from 27.27m to 27.45m undulating suggesting some deformation and appearance of almost schist like texture. Fracture from 27.86m to 28.3m near vertical within core run with undulating smooth surface. (Siltstone of the Torpoint Formation)
								27
								Continued on Next Sheet
								28

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-5**

Sheet 15 of 15

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 04/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					28.30			Very weak cleaved blueish grey SILTSTONE containing very thin veins (1-2mm thick) of quartz generally dipping at 80 degrees. Zone of extremely weak siltstone weathering to orange brown gravelly clay from 26.6m to 26.8m. Contact at 26.6m dipping at 70 degrees. Very closely spaced fractures at 26.8m to 27.2m along cleavage planes dipping at roughly 80 degrees with rough planar surfaces and some orange/ dark orange staining. Near horizontal fractures at 26.95m and 27.06m cutting across cleavages with low persistence and orange brown staining. Fracture at 27.45m cuts across cleavage with stepped rough surface. Cleavage planes from 27.27m to 27.45m undulating suggesting some deformation and appearance of almost schist like texture. Fracture from 27.86m to 28.3m near vertical within core run with undulating smooth surface. (Siltstone of the Torpoint Formation)
								End of Borehole at 28.30m

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Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 28.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 28m in sand layer from 27.5m to 28.3m, Piezometer 2 at 13.5m in sand layer from 13.0m to 14.0m, Piezometer 3 at 9.4m in sand layer from 9.55m to 8.6m, and Piezometer 4 at 4.3m in sand layer from 4.6m to 3.5m.

Borehole Log

Borehole No. **B19-6**

Sheet 1 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	JG					Moss over MADE GROUND comprising firm light brown gravelly sandy CLAY with some roots. Gravel dominated by angular platey clasts of dark grey mudstone. (Landfill material)
		0.50	JP					
		0.50	PP	125.00				
		0.50	PP	150.00				
					0.60			
								MADE GROUND comprising stiff (locally firm) brown sandy very gravelly CLAY. Gravel dominated by angular platey clasts of mudstone with some fragments of brick, glass, concrete and blacktop. Cobble size fragment of concrete from 1.4m to 1.5m. (Landfill material)
		1.00	JP					
		1.00	PP	150.00				
		1.00	PP	175.00				
		1.00	PP	175.00				
		1.50	SPT	N=25 (2,4/4,4,10,7)				
		1.60	JP					
		2.00	JP					

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Continued on Next Sheet

2

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 2 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					2.10			MADE GROUND comprising stiff (locally firm) brown sandy very gravelly CLAY. Gravel dominated by angular platey clasts of mudstone with some fragments of brick, glass, concrete and blacktop. Cobble size fragment of concrete from 1.4m to 1.5m. (Landfill material)	
		2.30	PP	62.50				MADE GROUND comprising stiff (locally firm) dark brown (locally greyish brown) very gravelly sandy CLAY with low cobble content. Gravel dominated by angular platey clasts of mudstone with occasional limestone, quartz and blacktop fragments. (Landfill waste)	
		2.30	PP	75.00					
		2.50	JP						
		2.70	JG						
		2.80	PP	137.50					
		2.80	PP	175.00					
		2.80	PP	87.50					
		3.00	JP		3.00				3
		3.00 - 5.00	B					MADE GROUND comprising stiff (locally firm) brown (locally pinkish grey) gravelly sandy CLAY. Gravel dominated by angular platey clasts of mudstone. No recovery from 3.0m to 3.2m (possibly due to SPT). (Landfill Waste)	
		3.00	SPT	N=30 (4,5/6,9,8,7)					
		3.60	JP						
					3.80			MADE GROUND comprising stiff (locally firm) dark brown (very) gravelly sandy CLAY. Gravel comprises angular platey clasts of mudstone and occasional clasts of slag. No recovery from 4.5m to 4.8m (possibly due to SPT). (Landfill Waste)	
		4.00	JP						
								Continued on Next Sheet	4

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 3 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		4.20	JG					MADE GROUND comprising stiff (locally firm) dark brown (very) gravelly sandy CLAY. Gravel comprises angular platey clasts of mudstone and occasional clasts of slag. No recovery from 4.5m to 4.8m (possibly due to SPT). (Landfill Waste)	
		4.50	SPT	N=28 (5,5/6,7,7,8)					
		4.90	JP						5
					5.04			MADE GROUND comprising firm (locally soft) brown very gravelly sandy CLAY. Gravel comprises mixture of limestone, mudstone and quartz with fragments of brick and concrete. Soft zone of wet clay from 5.6m to 5.74m. At 5.9m becoming very sandy with fragments of geotextile and plastic. (Landfill Waste)	
		5.20	JP						
		5.70	JP						
		5.95	JG						
		6.00	SPT	N=17 (9,7/6,3,3,5)	6.00				6

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 4 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		6.40	B					MADE GROUND comprising predominantly firm brown (mottled dark grey) sandy gravelly CLAY containing some organic matter (fossil plant roots). Gravel dominated by angular platey clasts of mudstone with occasional slag and brick fragments. Occasional cobble size fragments of concrete. (Landfill Waste)
		6.40	JG					
					6.54			
		6.80	PP	100.00				MADE GROUND comprising predominantly stiff purple (locally light brown) very gravelly CLAY containing occasional organic matter (fossil roots). Occasional cobble size clasts of quartz. Gravel contains some clasts of slag. (Landfill Waste)
		6.80	PP	112.50				
		6.80	PP	75.00				
		7.30	JP					
		7.30	PP	75.00				
		7.30	PP	75.00				
		7.50	SPT	N=21 (4,4/5,5,5,6)	7.50			MADE GROUND comprising wet firm very gravelly CLAY. Gravel dominated by mudstone with occasional brick fragments. (Landfill Waste)
		7.80	JP					

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 5 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND comprising wet firm very gravelly CLAY. Gravel dominated by mudstone with occasional brick fragments. (Landfill Waste)
					8.10			MADE GROUND comprising stiff purple gravelly CLAY with occasional organic matter (plant material) specifically at 8.9m. Gravel dominated by fine angular platey clasts of mudstone with occasional quartz and slag fragments. (Landfill Waste)
		8.50	PP	100.00				
		8.50	PP	125.00				
		8.50	PP	75.00				
		8.90	JP					
		9.00	SPT	N=27 (6,7/7,6,7,7)	9.00			MADE GROUD comprising stiff dark brown very gravelly sandy CLAY with low cobble content. Gravel dominated by angular platey clasts of dark green mudstone with occasional limestone, quartz and brick fragments. Cobbles comprise limestone and quartz. (Landfill Waste)
		9.20	JG					
		9.20	JP					
		9.40	PP	100.00				
		9.40	PP	150.00				
		9.40	PP	150.00				
					9.50			MADE GROUND comprising stiff light pinkish brown slightly sandy very gravelly CLAY with occasional fossil rootlets. Gravel dominated by fine clasts of mudstone with occasional quartz and sandstone. (Landfill Waste)
		9.70	PP	100.00				
		9.70	PP	100.00				
		9.70	PP	125.00				
		9.80 - 11.00	B					
					10.00			Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 6 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								MADE GROUND comprising stiff purple very gravelly CLAY. Gravel dominated by fine clasts of extremely weak mudstone with occasional quartz and sandstone. (Possibly reworked mudstone from the Torpoint Formation)	
		10.20	PP	100.00					
		10.20	PP	125.00					
		10.20	PP	125.00					
		10.50	SPT	N=26 (3,5/6,7,7,6)					
		10.70	JP						11
		11.30	PP	100.00					
		11.30	PP	100.00					
		11.30	PP	100.00					
					11.55			Extremely weak cleaved purple MUDSTONE weathering to a very stiff very gravelly clay. Mudstone easily broken into fine gravel by hand. (Completely weathered mudstone of the Torpoint Formation)	
	▼	11.80	JG						
		11.80	JP						
		11.90	PP	150.00					
		12.00	SPT	52 (6,9/52 for 225mm)					12

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 7 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Extremely weak cleaved purple MUDSTONE weathering to a very stiff very gravelly clay. Mudstone easily broken into fine gravel by hand. (Completely weathered mudstone of the Torpoint Formation)	
					12.40			Extremely weak cleaved purple MUDSTONE weathering to clayey gravel. Easily broken into fine gravel by hand. Core likely broken up by SPT. (Completely weathered mudstone of the Torpoint Formation)	
					12.85			Extremely weak cleaved purple MUDSTONE with some thin banding of greenish grey mudstone. Fractures at 12.8m, 12.9m, 13.14m, 13.2m and 13.3m dipping at roughly 30 degrees with smooth planar surfaces along cleavage planes. Fracture at 13.2m dipping 60 degrees (cutting through cleavage planes) with stepped smooth surface. From 12.85m to 13.0 very closely spaced fractures, breaking into gravel when removed from core liner. (Mudstone of the Torpoint Formation)	13
					13.30			Very weak cleaved purple grey MUDSTONE. Fractures at 13.43m, 13.66m, 13.8m along cleavage plane with smooth planar surface. At 13.66m surface indicates three transecting fractures (one along cleavage plane). Some evidence of folding resulting in fracture plane along the cleavage to undulate. Fractures cutting cleavage dipping at roughly 40 to 50 degrees with rough undulating surface. Some orange staining along fractures. (Mudstone of the Torpoint Formation)	
					13.80			Extremely weak cleaved purple grey MUDSTONE. Extremely closely fractured with core breaking into gravel/cobble size clasts 1-3mm thick. Cleavage dipping roughly 30 to 40 degrees with fractures typically along cleavage planes with planar rough surfaces but occasionally stepped. Some deformation of cleavage planes from 13.8m to 14.1m suggesting	14

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 8 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak cleaved purple grey MUDSTONE. Extremely closely fractured with core breaking into gravel/cobble size clasts 1-3mm thick. Cleavage dipping roughly 30 to 40 degrees with fractures typically along cleavage planes with planar rough surfaces but occasionally stepped. Some deformation of cleavage planes from 13.8m to 14.1m suggesting some minor faulting. Secondary fracture set with very low persistence dipping in opposite direction to cleavage at 40 to 50 degrees generally with rough planar surfaces but occasionally stepped. (Mudstone of the Torpoint Formation)
					14.30			Extremely weak to very weak cleaved purple grey MUDSTONE containing occasional thick greenish grey laminations. Fractures at 14.3m, 14.5m, 14.53m, 14.6m, 14.72m, 14.9m, 14.92m along cleavage planes with rough planar surfaces. Secondary fracture set dipping 50 to 60 degrees in opposite direction to cleavage generally with rough undulating/stepped surface. Evidence of some deformation at 14.72m as cleavage planes distorted creating curved fracture planes. Fractures infilled with minor deposits of wet light brown clay. Weak zone of rock from 15.07m to 15.12m broken into fine gravel clasts. (Mudstone of the Torpoint Formation)
					15.50			Very weak purple grey MUDSTONE with some thick greenish grey laminations. Mudstone more massive than overlying deposits with fractures occurring in apparent random orientations with more irregular surfaces (generally rough undulating/planar). Near vertical fracture from 15.73m to 15.9m with rough planar surface and minor wet light brown clay infill. Weak zone at 15.96m to 16.04m with rock broken into fine gravel clasts. (Mudstone of the Torpoint Formation)

15

16

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 9 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					16.04			Very weak purple grey MUDSTONE with some thick greenish grey laminations. Mudstone more massive than overlying deposits with fractures occurring in apparent random orientations with more irregular surfaces (generally rough undulating/planar). Near vertical fracture from 15.73m to 15.9m with rough planar surface and minor wet light brown clay infill. Weak zone at 15.96m to 16.04m with rock broken into fine gravel clasts. (Mudstone of the Torpoint Formation)
								Very weak cleaved closely fractured purple grey MUDSTONE. Fracture at 16.3m irregular rough surface with soft light brown infill. Fracture at 16.4m dipping at roughly 50 degrees with rough planar surface and minor clay infill. Fractures from 16.5m to 16.6m along cleavage planes dipping roughly 50 degrees with rough planar surface. Second fracture dipping in opposite direction to cleavage at roughly 20 degrees with rough planar surface. Some orange staining along fracture planes. Weak zones from 16.63m to 16.7m and 16.8m to 16.9m of extremely weak purple and light greenish grey mudstone weathering to gravelly clay. (Mudstone of the Torpoint Formation)
					16.90			Very weak purple MUDSTONE with some thick light greenish grey undulating laminations. Near vertical fracture running from 16.9m to 17.5m with smooth planar surface. (Mudstone of the Torpoint Formation)
					17.15			Very weak to extremely weak cleaved purple MUDSTONE with some thick light greenish grey laminations. Very closely fractured with spacing typically <10mm to 30mm. Most fractures along cleavage planes with smooth planar surface dipping at 30 degrees with some minor light brown clay infill. At 17.3m fracture cutting cleavage planes dipping at roughly 50 degrees with stepped rough surface. (Mudstone of the Torpoint Formation)
					17.80			Very weak thinly cleaved light greenish grey SILTSTONE. Closely fractured with spacing roughly 10-30mm. Fractures generally along cleavage planes with planar smooth surface. (Siltstone of the Torpoint Formation)
					18.00			Continued on Next Sheet

17

18

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-6**

Sheet 10 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 03/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		18.00	SPT	50 (25 for 95mm/50 for 10mm)				End of Borehole at 18.00m	19 20

Remarks

Dynamic sample to refusal at 12.4m and cored onto 18.0mbgl. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel) 16.0m to 18.0m. Seal (50 diameter plain pipe and bentonite) from ground level to 16.0m.

Borehole Log

Borehole No. **B19-7**

Sheet 1 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND comprising firm to stiff brown/ light brown slightly gravelly sandy CLAY with occasional rootlets and limestone cobble at 0.25m. Gravel comprises mudstone and limestone with occasional brick fragments. (Landfill Waste)
					0.25			ODEX arisings of light brown gravelly sandy CLAY with chippings predominantly of mudstone with some quartz and sandstone. (Landfill Waste)
		1.50	SPT	N=15 (1,2/4,4,3,3,4)	1.50			MADE GROUND comprising wet soft to firm brown very gravelly sandy CLAY with occasional rootlets. Gravel predominantly angular platey clasts of mudstone with occasional fragments of blacktop and plastic. Occasional cobble size fragments of concrete and mudstone. (Landfill Waste)
		1.60	JP					
		2.00	JP					

1

2

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 2 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.05	PP	25.00				MADE GROUND comprising wet soft to firm brown very gravelly sandy CLAY with occasional rootlets. Gravel predominantly angular platey clasts of mudstone with occasional fragments of blacktop and plastic. Occasional cobble size fragments of concrete and mudstone. (Landfill Waste)	
		2.05	PP	50.00					
		2.05	PP	50.00					
		2.45	PP	37.50					
		2.45	PP	75.00					
		2.45	PP	75.00					
		2.50	JP		2.55				
					2.60			MADE GROUND comprising stiff light brown gravelly CLAY with cobbles of light green siltstone. (Landfill Waste)	
		2.80	JG					MADE GROUND comprising very stiff dark greenish grey/ black gravely sandy CLAY. Gravel comprises mixture of limestone, concrete, mudstone, brick, and concrete. Some pieces of tyres, piping, and broken glass. (Landfill Waste)	
		2.90	PP	137.50					
		2.90	PP	150.00					
		2.90	PP	162.50	2.95				
		3.00	JP					MADE GROUND comprising wet firm to stiff brown very gravelly (locally gravelly) slightly sandy CLAY. Becoming dark grey from 3.8m to 4.2m. Occasional organic matter (roots and twigs). Gravel predominantly angular platey clasts of mudstone with fragments of brick and occasional blacktop, concrete, sandstone and chert. (Landfill Waste)	3
		3.00 - 5.70	B						
		3.00	SPT	N=16 (3,4/4,4,4,4)					
		3.50	JP						
		4.00	JP						4

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 3 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		4.05	PP	25.00				MADE GROUND comprising wet firm to stiff brown very gravelly (locally gravelly) slightly sandy CLAY. Becoming dark grey from 3.8m to 4.2m. Occasional organic matter (roots and twigs). Gravel predominantly angular platey clasts of mudstone with fragments of brick and occasional blacktop, concrete, sandstone and chert. (Landfill Waste)	
		4.05	PP	50.00					
		4.05	PP	75.00					
		4.10	JG						
		4.50	JP						
		4.50	SPT	N=9 (2,1/2,1,3,3)					
		4.85	PP	25.00					
		4.85	PP	37.50					
		4.85	PP	75.00					
		5.00	JP						5
		5.30	PP	50.00					
		5.30	PP	75.00					
		5.30	PP	75.00					
		5.50	JP						
		5.70 - 6.50	JG		5.70				
		5.70	SPT	0 (75 for 65mm/0 for 0mm)				ODEX arisings of dark greyish brown clay with chippings of mudstone. (Landfill Waste)	
								Continued on Next Sheet	6

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 4 of 14

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								ODEX arisings of dark greyish brown clay with chippings of mudstone. (Landfill Waste)	
		6.20	PP	125.00					
		6.50 - 8.50	B		6.50				
		6.50	SPT	N=21 (4,4/5,5,6,5)				MADE GROUND comprising firm to stiff (locally very stiff) brown/ greyish brown very gravelly (locally gravelly) slightly sandy CLAY with occasional rootlets. Gravel comprises mixture of mudstone, limestone and brick fragments and occasional quartz. Cobbles size fragments of brick at 8.0m. (Landfill Waste)	
		6.60	JP						
		6.90	JG						
		7.00	JP						7
		7.07	PP	100.00					
		7.07	PP	100.00					
		7.07	PP	125.00					
		7.45	PP	100.00					
		7.45	PP	112.50					
		7.45	PP	75.00					
		7.50	JP						
		7.90	PP	150.00					
		7.90	PP	175.00					
		7.90	PP	200.00					
		8.00	SPT	N=32 (12,12/12,9,6,5)	8.00				
								Continued on Next Sheet	8

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 5 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND comprises brownish grey sandy very clayey GRAVEL locally tending to gravelly sandy clay. Some fragments of wood (likely from old pallets) throughout. Gravel and sand predominantly comprise weathered concrete and breeze blocks with occasional mudstone. Cobble size fragment of concrete at 8.5m. (Landfill Waste)
		8.30	JP					
		8.40	JG					
		8.50 - 9.50	JP		8.50			ODEX arisings of dry light grey clayey sand and gravel with chippings of limestone, mudstone and chert and occasional glass fragments. (Landfill Waste)
		9.50 - 11.00	JP		9.50			ODEX arisings of dry brown clayey gravel comprising mudstone and brick fragments. (Landfill Waste)
		9.50	SPT	50 (25 for 75mm/50 for 75mm)				

9

10

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 6 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								ODEX arisings of dry brown clayey gravel comprising mudstone and brick fragments. (Landfill Waste)	
		11.00	SPT	50 (6,18/50 for 15mm)	11.00			MADE GROUND comprising stiff to very stiff light brown (locally dark brown) gravelly slightly sandy CLAY. Cobble size fragment of concrete at 11.5m. Gravel predominantly mudstone with occasional brick fragments. (Landfill Waste)	11
		11.20	JG						
		11.40	JP						
		11.50 - 12.50	JP		11.50			ODEX arisings of dry clayey sand and gravel comprising mudstone, limestone and chert with some fragments of brick. (Landfill Waste)	
								Continued on Next Sheet	12

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 7 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								ODEX arisings of dry clayey sand and gravel comprising mudstone, limestone and chert with some fragments of brick. (Landfill Waste)
		12.50 - 12.70 12.50	JG SPT	N=39 (21,2/9,8,10,12)	12.50			MADE GROUND comprising stiff dark brown mottled light brown and greenish grey gravelly slightly sandy CLAY. Cobble size fragments of concrete. Gravel predominantly mudstone. (Arisings similar to soils recovered from 11m to 11.5m). (Landfill Waste)
					12.70			ODEX arisings of dry brown clayey sand and gravel (similar to arisings from 11m to 12.5m). (Landfill Waste)
		13.20 - 14.00 13.20 - 14.00	JG JP		13.20			ODEX arisings of dry light yellowish brown clayey sandy gravel of mudstone clasts. (Landfill Waste)
		14.00 - 15.50	B		14.00			Continued on Next Sheet

13

14

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 8 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		14.00	SPT	N=17 (3,2/4,4,4,5)				MADE GROUND comprising stiff light brown very gravelly slightly sandy CLAY. Gravel dominated by angular platey mudstone clasts of dark grey, light grey and pink/orange in colour. Very occasional clast of sub rounded/ subangular dark grey limestone. (Landfill Waste)	
		14.05	PP	100.00					
		14.05	PP	100.00					
		14.05	PP	125.00					
		14.10	JP						
		14.50	JP						
		14.80	PP	100.00					
		14.80	PP	100.00					
		14.80	PP	150.00					
		15.00	JP						15
		15.30	JG						
		15.30	PP	125.00					
		15.30	PP	150.00					
		15.30	PP	175.00					
		15.50	JP						
		15.80	PP	100.00					
		15.80	PP	125.00					
		15.80	PP	75.00					
	▼								
		16.00	JP						16

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 9 of 14

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		16.20	PP	175.00				MADE GROUND comprising stiff light brown very gravelly slightly sandy CLAY. Gravel dominated by angular platey mudstone clasts of dark grey, light grey and pink/orange in colour. Very occasional clast of sub rounded/ subangular dark grey limestone. (Landfill Waste)	
		16.20	PP	175.00					
		16.50	JP						
					16.70			MADE GROUND comprising stiff light brown locally mottled grey gravelly slightly sandy CLAY containing singular cobble of dark grey limestone. Gravel comprises fine clasts of angular platey mudstone. (Landfill Waste)	
		16.80	JG						
		16.80	PP	100.00					
		16.80	PP	100.00					
		16.80	PP	100.00					
		16.90	JP						
		17.00	SPT	N=37 (6,8/8,9,10,10)	17.00			MADE GROUND comprising firm to stiff light brown mottled light grey and orange gravelly silty CLAY. Gravel predominantly angular platey mudstone with occasional limestone clast. From 17.9m to 18.0m plastic geotextile/sheeting and some blacktop fragments. (Landfill Waste)	17
		17.20	JG						
		17.35	PP	125.00					
		17.35	PP	137.50					
		17.35	PP	75.00					
		17.50	JP						
		17.80	PP	100.00					
		17.80	PP	75.00					
		17.80	PP	75.00					
		18.00	JP						
								Continued on Next Sheet	18

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 10 of 14

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		18.05	PP	137.50				MADE GROUND comprising firm to stiff light brown mottled light grey and orange gravelly silty CLAY. Gravel predominantly angular platey mudstone with occasional limestone clast. From 17.9m to 18.0m plastic geotextile/sheeting and some blacktop fragments. (Landfill Waste)
		18.05	PP	150.00				
		18.05	PP	150.00				
					18.20			MADE GROUND comprising soft to firm purple brown gravelly (locally very gravelly) slightly sandy silty CLAY with occasional rootlets. Gravel predominantly angular platey mudstone. (Landfill Waste)
		18.50 - 19.20	B					
		18.50	SPT	N=47 (10,9/11,18,9,9)				
		18.60	JP					
		18.70	JG					
		18.95	PP	50.00				
		18.95	PP	62.50				
		18.95	PP	75.00				
		19.00	JP					
					19.20			MADE GROUND comprising firm to stiff purple/light brown mottled light grey and purple very gravelly slightly sandy CLAY. Gravel comprises angular platey mudstone. Singular piece of concrete at 19.5m. (Possible reworked mudstone of the Torpoint Formation)
		19.40	PP	100.00				
		19.40	PP	150.00				
		19.40	PP	75.00				
		19.50	JP					
		19.60	JG					
		20.00	SPT	N=39 (5,6/9,7,13,10)				

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 11 of 14

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.10	PP	100.00				MADE GROUND comprising firm to stiff purple/light brown mottled light grey and purple very gravelly slightly sandy CLAY. Gravel comprises angular platey mudstone. Singular piece of concrete at 19.5m. (Possible reworked mudstone of the Torpoint Formation)	
		20.10	PP	100.00					
		20.10	PP	75.00					
					20.30			Stiff to very stiff purple very gravelly silty CLAY. Gravel comprises extremely weak angular platey mudstone with some relic structure. (Completely weathered mudstone of the Torpoint Formation)	
		20.50	PP	200.00					
		20.50	PP	200.00					
		20.50	PP	200.00					
					20.60			Stiff to very stiff light greenish brown very gravelly silty CLAY. Gravel comprises angular platey mudstone and siltstone. (Completely weathered interbedded mudstone and siltstone of the Torpoint Formation)	
					21.00			Extremely weak cleaved SILTSTONE weathered to very clayey fine gravel. Cleavage dipping roughly 20 degrees. (Completely weathered siltstone of the Torpoint Formation)	21
		21.50	SPT	60 (25 for 75mm/60 for 90mm)	21.50			Extremely weak cleaved extremely closely fractured light green SILTSTONE with thick light brown near vertical laminations. Very narrow veins (2 to 4mm) of quartz and dark reddish-brown mineral (possible iron deposits) dipping at roughly 40 degrees. Weak zones at 22.0m to 22.05m and 22.3 to 22.5m where rock has weathered to gravelly clay. (Siltstone of the Torpoint Formation)	
								Continued on Next Sheet	22

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 12 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak cleaved extremely closely fractured light green SILTSTONE with thick light brown near vertical laminations. Very narrow veins (2 to 4mm) of quartz and dark reddish-brown mineral (possible iron deposits) dipping at roughly 40 degrees. Weak zones at 22.0m to 22.05m and 22.3 to 22.5m where rock has weathered to gravelly clay. (Siltstone of the Torpoint Formation)
					22.50			Extremely weak to very weak cleaved extremely closely fractured light green SILTSTONE with occasional very narrow quartz veins with inclusions of black minerals (possibly manganese or iron). Veins present between 22.5m and 22.9m dipping at roughly 70 degrees. Cleavage near vertical with slight undulation. Fractures along cleavage very closely spaced (20, 25, 65mm) with planar rough surfaces but becoming undulating below 23.5m. Minor light brown clay infill and orange staining along fracture surfaces. Occasional fractures cutting cleavage with low persistence (cut by cleavage plane fractures) with rough stepped surfaces and minor clay infill. (Siltstone of the Torpoint Formation)
								Continued on Next Sheet

23

24

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 13 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					24.10			Extremely weak to very weak cleaved extremely closely fractured light green SILTSTONE with occasional very narrow quartz veins with inclusions of black minerals (possibly manganese or iron). Veins present between 22.5m and 22.9m dipping at roughly 70 degrees. Cleavage near vertical with slight undulation. Fractures along cleavage very closely spaced (20, 25, 65mm) with planar rough surfaces but becoming undulating below 23.5m. Minor light brown clay infill and orange staining along fracture surfaces. Occasional fractures cutting cleavage with low persistence (cut by cleavage plane fractures) with rough stepped surfaces and minor clay infill. (Siltstone of the Torpoint Formation)
								Very weak cleaved light green SILTSTONE with thick orange and dark reddish-brown laminations and very narrow quartz veins from 26.2m. Cleavage planes undulating dipping roughly 30 degrees. Fractures along cleavage planes from 24.5m to 25.6m closely spaced (13, 20, 38mm) with undulating rough surfaces. orange staining along surfaces. 24.1m to 24.3m comprises dark reddish-brown mineralised zone (possible iron concretions). At 24.3m fracture planar rough surface dipping 60 degrees with soft clay infill at base don mineralised zone. At 25.03m to 25.6m fractures with planar rough surfaces and some orange staining. Fractures from 26.02m to 27.2m very closely spaced (2, 20, 40mm) dipping at 40 to 50 degrees with rough planar surfaces. (Siltstone of the Torpoint Formation)
								25
								Continued on Next Sheet
								26

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-7**

Sheet 14 of 14

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 17/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Very weak cleaved light green SILTSTONE with thick orange and dark reddish-brown laminations and very narrow quartz veins from 26.2m. Cleavage planes undulating dipping roughly 30 degrees. Fractures along cleavage planes from 24.5m to 25.6m closely spaced (13, 20, 38mm) with undulating rough surfaces. orange staining along surfaces. 24.1m to 24.3m comprises dark reddish-brown mineralised zone (possible iron concretions). At 24.3m fracture planar rough surface dipping 60 degrees with soft clay infill at base don mineralised zone. At 25.03m to 25.6m fractures with planar rough surfaces and some orange staining. Fractures from 26.02m to 27.2m very closely spaced (2, 20, 40mm) dipping at 40 to 50 degrees with rough planar surfaces. (Siltstone of the Torpoint Formation)	27
		27.30	SPT	50 (25 for 85mm/50 for 60mm)	27.30			End of Borehole at 27.30m	28

Remarks

Dynamic sample to refusal at 22.1m and rotary cored from 22.3m to 27.3.0mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 27m in sand layer from 26.3m to 27.3m, Piezometer 2 at 18.5m in sand layer from 18.7m to 17.7m, Piezometer 3 at 13.7m in sand layer from 13.0m to 14.0m, and Piezometer 4 at 2.8m in sand layer from 2.0m to 3.0m. Hit water during 15.9m to 17m dynamic sample run, the water then rose to 13.9m after 5 mins.

Borehole Log

Borehole No. **B19-8**

Sheet 1 of 7

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 14/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Moss over MADE GROUND comprising stiff to firm brown slightly sandy slightly gravelly silty CLAY with occasional rootlets. Gravel comprises mudstone and fragments of brick. (Landfill Waste)
					0.20			MADE GROUND comprising firm brown slightly sandy very gravelly CLAY tending to very clayey gravel. Gravel predominantly grey angular platey clasts of mudstone. (Landfill Waste)
		0.40	JP					
					0.45			MADE GROUND comprising stiff (locally firm) brown locally mottled yellow brown and grey very gravelly sandy CLAY. Gravel comprises a mixture of mudstone, sandstone, quartz with fragments of brick and blacktop. (Landfill Waste)
		0.90	PP	100.00				
		0.90	PP	150.00				
		0.90	PP	175.00				
		1.00	JP					
		1.10	PP	1250.00				
		1.10	PP	150.00				
		1.10	PP	200.00	1.15			MADE GROUND comprising firm to stiff brownish grey very gravelly slightly sandy CLAY tending to very clayey gravel. Gravel dominated by dark grey angular clasts of mudstone with occasional sandstone and blacktop fragments. (Landfill Waste)
		1.50	JP					
		1.50	SPT	N=8 (2,2/3,2,1,2)				
					1.65			MADE GROUND comprising brown/greyish brown very gravelly slightly sandy (locally sandy) CLAY with occasional cobbles of quartz and concrete. Gravel predominantly angular platey mudstone with some limestone, quartz and fragments of concrete, brick and blacktop. Slight odour of hydrocarbons at 3.3m. (Landfill Waste)
		1.70	JG					
		2.00	JP					

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 6.0m and rotary cored from 6.3m to 13.65m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 11.2m to 13.65m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.65m. 19mm diameter piezometer with 300mm long porous tips installed at 4.1m in sand layer from 4.5m to 3.4m,

Borehole Log

Borehole No. **B19-8**

Sheet 2 of 7

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 14/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.50	JP					MADE GROUND comprising brown/greyish brown very gravelly slightly sandy (locally sandy) CLAY with occasional cobbles of quartz and concrete. Gravel predominantly angular platey mudstone with some limestone, quartz and fragments of concrete, brick and blacktop. Slight odour of hydrocarbons at 3.3m. (Landfill Waste)	
		2.60	PP	175.00					
		2.60	PP	200.00					
		2.60	PP	200.00					
		3.00	JP						3
		3.00	SPT	N=10 (3,3/3,2,3,2)					
		3.30	JG						
		3.40	JP						
		3.40	PP	150.00					
		3.40	PP	162.50					
		3.40	PP	175.00					
		3.55 - 5.00	B		3.55			MADE GROUND comprising purple mottled light grey clayey (locally very clayey) fine GRAVEL comprising angular platey mudstone clasts. Contains occasional fragments of blacktop with lenses of stiff brown clay from 4.5m. (Landfill Waste)	
								Continued on Next Sheet	4

Remarks

Dynamic sample to refusal at 6.0m and rotary cored from 6.3m to 13.65m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 11.2m to 13.65m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.65m. 19mm diameter piezometer with 300mm long porous tips installed at 4.1m in sand layer from 4.5m to 3.4m,

Borehole Log

Borehole No. **B19-8**

Sheet 3 of 7

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 14/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.50	JP					MADE GROUND comprising purple mottled light grey clayey (locally very clayey) fine GRAVEL comprising angular platey mudstone clasts. Contains occasional fragments of blacktop with lenses of stiff brown clay from 4.5m. (Landfill Waste)
		4.50	SPT	N=9 (3,3/3,2,2,2)				
					5.00			
		5.10	PP	75.00				MADE GROUND comprising stiff dark greenish brown gravelly (locally very gravelly) CLAY with occasional rootlets. Gravel comprises a mixture of mudstone, sandstone and fragments of blacktop, concrete with occasional pieces of pottery. (Landfill Waste)
		5.20	JP					
		5.30	PP	50.00				
		5.30	PP	50.00				
		5.30	PP	75.00				
		5.35	JG					
					5.40			
		5.60	JG					Extremely weak cleaved purple mudstone weathering to fine GRAVEL. Breaks in hand into fine gravel. (Completely weathered mudstone of the Torpoint Formation)
		5.70	JP					
								Continued on Next Sheet

5

6

Remarks

Dynamic sample to refusal at 6.0m and rotary cored from 6.3m to 13.65m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 11.2m to 13.65m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.65m. 19mm diameter piezometer with 300mm long porous tips installed at 4.1m in sand layer from 4.5m to 3.4m,

Borehole Log

Borehole No. **B19-8**

Sheet 4 of 7

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 14/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		6.00	SPT	50 (25 for 125mm/50 for 135mm)				Extremely weak cleaved purple mudstone weathering to fine GRAVEL. Breaks in hand into fine gravel. (Completely weathered mudstone of the Torpoint Formation)
					6.30			Extremely weak cleaved extremely closely fractured purple MUDSTONE. Fractures along cleavage planes extremely closely spaced (2,10,100mm) dipping 50 to 60 degrees with planar smooth surfaces and minor light brown clay infill. Very closely spaced fractures dipping at 60 to 70 degrees cross cutting cleavage with planar (locally stepped at 6.05m) rough surface and minor light brown clay infill. At 6.74m fractured infilled with 5mm thickness of soft light brown clay. (Mudstone of the Torpoint Formation)
					7.35			Extremely weak to very weak cleaved extremely closely fractured purple MUDSTONE. Cleavage dipping roughly 50 degrees. Fractures along cleavage planes extremely closely spaced (7, 70, 120mm) with planar smooth surfaces and minor clay infill. Medium spaced (150, 300, 400mm) near horizontal fractures with irregular rough surfaces showing low persistence at 7.9m. At 7.45m near vertical stepped rough fracture. At 8.2m 3mm thick infill of soft light brown clay. Highly fractured zone at 8.45m to 8.49m with mudstone broken into gravel size clasts. (Mudstone of the Torpoint Formation)

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 6.0m and rotary cored from 6.3m to 13.65m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 11.2m to 13.65m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.65m. 19mm diameter piezometer with 300mm long porous tips installed at 4.1m in sand layer from 4.5m to 3.4m,

Borehole Log

Borehole No. **B19-8**

Sheet 5 of 7

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 14/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak to very weak cleaved extremely closely fractured purple MUDSTONE. Cleavage dipping roughly 50 degrees. Fractures along cleavage planes extremely closely spaced (7, 70, 120mm) with planar smooth surfaces and minor clay infill. Medium spaced (150, 300, 400mm) near horizontal fractures with irregular rough surfaces showing low persistence at 7.9m. At 7.45m near vertical stepped rough fracture. At 8.2m 3mm thick infill of soft light brown clay. Highly fractured zone at 8.45m to 8.49m with mudstone broken into gravel size clasts. (Mudstone of the Torpoint Formation)

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Continued on Next Sheet

10

Remarks

Dynamic sample to refusal at 6.0m and rotary cored from 6.3m to 13.65m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 11.2m to 13.65m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.65m. 19mm diameter piezometer with 300mm long porous tips installed at 4.1m in sand layer from 4.5m to 3.4m,

Borehole Log

Borehole No. **B19-8**

Sheet 6 of 7

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 14/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.10			Extremely weak to very weak cleaved extremely closely fractured purple MUDSTONE. Cleavage dipping roughly 50 degrees. Fractures along cleavage planes extremely closely spaced (7, 70, 120mm) with planar smooth surfaces and minor clay infill. Medium spaced (150, 300, 400mm) near horizontal fractures with irregular rough surfaces showing low persistence at 7.9m. At 7.45m near vertical stepped rough fracture. At 8.2m 3mm thick infill of soft light brown clay. Highly fractured zone at 8.45m to 8.49m with mudstone broken into gravel size clasts. (Mudstone of the Torpoint Formation)
					10.35			Extremely weak cleaved purple MUDSTONE weathering into fine gravelly clay. Top contact irregular with roughly undulating surface and 3-4mm thick infill of soft clay. (Mudstone of the Torpoint Formation)
								Extremely weak cleaved very closely fractured purple MUDSTONE. Fractures along cleavage planes very closely spaced (20, 20, 130mm) with planar rough surfaces and minor clay infill. At 10.6m and 10.75m fractures with irregular (undulating rough) surfaces. (Mudstone of the Torpoint Formation)
					10.85			Extremely weak to very weak cleaved very closely fractured purple MUDSTONE with occasional lenses (5-10mm long) of orange brown mudstone. Fractures along cleavage dipping 50 degrees very closely spaced (5, 20, 80mm) with planar smooth surfaces and minor light brown clay infill.
								11
								12

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 6.0m and rotary cored from 6.3m to 13.65m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 11.2m to 13.65m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.65m. 19mm diameter piezometer with 300mm long porous tips installed at 4.1m in sand layer from 4.5m to 3.4m,

Borehole Log

Borehole No. **B19-8**

Sheet 7 of 7

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 14/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					12.15			Extremely weak to very weak cleaved very closely fractured purple MUDSTONE with occasional lenses (5-10mm long) of orange brown mudstone. Fractures along cleavage dipping 50 degrees very closely spaced (5, 20, 80mm) with planar smooth surfaces and minor light brown clay infill.
								Very weak cleaved closely fractured purple MUDSTONE with narrow (10mm) quartz veins dipping roughly 80 degrees and very closely spaced with some black mineral inclusions (possible manganese). Fractures along cleavage planes closely spaced (5, 200, 380mm) with planar rough surface. Weak zone at 13.1m to 13.2m, rock broken into medium gravel clasts with some light brown clay infill. Near vertical fracture from 13.2m to 13.5m with undulating rough surface and some soft light brown clay infill. (Mudstone of the Torpoint Formation)
					13.65			End of Borehole at 13.65m

13

14

Remarks

Dynamic sample to refusal at 6.0m and rotary cored from 6.3m to 13.65m. Borehole installed with groundwater monitoring well. Response zone (50mm diameter slotted pipe and gravel backfill) 11.2m to 13.65m. Seal (50 diameter plain pipe and bentonite backfill) from ground level to 13.65m. 19mm diameter piezometer with 300mm long porous tips installed at 4.1m in sand layer from 4.5m to 3.4m,

Borehole Log

Borehole No. **B19-9**

Sheet 1 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	PP	100.00				Moss over MADE GROUND comprising firm to stiff brown slightly sandy very gravelly CLAY with occasional cobble size fragments of concrete. Occasional organic matter (roots and rootlets) within the top 0.5m. Gravel comprises mixture of concrete, blacktop mudstone and brick. (Landfill Waste)	
		0.30	PP	100.00					
		0.30	PP	100.00					
		0.50	JP						
		0.80	PP	100.00					
		0.80	PP	50.00					
		0.80	PP	62.50					
		1.00	JP						1
		1.50	JP						
		1.50	SPT	N=21 (1,4/4,5,6,6)					
		1.80	JG						
					1.90			MADE GROUND comprising very soft dark greenish grey slightly sandy slightly gravelly CLAY with a slight organic odour. Gravel comprises angular platey clasts	
		2.00	JP						2

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 2 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.00	PP	12.50				MADE GROUND comprising very soft dark greenish grey slightly sandy slightly gravelly CLAY with a slight organic odour. Gravel comprises angular platey clasts of mudstone. (Landfill Waste)	
		2.00	PP	12.50					
		2.00	PP	25.00					
		2.30	PP	12.50					
		2.30	PP	12.50					
		2.30	PP	25.00					
					2.50				
		2.55	PP	100.00				MADE GROUND comprising firm light brown very gravelly CLAY. Gravel dominated with angular platey mudstone with occasional quartz. No recovery from 3m to 4m. Zone of brown clay with gravel size fragments of brick from 4m to 4.3m. (Landfill Waste)	
		2.55	PP	50.00					
		2.55	PP	750.00					
		2.60	JP						
		2.70	JG						
		3.00	SPT	N=15 (2,2/3,4,4,4)					3
		4.00	JP					Continued on Next Sheet	4

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 3 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.35	PP	100.00				MADE GROUND comprising firm light brown very gravelly CLAY. Gravel dominated with angular platey mudstone with occasional quartz. No recovery from 3m to 4m. Zone of brown clay with gravel size fragments of brick from 4m to 4.3m. (Landfill Waste)
		4.35	PP	100.00				
		4.35	PP	125.00				
		4.50	SPT	N=39 (5,7/7,10,11,11)	4.50			
								MADE GROUND comprising soft to very soft dark greenish brown sandy gravelly CLAY with occasional cobbles of brick and concrete. Gravel comprises a mixture of granite and mudstone with fragments of brick and concrete. No recovery from 6m to 6.25m. Firm zone from 6.7m to 6.9m. (Landfill Waste)
		5.00	JP					
		5.00 - 7.30	B					
		5.50	JP					
		5.60	JG					
		5.90	JP					
		6.00	SPT	N=9 (4,2/2,2,2,3)				

5

6

Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 4 of 10

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client: Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		6.30	JG					MADE GROUND comprising soft to very soft dark greenish brown sandy gravelly CLAY with occasional cobbles of brick and concrete. Gravel comprises a mixture of granite and mudstone with fragments of brick and concrete. No recovery from 6m to 6.25m. Firm zone from 6.7m to 6.9m. (Landfill Waste)	
		6.50	JP						
		7.00	JP						7
					7.30			MADE GROUND comprising firm light yellow brown slightly sandy gravelly CLAY. Gravel comprises mudstone with occasional sandstone and concrete fragments. No recovery from 7.7m to 8m. Dynamic sampling refused at 8m. (Landfill Waste)	
		7.50	JP						
		7.50	SPT	N=25 (1,3/4,4,3,14)					
		7.60	JG						
					8.00			Continued on Next Sheet	8

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 5 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								ODEX arisings of brown clay with some brick fragments. (Landfill Waste)	
		9.00 - 10.50	B		9.00				9
		9.00	SPT	N=20 (4,6/5,5,5,5)				MADE GROUND comprising firm (locally stiff) brown slightly sandy very gravelly CLAY with medium cobble content. Cobbles comprise granite, concrete and brick. Gravel comprises a mixture of mudstone, brick, concrete, blacktop and occasional granite. (Landfill Waste)	
		9.10	JP						
		9.30	PP	75.00					
		9.30	PP	75.00					
		9.30	PP	75.00					
		9.40	JG						
		9.60	JP						
								Continued on Next Sheet	10

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 6 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.30	PP	100.00				MADE GROUND comprising firm (locally stiff) brown slightly sandy very gravelly CLAY with medium cobble content. Cobbles comprise granite, concrete and brick. Gravel comprises a mixture of mudstone, brick, concrete, blacktop and occasional granite. (Landfill Waste)
		10.30	PP	125.00				
		10.30	PP	150.00				
		10.40	JP					
		10.50	SPT	N=17 (1,3/3,3,5,6)	10.50			
		10.60	PP	50.00				MADE GROUND comprises firm (with lenses of soft and stiff) gravelly silty CLAY with occasional pieces of wood (fragments of old planks and pallets). Gravel comprises mudstone and sandstone with occasional broken glass and fragments of plastic. (Landfill Waste)
		10.60	PP	50.00				
		10.60	PP	75.00				
		10.70	JG					
		10.80	PP	100.00				
		10.80	PP	75.00				
		10.90	JP					
								11
					11.10			
		11.15	JP					MADE GROUND comprising firm to stiff light yellow brown slightly sandy gravelly CLAY. Gravel comprises mudstone and concrete fragments. (Landfill Waste)
					11.20			ODEX arisings of brown clay with some brick and concrete fragments. (Landfill Waste)
					12.00			Continued on Next Sheet
								12

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 7 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		12.00	SPT	51 (9,15/51 for 165mm)				MADE GROUND comprising stiff purple brown sandy clayey GRAVEL with lenses of stiff clay. Gravel comprises brick and concrete with some mudstone, granite and blacktop fragments. Occasional cobble size fragments of granite and brick. (Landfill Waste)
		12.15	JP					
		12.25 - 12.50	JG		12.25			ODEX arisings predominantly fragments of brick and concrete with occasional chert and mudstone. (Landfill Waste)
					12.75			ODEX arisings of platey angular gravel clasts of mudstone. (Possibly reworked or weathered mudstone of the Torpoint Formation)
		13.30	SPT	0 (75 for 115mm/0 for 0mm)	13.30			Extremely weak cleaved extremely closely fractured purple (locally light greenish grey) MUDSTONE weathering to clayey fine gravel of platey mudstone clasts. Cleavage dipping roughly 20 degrees. (Completely weathered mudstone of the Torpoint Formation)

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 8 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Extremely weak cleaved extremely closely fractured purple (locally light greenish grey) MUDSTONE weathering to clayey fine gravel of platey mudstone clasts. Cleavage dipping roughly 20 degrees. (Completely weathered mudstone of the Torpoint Formation)
					14.20			Extremely weak cleaved extremely closely fractured purple MUDSTONE. Fractures along cleavage planes extremely closely spaced (<1, 10, 50mm). Surfaces planar with minor clay infill. Fractures perpendicular to cleavage extremely closely spaced (3, 10, 70mm) but very low persistence typically cut by fractures along cleavage planes. fracture surfaces typically stepped smooth but locally planar. Occasional clay infill of light brown clay. Weak zones from 14.35m to 14.42m and 14.85m to 14.95m of rock weathered to clayey gravel. (Mudstone of the Torpoint Formation)
					15.25			Very weak cleaved very closely fractured purple MUDSTONE. Cleavage dipping 40 to 50 degrees. Two main fracture sets. The first very closely to closely spaced (20, 25, 160mm) along cleavage planes dipping 40 to 50 degrees with planar smooth (occasionally rough) surfaces. Minor light brown clay infill. The second set medium spaced (70, 200, 600) cutting across cleavage planes. Fracture surfaces rough stepped with some clay infill. Fracture at 14.85m dipping at 20 to 30 degrees along top of light greenish grey band with some soft light brown clay infill. Fracture at 15.5m steeply dipping at roughly 70 degrees with planar rough surface and infill of soft light brown clay. At 16.93 50mm thick layer of soft light brown clay infill dipping roughly 20 degrees (possible bedding contact). Slight weak zone at 18.7m to 18.9m of extremely weak mudstone weathering to clayey gravel. (Mudstone of the Torpoint Formation)
								Continued on Next Sheet

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Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 9 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very weak cleaved very closely fractured purple MUDSTONE. Cleavage dipping 40 to 50 degrees. Two main fracture sets. The first very closely to closely spaced (20, 25, 160mm) along cleavage planes dipping 40 to 50 degrees with planar smooth (occasionally rough) surfaces. Minor light brown clay infill. The second set medium spaced (70, 200, 600) cutting across cleavage planes. Fracture surfaces rough stepped with some clay infill. Fracture at 14.85m dipping at 20 to 30 degrees along top of light greenish grey band with some soft light brown clay infill. Fracture at 15.5m steeply dipping at roughly 70 degrees with planar rough surface and infill of soft light brown clay. At 16.93 50mm thick layer of soft light brown clay infill dipping roughly 20 degrees (possible bedding contact). Slight weak zone at 18.7m to 18.9m of extremely weak mudstone weathering to clayey gravel. (Mudstone of the Torpoint Formation)

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Continued on Next Sheet

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

Borehole Log

Borehole No. **B19-9**

Sheet 10 of 10

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords:	Hole Type BH
Location:	Eales Farm, Tamar View Industrial Estate, Saltash		Level:	Scale 1:10
Client:	Burcombe Haulage		Dates: 10/02/2020	Logged By RA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very weak cleaved very closely fractured purple MUDSTONE. Cleavage dipping 40 to 50 degrees. Two main fracture sets. The first very closely to closely spaced (20, 25, 160mm) along cleavage planes dipping 40 to 50 degrees with planar smooth (occasionally rough) surfaces. Minor light brown clay infill. The second set medium spaced (70, 200, 600) cutting across cleavage planes. Fracture surfaces rough stepped with some clay infill. Fracture at 14.85m dipping at 20 to 30 degrees along top of light greenish grey band with some soft light brown clay infill. Fracture at 15.5m steeply dipping at roughly 70 degrees with planar rough surface and infill of soft light brown clay. At 16.93 50mm thick layer of soft light brown clay infill dipping roughly 20 degrees (possible bedding contact). Slight weak zone at 18.7m to 18.9m of extremely weak mudstone weathering to clayey gravel. (Mudstone of the Torpoint Formation)
					19.10			End of Borehole at 19.10m

19

20

Remarks

Dynamic sample to refusal at 12.25m, ODEX drilling from 12.25m to 13.3m and rotary cored from13.3m to 19.1mbgl. Borehole installed with four piezometers (19mm diameter 300mm long porous tips) for groundwater monitoring. Piezometer 1 at 18.9m in sand layer from 18.0m to 19.1m, Piezometer 2 at 12.4m in sand layer from 11.6m to 12.4m, Piezometer 3 at 10.2m in sand layer from 9.4m to 10.4m, and Piezometer 4 at 6.2m in sand layer from 5.4m to 6.4m.

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Trial Pit No.
TP01

Sheet 1 of 1

Project Name:	Project No:	Co-ords:	Date:
Eales Farm	12933	0E - 0N	21/04/2016
		Level: 0.00 m AOD	

Location:	Dimensions:	Scale:
Saltash	2.50m / 0.70m / Orientation: 340 Degrees	1:25
Client: Downderry Construction Ltd		Logged by: RS

Samples & In Situ Testing				Depth (m)	Level m AOD	Legend	Stratum Description	Ground Water Level
Depth (m)	Type	No	Results/Remarks					
							MADE GROUND comprising dense light grey clayey angular clast supported medium strong mudstone GRAVEL. (MG)	
				1.00	-1.00		MADE GROUND comprising medium dense dark grey slightly clayey angular clast supported GRAVEL. Clasts are randomly orientated, tabular to equant showing a well defined interlocking texture. Clasts are medium strong mudstone. (MG)	
				2.50	-2.50		Trial pit complete at 2.50 m	

General Remarks:

Method/Plant Used: Tracked excavator

Groundwater: None encountered

Shoring / Stability: Stable

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Trial Pit No.
TP02

Sheet 1 of 1

Project Name:	Project No:	Co-ords: -	Date:
Eales Farm	12933	Level: -	21/04/2016

Location:	Dimensions:	Scale:
Saltash	2.50m x 0.70m, Orientation: 290 Degrees	1:25
Client: Downderry Construction Ltd		Logged by: RS

Samples & In Situ Testing				Depth (m)	Level m AOD	Legend	Stratum Description	Ground Water Level
Depth (m)	Type	No	Results/Remarks					
							MADE GROUND comprising dense light grey clayey angular clast supported medium strong mudstone GRAVEL. (MG)	
				1.10			MADE GROUND comprising medium dense dark grey slightly clayey angular clast supported GRAVEL. Clasts are randomly orientated, tabular to equant showing a well defined interlocking texture. Clasts are medium strong mudstone. (MG)	
				2.50			Trial pit complete at 2.50 m	

General Remarks:	Method/Plant Used: Tracked excavator
Groundwater: None encountered	Shoring / Stability: Stable

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Trial Pit No.
TP03

Sheet 1 of 1

Project Name:	Project No:	Co-ords: -	Date:
Eales Farm	12933	Level: -	21/04/2016

Location:	Dimensions:	Scale:
Saltash	2.50m / 0.70m / Orientation: 70 Degrees	1:25
Client: Downderry Construction Ltd		Logged by: RS

Samples & In Situ Testing				Depth (m)	Level m AOD	Legend	Stratum Description	Ground Water Level
Depth (m)	Type	No	Results/Remarks					
							MADE GROUND comprising medium dense light brown clayey angular clast supported GRAVEL. Clasts are randomly orientated, tabular to equant showing a well defined interlocking texture. Clasts are medium strong mudstone. (MG)	
				2.70			Trial pit complete at 2.70 m	

General Remarks:	Method/Plant Used: Tracked excavator
Groundwater: None encountered	Shoring / Stability: Stable

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Trial Pit No.
TP04

Sheet 1 of 1

Project Name:	Project No:	Co-ords: -	Date:
Eales Farm	12933	Level: -	21/04/2016

Location:	Dimensions:	Scale:
Saltash	2.50m / 0.70m / Orientation: 40 Degrees	1:25
Client: Downderry Construction Ltd		Logged by: RS

Samples & In Situ Testing				Depth (m)	Level m AOD	Legend	Stratum Description	Ground Water Level
Depth (m)	Type	No	Results/Remarks					
							MADE GROUND comprising medium dense light grey clayey angular, medium strong mudstone GRAVEL. (MG)	
				0.90			MADE GROUND comprising medium dense light brown clayey angular clast supported GRAVEL. Clasts are randomly orientated, tabular to equant showing a well defined interlocking texture. Clasts are medium strong mudstone. (MG)	
				2.80			Trial pit complete at 2.80 m	

General Remarks:	Method/Plant Used: Tracked excavator
Groundwater: None encountered	Shoring / Stability: Stable

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Trial Pit No.
TP05

Sheet 1 of 1

Project Name:	Project No:	Co-ords: -	Date:
Eales Farm	12933	Level: -	21/04/2016

Location:	Dimensions:	Scale:
Saltash	2.50m; 0.70m; Orientation: 20 Degrees	1:25
Client: Downderry Construction Ltd		Logged by: RS

Samples & In Situ Testing				Depth (m)	Level m AOD	Legend	Stratum Description	Ground Water Level
Depth (m)	Type	No	Results/Remarks					
							MADE GROUND comprising medium dense light grey clayey angular, medium strong mudstone GRAVEL. (MG)	
				1				1
				1.30			MADE GROUND comprising medium dense light brown clayey angular clast supported GRAVEL. Clasts are randomly orientated, tabular to equant showing a well defined interlocking texture. Clasts are medium strong mudstone. (MG)	
				2				2
				3.00			Trial pit complete at 3.00 m	
				3				3
				4				4

General Remarks:

Method/Plant Used: Tracked excavator

Groundwater: None encountered

Shoring / Stability: Stable

Trial Pit Log

			TrialPit No TP01 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241293.00 - 60441.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.80 — 3.00 × 1.30	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.25	ES		0.40			MADE GROUND comprising soft to firm friable brown sandy gravelly CLAY with some roots and occasional plastic sheeting. Gravel comprises mudstone and sandstone (LANDFILL WASTE).
				2.80			MADE GROUND comprising dense purple (locally light grey) slightly sandy clayey GRAVEL with occasional fragments concrete. Gravel comprises medium weak mudstone clast in random orientations. Rebar and occasional plank of wood at around 2.4m (LANDFILL WASTE).
	3.10	ES					MADE GROUND comprising medium dense purple mottled light grey slightly sandy very clayey GRAVEL tending to very gravelly CLAY with occasional plant material and rebar (LANDFILL WASTE).
	3.70	ES		3.80			End of Pit at 3.80m

Remarks: No groundwater encountered. Trial pit stopped at 3.8m as reached target depth.

Stability: Sides stable.

Trial Pit Log

			TrialPit No TP02 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241277.00 - 60416.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.00 — 2.60 × 1.30	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.15	ES		0.20			MADE GROUND comprising firm friable sandy gravelly CLAY with abundant roots and metal piping, brick and concrete fragments. Gravel comprises angular to subangular sandstone, quartz and mudstone (LANDFILL WASTE).
				0.60			MADE GROUND comprising firm to stiff brown slightly sandy very gravelly CLAY with occasional brick fragments rebar and roots. Gravel comprises angular mudstone with some subangular sandstone (LANDFILL WASTE).
				1.70			MADE GROUND comprising dense purple (locally light grey) slightly clayey GRAVEL with medium to high cobble content of platey angular mudstone (LANDFILL WASTE).
	2.30	ES					MADE GROUND comprising loose to medium dense purple (locally light grey) clayey GRAVEL with occasional cobbles of platey mudstone and subrounded granite. Gravel comprises angular platey mudstone. Some plastic sheeting, wooden planks and concrete blocks below 2.7m (LANDFILL WASTE).
	3.10	ES					
	3.70	ES					
				4.00			End of Pit at 4.00m

1 2 3 4 5

Remarks: No groundwater encountered. Trial pit stopped at 4.0m as reached target depth.

Stability: Some side collapse in the cobbly gravel layer.

Trial Pit Log

			TrialPit No TP03 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241246.00 - 60376.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.20 — 3.20 / 1.30	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70	ES					MADE GROUND comprising bricks, wooden posts, concrete, rebar, and metal sheeting. Firm to stiff slightly sandy clayey GRAVEL with occasional roots. Gravel comprises mudstone, sandstone, granite and quartz (LANDFILL WASTE).
				2.00			
	2.20	ES					MADE GROUND comprising dense yellowish brown clayey sandy GRAVEL with fragments of black top, bricks and concrete along with metal sheeting and rebar. Occasional wooden planks and plastic sheeting (LANDFILL WASTE).
				2.70			
	2.85	ES					MADE GROUND comprising soft very dark brown to black slightly sandy CLAY with abundant organic matter and musk odour (LANDFILL WASTE).
				2.90			MADE GROUND comprising medium dense purple clayey GRAVEL with occasional boulders. Gravel comprises platey angular mudstone. Possible reworked Torpoint Formation (LANDFILL WASTE).
	3.60	ES					
				4.20			End of Pit at 4.20m

Remarks: No groundwater encountered. Trial pit stopped at 4.2m as reached target depth.

Stability: Some voids noted between the in-situ rubble in trial pit side walls.

Trial Pit Log

TrialPit No: TP04
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241231.00 - 60403.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): 3.30 x 1.30 Depth 3.60	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.60	ES					MADE GROUND comprising firm to stiff light brown slightly sandy very gravelly CLAY with some roots. Gravel comprises angular to subangular of mudstone, granite and occasional sandstone (LANDFILL WASTE).
	1.20	ES		1.10			MADE GROUND comprising medium dense dark grey slightly sandy very clayey GRAVEL with high content of organic matter, including large tree branch (1.4m long) and tree stump. Gravel comprises mudstone granite and sandstone along with occasional brick and concrete fragments (LANDFILL WASTE).
	2.10	ES					
				2.60			MADE GROUND comprising firm wet light brown slightly sandy very gravelly CLAY. Gravel comprises angular mudstone (LANDFILL WASTE).
	3.50	ES		3.40			MADE GROUND comprising medium dense purple slightly sandy very clayey GRAVEL of mudstone. Car tyre and plastic matting at 3.5m (LANDFILL WASTE).
				3.60			End of Pit at 3.60m

Remarks: No groundwater encountered. Trial pit stopped at 3.6m as reached target depth.

Stability: Large scale wall collapse.

Trial Pit Log

			TrialPit No TP05 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241256.00 - 60434.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.70 — 3.20 × 1.30	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40	ES		0.30			MADE GROUND comprising firm brown slightly sandy gravelly CLAY with abundant roots and some brick fragments and plastic sheeting (LANDFILL WASTE).
				0.70			MADE GROUND comprising firm to stiff brown slightly sandy GRAVEL with some organic matter, plastic sheeting, brick and concrete fragments (LANDFILL WASTE).
	1.30	ES		1.80			MADE GROUND comprising firm dark grey slightly sandy gravelly CLAY with occasional cobbles of granite and some plastic sheeting, brick and concrete fragments. High amount of plant material with tree stumps and large branches (0.25m diameter and 1.0m long). Strong musk odour (LANDFILL WASTE).
	2.80	ES		3.70			MADE GROUND comprising medium dense purple slightly clayey GRAVEL of angular platey mudstone. Possible reworked Torpoint Formation (LANDFILL WASTE).
							End of Pit at 3.70m

Remarks: No groundwater encountered. Trial pit stopped at 3.7m as reached target depth.

Stability: Side collapse below 3.0m.

Trial Pit Log

TrialPit No: TP06
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241273.00 - 60473.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.90, 1.30, 3.20	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.30			MADE GROUND comprising firm brown sandy very gravelly CLAY with abundant roots and occasional granite boulder and cobble. Gravel comprises angular platey mudstone (LANDFILL WASTE).
				0.70			MADE GROUND comprising dense light brown very clayey GRAVEL with fragments of black top and some plant matter. Gravel comprises angular mudstone (LANDFILL WASTE).
	1.20	ES		1.30			MADE GROUND comprising medium dense dark grey slightly sandy very clayey GRAVEL with fragments of brick, breeze block and plastic sheeting. High content of plant material of grass, possible relic topsoil. Gravel comprises mudstone and occasional granite (LANDFILL WASTE).
	1.35	ES					MADE GROUND comprising stiff dark purple very gravelly CLAY with some plant material and low cobble content. Gravel comprises mudstone, siltstone and sandstone (LANDFILL WASTE).
	2.40	ES		3.40			MADE GROUND comprising dense purple slightly clayey GRAVEL with low cobble content of platey angular mudstone. Possible reworked Torpoint Formation (LANDFILL WASTE).
	3.90	ES		3.90			End of Pit at 3.90m

Remarks: No groundwater encountered. Trial pit stopped at 3.9m as reached target depth.

Stability: Sides stable.

Trial Pit Log

			TrialPit No TP07 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241291.00 - 60496.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.80 — 1:30 — 3.80	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND comprising firm brown slightly sandy gravelly CLAY with abundant roots in the top 0.15m (LANDFILL WASTE).
				0.50			MADE GROUND comprising light brown clayey sandy GRAVEL of mudstone and siltstone and some sandstone. Occasional roots up to 0.05m in diameter (LANDFILL WASTE).
				0.80			MADE GROUND comprising medium dense reddish brown very clayey gravelly fine SAND containing; some plastic sheeting, occasional pieces of wood, metal wiring concrete boulders, and organic matter. Gravel comprises subrounded sandstone and quartz (LANDFILL WASTE).
	1.10	ES					
				1.90			MADE GROUND comprising firm dark grey to black wet gravelly slightly sandy CLAY with broken glass, metal piping and plant matter (LANDFILL WASTE).
	2.20	ES					
				2.40			MADE GROUND comprising loose yellowish gravelly very clayey SAND with low cobble content containing plastic wrapping, occasional wood fragments and black top. Gravel comprises subrounded to subangular mudstone and siltstone (LANDFILL WASTE).
	3.00	ES		3.00			MADE GROUND comprising dense purple slightly clayey slightly sandy GRAVEL with occasional boulders of blocky sandstone. Gravel comprises fine to medium subangular mudstone (LANDFILL WASTE).
				3.80			End of Pit at 3.80m

1 2 3 4 5

Remarks: No groundwater encountered. Trial pit stopped at 3.8m as reached target depth.

Stability: Large scale wall collapse.

AGS

Trial Pit Log

			TrialPit No TP08 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241312.00 - 60470.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.70 — 1.30 × 3.00	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.05	ES		0.30			MADE GROUND comprising firm brown gravelly sandy CLAY with abundant roots (LANDFILL WASTE).
				1.00			MADE GROUND comprising dense light brown clayey sandy GRAVEL with medium cobble content containing rubble (bricks, breeze blocks, plastic sheeting, and concrete) (LANDFILL WASTE).
	1.10	ES		1.40			MADE GROUND comprising stiff dark purple very gravelly CLAY. Gravel comprises angular mudstone and occasional subrounded sandstone (LANDFILL WASTE).
				1.80			MADE GROUND comprising dense dark bluey grey slightly clayey sandy GRAVEL of platey medium subangular platey mudstone with low cobble content (LANDFILL WASTE).
	2.00	ES					MADE GROUND comprising dense to very dense purple clayey (locally very clayey) slightly sandy GRAVEL of angular platey mudstone with low cobble content and occasional fragments of wood (LANDFILL WASTE).
	3.40	ES		3.70			End of Pit at 3.70m

Remarks: No groundwater encountered. Trial pit stopped at 3.7m as reached target depth.

Stability: Sides stable.

Trial Pit Log

			TrialPit No TP09 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241271.00 - 60432.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): 3.80 x 1.30 Depth 4.10	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40	ES		0.70			MADE GROUND comprising firm friable brown gravelly slightly sandy CLAY with abundant roots in the top 0.2m with some organic matter (LANDFILL WASTE).
	1.10	ES		1.70			MADE GROUND comprising stiff dark purple gravelly CLAY with some organic matter. Gravel comprises mixed lithologies of mudstone, siltstone, granite and sandstone (LANDFILL WASTE).
	2.00	ES		4.10			MADE GROUND comprising medium dense purple slightly clayey fine GRAVEL of mudstone with occasional rebar. Gravel clasts increase in size with depth comprising angular platey mudstone. Lenses of gravelly CLAY at 3.4m. Possibly reworked Torpoint Formation (LANDFILL WASTE).
							End of Pit at 4.10m

Remarks: No groundwater encountered. Trial pit stopped at 4.1m as reached target depth.

Stability: Sides stable.

Trial Pit Log

			TrialPit No TP10 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: 241319.00 - 60476.00 Level:	Date 22/08/2016
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.40 — 1.30 × 3.70	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.40			MADE GROUND comprising loose brown very clayey sandy GRAVEL with occasional brick fragments and abundant rootlets in the top 0.15m. Gravel comprises of mixed lithologies including, mudstone, siltstone, sandstone, granite and quartz (LANDFILL WASTE).
	1.10	ES					MADE GROUND comprising dense purple mottled yellowish brown clayey sandy GRAVEL with medium cobble content and occasional boulders. Cobbles and boulders comprise of subangular blocky sandstone and some platey mudstone. Gravel comprises angular to subangular mudstone, granite and siltstone. Occasional brick fragments and plastic debris throughout (LANDFILL WASTE).
	3.20	ES		3.40			End of Pit at 3.40m

1 2 3 4 5

Remarks: No groundwater encountered. Trial pit stopped at 3.4m as reached target depth.

Stability: Sides stable.

Trial Pit Log

TrialPit No: T19-01
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 2.20	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.50	JG					Moss over MADE GROUND comprising brown very gravelly slightly sandy CLAY with some cobbles of mudstone and concrete with rebar. Occasional boulder size fragments of concrete and pieces of scrap metal. Gravel comprises medium to coarse clasts of mudstone. Roots and rootlets within top 150mm. (Landfill Waste)
	1.00	JP					
				1.50			
	1.60	JP					Excavated as purple clayey (locally slightly clayey) fine GRAVEL of angular platey mudstone. Occasional clasts of quartz. (Possible completely weathered mudstone of the Torpoint Formation).
	2.20	JP		2.20			End of Pit at 2.20m

1 2 3 4 5

Remarks: Trial pit ceased at 2.2m due to difficulty digging and natural stratum encountered. Trial pit backfilled with arisings on completion.

Stability: Sides stable.

Trial Pit Log

TrialPit No: T19-02
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 1.90	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	JG		0.30			Moss over MADE GROUND comprising soft brown gravelly sandy CLAY. Gravel predominantly mudstone with some fragments of concrete, brick and occasional blacktop. Cobble size fragments of concrete, brick and plastic piping. Underlain with geotextile. (Landfill Waste)
	0.60	JP					Excavated as purple (locally light grey) clayey sandy fine GRAVEL of angular platey mudstone. Locally tending to stiff very gravelly clay. (Possible completely weathered mudstone of the Torpoint Formation)
	1.90	JP		1.90			End of Pit at 1.90m

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Remarks: Trial pit ceased at 1.9m due to difficulty digging and natural stratum encountered. Trial pit backfilled with arisings on completion.

Stability: Sides stable

Trial Pit Log

TrialPit No: T19-03
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 2.90	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 0.50 0.50	B JG JP					Moss over MADE GROUND comprising soft to firm light brown gravelly silty sandy CLAY with medium cobble content of mudstone and concrete / blacktop fragments. Gravel predominantly comprises mudstone with some concrete and limestone. Slight organic odour. Water ingress into the trial pit at the bottom of stratum (0.9m). (Landfill Waste)
				0.90			
	1.20 1.20	JG JP					Stiff to very stiff purple (locally grey) very gravelly slightly sandy CLAY locally tending to very clayey gravel. Gravel comprises medium to fine clasts of mudstone (angular and platey). No water ingress with stratum and arisings dry. (Possible Head or reworked mudstone of the Torpoint Formation).
				1.50			
							Excavated as stiff to very stiff light greyish brown/ purple very gravelly CLAY tending to very clayey gravel of medium to fine clasts of mudstone. (Possible completely weathered mudstone of the Torpoint Formation).
	2.90 2.90	B JP		2.90			End of Pit at 2.90m

1 2 3 4 5

Remarks: Trial pit backfilled with arisings on completion.

Stability: Trial pit sides stable.

Trial Pit Log

			TrialPit No T19-04 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.00	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.50	JP					Moss over MADE GROUND comprising firm brown (locally purple brown) very gravelly sandy CLAY. Gravel comprises mix of mudstone, concrete and brick. Occasional boulder size fragments of concrete, some metal (rebar and pipes), occasional organic matter (plants and old roots) and occasional pieces of ceramics and glass. (Landfill Waste)
	1.00	JP					
	2.00	JP					
				2.20			MADE GROUND comprising firm? yellowish brown (with lenses of purple) gravelly sandy CLAY. Gravel comprises predominantly mudstone with some fragments of concrete. Large boulders of granite at 3.0m preventing further excavation. (Landfill Waste)
	2.60	JG					
	2.60	JP					
				3.00			End of Pit at 3.00m

1 2 3 4 5

Remarks: Trial pit ceased at 3.0m as large boulders of granite preventing further excavation. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-05
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 2.00	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.20 1.20	JG JP					Moss over MADE GROUND comprising firm brown slightly gravelly (locally gravelly) slightly sandy silty CLAY with some cobbles of concrete. Gravel comprises mudstone. Occasional roots and scrap metal. Relic grass at 1.8m. At 2.0m large blocks of granite encountered. (Possibly stockpiled topsoil over stockpiled granite blocks)
	2.00	JP		2.00			End of Pit at 2.00m

1
2
3
4
5

Remarks: Trial pit ceased at 2.0m as excavator was unable to break up large granite blocks. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-06
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 2.60	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.20 1.20 1.20	B JG JP					MADE GROUND comprising rubble with matrix of brown gravelly sandy CLAY (tending to clayey gravelly sand) with roots in the top 150mm. Gravel comprising mixture of limestone, mudstone, chert, granite, brick and ceramics. Rubble comprises cobble and boulder sized fragments of concrete and blacktop. Some rebar, paving slabs, plastic sheeting and bricks with occasional broken glass. Large boulder size fragments of blacktop and concrete slabs at 2.5m causing large collapse of trial pit wall. (Landfill Waste).
	1.60	JP					
	2.00	JP					
	2.70 2.70 2.70	B JG JP		2.60			End of Pit at 2.60m

1
2
3
4
5

Remarks: Trial pit ceased as encountered large concrete slab at 2.6m and large collapse of pit walls. Trial pit backfilled with arisings on completion.

Stability: Trial pit side at risk of complete collapse due to large size of rubble fragments.

Trial Pit Log

TrialPit No: T19-07
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.70	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							Moss over MADE GROUND comprising stiff purple/ purple brown slightly gravelly slightly sandy silty CLAY with rootlets within top 100mm. (Landfill Waste)
				0.40			MADE GROUND comprising rubble with a matrix of firm brown gravely slightly sandy CLAY. Gravel comprising of mix mudstone, brick and concrete. Rubble comprises large boulder and cobble size fragments of concrete with occasional cobbles of brick and blacktop. Lenses of dark brown slightly gravelly silty clay with remnants of grass, twigs and roots (possible relic topsoil). Tree trunk measuring 0.7m long and 0.2m thick encountered at 1.2m. (Landfill Waste)
	0.80 0.80	JG JP					
				1.60			MADE GROUND comprising firm (locally stiff) purple gravelly slightly sandy CLAY. Gravel predominantly mudstone (fine angular) with occasional fragments of concrete. (Landfill Waste)
	2.20	JP					
				2.30			MADE GROUND comprising light grey very clayey (locally clayey) sandy fine GRAVEL with low cobble content of mudstone. Gravel comprises fine angular clasts of mudstone with occasional sandstone and concrete. Occasional bricks. (Landfill Waste)
	2.50	JP					
	3.50	JP					
	3.90	JP					
				4.20			MADE GROUND comprising stiff light yellowish brown very gravelly slightly sandy CLAY. Gravel predominantly mudstone with some fragments of concrete. Contains some wires and occasional cobbles and boulders of concrete. (Landfill Waste)
	4.70 4.70	JG JP		4.70			End of Pit at 4.70m

1 2 3 4 5

Remarks: Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-08
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.30	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	JG					Moss over MADE GROUND comprising stiff purple/ purple brown slightly gravelly (locally gravelly) slightly sandy silty CLAY with some rootlets within top 100mm. Gravel predominantly of mudstone. (Landfill Waste)
				0.60			MADE GROUND comprising greyish brown (with lenses of black) soft to firm gravelly slightly sandy CLAY with occasional cobbles of mudstone. Some cobble size fragments of concrete, brick and blacktop. Gravel predominantly of mudstone with some blacktop, brick and concrete fragments. Slight odour of damp organic soil. Some organic matter comprising old branches, old roots, grass cuttings and 'clumps' of relic topsoil. Tree trunk measuring 1.5m long, 0.3m thick at 2.0m. (Landfill Waste)
	1.00	B					
	1.00	JG					
	1.00	JP					
	2.10	JP					
				2.20			MADE GROUND comprising firm light greyish purple gravelly slightly sandy CLAY tending to very clayey gravel. Gravel comprises mudstone with occasional sandstone. (Landfill Waste)
	2.30	JP		2.40			MADE GROUND comprising light brownish grey clayey sandy fine GRAVEL with low cobble content. Gravel and cobbles comprise angular platey and blocky mudstone. At 3.7m lenses of very stiff to stiff purple/ blueish grey very gravelly clay. Arisings dry. (Landfill Waste)
	2.60	JP					
	3.00	B					
	3.00	JG					
	3.00	JP					
	3.50	JP					
	3.70	JP					
	4.30	JG		4.30			End of Pit at 4.30m
	4.30	JP					

1 2 3 4 5

Remarks: Trial pit ceased at 4.3 as struggling to get further using the excavator. Arisings dry. Trial pit backfilled with arisings on completion.

Stability: Slight collapse of trial pit side in top 2m during excavation.

Trial Pit Log

TrialPit No: T19-09
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.70	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Moss over MADE GROUND comprising firm to stiff brown slightly gravelly (locally gravelly) slightly sandy silty CLAY. Gravel predominantly comprises mudstone with some granite, brick and occasional limestone. (Landfill Waste)
	1.00 1.00	JG JP					MADE GROUND comprising rubble with matrix of brown/ light brown gravelly sandy CLAY. Rubble comprises fragments of brick and concrete, breeze blocks, plastic sheeting and blacktop, old wires and occasional old roots. Possible asbestos fibres. Below 1.0m boulder size fragments of concrete, brick wall and breeze blocks. Arisings dry. (Landfill Waste)
	1.70 1.70	B JG					
				2.10			MADE GROUND comprising light yellow grey (becoming light blueish grey below 3.0m) clayey sandy GRAVEL. Gravel predominantly of mudstone with occasional concrete fragments. Occasional boulder and cobble size fragments of concrete. (Landfill Waste)
	2.50	JP					
	3.00 3.00 3.00	B JG JP					
	3.40	JP					
	4.00	JP					
	4.70 4.70 4.70	B JG JP		4.70			End of Pit at 4.70m

1 2 3 4 5

Remarks: Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-10
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.60	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	JG					Moss over MADE GROUND comprising soft brown slightly gravelly slightly sandy silty CLAY with abundant rootlets and some roots (Topsoil).
				0.35			
	0.50 0.50	JG JP					MADE GROUND comprising firm (locally soft) brown very gravelly slightly sandy CLAY. Gravel predominantly mudstone with some brick and concrete fragments. Some scrap metal, plastic piping, cloth, and pieces of plastic. Occasional boulder size fragments of concrete and breeze blocks. (Landfill Waste)
	1.80	JP					
				2.10			
	2.30	JP					MADE GROUND comprising firm (locally stiff) purple very gravelly slightly sandy CLAY with occasional gravel clasts of brick and breeze block. Gravel predominantly mudstone (angular and platey). Arisings becoming wet and soft below 3.2m. (Landfill Waste)
	3.30	JP					
				3.80			
	4.20	JP					Excavated as purple slightly clayey slightly sandy fine to medium gravel of angular and platey mudstone. Occasional cobbles of mudstone (possible weathered mudstone of the Torpoint Formation).
				4.60			End of Pit at 4.60m

1 2 3 4 5

Remarks: During excavation gas meter used to measure emissions from arisings and from within the trial pit. No detection of methane was recorded. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-11
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.50	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 0.50	JG JP					Moss over MADE GROUND comprising firm brown (locally light grey) very gravelly sandy CLAY. Gravel predominantly comprises mudstone (angular platey) with some brick and concrete fragments. Occasional pieces of scrap metal, plastic and bricks. (Landfill Waste)
				1.00			MADE GROUND comprising rubble with a matrix of firm grey gravelly sandy clay. Rubble comprises; concrete, breeze blocks, copper piping, wooden pallet fragments, pieces of plastic, and occasional tree branches (up to 75mm diameter). (Landfill Waste)
	1.40 1.40	JG JP					
				1.80			MADE GROUND comprising brownish grey/ grey (locally purple) soft to firm gravelly (locally very gravelly) slightly sandy CLAY. Contains fragments of concrete, breeze blocks and some wooden planks (from old pallets). (Landfill Waste)
	2.40 2.40	B JP					
	3.20	JP					
	3.70	JP					
	4.50 4.50 4.50	B JG JP		4.50			End of Pit at 4.50m

1
2
3
4
5

Remarks: During excavation gas meter used to measure emissions from arisings and from within the trial pit. No detection of methane was recorded. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-12
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.60	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 0.50	B JP					Moss over MADE GROUND comprising firm brown gravelly slightly sandy CLAY. Gravel comprises mix of mudstone, limestone, with fragments of concrete blacktop, brick, and ceramics. Some boulder and cobble size fragments of concrete and blacktop. Occasional old roots, scrap metal, copper piping and wires. Arisings dry. (Landfill Waste)
				1.10			MADE GROUND comprising grey firm (locally stiff) gravelly slightly sandy CLAY. Gravel predominantly fine to medium clasts of mudstone. Some cobble size fragments of brick, blacktop and concrete. Occasional scrap metal. Some organic matter (mixture of old plant roots and pallet fragments). Becoming wet and soft at 2.5m with occasional boulder of concrete and mudstone. (Landfill Waste)
	1.80 1.80	B JP					
	2.50	JP					
	3.10 3.10	JG JP					
	3.50	JP					
	4.00	JP					
	4.50 4.50 4.50	B JG JP		4.60			End of Pit at 4.60m

1
2
3
4
5

Remarks: During excavation gas meter used to measure emissions from arisings and from within the trial pit. No detection of methane was recorded. Trial pit backfilled with arisings on completion.

Stability: Large scale well colapse in trial pit.

Trial Pit Log

			TrialPit No T19-13 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.50	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	JP					Moss over MADE GROUND comprising firm brown gravelly (locally slightly gravelly) slightly sandy CLAY with cobble sized fragments of concrete and blacktop. Occasional boulders of concrete, brick fragments, and pieces of plastic. Some roots within top 100mm. Water ingress from small gravel lens at 1.2m. Arisings dry. (Landfill Waste)
				1.20			
	1.60	JP					MADE GROUND comprising firm (but locally varying from soft to stiff) grey/ brownish grey gravelly slightly sandy CLAY with some organic matter (plant roots and branches up to 150mm diameter). Occasional boulder and cobble size fragments of concrete and brick. Slight organic odour. Arisings damp, becoming wet with depth. (Landfill Waste)
	2.50	JP					
				2.60			
	3.40	JP					MADE GROUND comprising soft to firm grey very gravelly slightly sandy CLAY mixed with firm purple very gravelly clay. Gravel comprises mudstone (angular and platey). Occasional pieces of wood (planks), scrap metal, wire, old wire fencing (similar to that seen in T19-14), and boulders of reinforced concrete. (Landfill Waste)
	3.80	JP					
	4.50	JG		4.50			End of Pit at 4.50m
	4.50	JP					

1 2 3 4 5

Remarks: During excavation gas meter used to measure emissions from arisings and from within the trial pit. No detection of methane was recorded. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

			TrialPit No T19-14 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.50	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 0.50	JG JP					Moss over MADE GROUND comprising grey (locally purple) very clayey sandy fine to medium GRAVEL of mudstone with occasional clasts of tile fragments and black top. Lens at 0.9m with abundant fragments of concrete and blacktop displaying rapid ingress of water. (Landfill Waste)
				1.10			MADE GROUND comprising firm (locally stiff) purple very gravelly slightly sandy CLAY. Gravel predominantly mudstone (angular and platey) with occasional granite. Sections of metal fencing seen throughout with occasional cobble size fragments of concrete. (Landfill Waste)
	1.50	JP					
	2.00	JP					
	3.40 3.40	JG JP					
	4.00	JP					
	4.50 4.50	B JP		4.50			End of Pit at 4.50m

1 2 3 4 5

Remarks: Trial pit backfilled with arisings on completion.

Stability: Trial pit sides stable

Trial Pit Log

TrialPit No: T19-15
Sheet 1 of 2

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 5.00	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.13			Moss over MADE GROUND comprising stiff to firm purple gravelly silty CLAY with some rootlets. (Landfill Waste)
	0.90 0.90 0.90	B JG JP					MADE GROUND comprising light greyish brown/ brownish grey clayey sandy medium to coarse GRAVEL with medium cobble content of mudstone. Gravel predominantly mudstone (angular and platey). Occasional cobble and boulder size fragments of blacktop, concrete and brick. Lenses within stratum of soft grey gravelly clay with some organic materials (old plant matter). Large boulder size fragments of blacktop at 1.3m. (Landfill Waste)
				1.40			MADE GROUND comprising firm grey/ brownish grey gravelly slightly sandy CLAY. Gravel predominantly comprises fine clasts of mudstone. Contains fragments of bricks, concrete, blacktop, scrap metal, breeze blocks, plastic sheeting and occasional organic matter. Small zone at 3.2m containing tree branches. Strong odour of hydrocarbons at 4.2m (very localised). (Landfill Waste)
	2.00	JP					
	2.50 2.50 2.50	B JG JP					
	3.20	JP					
	4.20 4.20	JG JP					
	5.00	JG		5.00			Continued on Next Sheet

1 2 3 4 5

Remarks: Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-15
Sheet 2 of 2

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 5.00	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	5.00	JP					End of Pit at 5.00m

6
7
8
9
10

Remarks: Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-16
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 06/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.50	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.00 1.00 1.00	B JG JP					Moss over MADE GROUND comprising firm (locally soft) light greyish brown gravelly slightly sandy CLAY. Gravel predominantly comprises mudstone with some concrete, brick and blacktop. Occasional cobbles of limestone and brick. Occasional fragments of plastic and ceramics. Arisings damp. (Landfill Waste)
				1.30			
	1.50	JP					MADE GROUND comprising very soft to soft dark greyish brown sandy gravelly CLAY with some cobble size fragments of paving slabs, concrete and bricks. Contains some old wires, metal, plastic and wooden skirting board. Occasional old branches and roots. Slight organic smell. Arisings wet. (Landfill Waste)
				2.00			
	2.30	JP					MADE GROUND comprising soft to firm dark greyish brown gravelly slightly sandy CLAY. Gravel clasts medium to coarse comprising mixture of mudstone, concrete, blacktop, limestone, brick and granite. Occasional cobble size fragments of blacktop, concrete and breezeblock. Some plastic sheeting and ceramic pipe fragments. Occasional lenses of wet very soft to soft clay. Arisings dry. Large concrete slab encountered at 3.5m. (Landfill Waste)
	2.70	B					
	3.40 3.40	JG JP		3.50			End of Pit at 3.50m

1 2 3 4 5

Remarks: Trial pit creased at 3.5m due to large concrete slab. Trial pit backfilled with arisings on completion.

Stability: Collapses within trial pit walls in top 2.0m

Trial Pit Log

			TrialPit No T19-17 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.60	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	JP					Moss over MADE GROUND comprising brownish grey gravelly sandy CLAY matrix (tending to clayey sandy gravel) with cobbles and boulders size fragments of blacktop and concrete, paving slabs, and plastic sheeting. Gravel comprises mudstone and limestone. Water at 1.5m (likely perched). Large concrete slab from 1.7m. Below 1.7m planks of wood, wiring, scrap metal (including car wingmirror) and some light pinkish brown mudstone gravel clasts. (Landfill Waste)
	1.10	B					
	1.10	JG					
	1.10	JP					
	1.70	JP					
	2.50	JP					
				2.70			
	2.90	JG					MADE GROUND comprising light pinkish grey very gravelly slightly sandy CLAY. Gravel predominantly comprises fine clasts of mudstone (angular and platey). At 3.6m encountered high abundance of rubble with large concrete slab preventing excavation to continue. (Landfill Waste).
	2.90	JP					
	3.40	B					
				3.60			End of Pit at 3.60m

Remarks: Trial pit ceased at 3.6m due to large concrete slab. Trial pit backfilled with arisings on completion.

Stability: Large collapse in trial pit walls.

Trial Pit Log

TrialPit No: T19-18
Sheet 1 of 1

Project Name:	Eales Farm Landfill	Project No.: GCE00692	Co-ords: - Level:	Date: 04/03/2020
Location:	Eales Farm, Tamar View Industrial Estate, Saltash	Dimensions (m): Depth 3.60		Scale: 1:25
Client:	Burcombe Haulage			Logged: RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 0.50	JG JP					Buddleia and moss over MADE GROUND comprising of soft to firm brown slightly sandy gravelly CLAY. Gravel predominantly mudstone. Contains some cobble sized clasts of granite, mudstone, blacktop, brick and concrete. Occasional boulder size fragments of concrete and sections of brick wall. (Landfill Waste)
	1.00 1.00	B JP					
	1.80	JP					
				2.20			MADE GROUND comprising light pinkish brown gravelly sandy CLAY with medium cobble content of limestone, brick and blacktop. Occasional boulder of blacktop, pieces of rebar and plastic sheeting. Gravel comprising of mudstone, brick, concrete and blacktop. High content of rubble below 3.0m (concrete, blacktop and brick boulders). Large granite block at 3.6m. (Landfill Waste)
	2.90 2.90 2.90	B JG JP					
	3.40	JP					
				3.60			End of Pit at 3.60m

Remarks: Trial pit ceased at 3.6m as excavator was unable to break up large granite boulder. Arisings dry. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-19
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 05/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 2.00	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25			Moss and buddleia over MADE GROUND comprising firm light brown/ brown gravelly (locally slightly gravelly) silty CLAY with some roots and rootlets. Gravel predominantly mudstone (angular platey) with occasional fragments of concrete and brick. (Landfill Waste)
	0.70 0.70	JG JP					MADE GROUND comprising firm purple gravelly slightly sandy CLAY containing occasional plant matter (old roots and branches). Gravel predominantly mudstone (angular and platey) with occasional fragments of concrete and brick. Slight earthy odour. Occasional pieces of plastic. Large concrete slabs at 1.2m. (Landfill Waste)
	1.10	B		1.20			MADE GROUND comprising large reinforced concrete slabs. Matrix comprises gravelly clay containing some pieces of plastic with rubble and brick fragments. Arisings dry. (Landfill Waste)
	1.80 1.80 1.80	B JG JP		2.00			End of Pit at 2.00m

Remarks: Trial pit ceased at 2.0m due to large concrete slab spanning trial pit floor. Arisings dry. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-20
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 04/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.30	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	JP					Moss and weeds over MADE GROUND comprising stiff (locally firm) grey gravelly CLAY containing some shell fragments and occasional pieces of wood (possibly fragments of old pallets). Gravel comprises fine clasts of mudstone with some fragments of ceramic pottery and concrete. Occasional lenses of soft brown gravely silty clay. Roots and rootlets within top 100mm. (Landfill Waste)
				1.10			
	1.30	JG					MADE GROUND comprising very dark grey gravelly slightly sandy CLAY with low cobble content of brick and concrete. Gravel comprises mix of mudstone, concrete, brick and blacktop. Slight odour of hydrocarbons throughout. Occasional bricks and boulder size fragments of blacktop. Some fragments of wood (possible fragments of old pallets). Below 3.0m contains plastic sheeting, rope, scrap metal, old wooden pallet and plastic bottle. Locally arisings very wet. (Landfill Waste)
	1.30	JP					
	2.60	B					
	2.60	JG					
	2.60	JP					
	3.00	JP					
	3.40	JP					
	4.00	JG					
	4.30	B		4.30			End of Pit at 4.30m

1 2 3 4 5

Remarks: Trial pit ceased at 4.3m as excavator unable to conitue due to depth. Locally arisings very wet. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-21
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 04/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 1.65	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 0.50	JG JP					Moss and buddleia over MADE GROUND comprising firm? pinkish/ brownish grey very gravelly slightly sandy CLAY. Gravel comprises fine to medium clasts of mudstone (angular platey). Some roots/rootlets within top 150mm. Occasional pockets of brown slightly gravely clay. Old bike at 1.3m. (Landfill Waste)
	1.30	JP					
	1.50 1.50 1.60	B JP JP		1.40 1.55 1.65			Excavated as light grey/brownish grey very clayey sandy GRAVEL locally tending to very gravelly clay. Gravel of mudstone (angular platey). (Possible completely weathered mudstone of the Torpoint Formation).
							Very weak extremely closely fractured cleaved light greenish grey (weathering orange) MUDSTONE. Cleavage dipping at 40 degrees. Excavated as clayey medium gravel. (Highly weathered mudstone of the Torpoint formation).
							End of Pit at 1.65m

Remarks: Trial pit ceased at 1.65m as difficult digging through mudstone. Arings dry. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-22
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 04/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.70	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.90 0.90	JG JP					Moss over MADE GROUND comprising grey/brownish grey very clayey (locally clay) sandy GRAVEL with occasional cobble size fragment of concrete and mudstone. Contains occasional boulder size fragments of concrete, blacktop, mudstone and brick. Very slight odour of hydrocarbons. Very hard digging at 1.2m due to presence of concrete slabs. Below 2.0m some breeze blocks, pieces of scrap metal and occasional lenses of soft purple grey gravelly clay. Water inflow from a hole in the trial pit wall created by a piece of rebar at 1.5m. Difficult digging below 2.0m. (Landfill Waste)
	1.80 1.80	B JP					
	2.50	JP		2.40			MADE GROUND comprising very gravelly CLAY tending to clayey gravel. Gravel comprises mudstone and fragments of rubble (concrete, blacktop, and brick). Contains occasional boulder size fragments of concrete, blacktop, mudstone and brick. (Landfill Waste)
	3.20	JP					
	3.70 3.70	B JG		3.70			End of Pit at 3.70m

1
2
3
4
5

Remarks: Trial pit ceased at 3.7m as excavator was struggling to get through rubble. Arisings generally dry with slight water ingreess at 1.5m through small opening in trial pit wall. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-23
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 04/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.60	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	JP		0.80			Moss over MADE GROUND comprising of firm to stiff light pinkish brown very gravelly sandy CLAY. Gravel predominantly of mudstone (angular and platey). Occasional fragments of brick and concrete. (Landfill Waste)
	1.00 1.00	JG JP					MADE GROUND comprising very dark blueish grey very gravelly slightly sandy CLAY tending to clayey gravel predominantly of mudstone. Very strong odour of hydrocarbons. Contains some pieces of scrap metal (possibly old car parts) and occasional fragments of plastic and blacktop. Occasional pieces of wood and old wires. (Landfill Waste)
	2.00 2.00	JG JP		2.10			MADE GROUND comprising of grey very gravelly sandy CLAY with occasional cobbles of mudstone. Contains cobble size fragments of brick and concrete with occasional scrap metal and pieces plastic. Gravel predominantly of mudstone. Occasional breeze blocks below 3.0m. Slight odour of hydrocarbons. Arising dry. Difficult digging due to large boulder size fragments of limestone and concrete below 3.0m. (Landfill Waste)
	2.50 2.50	JG JP					
	3.00	B					
	3.40 3.40	JG JP		3.60			End of Pit at 3.60m

Remarks: Trial pit ceased at 3.6m as excavator was unable to break up a large slab of concrete. Arisings dry. Trial pit backfilled with arisings on completion.

Stability: Slight spalling.

Trial Pit Log

TrialPit No: T19-24
Sheet 1 of 1

Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 04/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 4.70	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	JG		0.30			Moss over MADE GROUND comprising soft dark brown slightly gravelly sandy CLAY with some rootlets and occasional fragments of scrap metal. (Landfill Waste)
	1.30 1.30	JG JP		1.50			MADE GROUND comprising firm to stiff brown/greyish brown gravelly slightly sandy CLAY with medium cobble content comprising fragments of brick, concrete and limestone. Contains occasional pieces of wood (possibly from old pallets or fence posts) and old roots. Gravel comprises mixture of mudstone, granite, brick fragments, blacktop and concrete. (Landfill Waste)
	2.10 2.10	B JP					MADE GROUND comprises damp/wet soft to firm brown very gravelly CLAY with some cobbles of concrete and brick. Gravel predominantly comprises mudstone with occasional pieces of plastic and ceramic pottery. Contains some wood fragments (possibly from old pallets or fence posts) and old roots up to 5mm diameter. (Landfill Waste)
	2.50	JG					
	3.00	JP		3.00			MADE GROUND comprising firm brown (with dark grey lenses) gravelly slightly sandy CLAY. Gravel contains mixture of mudstone, concrete and granite. Cobbles and boulder size fragments of concrete and blacktop. Contains occasional pieces of rebar and some plastic. (Landfill Waste)
	3.40 3.40 3.40	B JG JP					
	3.90	JP					
	4.40	JP		4.70			End of Pit at 4.70m

1 2 3 4 5

Remarks: Trial pit ceased at 4.7m as excavator struggling to continue due to the depth. Arisings damp/wet below 1.5m. Strong odour of hydrocarbons within arisings. Trial pit backfilled with arisings on completion.

Stability: Some minor collapse within trial pit walls.

Trial Pit Log

			TrialPit No T19-25 Sheet 1 of 1
Project Name: Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 04/03/2020
Location: Eales Farm, Tamar View Industrial Estate, Saltash		Dimensions (m): Depth 3.40	Scale 1:25
Client: Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	1.10 1.10 1.10	B JG JP		1.30			Moss over MADE GROUND comprising soft to firm brown very gravelly slightly sandy CLAY with occasional cobble of mudstone. Gravel predominantly comprises angular platey mudstone. Occasional tree root with diameter up to 25mm. Contains some fragments of blacktop, brick, quartz, plastic and concrete. Occasional breeze blocks from 0.9m. (Landfill Waste)
	1.60 1.60	JG JP					MADE GROUND comprising firm grey (locally brown grey) very gravelly (locally gravelly) slightly sandy CLAY with occasional organic matter. Gravel predominantly comprises mudstone. Contains some fragments of concrete, rebar and bricks with occasional breeze blocks. Fragments of blacktop throughout increasing in abundance below 2.0m. (Landfill Waste)
	2.10 2.10	B JP					
	2.80 2.80	JG JP		3.00			
	3.10	JP					MADE GROUND comprising dense? greyish brown very clayey sandy GRAVEL with medium cobble content. Gravel and cobbles comprise fragments of concrete and limestone with some fragments of blacktop, brick and plastic. (Landfill Waste)
	3.40	B		3.40			End of Pit at 3.40m

1 2 3 4 5

Remarks: Trial pit ceased at 3.4m as excavator struggling to get through rubble. Arisings dry. Trial pit backfilled with arisings on completion.

Stability: Some instability in trial pit walls with mulT19-ile collapses during excavation.

Trial Pit Log

TrialPit No: T19-26
Sheet 1 of 1

Project Name:	Eales Farm Landfill	Project No. GCE00692	Co-ords: - Level:	Date 04/03/2020
Location:	Eales Farm, Tamar View Industrial Estate, Saltash	Dimensions (m): Depth 4.70		Scale 1:25
Client:	Burcombe Haulage			Logged RA

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	JG					MADE GROUND comprising soft to firm, slightly sandy gravelly CLAY with fragments of plastic, blacktop, brick and concrete. Occasional old roots and rootlets in top 100mm. Occasional boulders of limestone and concrete. (Landfill Waste)
	1.00	JP					
				1.80			
	2.00	B					MADE GROUND comprising of dark brownish grey very gravelly slightly sandy CLAY with cobble and gravel sized fragments of concrete, brick and blacktop. Gravel predominantly mudstone (angular and platey). Slight odour of hydrocarbons. Some cobbles of mudstone and occasional boulders of blacktop. Occasional fragments of plastic, and whole bricks. Below 3.5m boulder size fragment of concrete with rebar. Arisings dry but becoming damp/wet below 4.0m.
	2.00	JG					
	2.00	JP					
	3.00	JP					
	3.70	JP					
	4.00	JG					
				4.70			End of Pit at 4.70m

1 2 3 4 5

Remarks: Trial pit ceased at 4.7m as excavator struggling to continue due to the depth. Arisings becoming damp/wet below 4.0m. Trial pit backfilled with arisings on completion.

Stability: Continious collapse of trial pit sides during excavation

Appendix D Tables

Table D0
Existing Eales Farm Landfill - Groundwater Level Monitoring Data

Location	Approximate Level (m AOD)	Response Zone				Response Zone Geology	Top of Mudstone Depth		Groundwater Monitoring Summary						Discussion
		Top (m bgl)	Bottom (m bgl)	Top (m AOD)	Bottom (m AOD)		Depth (mbgl)	Elevation (m AOD)	No. of Measurements	Max. Recorded (m AOD)	Thickness (Max Above Base of Well)	Thickness (Min Above Base of Well)	Mean (m AOD)	Min. (m AOD)	
Monitoring Wells															
B19-1	71.57	13.0	18.0	58.6	53.6	Mudstone	0.3	71.3	4	65.5	11.9	10.2	NC	63.8	Top of mudstone unsaturated.
B19-2	33.10	9.2	15.0	23.9	18.1	Mudstone	0.5	32.7	4	30.0	11.9	8.5	NC	26.6	Top of mudstone unsaturated.
B19-3	58.91	9.2	15.0	49.7	43.9	Mudstone	0.0	58.9	4	58.2	14.3	13.4	NC	57.3	Top of mudstone unsaturated.
B19-4	39.43	16.5	18.6	22.9	20.8	Mudstone	11.5	27.9	4	27.9	7.1	3.5	NC	24.4	Top of mudstone unsaturated.
B19-5a	44.07	27.5	28.3	16.6	15.8	Mudstone	22.3	21.8	4	25.5	9.7	9.1	NC	24.8	Water level within waste deposits, interpreted to be due to a function of stream down base of valley.
B19-5b	44.07	13.0	14.0	31.1	30.1	Waste	22.3	21.8	4	-	-	-	-	-	Well dry
B19-5c	44.07	8.6	9.6	35.5	34.5	Waste	22.3	21.8	4	-	-	-	-	-	Well dry
B19-5d	44.07	3.5	4.6	40.6	39.5	Waste	22.3	21.8	4	-	-	-	-	-	Well dry
B19-6	43.74	16.0	18.0	27.7	25.7	Mudstone	11.6	32.2	4	31.1	5.3	2.7	NC	28.4	Top of mudstone unsaturated.
B19-7a	50.06	26.3	27.3	23.8	22.8	Mudstone	20.3	29.8	4	32.1	9.3	0.3	NC	23.1	Water level within waste deposits on occasion.
B19-7b	50.06	16.7	18.8	33.4	31.3	Waste	20.3	29.8	4	33.8	2.5	0.7	NC	32.0	Minor quantities of water recorded within waste deposits, interpreted to be leachate pooling in well annulus.
B19-7c	50.06	13.0	14.0	37.1	36.1	Waste	20.3	29.8	4	-	-	-	-	-	Well dry
B19-7d	50.06	2.0	3.0	48.1	47.1	Waste	20.3	29.8	3	47.4	0.3	0.0	NC	47.1	Water only reported on one occasion just above base of response zone suggesting perched water in base of well.
B19-8a	46.23	11.2	13.7	35.0	32.6	Mudstone	5.4	40.8	4	38.5	5.9	4.7	NC	37.2	Top of mudstone unsaturated.
B19-8b	46.23	3.4	4.5	42.8	41.7	Waste	5.4	40.8	4	-	-	-	-	-	Well dry
B19-9a	46.65	18.0	19.1	28.7	27.6	Mudstone	13.3	33.4	4	31.5	3.9	1.5	NC	29.1	Top of mudstone unsaturated.
B19-9b	46.65	11.6	12.4	35.1	34.3	Waste	13.3	33.4	4	34.2	0.0	0.0	NC	34.2	Well dry apart from one occasion when minor quantities of leachate recorded.
B19-9c	46.65	9.4	10.4	37.3	36.3	Waste	13.3	33.4	4	-	-	-	-	-	Well dry
B19-d	46.65	5.4	6.4	41.3	40.3	Waste	13.3	33.4	4	40.7	0.4	-0.4	NC	39.8	Measurable thickness of water only recorded on two occasion just above base of response zone suggesting perched water (interpreted as leachate) in base of well.
MBH10	50.53	2.6	14.4	47.9	36.2	Waste	16.7	33.8	14	39.5	3.3	0.0	37.2	36.1	Water (leachate) within waste deposits.
MBH11A	44.06	2.6	5.4	41.5	38.7	Waste	6.4	37.7	1	38.8	0.1	0.1	NC	38.8	Water detected on one occasion, once just above the base of the response zone.
MBH11B	44.06	8.5	15.2	35.6	28.9	Mudstone	6.4	37.7	27	36.7	7.8	3.3	34.6	32.2	Top of mudstone unsaturated.
MBH12	48.13	2.6	9.0	45.5	39.1	Waste	10.8	37.3	2	39.1	0.0	0.0	39.1	39.1	Water level consistent with base of well indicating perched water within well annulus.
MBH13	70.20	1.0	6.5	69.2	63.7	Waste	6.6	63.6	25	68.0	4.3	0.1	66.8	63.8	Water (leachate) within waste deposits.
MBH15	69.99	1.9	4.9	68.1	65.1	Waste	5.5	64.5	2	70.0	4.9	0.4	NC	65.5	Water (leachate) within waste deposits.
MBH16	67.05	2.4	14.4	64.7	52.7	Waste	14.6	52.5	17	56.6	4.0	0.5	54.4	53.1	Water (leachate) level consistently within waste deposits.
MBH1A	70.35	1.8	2.7	68.55	67.65	Mudstone	1.2	69.15	26	69.4	1.7	0.1	68.7	67.8	Ugradient well located in north-west corner of former Eales Farm Landfill. Water levels typically in mudstone, albeit on a few occasions recorded slightly within overlying waste deposits. Water level in deeper borehole generally at greater depth than shallow borehole.
MBH1B	70.35	7.3	10.4	63.1	60.0	Mudstone	1.2	69.2	28	70.4	10.4	6.5	68.1	66.5	Top of mudstone generally unsaturated apart from one monitoring visit.
MBH2A	68.86	2.6	6.8	66.3	62.1	Waste	8.5	60.4	24	62.6	0.5	0.0	62.4	62.1	Water levels typically just above base of response zone suggesting perched water in base of well.
MBH2B	68.86	11.0	26.0	57.9	42.9	Mudstone	8.5	60.4	26	62.2	19.3	15.7	59.6	58.6	Water levels generally within mudstone, apart from 4No. monitoring visits during winter months when water levels slightly within waste deposits.
MBH3	70.26	2.7	9.9	67.6	60.4	Waste	11.3	59.0	7	61.5	1.1	0.0	60.9	60.4	Water levels typically just above base of response zone suggesting perched water in base of well.
MBH4	70.61	3.0	7.7	67.6	62.9	Waste	9.5	61.1	5	70.7	7.8	0.0	67.2	62.9	Water (leachate) within waste deposits.
MBH5	66.69	2.6	13.6	64.1	53.1	Waste	16.3	50.4	12	53.5	0.4	0.1	53.3	53.2	Water (leachate) within waste deposits, however typically close to the base of the well response zone.
MBH6	67.69	3.0	14.7	64.7	53.0	Waste	15.0	52.7	15	53.3	0.2	0.0	53.2	53.0	Water (leachate) within waste deposits, however typically close to the base of the well response zone.
MBH7A	69.46	2.6	4.1	66.9	65.4	Waste	5.6	63.9	17	66.2	0.8	0.1	65.8	65.4	Water (leachate) within waste deposits.
MBH7B	69.46	7.3	16.8	62.2	52.7	Mudstone	5.6	63.9	30	58.6	6.0	2.9	56.7	55.6	Top of mudstone unsaturated.
MBH9	40.38	2.6	10.6	37.8	29.8	Waste	12.0	28.4	10	31.9	2.2	0.3	31.4	30.1	Water within waste deposits.
Drive-In Piezometers															
DP01	*29	-	-	-	*26.08	-	-	-	4	-	-	-	-	-	-
DP02	31.76	-	-	-	29.84	-	-	-	4	-	-	-	-	-	-
DP03	*24.4	-	-	-	*23.25	-	-	-	4	-	-	-	-	-	-
DP04	27.57	-	-	-	24.95	-	-	-	4	-	-	-	-	-	-
DP05	*23	-	-	-	*20.54	-	-	-	4	-	-	-	-	-	-
DP06	27.76	-	-	-	25.39	-	-	-	4	-	-	-	-	-	-
DP07	58.60	-	-	-	57.83	-	-	-	4	-	-	-	-	-	-
DP08	57.41	-	-	-	54.69	-	-	-	4	-	-	-	-	-	-
DP09	56.32	-	-	-	54.62	-	-	-	4	-	-	-	-	-	-
DP10	53.18	-	-	-	51.43	-	-	-	4	-	-	-	-	-	-

Groundwater Elevation (m AOD)

Location	21-Apr-16	11-Aug-16	07-Sep-16	24-May-17	16-Aug-17	26-Sep-17	10-Oct-17	15-Nov-17	22-Nov-17	13-Dec-17	10-Jan-18	26-Feb-18	27-Mar-18	26-Apr-18	29-May-18	26-Jun-18	26-Jun-18	18-Jul-18	26-Sep-18	25-Oct-18	30-Nov-18	14-Dec-18	29-Jan-19	28-Feb-19	26-Mar-19	30-Apr-19	29-May-19	25-Jun-19	06-Aug-19	27-Nov-19	19-Feb-20	18-Mar-20	01-Apr-20	16-Apr-20	21-May-20
Monitoring Wells																																			
B19-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65.47	64.59	64.79	63.78
B19-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.04	28.22	27.86	26.59
B19-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.20	57.57	57.59	57.26
B19-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27.92	25.81	25.14	24.37
B19-5a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.48	25.10	25.01	24.84
B19-5b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
B19-5c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
B19-5d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
B19-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.06	29.96	29.45	28.45
B19-7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32.09	30.06	23.09	29.11
B19-7b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.79	31.98	Dry	Dry
B19-7c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
B19-7d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47.39	-	47.27	47.06
B19-8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.48	37.69	37.43	37.23
B19-8b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
B19-9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.49	30.58	29.09	Dry
B19-9b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	34.23	Dry
B19-9c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
B19-d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	WAB	WAB	40.69	39.83
MBH10	-	-	-	36.58	-	-	-	-	-	36.98	37.2	36.16	37.17	-	-	-	-	36.14	36.49	36.48	39.48	37.17	37.18	-	36.7	-	-	-	-	37.94	38.68	-	-	-	-
MBH11A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MBH11B	34.66	33.32	-	34.85	34.76	-	-	-	35	35.68	36.29	35.68	36.65	35.3	34.61	32.95	32.95	32.72	32.75	33.12	36.43	35.58	36.22	34.86	35.34	34.34	33.26	32.82	32.19	36.55	36.12	-	-	-	-
MBH12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.09	-	-	-	39.1	-	-	-	-	-	-	-	-	-	-
MBH13	-	-	-	67.12	67	-	-	-	63.81	67.72	67.98	67.73	67.18	66.97	66.14	64.76	64.76	67.02	66.81	66.93	67.85	67.45	67.46	67.11	67.28	67.06	66.38	66.87	66.24	67.79	67.44	-	-	-	-
MBH15	-	-	-	-	-	-	-	-	65.5	-	-	69.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MBH16	-	-	-	54.21	-	-	-	-	53.63	54.4	54.9	-	54.28	-	-	53.1	53.1	54.43	53.1	54.22	56.61	55.7	55.7	53.72	53.7	-	-	-	-	55.64	54.9	-	-	-	-
MBH1A	68.00	67.91	68.57	68.81	68.54	-	-	-	69.12	69.25	69.35	69.10	68.98	68.25	67.77	-	-	68.96	68.80	68.79	69.33	69.20	69.15	68.87	68.93	68.70	68.51	68.56	68.05	68.85	68.78	-	-	-	-
MBH1B	67.53	67.69	68.04	68.39	68.13	-	-	-	69.02	70.35	69.27	68.93	68.99	67.88	67.77	66.52	66.52	68.52	68.41	68.34	69.17	66.47	68.32	67.77	68.00	67.51	67.35	67.49	67.56	68.76	68.71	-	-	-	-
MBH2A	62.14	62.56	-	62.42	62.46	-	-	-	62.49	62.46	62.49	62.49	62.47	62.46	62.46	62.08	62.08	62.35	62.12	62.13	62.42	-	62.16	62.34	62.42	62.45	62.49	62.44	62.11	-	-	-	-	-	-
MBH2B	58.86	58.83	-	59.39	59.26	-	-	-	59.39	60.26	-	59.92	60.35	59.25	59.02	58.74	58.74	60.10	59.19	59.06	62.19	60.57	60.02	59.05	59.18	58.97	58.92	58.88	58.60	62.08	61.16	-	-	-	-
MBH3	-	-	-	-	-	-	-	-	-	-	60.44	-	-	-	-	-	-	-	-	-	61.52	60.82	60.79	-	60.4	-	-	-	-	61.28	61.30	-	-	-	-
MBH4	-	-	-	-	-	-	-	-	67.79	70.61	62.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70.71	-	63.91	-	-	-	-
MBH5	53.15	-	-	-	-	-	-	-	53.28	53.39	-	-	53.40	-	-	-	-	53.22	53.20	53.17	53.50	-	53.27	-	53.27	-	-	-	-	53.29	53.41	-	-	-	-
MBH6	-	-	-	-	-	-	-	-	53.27	-	53.2	-	53.21	-	-	-	-	53.16	53.18	53.19	53.17	53.17	53.19	53.16	53.2	53.19	-	53.2	-	53.01	53.16	-	-	-	-
MBH7A	-	-	-	-	-	-	-	-	65.44	65.44	-	-	-	66.21	65.76	-	-	65.51	65.46	66.06	66.08	66.06	66.11	66.12	66.14	65.86	66.08	65.48	-	65.48	65.46	-	-	-	-
MBH7B	56.1	56.96	-	56.36	56.32	56.66	56.62	56.35	56.38	56.52	57.62	57	57.47	56.58	56.32	55.72	55.72	56	56.07	56.245	58.62	57.33	56.95	56.5	56.78	56.28	56.12	56.11	55.57	57.96	58.62	-	-	-	-
MBH9	30.12	-	-	-	-	-	-	-	-	31.78	30.93	-	31.78	-	-	-	-	31.57	-	-	31.94	31.06	31.55	-	-	-	-	-	-	31.6	31.5	-	-	-	-
Drive-In Piezometers																																			
DP01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
DP02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
DP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
DP04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
DP05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
DP06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.52	25.52	25.51	25.51
DP07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
DP08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.66	Dry	Dry	Dry
DP09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry
DP10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	Dry	Dry	Dry

Notes:
Water elevation data provided by GCE
WAB - Water at Base (i.e. dipmeter records nominal water thickness, potentially attributable to sludge, at base of well)
NC - Not Calculated
* Approximate elevation

Table D1
Existing Eales Farm Landfill - Soil Testing Data

Location / Top Depth (m) / Date / Geology	Units	LRL	No. Samples	Min	Max	Mean	SD	MBH1 1.0 07-Apr-2016 Waste	MBH2 1.5 07-Apr-2016 Waste	MBH3 3.0 14-Apr-2016 Waste	MBH3 10.0 14-Apr-2016 Waste	MBH4 7.5 07-Apr-2016 Waste	MBH5 4.1 08-Apr-2016 Waste	MBH5 12.0 11-Apr-2016 Waste	MBH6 2.0 06-Apr-2016 Waste	MBH6 10.0 06-Apr-2016 Waste	MBH6 13.0 06-Apr-2016 Waste	MBH6 15.0 06-Apr-2016 Waste	MBH7 3.0 06-Apr-2016 Waste	MBH9 2.0 12-Apr-2016 Waste	MBH9 7.0 12-Apr-2016 Waste	MBH9 10.0 12-Apr-2016 Waste	MBH10 6.0 13-Apr-2016 Waste
Statistics For Made Ground Samples Only																							
Inorganics																							
Arsenic	mg/kg	1	79	LRL	2600	103.1	294.1	59	130	15	9.2	140	27	100	42	41	37	35	66	98	280	200	99
Boron	mg/kg	*0.40*	21	LRL	3.80	1.1	0.8	0.97	1.9	<0.40	<0.40	3.8	2.4	0.42	1.2	0.99	0.72	0.67	0.68	0.74	1.0	1.1	1.1
Cadmium	mg/kg	0.1	79	LRL	3.10	0.3	0.5	0.23	0.23	<0.10	<0.10	0.18	0.15	0.19	0.34	0.35	0.24	0.19	0.23	0.31	1.0	0.78	0.74
Chromium	mg/kg	1	79	14	160	37.0	18.9	35	50	35	38	53	35	48	33	81	41	46	68	53	30	26	31
Manganese	mg/kg	5	23	1000	3300	1934.8	639.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	0.5	79	12	690	98.9	130.9	78	77	43	41	72	46	99	55	54	46	43	58	130	550	690	350
Mercury	mg/kg	0.1	79	LRL	2.50	0.3	0.3	0.17	0.22	0.15	0.16	0.27	0.27	0.16	0.37	0.28	0.19	0.14	0.18	0.22	0.24	0.24	0.27
Nickel	mg/kg	0.5	79	22	110	54.4	14.3	53	56	59	58	47	46	74	47	89	56	58	70	61	58	45	48
Lead	mg/kg	0.5	79	6	970	130.1	132.7	130	140	30	29	120	120	72	200	200	120	91	88	90	99	100	120
Selenium	mg/kg	0.2	79	LRL	1.0	0.2	0.2	0.72	0.81	0.22	<0.20	0.91	0.65	<0.20	0.53	0.48	0.36	0.31	0.42	0.52	0.38	0.29	<0.20
Zinc	mg/kg	0.5	79	71	1600	181.2	187.8	140	140	100	100	120	140	160	220	160	140	130	140	170	360	270	280
Chromium (Hexavalent)	mg/kg	0.5	79	LRL	LRL	NC	NC	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons (TPH)																							
TPH >C5-C6	mg/kg	1	58	LRL	LRL	NC	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH >C6-C7	mg/kg	1	58	LRL	LRL	NC	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH >C7-C8	mg/kg	1	58	LRL	LRL	NC	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH >C8-C10	mg/kg	1	58	LRL	4	0.6	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH >C10-C12	mg/kg	1	58	LRL	7	0.8	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH >C12-C16	mg/kg	1	58	LRL	65	4.8	9.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH >C16-C21	mg/kg	1	58	LRL	160	12.6	25.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH >C21-C35	mg/kg	1	58	LRL	1600	68.4	232.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total TPH >C5-C35	mg/kg	10	79	LRL	3700	133.9	478.0	<10	<10	<10	<10	<10	<10	21	1000	340	45	91	<10	41	18	<10	3700
Aliphatic TPH >C5-C6	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C6-C8	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C8-C10	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C10-C12	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C12-C16	mg/kg	*1.0*	21	LRL	9	1.0	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.3
Aliphatic TPH >C16-C21	mg/kg	*1.0*	21	LRL	54	4.6	12.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	21	13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	54
Aliphatic TPH >C21-C35	mg/kg	*1.0*	21	LRL	280	25.3	71.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	280	62	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	180
Aliphatic TPH >C35-C44	mg/kg	*1.0*	21	LRL	310	17.8	68.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	310	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	54
Total Aliphatic Hydrocarbons	mg/kg	*5.0*	21	LRL	620	49.1	145.6	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	620	76	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	290
Aromatic TPH >C5-C7	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C7-C8	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C8-C10	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C10-C12	mg/kg	*1.0*	21	LRL	LRL	NC	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C12-C16	mg/kg	*1.0*	21	LRL	72	4.7	15.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.4	<1.0	5.0	8.3	<1.0	<1.0	<1.0	<1.0	72
Aromatic TPH >C16-C21	mg/kg	*1.0*	21	LRL	500	30.0	108.1	3.2	<1.0	<1.0	<1.0	<1.0	1.7	3.6	19	4.4	13	28	2.0	11	2.9	<1.0	500
Aromatic TPH >C21-C35	mg/kg	*1.0*	21	LRL	2500	160.6	544.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	18	370	250	28	55	<1.0	30	15	<1.0	2500
Aromatic TPH >C35-C44	mg/kg	*1.0*	21	LRL	300	16.6	65.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	30	9.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	300
Total Aromatic Hydrocarbons	mg/kg	*5.0*	21	LRL	3400	212.7	737.7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	21	420	270	46	91	<5.0	41	18	<5.0	3400
Polycyclic Aromatic Hydrocarbons (PAHs)																							
Naphthalene	mg/kg	0.1	79	LRL	4	0.2	0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.65	<0.10	<0.10	<0.10	<0.10	0.54	2.0	0.75	0.93	0.82
Acenaphthylene	mg/kg	0.1	79	LRL	24	0.4	2.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	0.14	0.19	0.14	0.15	0.87
Acenaphthene	mg/kg	0.1	79	LRL	17	0.4	2.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.70	0.16	0.18	0.13	2.1
Fluorene	mg/kg	0.1	79	LRL	18	0.5	2.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.16	<0.10	<0.10	<0.10	<0.10	1.1	0.21	0.26	0.19	2.3
Phenanthrene	mg/kg	0.1	79	LRL	35	2.3	5.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.0	0.94	1.5	1.3	3.7	7.0	1.5	1.6	1.0	24
Anthracene	mg/kg	0.1	79	LRL	31	1.0	3.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.24	0.27	0.39	0.38	1.1	1.9	0.35	0.41	0.28	5.9
Fluoranthene	mg/kg	0.1	79	LRL	97	4.3	12.5	0.80	0.72	<0.10	<0.10	0.46	1.1	1.5	1.6	2.3	2.4	4.7	7.9	2.4	1.9	1.4	28
Pyrene	mg/kg	0.1	79	LRL	87	4.1	11.4	0.84	0.64	<0.10	<0.10	0.60	1.1	1.4	1.6	2.5	2.4	4.7	7.2	2.3	1.9	1.4	26
Benzo[a]anthracene	mg/kg	0.1	79	LRL	29	1.6	4.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.54	0.90	1.6	1.2	2.0	3.0	1.0	0.82	0.62	11
Chrysene	mg/kg	0.1	79	LRL	33	1.8	4.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.75	2.0	1.9	2.5	3.3	4.1	1.1	0.90	0.77	11
Benzo[b]fluoranthene	mg/kg	0.1	79	LRL	32	2.0	4.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.94	1.5	2.1	1.9	2.9	3.5	1.4	0.99	0.87	13
Benzo[k]fluoranthene	mg/kg	0.1	79	LRL	12	0.8	1.8	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.51	0.95	1.0	0.62	1.5	1.3	0.66	0.41	0.39	5.9
Benzo[a]pyrene	mg/kg	0.1	79	LRL	15	1.5	2.9	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.63	1.2	1.6	1.3	2.2	3.0	1.1	0.75	0.66	9.7
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	79	LRL	15	1.0	2.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.71	1.0	1.3	<0.10	1.9	1.9	0.77	0.55	0.56	7.1
Dibenz(a,h)Anthracene	mg/kg	0.1	79	LRL	5	0.3	0.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.32	0.30	0.38	<0.10	0.34	0.39	0.17	0.18	0.17	1.6
Benzo[g,h,i]perylene	mg/kg	0.1	79	LRL	15	1.1	2.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.78	1.6	2.1	<0.10	2.1	2.4	1.3	0.63	0.63	7.0
Total Of 16 PAH's	mg/kg	2	79	LRL	450	23.3	61.4	<2.0	<2.0	<2.0	<2.0	<2.0	2.2	10	14	19	14	30	46	17	12	10	160
Organic Matter	%	0.4	21	LRL	6.6	2.2	1.4	2.9	2.2	0.98	0.90	2.6	2.8	1.4	4.3	3.8	2.1	1.3	1.7	6.6	1.5	1.7	1.6
Total Organic Carbon	%	0.2	58	LRL	5.2	1.3	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ACM Type		N/A	7	NAD	Asbestos	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Identification	%	0.001	58	NAD	Asbestos	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	0.02	79	3	22	12.5	3.2	15	21	12	14	16	14	8.1	13	11	13	13	14	11	14	8.9	6.6
pH		N/A	79	7	11	8.4	0.7	8.1	7.9	7.7	7.8	7.9	8.1	9.7	8.2	8.4	8.6	8.7	8.7	8.3	8.7	8.8	8.8
Sulphate (2:1 Water Soluble) as SO4	g/l	0.01	58	LRL	1.7	0.2	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate (Total)	%	0.01	58	LRL	2.3	0.1831	0.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
LRL - Laboratory Reporting Limit for GCE August 2016 testing unless compound not tested during sampling event. LRL in italics is for JGP April 2016 testing.
SD - Standard deviation
NC - Not calculated
NAD - NAD
Mudstone* - borehole log describes residual or potentially reworked mudstone.
All statistics calculated on waste samples above the LRL only.
Where a concentration is reported below the LRL, the statistics have been calculated assuming a concentration of 50% of the LRL.
The statistics for TPH C10-C12, C12-C16, C16-C21 and C21-C35 include the sum of the aliphatic and aromatic fractions reported during the April sampling event.

Table D2

Existing Eales Farm Landfill - Soil Leachate Testing Data

Location	Units	LRL	Assessment Criteria				MBH1	MBH2	MBH4	MBH5	MBH6	MBH7	MBH9	MBH10	MBH11	MBH12
Top Depth (m):							1	1.5	7.5	4.1	10	3	10.0	6.0	6.0	3.0
Geology							Waste	Waste	Waste	Waste	Waste	Waste	Waste	Waste	Waste	Waste
Date Sampled:			EQS (Freshwater)	EQS Source	DWS	DWS Source	07-04-2016	07-04-2016	07-04-2016	08-04-2016	06-04-2016	06-04-2016	12-04-2016	13-04-2016	12-04-2016	13-04-2016
Arsenic	µg/l	1.0	50	UK AA EQS	10	UK	2.9	8.2	6.1	19	7.6	***58***	7.2	17	1.3	38
Boron	µg/l	20	2000	UK AA EQS	1000	UK	<20	<20	48	53	31	61	59	56	26	46
Cadmium	µg/l	0.080	50	UK AA EQS	10	UK	<0.080	<0.080	<0.080	0.089	<0.080	0.12	<0.080	<0.080	<0.080	<0.080
Chromium	µg/l	1.0	4.7	UK AA EQS	50	UK	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	4.3	2.6	4.1
Copper	µg/l	1.0	10	UK AA EQS	2,000	UK	2.2	4.7	3.8	**14**	5.3	**13**	2.1	4.0	**130**	**71**
Mercury	µg/l	0.50	0.05	UK AA EQS	1.0	UK	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	µg/l	1.0	20	UK AA EQS	20	UK	<1.0	<1.0	<1.0	1.1	<1.0	2.5	<1.0	<1.0	<1.0	3.7
Lead	µg/l	1.0	7.2	UK AA EQS	10	UK	2.1	<1.0	5.0	**34**	1.4	**45**	<1.0	<1.0	<1.0	**31**
Selenium	µg/l	1.0	-	-	10	UK	<1.0	<1.0	1.2	1.2	1.6	<1.0	1.2	<1.0	<1.0	3.0
Zinc	µg/l	1.0	75	UK AA EQS	5,000	USEPA	1.3	<1.0	1.6	13	<1.0	10	2.0	1.2	1.2	11
Chromium (Hexavalent)	µg/l	20	3.4	UK AA EQS	50	UK	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Aliphatic TPH >C5-C6	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Aliphatic TPH >C6-C8	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Aliphatic TPH >C8-C10	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	86	<0.10	<0.10
Aliphatic TPH >C10-C12	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Aliphatic TPH >C12-C16	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	3.3	<0.10	<0.10
Aliphatic TPH >C16-C21	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	8.9	<0.10	<0.10
Aliphatic TPH >C21-C35	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	61	<0.10	<0.10
Aliphatic TPH >C35-C44	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Aliphatic Hydrocarbons	µg/l	5.0	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	160	<5.0	<5.0
Aromatic TPH >C5-C7	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Aromatic TPH >C7-C8	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Aromatic TPH >C8-C10	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	32	<0.10	<0.10
Aromatic TPH >C10-C12	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2.9	<0.10	<0.10
Aromatic TPH >C12-C16	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	57	<0.10	<0.10
Aromatic TPH >C16-C21	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	160	<0.10	<0.10
Aromatic TPH >C21-C35	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	370	<0.10	<0.10
Aromatic TPH >C35-C44	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Aromatic Hydrocarbons	µg/l	5.0	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	620	<5.0	<5.0
Total Petroleum Hydrocarbons	µg/l	10	-	-	10	UK (revoked)	<10	<10	<10	<10	<10	<10	<10	***780***	<10	<10
Naphthalene	µg/l	0.10	1.2	UK AA	-	-	<0.10	<0.10	0.76	0.53	0.75	0.84	<0.10	0.75	<0.10	<0.10
Acenaphthylene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.75	<0.10	<0.10
Acenaphthene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	3.8	<0.10	<0.10
Fluorene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.6	<0.10	<0.10
Phenanthrene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	11	<0.10	<0.10
Anthracene	µg/l	0.10	0.1	UK AA	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**5.5**	<0.10	<0.10
Fluoranthene	µg/l	0.10	0.1	UK AA	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**11**	<0.10	0.52
Pyrene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	9.9	<0.10	0.65
Benzo[a]anthracene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	5.2	<0.10	<0.10
Chrysene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	5.6	<0.10	<0.10
Benzo[b]fluoranthene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	5.8	<0.10	<0.10
Benzo[k]fluoranthene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	3.2	<0.10	<0.10
Benzo[a]pyrene	µg/l	0.10	0.05	UK AA	0.01	UK	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**4.8**	<0.10	<0.10
Indeno(1,2,3-c,d)Pyrene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	3.3	<0.10	<0.10
Dibenz(a,h)Anthracene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2.4	<0.10	<0.10
Benzo[g,h,i]perylene	µg/l	0.10	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	4.0	<0.10	<0.10
Total Of 16 PAH's	µg/l	2.0	-	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	79	<2.0	<2.0
pH		N/A	6 - 9*	UK DWS	6.5 - 8.5	WHO	7.8	7.8	7.7	8.2	***9.8***	8.8	8.7	***9.6***	***9.2***	***9.1***
Hardness	mg/l	15	-	-	-	-	63	93	86	47	57	55	34	31	32	47
Total Organic Carbon	mg/l	2.0	-	-	-	-	4.3	5.7	11	12	6.7	11	4.0	11	4.0	52

Notes:

Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certificates for inspection.

Where a contaminant concentration slightly exceeds the adopted assessment criteria, and this is assumed by Horizon to be due to the laboratory reporting limit, this has not been highlighted as an exceedance.

LRL - Laboratory Reporting Limit

EQS - Environmental Quality

* - DWS - Drinking Water Standard

UK - United Kingdom

AA - Annual Average

Denotes exceedance of DWS

Denotes exceedance of EQS

Denotes exceedance of DWS and EQS

Table D3a

Existing Eales Farm Landfill - Leachate Quality Data

Sample Location			Assessment Criteria				BH2A																							BH9				
Screened Geology							Waste (Leachate)																							Waste (Leachate)				
Determinand	Units	LRL	EQS (Freshwater)	EQS Source	DWS	DWS Source	11-Aug-2016	24-May-2017	06-Jun-2017	27-Jul-2017	16/08/2017	26/09/2017	26-Oct-2017	22-Nov-2017	13-Dec-2017	10-Jan-2018	26-Feb-2018	27-Mar-2018	26-Apr-2018	29-May-2018	18-Jul-2018	13-Aug-2018	30-Nov-2018	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	20-Feb-2020	27-Mar-2018	13-Aug-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019
pH		N/A	6 - 9*	UK DWS	6.5 - 8.5	WHO	7.8	8.2	8.3	8.0	8.2	7.1	7.1	7.0	8.3	8.1	7.3	7.0	7.0	7.2	8.1	8.3	8.2	7.0	7.8	8.3	8.3	8.2	8.0	7.9	7.9	8.1	7.5	8.1
Electrical Conductivity	µS/cm	1	1000	UK DWS	2500	UK	640	540	520	-	490	-	-	640	-	-	650	-	-	640	-	600	530	-	660	-	730	-	470	860	1000	600	-	-
Suspended Solids	mg/l	5					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1400	400	-	560	-	2400	-	2900	-	440	260	-	-
Alkalinity (Total)	mg $CaCO_3$/l	10	-	-	-	-	280	290	330	-	300	-	-	340	-	-	280	-	-	310	-	310	330	-	410	-	280	-	290	500	390	380	-	-
Chloride	mg/l	1	250	UK (Non Statutory)	250	UK	45	44	46	-	43	-	-	45	-	-	42	-	-	43	-	43	43	-	39	-	40	-	36	19	24	16	-	-
Ammoniacal Nitrogen	mg/l	0.01	0.6	UK AA EQS	0.05	EU	***4.8***	***4.4***	***4.0***	***4.0***	***3.9***	***3.7***	***4.7***	***4.0***	***4.1***	***4.4***	***4.2***	***5.1***	***4.7***	***3.9***	***4.4***	***3.6***	***5.2***	***4.0***	***2.1***	***4.2***	***3.3***	***4.2***	***0.28***	***0.86***	***0.38***	***2.4***	***5.6***	***1.1***
Nitrite	mg/l	0.02	-	-	0.5	UK	<0.020	<0.020	0.058	<0.020	0.044	0.13	0.062	0.048	<0.020	0.020	0.021	0.021	0.022	<0.020	<0.020	<0.020	0.035	0.16	0.25	***1.1***	***0.56***	0.032	***2.0***	0.13	0.10	0.18	0.050	0.026
Nitrate	mg/l	0.5	-	-	50	UK	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	0.56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	4.7	2.5	0.55	<0.50	6.7	5.9	4.2	15	11	4.9
Sulphate	mg/l	1	400	UK AA (Non Statutory)	250	UK	14	13	16	-	15	-	-	13	13	15	13	14	16	15	13	14	14	17	18	14	37	14	16	77	140	98	100	91
Calcium	mg/l	5	-	-	-	-	77	71	79	-	93	-	-	82	-	-	64	-	-	78	-	67	61	-	74	-	73	-	86	170	190	140	-	-
Potassium	mg/l	0.5	-	-		-	5.3	4.4	4.2	-	5.7	-	-	4.7	-	-	4.3	-	-	4.7	-	3.8	5.4	-	4.9	-	8.2	-	14	7.4	8.2	7.7	-	-
Magnesium	mg/l	0.5	-	-	-	-	11	9.3	8.4	-	13	-	-	11	-	-	9.2	-	-	10	-	7.4	10	-	11	-	8.6	-	12	21	24	19	-	-
Sodium	mg/l	0.5	-	-	200	UK	25	23	21	-	34	-	-	29	-	-	27	-	-	29	-	20	30	-	44	-	36	-	39	14	18	13	-	-
Hardness	mg/l	15	-	-	-	-	240	220	230	-	290	-	-	250	-	-	200	-	-	240	-	200	190	-	230	-	220	-	260	510	560	420	-	-
Arsenic (Dissolved)	µg/l	1	50	UK AA EQS	10	UK	4.8	3.8	2.2	-	1.8	-	-	3.5	-	-	2.1	-	-	1.9	-	1.7	2.5	-	1.1	-	<1.0	-	<1.0	***40***	***40***	***27***	-	-
Boron (Dissolved)	µg/l	20	2000	UK AA EQS	1000	UK	***1500***	55	450	-	920	-	-	870	-	-	530	-	-	29	-	52	43	-	33	-	530	-	630	160	160	99	-	-
Cadmium (Dissolved)	µg/l	0.08	50	UK AA EQS	10	UK	<0.080	0.23	0.11	-	0.44	-	-	<0.080	-	-	0.96	-	-	<0.080	-	0.10	<0.080	-	0.11	-	0.88	-	0.50	<0.080	0.19	<0.080	-	-
Chromium (Dissolved)	µg/l	1	4.7	UK AA EQS	50	UK	1.9	2.0	1.7	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	<1.0	<1.0	-	<1.0	-	1.8	-	<1.0	2.8	2.7	<1.0	-	-
Copper (Dissolved)	µg/l	1	10	UK AA EQS	2,000	UK	<1.0	2.0	1.2	-	<1.0	-	-	<1.0	-	-	5.8	-	-	<1.0	-	<1.0	1.4	-	1.5	-	<1.0	-	2.7	8.3	4.3	**11**	-	-
Iron (Dissolved)	µg/l	20	1000	UK AA EQS	200	UK	-	***890***	***220***	***3000***	180	***220***	***380***	***230***	***520***	150	***1000***	***280***	***450***	160	***1300***	150	***610***	<20	***520***	***230***	140	180	190	***360***	***280***	***510***	***280***	170
Mercury (Dissolved)	µg/l	0.5	0.05	UK AA EQS	1.0	UK	<0.50	<0.50	<0.50	-	<0.50	-	-	<0.50	-	-	<0.50	-	-	<0.50	-	<0.50	<0.50	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	-
Manganese (Dissolved)	µg/l	1	30	UK AA EQS	50	UK	***5900***	***7500***	***4600***	***7300***	***7300***	***6800***	***7000***	***1100***	***7300***	***5800***	***4400***	***7600***	***7500***	***6100***	***6700***	***6800***	***6900***	***2100***	***2800***	***1900***	***6600***	***8800***	***1700***	***180***	***450***	***200***	**36**	15
Nickel (Dissolved)	µg/l	1	20	UK AA EQS	20	UK	3.2	4.9	2.3	-	2.6	-	-	<1.0	-	-	2.9	-	-	1.6	-	2.9	2.3	-	<1.0	-	2.1	-	1.1	1.4	1.5	1.2	-	-
Lead (Dissolved)	µg/l	1	7.2	UK AA EQS	10	UK	<1.0	1.3	<1.0	-	<1.0	-	-	<1.0	-	-	4.9	-	-	<1.0	-	<1.0	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	-
Selenium (Dissolved)	µg/l	1	-	-	10	UK	26.0	11	7.7	-	12	-	-	<1.0	-	-	5.0	-	-	7.0	-	6.7	12	-	12	-	7.9	-	8.5	4.7	5	6.6	-	-
Zinc (Dissolved)	µg/l	1	75	UK AA EQS	5,000	USEPA	3.1	20	9.4	-	6.3	-	-	3.7	-	-	5.5	-	-	1.8	-	2.6	3.2	-	17	-	<1.0	-	2.2	23	6.6	9.4	-	-
Chromium (Hexavalent)	µg/l	20	-	-	-	-	<20	<20	<20	-	<20	-	-	<20	-	-	<20	-	-	<20	-	<20	<20	-	<20	-	<20	-	<20	<20	<20	<20	-	-
Total Organic Carbon	mg/l	2	-	-	-	-	12	9.4	12	-	4.9	-	-	11	6.2	6.0	21	23	8.8	5.1	35	46	11	8.3	12	10	7.1	4.3	3.8	22	77	19	8.4	4.5
Total TPH >C6-C40	µg/l	10	-	-	10	UK (revoked)	<10	<10	<10	-	<10	-	-	<10	-	-	<10	-	-	<10	-	<10	<10	-	<10	-	<10	-	<10	<10	<10	<10	-	-
Total Of 16 PAH's	µg/l	2	-	-	-	UK	<2.0	<2.0	<2.0	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	<2.0	<2.0	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0	-	-

Notes:

Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certificates for inspection.

Where a contaminant concentration slightly exceeds the adopted assessment criteria, and this is assumed by Horizon to be due to the laboratory reporting limit, this has not been highlighted as an exceedance.

LRL - Laboratory Reporting Limit
EQS - Environmental Quality Standard
* - DWS - Drinking Water Standard
** - Criteria for Phenol applied
UK - United Kingdom
AA - Annual Average

Denotes exceedance of DWS

Denotes exceedance of EQS

Denotes exceedance of DWS and EQS

Table D3b

Existing Eales Farm Landfill - Groundwater Quality Data

Sample Location			Assessment Criteria				BH1B														
Screened Geology							Bedrock (Groundwater)														
Determinand	Units	LRL	EQS (Freshwater)	EQS Source	DWS	DWS Source	11-Aug-2016	24-May-2017	16-Aug-2017	22-Nov-2017	26-Feb-2018	29-May-2018	13-Aug-2018	30-Nov-2018	26-Mar-2019	30-Apr-2019	29-May-2019	06-Aug-2019	27-Nov-2019	20-Feb-2020	21-May-2020
pH		N/A	6 - 9*	UK DWS	6.5 - 8.5	WHO	8.3	8.5	8.5	7.0	7.6	7.4	8.3	8.3	8.1	8.4	8.0	8.5	8.0	8.1	8.4
Electrical Conductivity	µS/cm	1	1000	UK DWS	2500	UK	740	650	640	530	530	570	550	490	610	-	720	570	530	540	460
Suspended Solids	mg/l	5					-	-	-	-	-	-	51	620	55	-	790	16000	1000	140	100
Alkalinity (Total)	mg $CaCO_3$/l	10	-	-	-	-	190	170	170	180	120	150	160	160	150	-	150	160	160	150	140
Chloride	mg/l	1	250	UK (Non Statutory)	250	UK	69	79	62	57	70	74	70	60	120	-	84	63	58	44	45
Ammoniacal Nitrogen	mg/l	0.01	0.6	UK AA EQS	0.05	EU	0.49	0.078	0.10	0.28	0.17	0.11	0.41	2.4	0.12	2.0	1.4	0.12	0.6	<0.050	<0.050
Nitrite	mg/l	0.02	-	-	0.5	UK	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.073	<0.020	0.031	0.026	<0.020	0.028	<0.020	<0.020
Nitrate	mg/l	0.5	-	-	50	UK	17	13	13	8.6	8.9	8.7	16	9.3	12	16	14	17	14	24	6
Sulphate	mg/l	1	400	UK AA (Non Statutory)	250	UK	57	45	41	34	38	44	42	33	32	30	34	35	42	83	31
Calcium	mg/l	5	-	-	-	-	42	60	71	58	44	51	41	45	81	-	68	51	60	59	35
Potassium	mg/l	0.5	-	-		-	15	10	20.0	10	13	9.6	9.3	9.4	10	-	11	13	10	9.0	7.8
Magnesium	mg/l	0.5	-	-	-	-	17	10	19	9.8	8.4	9.5	9.8	9.8	13	-	8.8	9.0	8.1	8.9	6.7
Sodium	mg/l	0.5	-	-	200	UK	77	44	57	48	48	43	31	39	46	-	45	43	37	37	37
Hardness	mg/l	15	-	-	-	-	180	190	260	190	150	170	140	150	260	-	210	170	180	180	120
Arsenic (Dissolved)	µg/l	1	50	UK AA EQS	10	UK	4.9	2.3	<1.0	1.5	<1.0	1.5	<1.0	<1.0	<1.0	-	<1.0	1.2	1.5	1.4	1.3
Boron (Dissolved)	µg/l	20	2000	UK AA EQS	1000	UK	2400	36	920	930	23	26	35	390	23	-	570	77	880	550	37
Cadmium (Dissolved)	µg/l	0.08	50	UK AA EQS	10	UK	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	-	<0.080	<0.080	<0.080	<0.080	<0.080
Chromium (Dissolved)	µg/l	1	4.7	UK AA EQS	50	UK	5.8	1.9	<1.0	<1.0	<1.0	9.4	5.6	<1.0	3.0	-	2.0	20	13	<1.0	9.9
Copper (Dissolved)	µg/l	1	10	UK AA EQS	2,000	UK	19.0	2.2	1.3	<1.0	1.6	2.3	<1.0	2.5	1.5	-	<1.0	3.6	2.5	<1.0	3.2
Iron (Dissolved)	µg/l	20	1000	UK AA EQS	200	UK		430	110	250	110	500	56	420	320	140	190	180	310	130	910
Mercury (Dissolved)	µg/l	0.5	0.05	UK AA EQS	1.0	UK	0.62	<0.50	<0.50	<0.50	0.92	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50
Manganese (Dissolved)	µg/l	1	30	UK AA EQS	50	UK	3.6	17	64	1.9	11	19	6.4	8.0	2.7	<1.0	4.2	17	2.8	3.5	10.0
Nickel (Dissolved)	µg/l	1	20	UK AA EQS	20	UK	3.8	1.6	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	-	<1.0	3.0	<1.0	<1.0	2.7
Lead (Dissolved)	µg/l	1	7.2	UK AA EQS	10	UK	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Selenium (Dissolved)	µg/l	1	-	-	10	UK	37.0	2.4	3.4	<1.0	1.8	1.8	2	1.8	1.6	-	1.9	4.2	1.6	3.2	2.4
Zinc (Dissolved)	µg/l	1	75	UK AA EQS	5,000	USEPA	110	18	2.6	14	38	7.5	4.7	1.3	2.4	-	1.3	2.6	5.5	4.8	12.0
Chromium (Hexavalent)	µg/l	20	-	-	-	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	<20
Total Organic Carbon	mg/l	2	-	-	-	-	9.7	8.1	3.1	10	19	5.2	30	12	7.7	6.1	2.4	7.7	14	2.5	<2.0
Total TPH >C6-C40	µg/l	10	-	-	10	UK (revoked)	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
Total Of 16 PAH's	µg/l	2	-	-	-	UK	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0

Sample Location	BH2B																										
Screened Geology	Bedrock (Groundwater)																										
Determinand	06-Jun-2017	27-Jul-2017	16-Aug-2017	26-Sep-2017	26-Oct-2017	22-Nov-2017	13-Dec-2017	10-Jan-2018	26-Feb-2018	27-Mar-2018	26-Apr-2018	29-May-2018	26-Jun-2018	18-Jul-2018	13-Aug-2018	26-Sep-2018	25-Oct-2018	30-Nov-2018	29-Jan-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	20-Feb-2020	21-May-2020
pH	8.6	7.6	8.2	7.0	7.1	7.1	8.2	8.1	7.4	7.0	6.9	7.2	8.3	8.0	8.3	8.0	6.9	8.4	8.0	7.7	8.5	8.0	8.3	8.1	8.2	8.1	8.4
Electrical Conductivity	560	-	530	-	-	660	-	-	520	-	-	560	-	-	680	-	-	470	-	590	-	730	-	610	510	470	530
Suspended Solids	-	-	-	-	-	-	-	-	-	-	-	-	-	-	940	-	-	290	-	2200	-	7200	-	1800	800	360	530
Alkalinity (Total)	290	-	270	-	-	330	-	-	210	-	-	240	-	-	220	-	-	200	-	230	-	220	-	240	200	160	210
Chloride	48	-	29	-	-	41	-	-	39	-	-	46	-	-	51	-	-	43	-	42	-	53	-	57	40	39	45
Ammoniacal Nitrogen	2.3	1.7	0.18	0.61	1.0	1.0	0.65	5.8	1.9	4.3	2.4	3.2	3.5	3.9	3.4	4.8	3.0	6.6	6.4	3.3	5.6	5.1	0.8	4.5	6.0	6.1	4.6
Nitrite	0.044	0.27	<0.020	0.20	0.13	0.10	<0.020	0.099	0.067	0.063	0.14	<0.020	<0.020	0.021	1.6	<0.020	0.036	0.032	0.054	0.11	0.16	0.43	<0.020	0.20	0.056	0.19	0.81
Nitrate	1.3	2.4	2.7	2.6	2.1	24	1.1	<0.50	3.0	<0.50	0.59	<0.50	<0.50	<0.50	19	<0.50	<0.50	1.8	<0.50	<0.50	2.2	1.5	3.7	2.8	4.6	2.6	5.3
Sulphate	28		61	-	-	42	38	11	26	15	28	12	31	64	58	70	64	29	25	34	17	31	60	34	20	15	21
Calcium	43		84	-	-	44	-	-	43	-	-	38	-	-	59	-	-	57	-	50	-	59	-	34	40	53	39
Potassium	23		4.5	-	-	26	-	-	20	-	-	22	-	-	17	-	-	13	-	21	-	23	-	25	13	14	13
Magnesium	17		35	-	-	32	-	-	19	-	-	18	-	-	13	-	-	12	-	18	-	18	-	17	7.7	9.3	9.2
Sodium	31		25	-	-	46	-	-	31	-	-	34	-	-	28	-	-	27	-	35	-	38	-	38	28	30	30
Hardness	180		350	-	-	240	-	-	190	-	-	170	-	-	200	-	-	190	-	200	-	220	-	160	130	170	140
Arsenic (Dissolved)	1.1		<1.0	-	-	1.1	-	-	4.5	-	-	2.0	-	-	1.2	-	-	<1.0	-	<1.0	-	1.0	-	1.5	2.8	2.1	3.0
Boron (Dissolved)	470		1300	-	-	1100	-	-	620	-	-	27	-	-	54	-	-	42	-	26	-	530	-	54	830	220	53
Cadmium (Dissolved)	1.5		<0.080	-	-	<0.080	-	-	0.53	-	-	0.18	-	-	0.4	-	-	0.85	-	0.84	-	1.4	-	2.5	0.19	0.16	0.55
Chromium (Dissolved)	1.0		<1.0	-	-	<1.0	-	-	1.1	-	-	<1.0	-	-	2.4	-	-	<1.0	-	<1.0	-	1.2	-	29	6.6	<1.0	<1.0
Copper (Dissolved)	1.4		<1.0	-	-	<1.0	-	-	2.7	-	-	<1.0	-	-	1.7	-	-	3.8	-	1.6	-	<1.0	-	4.3	4.0	1.7	3.3
Iron (Dissolved)	100	360	67	140	290	290	170	270	500	220	180	80	210	330	97	410	250	190	130	230	300	79	140	160	460	140	280
Mercury (Dissolved)	<0.50		<0.50	-	-	<0.50			<0.50	-	-	<0.50	-	-	<0.50	-	-	<0.50	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	<0.50
Manganese (Dissolved)	1700	2200	67	1100	1200	28	630	3100	2000	4300	1400	1800	2800	2600	6000	2700	2200	8100	1600	2600	2600	4100	2.6	4200	17000	7500	5800
Nickel (Dissolved)	3.7	-	<1.0	-	-	1.2			3.1	-	-	3.0	-	-	3.7	-	-	2.5	-	<1.0	-	2.1	-	6.0	1.9	1.0	2.9
Lead (Dissolved)	<1.0	-	<1.0	-	-	<1.0			<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Selenium (Dissolved)	1.4	-	<1.0	-	-	3.0			<1.0	-	-	<1.0	-	-	1.4	-	-	1.4	-	<1.0	-	1.2	-	1.2	1.1	<1.0	<1.0
Zinc (Dissolved)	5.2	-	2.9	-	-	8.9			3.8	-	-	2.7	-	-	5.6	-	-	3.5	-	<1.0	-	<1.0	-	2.1	13	13	6.0
Chromium (Hexavalent)	<20	-	<20	-	-	<20			<20	-	-	<20	-	-	<20	-	-	<20	-	<20	-	<20	-	<20	<20	<20	<20
Total Organic Carbon	11	-	2.3	-	-	13	3.4	6.1	19	17	6.6	3.2	7.6	34	44	9.6	4.5	17	5.4	6.7	6.5	4.5	28	6.2	6.3	4.9	3.6
Total TPH >C6-C40	150	-	<10	-	-	<10			<10	-	-	<10	-	-	<10	-	-	<10	-	<10	-	<10	-	<10	<10	<10	<10
Total Of 16 PAH's	<2.0	-	<2.0	-	-	<2.0	-	-	2.8	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0

Sample Location	BH7B																										
Screened Geology	Bedrock (Groundwater)																										
Determinand	11-Aug-2016	24-May-2017	16-Aug-2017	22-Nov-2017	13-Dec-2017	10-Jan-2018	26-Feb-2018	27-Mar-2018	26-Apr-2018	29-May-2018	26-Jun-2018	18-Jul-2018	13-Aug-2018	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	20-Feb-2020	21-May-2020
pH	8.2	8.2	8.2	7.1	8.2	7.8	7.3	6.7	6.8	7.2	8.3	8.2	8.2	8.2	7.2	8.4	7.0	7.9	6.9	7.6	8.3	8.2	8.2	7.9	8.2	8.2	8.3
Electrical Conductivity	920	790	710	810	-	-	740	-	-	840	-	-	810	-	-	560	-	-	-	760	-	820	-	790	760	670	840
Suspended Solids	-	-	-	-	-	-	-	-	-	-	-	-	290	-	-	220	-	-	-	1600	-	4300	-	1100	1900	3100	1400
Alkalinity (Total)	280	210	280	320	-	-	230	-	-	300	-	-	220	-	-	180	-	-	-	210	-	270	-	310	190	130	330
Chloride	44	44	43	44	-	-	44	-	-	41	-	-	46	-	-	36	-	-	-	42	-	40	-	44	37	62	41
Ammoniacal Nitrogen	0.35	0.028	0.46	0.52	0.23	0.47	0.33	0.47	0.34	0.11	0.7	0.23	0.35	1.2	0.9	2.4	5.0	1.3	2.7	0.11	2.2	1.1	0.6	0.18	0.17	<0.050	<0.050
Nitrite	<0.020	<0.020	0.026	0.078	<0.020	<0.020	<0.020	0.028	0.028	0.069	0.26	<0.020	0.050	0.070	0.045	0.13	1.3	1.6	0.042	0.052	0.073	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate	22	22	23	29	30	24	14	31	23	17	24	24	23	24	24	45	35	34	29	17	3.9	18	21	22	27	9.1	21.0
Sulphate	150	130	140	140	120	100	150	130	130	140	160	150	140	140	140	67	120	150	140	130	66	140	130	130	72	24	110
Calcium	110	95	130	110	-	-	86	-	-	98	-	-	88	-	-	67	-	-	-	85	-	89	-	82	65	73	92
Potassium	2.7	2.5	5.3	2.9	-	-	3.6	-	-	2.4	-	-	2.4	-	-	1.9	-	-	-	2.0	-	3.5	-	2.2	2.2	4.5	2.6
Magnesium	39	33	44	38	-	-	28	-	-	36	-	-	35	-	-	20	-	-	-	29	-	35	-	33	20	25	29
Sodium	30	26	34	31	-	-	24	-	-	29	-	-	24	-	-	20	-	-	-	25	-	28	-	27	22	24	26
Hardness	420	370	510	420	-	-	330	-	-	390	-	-	360	-	-	250	-	-	-	330	-	370	-	340	250	290	350
Arsenic (Dissolved)	1.4	1.0	<1.0	<1.0	-	-	<1.0	-	-	2.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	1.7	1.0	1.6
Boron (Dissolved)	1200	34	540	530	-	-	690	-	-	21	-	-	21	-	-	28	-	-	-	27	-	370	-	33	920	610	27
Cadmium (Dissolved)	<0.080	<0.080	<0.080	0.31	-	-	<0.080	-	-	<0.080	-	-	<0.080	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080	<0.080
Chromium (Dissolved)	1.4	2.2	<1.0	<1.0	-	-	<1.0	-	-	10	-	-	4.9	-	-	<1.0	-	-	-	1.3	-	1.4	-	19	5.3	<1.0	5.9
Copper (Dissolved)	6.7	1.9	<1.0	<1.0	-	-	<1.0	-	-	1.2	-	-	<1.0	-	-	2.1	-	-	-	<1.0	-	<1.0	-	18	<1.0	1.0	<1.0
Iron (Dissolved)		590	210	220	370	150	270	320	260	510	290	280	130	210	340	300	160	75	<20	470	220	150	230	220	220	180	430
Mercury (Dissolved)	<0.50	0.8	<0.50	<0.50	-	-	<0.50	-	-	0.56	-	-	<0.50	-	-	<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	<0.50
Manganese (Dissolved)	79	82	5.1		15	37	21	17	53	36	22	66	10	92	31	39	9.9	5.0	12	11	6.8	140	17	110	200	8.7	12
Nickel (Dissolved)	1.0	1.1	<1.0	2.8	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	1.7	<1.0	<1.0	<1.0
Lead (Dissolved)	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Selenium (Dissolved)	5.4	3.3	3.6	<1.0	-	-	3.7	-	-	2.8	-	-	2.2	-	-	2.9	-	-	-	3.2	-	2.1	-	3.2	2.8	<1.0	3.2
Zinc (Dissolved)	24	23	3.7	3.0	-	-	<1.0	-	-	5.2	-	-	3.6	-	-	6.3	-	-	-	3.9	-	<1.0	-	7.1	3.5	19	6.6
Chromium (Hexavalent)	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	<20	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20	<20
Total Organic Carbon	9.5	7.2	<2.0	11	3.2	4.0	19	22	4.5	3.3	11	36	47	15	3.0	16	12	4.6	7.2	7.7	6.5	3.0	<2.0	7.1	12	2.5	<2.0
Total TPH >C6-C40	930	<10	<10	<10	-	-	<10	-	-	<10	-	-	<10	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10	<10
Total Of 16 PAH's	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0

Notes:

Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certificates for inspection.

Where a contaminant concentration slightly exceeds the adopted assessment criteria, and this is assumed by Horizon to be due to the laboratory reporting limit, this has not been highlighted as an exceedance.

LRL - Laboratory Reporting Limit

EQS - Environmental Quality Standard

* - DWS - Drinking Water Standard

** - Criteria for Phenol applied

UK - United Kingdom

AA - Annual Average

Denotes exceedance of DWS

Denotes exceedance of EQS

Denotes exceedance of DWS and EQS

Table D3b
Existing Eales Farm Landfill - Groundwater Quality Data

Sample Location			Assessment Criteria				BH11 B																						BH19-1		BH19-2		BH19-3		BH19-4	BH19-6		BH19-8
Screened Geology							Bedrock (Groundwater)																						Mudstone		Mudstone		Mudstone		Mudstone	Mudstone		Mudstone
Determinand	Units	LRL	EQS (Freshwater)	EQS Source	DWS	DWS Source	31-Aug-2016	24-May-2017	09-Aug-2017	23-Nov-2017	13-Dec-2017	10-Jan-2018	24-Feb-2018	27-Mar-2018	26-Apr-2018	23-May-2018	26-Jun-2018	19-Jul-2018	13-Aug-2018	26-Sep-2018	25-Oct-2018	20-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	24-Mar-2019	29-Apr-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	03-Feb-2020	18-Mar-2020	21-May-2020	18-Mar-2020	21-May-2020	18-Mar-2020	18-Mar-2020	21-May-2020	18-Mar-2020
pH		NA	6 - 9*	UK DWS	6.5 - 9.5	WHO	8.4	8.3	8.2	7.2	8.2	8.4	8.2	7.3	7.0	7.4	8.4	8.3	8.4	9.1	7.2	8.2	7.5	8.0	7.1	7.9	8.4	8.4	8.3	8.1	8.1	8.1	8.5	8.5	8.6	8.4	8.4	8.4	8.6	8.3
Electrical Conductivity	µS/cm	1	1000	UK DWS	2500	UK	630	570	530	690	-	-	630	-	-	980	-	-	810	-	-	970	-	-	-	530	-	880	-	620	800	930	710	670	820	590	820	620	810
Suspended Solids	mg/l	5					-	-	-	-	-	-	-	-	-	-	-	-	1100	-	-	470	-	-	-	730	-	1700	-	1500	64	1000	130	140	<5.0	5700	<5.0	220	<5.0	79000	<5.0
Alkalinity (Total)	mg Ca CO_3/l	10	-	-	-	-	250	250	270	330	-	-	220	-	-	240	-	-	240	-	-	240	-	-	-	220	-	260	-	290	220	240	210	200	210	210	410	140	490	380	140	470
Chloride	mg/l	1	250	UK (Non Statutory)	250	UK	31	30	29	25	-	-	92	-	-	310	-	-	34	-	-	29	-	-	-	28	-	30	-	32	31	31	68	56	41	41	59	55	32	44	34	30
Ammoniacal Nitrogen	mg/l	0.01	0.6	UK AA EQS	0.05	EU	0.35	0.014	*0.18*	*0.46*	*0.23*	*0.20*	*0.06*	*0.75*	*0.33*	*0.093*	*2.7*	*0.24*	*0.24*	*1.3*	*1.5*	*2.6*	*1.2*	*2.2*	*3.5*	*0.093*	*0.2*	*2.2*	*0.8*	*0.23*	<0.050	*0.078*	*0.18*	<0.050	<0.050	*0.18*	*0.092*	*0.08*	*0.092*	*0.09*
Nitrite	mg/l	0.02	-	-	-	UK	<0.020	<0.020	<0.020	0.055	<0.020	<0.020	<0.020	0.27	0.022	<0.020	0.032	0.42	0.027	<0.020	<0.020	0.093	0.055	0.067	0.069	0.022	0.033	<0.020	<0.020	0.039	0.059	<0.020	<0.020	<0.020	<0.020	0.022	0.061	<0.020	<0.020	<0.020	<0.020
Nitrate	mg/l	0.8	-	-	50	UK	3.7	2.7	2.7	2.8	4.8	3.4	2.8	3.7	5.0	2.0	4.4	5.0	4.5	5.8	6.1	4.9	3.4	3.5	2.9	2.1	27	3.7	3.7	5.6	3.1	4.3	11.0	7.3	11.0	13.0	5.9	2.0	6.9	1.2	<0.8	15.0
Sulphate	mg/l	1	400	UK AA (Non Statutory)	250	UK	52	66	61	100	96	63	57	52	68	52	59	49	51	240	*270*	76	25	90	44	45	130	48	60	46	61	52	77	69	61	47	42	51	77	67	53	81
Calcium	mg/l	5	-	-	-	-	61	60	64	94	-	-	62	-	-	67	-	-	53	-	-	63	-	-	-	69	-	62	-	51	75	76	77	69	50	51	96	18	93	54	50	95
Potassium	mg/l	0.5	-	-	-	-	2.7	2.8	4.5	9.8	-	-	8.9	-	-	4.1	-	-	2.0	-	-	7.3	-	-	-	6.5	-	2.6	-	1.8	8.5	6.3	3.1	3.2	1.4	2.1	1.6	6.4	7.6	4.3	4.9	<0.50
Magnesium	mg/l	0.5	-	-	-	-	31	25	35	24	-	-	20	-	-	25	-	-	28	-	-	12	-	-	-	13	-	28	-	25	13	22	17	21	23	22	3.6	11	2.0	22	25	23
Sodium	mg/l	0.5	-	-	200	UK	21	18	25	20	-	-	31	-	-	21	-	-	19	-	-	18	-	-	-	17	-	21	-	19	19	20	33	37	20	21	7.8	64	3.9	32	22	2.4
Hardness	mg/l	19	-	-	-	-	280	250	350	330	-	-	240	-	-	270	-	-	230	-	-	260	-	-	-	230	-	270	-	230	240	290	260	200	220	220	39	90	320	230	230	330
Arsenic (Dissolved)	µg/l	1	50	UK AA EQS	10	UK	1.2	<1.0	<1.0	1.7	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	1.3	<1.0	2.3	<1.0	<1.0	<1.0	7.7	1.2	9.5	<1.0	1.0	<1.0
Boron (Dissolved)	µg/l	20	2000	UK AA EQS	1000	UK	*1100*	44	*2300*	*1100*	-	-	1000	-	-	2.0	-	-	22	-	-	72	-	-	-	3.3	-	37.0	-	28	*1300*	32	540	<20	500	2.4	620	55	640	6.40	43	80.0
Cadmium (Dissolved)	µg/l	0.08	5.0	UK AA EQS	10	UK	<0.080	<0.080	<0.080	0.22	-	-	<0.080	-	-	<0.080	-	-	<0.080	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Chromium (Dissolved)	µg/l	1	4.7	UK AA EQS	50	UK	1.1	2.2	<1.0	<1.0	-	-	2.1	-	-	5.0	-	-	6.4	-	-	4.6	-	-	-	<1.0	-	1.6	-	15	7.5	<1.0	1.2	4.5	1.2	2.0	1.0	6.0	<1.0	<1.0	2	1.3
Copper (Dissolved)	µg/l	1	10	UK AA EQS	2,000	UK	2.2	2.1	<1.0	<1.0	-	-	1.2	-	-	1.0	-	-	<1.0	-	-	3.6	-	-	-	1.2	-	<1.0	-	<1.0	3.2	<1.0	4.8	1.5	5.4	1.1	4.2	2.6	6.5	1.5	1.8	2.0
Iron (Dissolved)	µg/l	20	1000	UK AA EQS	200	UK	-	*370*	67	*830*	*20.0*	120	*280*	*300*	170	120	180	160	110	*260*	*430*	*280*	150	61	<20	*3.60*	170	110	1.40	140	*8.80*	120	*260*	*230*	*320*	*2.60*	*260*	160	*5.20*	*220*	*730*	*410*
Mercury (Dissolved)	µg/l	0.5	0.05	UK AA EQS	1.0	UK	<0.50	<0.50	<0.50	<0.50	-	-	<0.50	-	-	<0.50	-	-	<0.50	-	-	<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	*0.84*	<0.50	<0.50	<0.50	<0.50	<0.50
Manganese (Dissolved)	µg/l	1	30	UK AA EQS	50	UK	6.9	26	*87*	*7700*	1.5	2.7	4.6	8.6	7.9	2.7	12	2.2	*38.0*	11	3.4	*6.3*	2.3	*85*	<1.0	20	2.0	11	2.6	5.7	3.7	14	20	3.1	*59*	4.8	*220*	43	*98*	*5300*	*7900*	23
Nickel (Dissolved)	µg/l	1	2.0	UK AA EQS	20	UK	<1.0	1.2	<1.0	2.7	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	1.0	<1.0	<1.0	1.5	<1.0	1.7	<1.0	8.8	2.1	2.3	2.8	7.4	2.3
Lead (Dissolved)	µg/l	1	7.2	UK AA EQS	10	UK	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	3.2	<1.0	2.9	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0
Selenium (Dissolved)	µg/l	1	-	-	10	UK	2.0	1.2	<1.0	6.4	-	-	1.1	-	-	<1.0	-	-	1	-	-	1.5	-	-	-	<1.0	-	<1.0	-	1.3	2.6	<1.0	1.5	<1.0	1.5	1.4	1.6	1.4	2.1	2	<1.0	4
Zinc (Dissolved)	µg/l	1	7.9	UK AA EQS	5,000	US EPA	14.0	21	2.9	<1.0	-	-	3.3	-	-	3.3	-	-	<1.0	-	-	1.6	-	-	-	<1.0	-	<1.0	-	1.1	7.2	1.2	16	9.0	9.0	4.6	26	13	11	61	5.2	10
Chromium (Hexavalent)	µg/l	20	-	-	-	-	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	<20	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Total Organic Carbon	mg/l	2	-	-	-	-	8.7	6.1	2.3	12	3.3	3.4	9.6	22	4.1	3.6	7.0	29	40	7.0	3.8	17	4.5	5.4	1.1	7.3	6.8	3.5	28	4.4	16	<2.0	3.1	<2.0	<2.0	<2.0	4.4	<2.0	<2.0	3.9	<2.0	<2.0
Total TPH>C6-C40	µg/l	10	-	-	10	UK (revoked)	*340*	<10	<10	<10	-	-	<10	-	-	<10	-	-	<10	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10	<10	<10	<10	<10	*150*	<10	<10	<10	<10	<10
Total Of 16 PAHs	µg/l	2	-	-	-	-	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

Notes:
Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certifica
Where a contaminant concentration slightly exceeds the adopted assessment criteria, and this is assumed by HI
LRL - Laboratory Reporting Limit
EQS - Environmental Quality Standard
* - DWS - Drinking Water Standard
** - Criteria for Phenol applied
UK - United Kingdom
AA - Annual Average
Denotes exceedance of DWS
Denotes exceedance of EQS
Denotes exceedance of DWS and EQS

Table 4
Existing Eales Farm Landfill - Surface Water Quality Data

Determinand	Units	LRL	EQS (Freshwater)	EQS Source	DWS	DWS Source
pH		N/A	6 - 9*	UK DWS	6.5 - 8.5	WHO
Electrical Conductivity	µS/cm	1	1000	UK DWS	2500	UK
Suspended Solids	mg/l	5				
Alkalinity (Total)	mg $CaCO_3$/l	10	-	-	-	-
Chloride	mg/l	1	250	UK (Non Statutory)	250	UK
Ammoniacal Nitrogen	mg/l	0.01	0.6	UK AA EQS	0.05	EU
Nitrite	mg/l	0.02	-	-	0.5	UK
Nitrate	mg/l	0.5	-	-	50	UK
Sulphate	mg/l	1	400	UK AA (Non Statutory)	250	UK
Calcium	mg/l	5	-	-	-	-
Potassium	mg/l	0.5	-	-		-
Magnesium	mg/l	0.5	-	-	-	-
Sodium	mg/l	0.5	-	-	200	UK
Hardness	mg/l	15	-	-	-	-
Arsenic (Dissolved)	µg/l	1	50	UK AA EQS	10	UK
Boron (Dissolved)	µg/l	20	2000	UK AA EQS	1000	UK
Cadmium (Dissolved)	µg/l	0.08	50	UK AA EQS	10	UK
Chromium (Dissolved)	µg/l	1	4.7	UK AA EQS	50	UK
Copper (Dissolved)	µg/l	1	10	UK AA EQS	2,000	UK
Iron (Dissolved)	µg/l	20	1000	UK AA EQS	200	UK
Mercury (Dissolved)	µg/l	0.5	0.05	UK AA EQS	1.0	UK
Manganese (Dissolved)	µg/l	1	30	UK AA EQS	50	UK
Nickel (Dissolved)	µg/l	1	20	UK AA EQS	20	UK
Lead (Dissolved)	µg/l	1	7.2	UK AA EQS	10	UK
Selenium (Dissolved)	µg/l	1	-	-	10	UK
Zinc (Dissolved)	µg/l	1	75	UK AA EQS	5,000	USEPA
Chromium (Hexavalent)	µg/l	20	-	-	-	-
Total Organic Carbon	mg/l	2	-	-	-	-
Total TPH >C6-C40	µg/l	10	-	-	10	UK (revoked)
Total Of 16 PAH's	µg/l	2	-	-	-	UK

MSW1 – Unnamed Stream Located North of Site

Determinand	########	24-May-2017	########	22-Nov-2017	26-Feb-2018	29-May-2018	26-Jun-2018	18-Jul-2018	########	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	########	27-Nov-2019	19-Feb-2020	21-May-2020
pH	8.2	8.4	8.4	7.5	7.0	7.6	7.9	8.3	8.1	8.2	7.4	8.2	7.8	8.3	7.5	8.2	9.2	8.1	8.4	8.0	8.1	7.3	8.3
Electrical Conductivity	410	370	390	370	340	400	-	-	340	-	-	280	-	-	-	340	-	440	-	380	300	340	370
Suspended Solids	-	-	-	-	-	-	-	-	2200	-	-	240	-	-	-	340	-	8300	-	8100	11	8100	9000
Alkalinity (Total)	140	120	140	150	230	160	-	-	120	-	-	92	-	-	-	130	-	130	-	150	96	110	170
Chloride	29	26	23	24	30	25	-	-	29	-	-	28	-	-	-	23	-	25	-	29	22	26	27
Ammoniacal Nitrogen	0.29	0.019	0.26	0.40	3.4	0.63	0.68	1.80	0.2	1.1	1.7	2.4	5.1	2.2	3.0	<0.050	2.0	1.5	1.5	0.2	0.078	1.4	0.4
Nitrite	0.110	<0.020	<0.020	0.048	<0.020	0.070	<0.020	0.067	0.049	<0.020	0.025	0.043	0.18	0.029	0.024	<0.020	0.12	<0.020	0.022	<0.020	0.074	0.26	0.049
Nitrate	7.6	14.0	13.0	14	<0.50	3.4	4.2	<0.50	18	16	11	17	23	14	11	11	4.8	7.2	9.3	6.8	15	1.6	6.3
Sulphate	31	22	23	25	15	21	29	24	27	25	29	31	37	19	36	20	25	23	23	25	19	19	22
Calcium	42	40	54	49	60	42	-	-	32	-	-	29	-	-	-	39	-	55	-	35	44	42	37
Potassium	5.8	5.0	5.4	5.8	4.7	7.2	-	-	4.8	-	-	4.5	-	-	-	4.8	-	4.4	-	5.1	5.5	7.4	4.6
Magnesium	10	8.2	15	9.7	8.6	8.9	-	-	6.4	-	-	6.0	-	-	-	7.0	-	14.0	-	6.7	7.3	7.4	7.4
Sodium	18	15	16	18	13	17	-	-	13	-	-	13	-	-	-	14	-	19	-	18	14	21	16
Hardness	150	130	200	160	190	140	-	-	110	-	-	97	-	-	-	130	-	200	-	120	140	140	120
Arsenic (Dissolved)	<1.0	<1.0	<1.0	<1.0	<1.0	4.2	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Boron (Dissolved)	1000	100	700	<20	42	130	-	-	40	-	-	32	-	-	-	20	-	310	-	44	460	28	35
Cadmium (Dissolved)	<0.080	<0.080	0.082	<0.080	<0.080	<0.080	-	-	<0.080	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080	<0.080
Chromium (Dissolved)	1.2	<1.0	<1.0	<1.0	<1.0	1.1	-	-	2.6	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	7.2	<1.0	<1.0	<1.0
Copper (Dissolved)	1.0	2.4	1.3	<1.0	<1.0	<1.0	-	-	<1.0	-	-	1.5	-	-	-	1.5	-	<1.0	-	2.4	<1.0	<1.0	<1.0
Iron (Dissolved)		140	86	270	84	130	310	210	37	86	190	110	60	<20	<20	160	110	66	80	90	100	110	170
Mercury (Dissolved)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	<0.50			<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	2.0	<0.50	<0.50
Manganese (Dissolved)	55	11	35	27	4.9	2000	71	380	30	2.6	4.5	5.9	1.2	<1.0	1.2	1.6	11	3.7	59	130	9.4	3600	3.1
Nickel (Dissolved)	<1.0	1.4	1.9	1.2	<1.0	2.1	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	1.8	<1.0	<1.0	<1.0
Lead (Dissolved)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Selenium (Dissolved)	2.4	<1.0	<1.0	<1.0	<1.0	3.9	-	-	<1.0	-	-	1.1	-	-	-	<1.0	-	<1.0	-	1.2	1.3	<1.0	<1.0
Zinc (Dissolved)	1.3	48	5.1	<1.0	3.5	4.4	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	2.7	<1.0	3.3	1.5
Chromium (Hexavalent)	<20	<20	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20	<20
Total Organic Carbon	12	9.9	2.9	14	19	5.3	7.1	21	24	6.3	6.5	17	8.2	11	9.4	11	6.1	4.8	3.9	5.6	4.8	13	7
Total TPH >C6-C40	140	<10	<10	<10	<10	<10	-	-	<10	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10	<10
Total Of 16 PAH's	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	2.3	-	<2.0	-	<2.0	<2.0	<2.0	<2.0

MSW2 – Pond in North-West Corner of Site

Determinand	########	24-May-2017	########	22-Nov-2017	26-Feb-2018	29-May-2018	26-Jun-2018	18-Jul-2018	########	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	########	27-Nov-2019	19-Feb-2020	21-May-2020
pH	8.3	8.3	8.5	7.4	7.4	8.2	8.9	8.5	8.0	8.1	7.4	8.5	7.8	8.2	8.9	8.8	8.7	8.0	8.4	7.9	8.1	7.8	8.4
Electrical Conductivity	400	350	360	360	380	360	-	-	260	-	-	290	-	-	-	340	-	500	-	360	300	330	380
Suspended Solids	-	-	-	-	-	-	-	-	16	-	-	35	-	-	-	13	-	46	-	330	<5.0	52	33
Alkalinity (Total)	130	120	140	99	95	150	-	-	92	-	-	99	-	-	-	130	-	140	-	150	110	88	150
Chloride	29	24	22	81	45	27	-	-	24	-	-	26	-	-	-	27	-	26	-	27	26	28	28
Ammoniacal Nitrogen	0.3	0.01	0.24	0.55	0.64	0.30	0.55	0.57	0.42	0.9	1.2	1.2	5.9	4.0	2.5	0.29	1.5	1.4	1.1	0.64	0.093	0.19	0.18
Nitrite	0.280	0.05	0.23	0.061	<0.020	0.056	<0.020	<0.020	0.420	0.330	0.097	0.110	0.280	0.110	0.037	0.035	0.082	0.120	0.039	0.140	0.150	<0.020	0.050
Nitrate	5.5	7.3	5.4	9.0	4.9	<0.50	<0.50	<0.50	8.8	5.6	6.9	14.0	21	13.0	6.2	5.1	5.1	1.3	<0.50	<0.50	9.8	11	4
Sulphate	22	21	21	23	17	17	19	16	27	22	24	22	35	19	20	18	17	17	20	21	19	16	22
Calcium	40	29	47	27	35	39	-	-	20	-	-	31	-	-	-	38	-	37	-	33	37	39	41
Potassium	7.8	4.1	6.3	4.1	4.9	5.2	-	-	5.3	-	-	5.2	-	-	-	5.8	-	3.7	-	9.1	7.2	5.9	6.2
Magnesium	8.3	5.3	11	5.5	5.5	8.1	-	-	3.9	-	-	6.3	-	-	-	6.3	-	6.4	-	5.8	6.0	6.6	7.2
Sodium	19	11	17	11	22	17	-	-	8.9	-	-	15	-	-	-	15	-	18	-	17	17	17	18
Hardness	130	94	160	90	110	130	-	-	66	-	-	100	-	-	-	120	-	120	-	110	120	130	130
Arsenic (Dissolved)	3.7	2.0	<1.0	<1.0	1.5	2.1	-	-	2.3	-	-	1.0	-	-	-	1.1	-	1.1	-	1.7	2.1	<1.0	2
Boron (Dissolved)	1000	60	710	<20	55	55	-	-	41	-	-	26	-	-	-	<20	-	540	-	51	570	23	37
Cadmium (Dissolved)	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	-	-	<0.080	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080	<0.080
Chromium (Dissolved)	2.1	<1.0	<1.0	<1.0	2.3	6.7	-	-	4.8	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	13	<1.0	<1.0	<1.0
Copper (Dissolved)	3.5	2.7	<1.0	4.4	3.7	1.3	-	-	1.8	-	-	2.6	-	-	-	1.5	-	<1.0	-	<1.0	1.5	2.8	1.2
Iron (Dissolved)	-	180	71	840	130	99	110	150	38	110	140	120	89	27	<20	200	90	66	110	420	130	91	240
Mercury (Dissolved)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	<0.50	-	-	<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	1.8	<0.50	<0.50
Manganese (Dissolved)	3.1	5.6	2.0	45	9.1	32	7.6	6.4	5.7	3.6	62	7.0	5.1	1.1	<1.0	1.3	1.1	1.5	7.4	300	5.2	3.5	3.1
Nickel (Dissolved)	2.3	<1.0	<1.0	4.3	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	2.1	<1.0	<1.0	<1.0
Lead (Dissolved)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Selenium (Dissolved)	1.9	1.0	<1.0	<1.0	<1.0	1.8	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	1.7	<1.0	<1.0
Zinc (Dissolved)	4.1	17	2.8	<1.0	24	<1.0	-	-	<1.0	-	-	2.2	-	-	-	<1.0	-	<1.0	-	2.4	35	13	74
Chromium (Hexavalent)	<20	<20	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20	<20
Total Organic Carbon	12	9.4	4.1	13	17	4.4	9.6	22	22	6.7	5.5	16	7.4	7.6	9.3	8.2	7.4	4.8	4.9	12	6.2	6.0	4.2
Total TPH >C6-C40	180	<10	<10	<10	<10	<10	-	-	<10	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10	<10
Total Of 16 PAH's	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0

MSW3 – Water Flowing Beneath Culvert

Determinand	########	24-May-2017	06-Jun-2017	########	22-Nov-2017	13-Dec-2017	10-Jan-2018	26-Feb-2018	27-Mar-2018	26-Apr-2018	29-May-2018	26-Jun-2018	18-Jul-2018	########	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	########	27-Nov-2019	19-Feb-2020	21-May-2020
pH	8.1	8.0	7.9	8.1	7.0	8.1	8.1	7.3	7.4	7.1	7.4	8.2	8.1	8.0	8.0	7.1	8.1	7.4	8.2	7.7	8.1	8.4	8.3	8.1	7.6	8.1	7.8	8.1
Electrical Conductivity	860	630	380	580	780	-	-	680	-	-	800	-	-	840	-	-	620	-	-	-	710	-	790	-	750	740	560	660
Suspended Solids	-	-	-	-	-	-	-	-	-	-	-	-	-	<5.0	-	-	64	-	-	-	30	-	21	-	<5.0	160	7	78
Alkalinity (Total)	390	330	160	370	420	-	-	240	-	-	350	-	-	350	-	-	310	-	-	-	470	-	350	-	380	240	330	410
Chloride	34	31	29	30	32	-	-	32	-	-	34	-	-	40	-	-	35	-	-	-	28	-	31	-	34	30	34	30
Ammoniacal Nitrogen	0.23	0.025	0.19	0.15	0.39	0.42	0.18	0.55	1.0	0.53	0.12	0.67	0.17	0.42	1.20	0.23	2.60	4.70	2.4	1.80	<0.050	1.70	1.60	0.78	0.30	0.12	<0.050	<0.050
Nitrite	<0.020	<0.020	0.24	<0.020	0.044	<0.020	<0.020	<0.020	0.026	0.15	<0.020	0.021	<0.020	<0.020	<0.020	<0.020	0.059	0.25	<0.020	<0.020	<0.020	0.31	<0.020	<0.020	3.3	<0.020	<0.020	<0.020
Nitrate	3.1	2.9	9.0	3.0	4.7	6.4	6.9	2.8	6.6	4.8	2.5	3.8	3.3	4.2	4.1	3.7	7.4	19	5.4	6.5	4.1	5.7	2.3	2.6	3.3	5.9	7.3	2.7
Sulphate	71	77	22	70	75	90	85	75	71	33	64	74	81	100	78	70	85	96	77	89	66	23	68	61	61	89	82	58
Calcium	140	130	96	130	140	-	-	88	-	-	120	-	-	120	-	-	110	-	-	-	92	-	11	-	93	270	130	97
Potassium	8.8	9.0	4.9	9.3	9.1	-	-	7.0	-	-	8.5	-	-	7.7	-	-	10	-	-	-	8.2	-	1.6	-	7.4	15	10	6
Magnesium	20	18	8.1	18	20	-	-	13	-	-	16	-	-	16	-	-	14	-	-	-	14	-	1.3	-	16	21	16	13
Sodium	25	21	19	23	26	-	-	19	-	-	23	-	-	19	-	-	23	-	-	-	21	-	8.1	-	22	31	23	19
Hardness	430	400	270	400	420	-	-	270	-	-	370	-	-	370	-	-	320	-	-	-	290	-	33	-	300	760	380	300
Arsenic (Dissolved)	2.4	3.0	4.5	2.3	<1.0	-	-	2.0	-	-	2.8	-	-	1.9	-	-	2.9	-	-	-	1.7	-	1.7	-	2.6	2.2	2.4	3.0
Boron (Dissolved)	1000	120	31	380	690	-	-	77	-	-	100	-	-	110	-	-	90	-	-	-	58	-	520	-	110	610	110	91
Cadmium (Dissolved)	0.2	<0.080	<0.080	<0.080	<0.080	-	-	<0.080	-	-	<0.080	-	-	<0.080	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080	<0.080
Chromium (Dissolved)	1.5	7.1	<1.0	<1.0	<1.0	-	-	1.0	-	-	8.1	-	-	7.0	-	-	4.9	-	-	-	<1.0	-	2.0	-	33	<1.0	<1.0	7.3
Copper (Dissolved)	2.0	2.3	2.1	1.3	<1.0	-	-	1.7	-	-	2.0	-	-	1.2	-	-	5.4	-	-	-	1.1	-	<1.0	-	1.3	1.2	2.4	2.0
Iron (Dissolved)	-	450	200	240	210	400	140	210	250	230	250	260	420	220	250	320	390	260	100	24	590	160	190	220	340	280	230	380
Mercury (Dissolved)	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	1.6	-	-	<0.50	-	-	<0.50	-	-	<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	1.3	<0.50	<0.50
Manganese (Dissolved)	20	18	130	2.0	16	17	1.1	1.4	5.7	1.7	2.4	4.8	1.5	2.2	2.1	2.8	100	2.2	<1.0	5.5	6.3	540	1.4	2.1	14	1.9	2.1	3.1
Nickel (Dissolved)	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	3.4	<1.0	<1.0	<1.0
Lead (Dissolved)	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Selenium (Dissolved)	12	1.6	<1.0	1.4	<1.0	-	-	2.1	-	-	1.6	-	-	1.4	-	-	2.0	-	-	-	1.0	-	1.2	-	1.6	1.4	1.8	1.8
Zinc (Dissolved)	12	12	11	10	<1.0	-	-	4.6	-	-	5.7	-	-	7.6	-	-	6.0	-	-	-	2.8	-	<1.0	-	12	6.5	6.7	6.8
Chromium (Hexavalent)	<20	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	<20	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20	<20
Total Organic Carbon	9.1	8.5	7.4	3.7	13	9.2	4.8	15	21	5.2	3.1	7.8	38	62	16	3.9	19	6.2	5.0	11	9.0	6.1	3.9	2.8	6.9	15	4.2	2.9
Total TPH >C6-C40	<10	<10	<10	<10	<10	-	-	<10	-	-	<10	-	-	<10	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10	<10
Total Of 16 PAH's	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0

Notes:

Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certificates for inspection.

Where a contaminant concentration slightly exceeds the adopted assessment criteria, and this is assumed by Horizon to be due to the laboratory reporting limit, this has not been highlighted as an exceedance.

The original labelling for locations MSW3 and MSW4 is contradictory in the JGP report. Based on the results reported and looking at the overall results for each population, Horizon has inferred that the data from the August 2016, May 2017 and July 2017 sampling events was incorrectly labelled and has updated this table accordingly.

Sample obtained from seepage to north-west of culvert

Sample obtained from stream, approximately 10m downstream of culvert discharge

LRL - Laboratory Reporting Limit
EQS - Environmental Quality Standard
* - DWS - Drinking Water Standard
** - Criteria for Phenol applied
UK - United Kingdom
AA - Annual Average

Denotes exceedance of DWS

Denotes exceedance of EQS

Denotes exceedance of DWS and EQS

Table 4

Existing Eales Farm Landfill - Surface Water Quality Data

Sample ID			Assessment Criteria				MSW4													
Location							Culvert Outfall (Downgradient of Site)													
Determinand	Units	LRL	EQS (Freshwater)	EQS Source	DWS	DWS Source	########	24-May-2017	29-Jul-2017	########	22-Nov-2017	13-Dec-2017	10-Jan-2018	26-Feb-2018	27-Mar-2018	26-Apr-2018	29-May-2018	26-Jun-2018	18-Jul-2018	########
pH		N/A	6 - 9*	UK DWS	6.5 - 8.5	WHO	8.4	8.2	8.7	8.2	7.9	8.3	8.3	7.7	7.7	7.7	8.1	8.5	8.2	8.4
Electrical Conductivity	µS/cm	1	1000	UK DWS	2500	UK	630	510	470	460	620	-	-	550	-	-	590	-	-	510
Suspended Solids	mg/l	5					-	-	-	-	-	-	-	-	-	-	-	-	-	<5.0
Alkalinity (Total)	mg $CaCO_3$/l	10	-	-	-	-	230	230	190	290	340	-	-	190	-	-	230	-	-	190
Chloride	mg/l	1	250	UK (Non Statutory)	250	UK	46	48	39	42	43	-	-	51	-	-	54	-	-	45
Ammoniacal Nitrogen	mg/l	0.01	0.6	UK AA EQS	0.05	EU	0.086	0.2	0.78	0.24	0.47	0.69	0.31	0.38	1.8	0.44	0.12	0.75	0.12	0.23
Nitrite	mg/l	0.02	-	-	0.5	UK	0.170	0.11	0.22	0.24	0.30	0.029	0.062	0.040	0.093	0.14	0.26	0.16	0.5	0.11
Nitrate	mg/l	0.5	-	-	50	UK	5.8	6.0	8.6	6.1	6.1	8.4	7.7	4.0	6.8	4.9	5.6	5.8	5.4	12
Sulphate	mg/l	1	400	UK AA (Non Statutory)	250	UK	21	28	23	26	26	29	37	30	25	28	24	30	23	27
Calcium	mg/l	5	-	-	-	-	75	93	66	96	89	-	-	64	-	-	75	-	-	78
Potassium	mg/l	0.5	-	-		-	6.5	7.1	4.4	7.7	6.7	-	-	5.5	-	-	6.3	-	-	4.5
Magnesium	mg/l	0.5	-	-	-	-	11	11	6.5	12	11	-	-	7.5	-	-	10	-	-	7.7
Sodium	mg/l	0.5	-	-	200	UK	27	26	20	30	32	-	-	26	-	-	27	-	-	19
Hardness	mg/l	15	-	-	-	-	230	280	190	290	270	-	-	190	-	-	230	-	-	230
Arsenic (Dissolved)	µg/l	1	50	UK AA EQS	10	UK	1.9	2.5	3.6	1.9	<1.0	-	-	1.5	-	-	<1.0	-	-	1.3
Boron (Dissolved)	µg/l	20	2000	UK AA EQS	1000	UK	920	64	470	830	1200	-	-	26	-	-	29	-	-	46
Cadmium (Dissolved)	µg/l	0.08	50	UK AA EQS	10	UK	<0.080	<0.080	<0.080	<0.080	<0.080	-	-	<0.080	-	-	<0.080	-	-	<0.080
Chromium (Dissolved)	µg/l	1	4.7	UK AA EQS	50	UK	1.7	<1.0	3.9	<1.0	<1.0	-	-	4.1	-	-	7.2	-	-	4.3
Copper (Dissolved)	µg/l	1	10	UK AA EQS	2,000	UK	1.2	1.7	3.8	1.1	<1.0	-	-	1.4	-	-	1.9	-	-	1.2
Iron (Dissolved)	µg/l	20	1000	UK AA EQS	200	UK	-	380	220	160	430	460	150	190	230	360	260	150	260	92
Mercury (Dissolved)	µg/l	0.5	0.05	UK AA EQS	1.0	UK	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	1.0	-	-	<0.50	-	-	<0.50
Manganese (Dissolved)	µg/l	1	30	UK AA EQS	50	UK	1,500	1,100	150	920	82	640	430	570	270	810	870	440	330	140
Nickel (Dissolved)	µg/l	1	20	UK AA EQS	20	UK	<1.0	<1.0	1.6	<1.0	2.9	-	-	<1.0	-	-	<1.0	-	-	<1.0
Lead (Dissolved)	µg/l	1	7.2	UK AA EQS	10	UK	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	<1.0
Selenium (Dissolved)	µg/l	1	-	-	10	UK	2.0	<1.0	1.3	1.0	<1.0	-	-	1.2	-	-	<1.0	-	-	1.0
Zinc (Dissolved)	µg/l	1	75	UK AA EQS	5,000	USEPA	6.0	7.4	97	3.6	14	-	-	13	-	-	4.5	-	-	4.1
Chromium (Hexavalent)	µg/l	20	-	-	-	-	<20	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	<20
Total Organic Carbon	mg/l	2	-	-	-	-	10	11	16	3.3	9.4	4.7	4.5	21	19	6.6	6.9	7.2	31	32
Total TPH >C6-C40	µg/l	10	-	-	10	UK (revoked)	150	<10	<10	<10	<10	-	-	<10	-	-	<10	-	-	<10
Total Of 16 PAH's	µg/l	2	-	-	-	UK	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	<2.0

Sample ID	MSW4 (continued)													
Location	Culvert Outfall (Downgradient of Site)													
Determinand	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	########	27-Nov-2019	19-Feb-2020	21-May-2020
pH	8.2	7.7	8.2	8.1	8.5	7.6	8.3	8.5	8.0	8.2	8.0	8.3	8.2	8.6
Electrical Conductivity	-	-	500	-	-	-	620	-	130	-	550	350	600	500
Suspended Solids	-	-	24	-	-	-	9	-	84	-	<5.0	7	5	7
Alkalinity (Total)	-	-	230	-	-	-	250	-	57	-	230	150	210	200
Chloride	-	-	42	-	-	-	52	-	9	-	55	23	43	39
Ammoniacal Nitrogen	0.93	0.63	2.70	4.90	1.60	2.70	0.23	2.20	2.60	0.93	0.26	0.17	0.13	<0.050
Nitrite	<0.020	0.13	0.15	0.63	0.4	0.52	0.18	<0.020	0.16	0.076	0.57	0.08	0.024	<0.020
Nitrate	<0.50	5.7	11	15	3.6	4.2	5.1	3.2	0.98	4.5	4.6	4.4	8.3	5.7
Sulphate	25	34	46	52	17	26	27	66	6.3	24	24	17	32	23
Calcium	-	-	89	-	-	-	69	-	45	-	60	82	92	60
Potassium	-	-	6.4	-	-	-	6.3	-	3.0	-	4.3	4.1	6.6	5.0
Magnesium	-	-	12	-	-	-	10	-	5.0	-	7.8	8.0	10	8
Sodium	-	-	25	-	-	-	28	-	23	-	27	15	28	24
Hardness	-	-	270	-	-	-	210	-	130	-	180	240	270	180
Arsenic (Dissolved)	-	-	1.6	-	-	-	1.3	-	1.8	-	<1.0	1.6	1.0	1.3
Boron (Dissolved)	-	-	43	-	-	-	30	-	580	-	44	730	34	39
Cadmium (Dissolved)	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080	<0.080
Chromium (Dissolved)	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	35	<1.0	<1.0	5.7
Copper (Dissolved)	-	-	2.3	-	-	-	1.5	-	<1.0	-	1.7	1.5	4.0	2.6
Iron (Dissolved)	170	210	380	180	27	280	510	210	110	140	260	160	190	260
Mercury (Dissolved)	-	-	<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	1.2	<0.50	<0.50
Manganese (Dissolved)	700	640	600	520	2.7	500	630	2.4	11	1,300	800	95	480	850
Nickel (Dissolved)	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	3.9	<1.0	<1.0	<1.0
Lead (Dissolved)	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Selenium (Dissolved)	-	-	1.5	-	-	-	<1.0	-	<1.0	-	<1.0	1.0	1.3	1.0
Zinc (Dissolved)	-	-	5.5	-	-	-	<1.0	-	110	-	4.8	20	20	15
Chromium (Hexavalent)	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20	<20
Total Organic Carbon	7.5	4.9	17	6.7	6.2	21	8.8	5.3	7.5	4.6	5.9	11	3.2	2.6
Total TPH >C6-C40	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10	<10
Total Of 16 PAH's	-	-	<2.0	-	-	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0

Sample ID	MSW5													MSW6				MSW7
Location	Upgradient Culvert													Seepage#				Stream##
Determinand	29-Jul-2017	########	26-Sep-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	29-May-2019	25-Jun-2019	########	27-Nov-2019	19-Feb-2020	21-May-2020	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	29-May-2019
pH	7.4	8.3	8.0	7.5	7.9	8.4	7.5	8.2	8.4	8.2	8.2	8.0	8.3	8.2	8.2	8.3	8.1	8.2
Electrical Conductivity	270	430	-	480	-	-	-	400	-	350	320	420	300	690	-	720	-	190
Suspended Solids	-	<5.0	-	29	-	-	-	520	-	9	<5.0	41	<5.0	360	-	390	-	94
Alkalinity (Total)	120	140	-	150	-	-	-	130	-	130	120	110	88	420	-	340	-	69
Chloride	18	48	-	47	-	-	-	35	-	36	31	43	26	28	-	30	-	9
Ammoniacal Nitrogen	0.5	0.41	1.20	2.30	4.40	1.40	4.40	1.20	0.78	0.44	0.58	<0.050	<0.050	<0.050	1.60	1.20	0.71	2.30
Nitrite	0.460	0.061	<0.020	0.053	0.074	0.36	0.38	0.8	0.024	0.87	0.082	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.23
Nitrate	9.2	12	1.3	7	8.6	6.2	2.6	3.4	4.7	6.1	3.6	<0.50	5.5	3.5	3.5	2.1	2.3	1.3
Sulphate	18	30	26	27	33	19	16	24	21	19	20	22	28	65	58	65	59	11
Calcium	38	49	-	80	-	-	-	43	-	37	43	48	31	95	-	99	-	43
Potassium	3.2	2.8	-	7.0	-	-	-	2.5	-	1.8	1.6	2.4	2.0	8.2	-	5.9	-	3.5
Magnesium	4.0	4.8	-	10	-	-	-	4.7	-	4.3	2.8	6.3	3.5	15	-	16	-	3.5
Sodium	17	17	-	26	-	-	-	19	-	17	19	26	15	21	-	22	-	14
Hardness	110	140	-	240	-	-	-	130	-	110	120	150	92	300	-	310	-	120
Arsenic (Dissolved)	7.7	2.6	-	4.2	-	-	-	1.8	-	2.6	3.5	1.3	4.4	1.3	-	2.4	-	1.7
Boron (Dissolved)	38	51	-	320	-	-	-	470	-	35	740	560	22	53	-	670	-	590
Cadmium (Dissolved)	<0.080	<0.080	-	<0.080	-	-	-	<0.080	-	<0.080	<0.080	<0.080	<0.080	<0.080	-	<0.080	-	<0.080
Chromium (Dissolved)	2.0	6.3	-	5.5	-	-	-	2.5	-	39	<1.0	<1.0	7.2	<1.0	-	2.6	-	1.1
Copper (Dissolved)	8.9	1.9	-	36	-	-	-	<1.0	-	3.7	1.6	3.7	3.5	<1.0	-	<1.0	-	<1.0
Iron (Dissolved)	130	72	130	650	100	76	<20	98	95	240	180	67	120	560	170	220	200	63
Mercury (Dissolved)	0.77	<0.50	-	<0.50	-	-	-	<0.50	-	<0.50	1.3	<0.50	<0.50	<0.50	-	<0.50	-	<0.50
Manganese (Dissolved)	11	25	23	150	5.3	160	4.7	61	30	18	19	15	3.0	8.4	<1.0	2.0	6.5	1.4
Nickel (Dissolved)	1.2	<1.0	-	2.4	-	-	-	<1.0	-	4.3	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0
Lead (Dissolved)	<1.0	<1.0	-	2.5	-	-	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0
Selenium (Dissolved)	4.0	1.2	-	1.3	-	-	-	<1.0	-	<1.0	<1.0	<1.0	1	<1.0	-	1.3	-	<1.0
Zinc (Dissolved)	89	9.2	-	78	-	-	-	1400	-	170	26	57	60	1.9	-	9.3	-	79
Chromium (Hexavalent)	<20	<20	-	<20	-	-	-	<20	-	<20	<20	<20	<20	<20	-	<20	-	<20
Total Organic Carbon	11	24	9.0	16	8.5	4.1	19	13	7.4	8.5	6.4	11	<2.0	8.0	5.8	4.7	3.8	7.1
Total TPH >C6-C40	<10	<10	-	<10	-	-	-	<10	-	<10	<10	<10	<10	<10	-	<10	-	<10
Total Of 16 PAH's	<2.0	<2.0	-	<2.0	-	-	-	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	-	<2.0

Notes:

Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certificates

Where a contaminant concentration slightly exceeds the adopted assessment criteria, and this is assumed by Horizo

The original labelling for locations MSW3 and MSW4 is contradictory in the JGP report. Based on the results reporte

Sample obtained from seepage to north-west of culvert

Sample obtained from stream, approximately 10m downstream of culvert discharge

LRL - Laboratory Reporting Limit
EQS - Environmental Quality Standard
* - DWS - Drinking Water Standard
** - Criteria for Phenol applied
UK - United Kingdom
AA - Annual Average

Denotes exceedance of DWS

Denotes exceedance of EQS

Denotes exceedance of DWS and EQS

Table D5a

Existing Eales Farm Landfill - Comparison of Percentage Difference between Surface Water Samples MSW1 and MSW2

Sample Type: MSW1

Determinand	Units	LRL	11-Aug-2016	24-May-2017	16-Aug-2017	22-Nov-2017	26-Feb-2018	29-May-2018	26-Jun-2018	18-Jul-2018	13-Aug-2018	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	19-Feb-2020
pH		N/A	8.2	8.4	8.4	7.5	7.0	7.6	7.9	8.3	8.1	8.2	7.4	8.2	7.8	8.3	7.5	8.2	9.2	8.1	8.4	8.0	8.1	7.3
Electrical Conductivity	µS/cm	1	410	370	390	370	340	400	-	-	340	-	-	280	-	-	-	340	-	440	-	380	300	340
Suspended Solids	mg/l	5	-	-	-	-	-	-	-	-	2200	-	-	240	-	-	-	340	-	8300	-	8100	11	8100
Alkalinity (Total)	mg $CaCO_3$/l	10	140	120	140	150	230	160	-	-	120	-	-	92	-	-	-	130	-	130	-	150	96	110
Chloride	mg/l	1	29	26	23	24	30	25	-	-	29	-	-	28	-	-	-	23	-	25	-	29	22	26
Ammoniacal Nitrogen	mg/l	0.01	0.29	0.019	0.26	0.40	3.4	0.63	0.68	1.80	0.2	1.1	1.7	2.4	5.1	2.2	3.0	<0.050	2.0	1.5	1.5	0.2	0.078	1.4
Nitrite	mg/l	0.02	0.110	<0.020	<0.020	0.048	<0.020	0.070	<0.020	0.067	0.049	<0.020	0.025	0.043	0.18	0.029	0.024	<0.020	0.12	<0.020	0.022	<0.020	0.074	0.26
Nitrate	mg/l	0.5	7.6	14.0	13.0	14	<0.50	3.4	4.2	<0.50	18	16	11	17	23	14	11	11	4.8	7.2	9.3	6.8	15	1.6
Sulphate	mg/l	1	31	22	23	25	15	21	29	24	27	25	29	31	37	19	36	20	25	23	23	25	19	19
Calcium	mg/l	5	42	40	54	49	60	42	-	-	32	-	-	29	-	-	-	39	-	55	-	35	44	42
Potassium	mg/l	0.5	5.8	5.0	5.4	5.8	4.7	7.2	-	-	4.8	-	-	4.5	-	-	-	4.8	-	4.4	-	5.1	5.5	7.4
Magnesium	mg/l	0.5	10	8.2	15	9.7	8.6	8.9	-	-	6.4	-	-	6.0	-	-	-	7.0	-	14.0	-	6.7	7.3	7.4
Sodium	mg/l	0.5	18	15	16	18	13	17	-	-	13	-	-	13	-	-	-	14	-	19	-	18	14	21
Hardness	mg/l	15	150	130	200	160	190	140	-	-	110	-	-	97	-	-	-	130	-	200	-	120	140	140
Arsenic (Dissolved)	µg/l	1	<1.0	<1.0	<1.0	<1.0	<1.0	4.2	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0
Boron (Dissolved)	µg/l	20	1000	100	700	<20	42	130	-	-	40	-	-	32	-	-	-	20	-	310	-	44	460	28
Cadmium (Dissolved)	µg/l	0.08	<0.080	<0.080	0.082	<0.080	<0.080	<0.080	-	-	<0.080	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080
Chromium (Dissolved)	µg/l	1	1.2	<1.0	<1.0	<1.0	<1.0	1.1	-	-	2.6	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	7.2	<1.0	<1.0
Copper (Dissolved)	µg/l	1	1.0	2.4	1.3	<1.0	<1.0	<1.0	-	-	<1.0	-	-	1.5	-	-	-	1.5	-	<1.0	-	2.4	<1.0	<1.0
Iron (Dissolved)	µg/l	20	-	140	86	270	84	130	310	210	37	86	190	110	60	<20	<20	160	110	66	80	90	100	110
Mercury (Dissolved)	µg/l	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	<0.50	-	-	<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	2.0	<0.50
Manganese (Dissolved)	µg/l	1	55	11	35	27	4.9	2000	71	380	30	2.6	4.5	5.9	1.2	<1.0	1.2	1.6	11	3.7	59	130	9.4	3600
Nickel (Dissolved)	µg/l	1	<1.0	1.4	1.9	1.2	<1.0	2.1	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	1.8	<1.0	<1.0
Lead (Dissolved)	µg/l	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0
Selenium (Dissolved)	µg/l	1	2.4	<1.0	<1.0	<1.0	<1.0	3.9	-	-	<1.0	-	-	1.1	-	-	-	<1.0	-	<1.0	-	1.2	1.3	<1.0
Zinc (Dissolved)	µg/l	1	1.3	48	5.1	<1.0	3.5	4.4	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	2.7	<1.0	3.3
Chromium (Hexavalent)	µg/l	20	<20	<20	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20
Total Organic Carbon	mg/l	2	12	9.9	2.9	14	19	5.3	7.1	21	24	6.3	6.5	17	8.2	11	9.4	11	6.1	4.8	3.9	5.6	4.8	13
Total TPH >C6-C40	µg/l	10	140	<10	<10	<10	<10	<10	-	-	<10	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10
Total Of 16 PAH's	µg/l	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	2.3	-	<2.0	-	<2.0	<2.0	<2.0

Sample Type: MSW2

Determinand	11-Aug-2016	24-May-2017	16-Aug-2017	22-Nov-2017	26-Feb-2018	29-May-2018	26-Jun-2018	18-Jul-2018	13-Aug-2018	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	19-Feb-2020
pH	8.3	8.3	8.5	7.4	7.4	8.2	8.9	8.5	8.0	8.1	7.4	8.5	7.8	8.2	8.9	8.8	8.7	8.0	8.4	7.9	8.1	7.8
Electrical Conductivity	400	350	360	360	380	360	-	-	260	-	-	290	-	-	-	340	-	500	-	360	300	330
Suspended Solids	-	-	-	-	-	-	-	-	16	-	-	35	-	-	-	13	-	46	-	330	<5.0	52
Alkalinity (Total)	130	120	140	99	95	150	-	-	92	-	-	99	-	-	-	130	-	140	-	150	110	88
Chloride	29	24	22	81	45	27	-	-	24	-	-	26	-	-	-	27	-	26	-	27	26	28
Ammoniacal Nitrogen	0.3	0.01	0.24	0.55	0.64	0.30	0.55	0.57	0.42	0.9	1.2	1.2	5.9	4.0	2.5	0.29	1.5	1.4	1.1	0.64	0.093	0.19
Nitrite	0.280	0.05	0.23	0.061	<0.020	0.056	<0.020	<0.020	0.420	0.330	0.097	0.110	0.280	0.110	0.037	0.035	0.082	0.120	0.039	0.140	0.150	<0.020
Nitrate	5.5	7.3	5.4	9.0	4.9	<0.50	<0.50	<0.50	8.8	5.6	6.9	14.0	21	13.0	6.2	5.1	5.1	1.3	<0.50	<0.50	9.8	11
Sulphate	22	21	21	23	17	17	19	16	27	22	24	22	35	19	20	18	17	17	20	21	19	16
Calcium	40	29	47	27	35	39	-	-	20	-	-	31	-	-	-	38	-	37	-	33	37	39
Potassium	7.8	4.1	6.3	4.1	4.9	5.2	-	-	5.3	-	-	5.2	-	-	-	5.8	-	3.7	-	9.1	7.2	5.9
Magnesium	8.3	5.3	11	5.5	5.5	8.1	-	-	3.9	-	-	6.3	-	-	-	6.3	-	6.4	-	5.8	6.0	6.6
Sodium	19	11	17	11	22	17	-	-	8.9	-	-	15	-	-	-	15	-	18	-	17	17	17
Hardness	130	94	160	90	110	130	-	-	66	-	-	100	-	-	-	120	-	120	-	110	120	130
Arsenic (Dissolved)	3.7	2.0	<1.0	<1.0	1.5	2.1	-	-	2.3	-	-	1.0	-	-	-	1.1	-	1.1	-	1.7	2.1	<1.0
Boron (Dissolved)	1000	60	710	<20	55	55	-	-	41	-	-	26	-	-	-	<20	-	540	-	51	570	23
Cadmium (Dissolved)	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	-	-	<0.080	-	-	<0.080	-	-	-	<0.080	-	<0.080	-	<0.080	<0.080	<0.080
Chromium (Dissolved)	2.1	<1.0	<1.0	<1.0	2.3	6.7	-	-	4.8	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	13	<1.0	<1.0
Copper (Dissolved)	3.5	2.7	<1.0	4.4	3.7	1.3	-	-	1.8	-	-	2.6	-	-	-	1.5	-	<1.0	-	<1.0	1.5	2.8
Iron (Dissolved)	-	180	71	840	130	99	110	150	38	110	140	120	89	27	<20	200	90	66	110	420	130	91
Mercury (Dissolved)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	<0.50	-	-	<0.50	-	-	-	<0.50	-	<0.50	-	<0.50	1.8	<0.50
Manganese (Dissolved)	3.1	5.6	2.0	45	9.1	32	7.6	6.4	5.7	3.6	62	7.0	5.1	1.1	<1.0	1.3	1.1	1.5	7.4	300	5.2	3.5
Nickel (Dissolved)	2.3	<1.0	<1.0	4.3	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	2.1	<1.0	<1.0
Lead (Dissolved)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0
Selenium (Dissolved)	1.9	1.0	<1.0	<1.0	<1.0	1.8	-	-	<1.0	-	-	<1.0	-	-	-	<1.0	-	<1.0	-	<1.0	1.7	<1.0
Zinc (Dissolved)	4.1	17	2.8	<1.0	24	<1.0	-	-	<1.0	-	-	2.2	-	-	-	<1.0	-	<1.0	-	2.4	35	13
Chromium (Hexavalent)	<20	<20	<20	<20	<20	<20	-	-	<20	-	-	<20	-	-	-	<20	-	<20	-	<20	<20	<20
Total Organic Carbon	12	9.4	4.1	13	17	4.4	9.6	22	22	6.7	5.5	16	7.4	7.6	9.3	8.2	7.4	4.8	4.9	12	6.2	6.0
Total TPH >C6-C40	180	<10	<10	<10	<10	<10	-	-	<10	-	-	<10	-	-	-	<10	-	<10	-	<10	<10	<10
Total Of 16 PAH's	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0

Sample Type: RPD

Determinand	11-Aug-2016	24-May-2017	16-Aug-2017	22-Nov-2017	26-Feb-2018	29-May-2018	26-Jun-2018	18-Jul-2018	13-Aug-2018	26-Sep-2018	25-Oct-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	26-Mar-2019	30-Apr-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	19-Feb-2020
pH	-1%	1%	-1%	1%	-6%	-8%	-12%	-2%	1%	1%	0%	-4%	0%	1%	-17%	-7%	6%	1%	0%	1%	0%	-7%
Electrical Conductivity	2%	6%	8%	3%	-11%	11%	NC	NC	27%	NC	NC	-4%	NC	NC	NC	0%	NC	-13%	NC	5%	0%	3%
Suspended Solids	NC	NC	NC	NC	NC	NC	NC	NC	197%	NC	NC	149%	NC	NC	NC	185%	NC	198%	NC	184%	75%	197%
Alkalinity (Total)	7%	0%	0%	41%	83%	6%	NC	NC	26%	NC	NC	-7%	NC	NC	NC	0%	NC	-7%	NC	0%	-14%	22%
Chloride	0%	8%	4%	-109%	-40%	-8%	NC	NC	19%	NC	NC	7%	NC	NC	NC	-16%	NC	-4%	NC	7%	-17%	-7%
Ammoniacal Nitrogen	-16%	62%	8%	-32%	137%	71%	21%	104%	-80%	24%	34%	67%	-15%	-58%	18%	-141%	29%	7%	31%	-120%	-18%	152%
Nitrite	-87%	-92%	-168%	-24%	NC	22%	NC	108%	-158%	-177%	-118%	-88%	-43%	-117%	-43%	-55%	38%	-143%	-56%	-150%	-68%	171%
Nitrate	32%	63%	83%	43%	-163%	149%	157%	NC	69%	96%	46%	19%	9%	7%	56%	73%	-6%	139%	180%	173%	42%	-149%
Sulphate	34%	5%	9%	8%	-13%	21%	42%	40%	0%	13%	19%	34%	6%	0%	57%	11%	38%	30%	14%	17%	0%	17%
Calcium	5%	32%	14%	58%	53%	7%	NC	NC	46%	NC	NC	-7%	NC	NC	NC	3%	NC	39%	NC	6%	17%	7%
Potassium	-29%	20%	-15%	34%	-4%	32%	NC	NC	-10%	NC	NC	-14%	NC	NC	NC	-19%	NC	17%	NC	-56%	-27%	23%
Magnesium	19%	43%	31%	55%	44%	9%	NC	NC	49%	NC	NC	-5%	NC	NC	NC	11%	NC	75%	NC	14%	20%	11%
Sodium	-5%	31%	-6%	48%	-51%	0%	NC	NC	37%	NC	NC	-14%	NC	NC	NC	-7%	NC	5%	NC	6%	-19%	21%
Hardness	14%	32%	22%	56%	53%	7%	NC	NC	50%	NC	NC	-3%	NC	NC	NC	8%	NC	50%	NC	9%	15%	7%
Arsenic (Dissolved)	-115%	-67%	NC	NC	-40%	67%	NC	NC	-79%	NC	NC	0%	NC	NC	NC	-10%	NC	-10%	NC	-52%	-71%	NC
Boron (Dissolved)	0%	50%	-1%	NC	-27%	81%	NC	NC	-2%	NC	NC	21%	NC	NC	NC	0%	NC	-54%	NC	-15%	-21%	20%
Cadmium (Dissolved)	NC	NC	2%	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chromium (Dissolved)	-55%	NC	NC	NC	-79%	-144%	NC	NC	-59%	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	-57%	NC	NC
Copper (Dissolved)	-111%	-12%	26%	-126%	-115%	-26%	NC	NC	-57%	NC	NC	-54%	NC	NC	NC	0%	NC	NC	NC	82%	-40%	-95%
Iron (Dissolved)	NC	-25%	19%	-103%	-43%	27%	95%	33%	-3%	-24%	30%	-9%	-39%	-30%	NC	-22%	20%	0%	-32%	-129%	-26%	19%
Mercury (Dissolved)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	11%	NC
Manganese (Dissolved)	179%	65%	178%	-50%	-60%	194%	161%	193%	136%	-32%	-173%	-17%	-124%	-10%	18%	21%	164%	85%	155%	-79%	58%	200%
Nickel (Dissolved)	-79%	33%	62%	-113%	NC	71%	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	-15%	NC	NC
Lead (Dissolved)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Selenium (Dissolved)	23%	0%	NC	NC	NC	74%	NC	NC	NC	NC	NC	10%	NC	NC	NC	NC	NC	NC	NC	18%	-27%	NC
Zinc (Dissolved)	-104%	95%	58%	NC	-149%	126%	NC	NC	NC	NC	NC	-75%	NC	NC	NC	NC	NC	NC	NC	12%	-189%	-119%
Chromium (Hexavalent)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total Organic Carbon	0%	5%	-34%	7%	11%	19%	-30%	-5%	9%	-6%	17%	6%	10%	37%	1%	29%	-19%	0%	-23%	-73%	-25%	74%
Total TPH >C6-C40	-25%	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total Of 16 PAH's	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	14%	NC	NC	NC	NC	NC	NC

Notes:

Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certificates for inspection.

Positive value shows an increase in concentration in pond sample compared with upstream sample from stream (conversely negative value shows reduction in concentration in pond water sample)

NC - Not Calculated

Where one concentration is above the laboratory reporting limit (LRL) and concentration is below, the LRL has been used to calculate the percentage difference.

Where both concentrations are below the laboratory reporting limit (LRL) or not reported the percentage difference has not been calculated.

Denotes increase in contaminant concentration in pond sample compared with upstream sample.

Denotes percentage difference greater than -100%

Denotes percentage difference greater than 100%

Table D5b

Existing Eales Farm Landfill - Comparison of Percentage Difference between Surface Water Samples MSW4 and MSW5

Sample Type: MSW4 - Downstream Culvert

Determinand	Units	LRL	13-Aug-2018	26-Sep-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	19-Feb-2020
pH		N/A	8.4	8.2	8.2	8.1	8.5	7.6	8.0	8.2	8.0	8.3	8.2
Electrical Conductivity	µS/cm	1	510	-	500	-	-	-	130	-	550	350	600
Suspended Solids	mg/l	5	<5.0	-	24	-	-	-	84	-	<5.0	7	5
Alkalinity (Total)	mg $CaCO_3$/l	10	190	-	230	-	-	-	57	-	230	150	210
Chloride	mg/l	1	45	-	42	-	-	-	9	-	55	23	43
Ammoniacal Nitrogen	mg/l	0.01	0.23	0.93	2.70	4.90	1.60	2.70	2.60	0.93	0.26	0.17	0.13
Nitrite	mg/l	0.02	0.11	<0.020	0.15	0.63	0.4	0.52	0.16	0.076	0.57	0.08	0.024
Nitrate	mg/l	0.5	12	<0.50	11	15	3.6	4.2	0.98	4.5	4.6	4.4	8.3
Sulphate	mg/l	1	27	25	46	52	17	26	6.3	24	24	17	32
Calcium	mg/l	5	78	-	89	-	-	-	45	-	60	82	92
Potassium	mg/l	0.5	4.5	-	6.4	-	-	-	3.0	-	4.3	4.1	6.6
Magnesium	mg/l	0.5	7.7	-	12	-	-	-	5.0	-	7.8	8.0	10
Sodium	mg/l	0.5	19	-	25	-	-	-	23	-	27	15	28
Hardness	mg/l	15	230	-	270	-	-	-	130	-	180	240	270
Arsenic (Dissolved)	µg/l	1	1.3	-	1.6	-	-	-	1.8	-	<1.0	1.6	1.0
Boron (Dissolved)	µg/l	20	46	-	43	-	-	-	580	-	44	730	34
Cadmium (Dissolved)	µg/l	0.08	<0.080	-	<0.080	-	-	-	<0.080	-	<0.080	<0.080	<0.080
Chromium (Dissolved)	µg/l	1	4.3	-	<1.0	-	-	-	<1.0	-	35	<1.0	<1.0
Copper (Dissolved)	µg/l	1	1.2	-	2.3	-	-	-	<1.0	-	1.7	1.5	4.0
Iron (Dissolved)	µg/l	20	92	170	380	180	27	280	110	140	260	160	190
Mercury (Dissolved)	µg/l	0.5	<0.50	-	<0.50	-	-	-	<0.50	-	<0.50	1.2	<0.50
Manganese (Dissolved)	µg/l	1	140	700	600	520	2.7	500	11	1300	800	95	480
Nickel (Dissolved)	µg/l	1	<1.0	-	<1.0	-	-	-	<1.0	-	3.9	<1.0	<1.0
Lead (Dissolved)	µg/l	1	<1.0	-	<1.0	-	-	-	<1.0	-	<1.0	<1.0	<1.0
Selenium (Dissolved)	µg/l	1	1.0	-	1.5	-	-	-	<1.0	-	<1.0	1.0	1.3
Zinc (Dissolved)	µg/l	1	4.1	-	5.5	-	-	-	110	-	4.8	20	20
Chromium (Hexavalent)	µg/l	20	<20	-	<20	-	-	-	<20	-	<20	<20	<20
Total Organic Carbon	mg/l	2	32	7.5	17	6.7	6.2	21	7.5	4.6	5.9	11	3.2
Total TPH >C6-C40	µg/l	10	<10	-	<10	-	-	-	<10	-	<10	<10	<10
Total Of 16 PAH's	µg/l	2	<2.0	-	<2.0	-	-	-	<2.0	-	<2.0	<2.0	<2.0

Sample Type: MSW5 - Upstream Culvert

Determinand	13-Aug-2018	26-Sep-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	19-Feb-2020
pH	8.3	8.0	7.5	7.9	8.4	7.5	8.2	8.4	8.2	8.2	8.0
Electrical Conductivity	430	-	480	-	-	-	400	-	350	320	420
Suspended Solids	<5.0	-	29	-	-	-	520	-	9	<5.0	41
Alkalinity (Total)	140	-	150	-	-	-	130	-	130	120	110
Chloride	48	-	47	-	-	-	35	-	36	31	43
Ammoniacal Nitrogen	0.41	1.20	2.30	4.40	1.40	4.40	1.20	0.78	0.44	0.58	<0.050
Nitrite	0.061	<0.020	0.053	0.074	0.36	0.38	0.8	0.024	0.87	0.082	<0.020
Nitrate	12	1.3	7	8.6	6.2	2.6	3.4	4.7	6.1	3.6	<0.50
Sulphate	30	26	27	33	19	16	24	21	19	20	22
Calcium	49	-	80	-	-	-	43	-	37	43	48
Potassium	2.8	-	7.0	-	-	-	2.5	-	1.8	1.6	2.4
Magnesium	4.8	-	10	-	-	-	4.7	-	4.3	2.8	6.3
Sodium	17	-	26	-	-	-	19	-	17	19	26
Hardness	140	-	240	-	-	-	130	-	110	120	150
Arsenic (Dissolved)	2.6	-	4.2	-	-	-	1.8	-	2.6	3.5	1.3
Boron (Dissolved)	51	-	320	-	-	-	470	-	35	740	560
Cadmium (Dissolved)	<0.080	-	<0.080	-	-	-	<0.080	-	<0.080	<0.080	<0.080
Chromium (Dissolved)	6.3	-	5.5	-	-	-	2.5	-	39	<1.0	<1.0
Copper (Dissolved)	1.9	-	36	-	-	-	<1.0	-	3.7	1.6	3.7
Iron (Dissolved)	72	130	650	100	76	<20	98	95	240	180	67
Mercury (Dissolved)	<0.50	-	<0.50	-	-	-	<0.50	-	<0.50	1.3	<0.50
Manganese (Dissolved)	25	23	150	5.3	160	4.7	61	30	18	19	15
Nickel (Dissolved)	<1.0	-	2.4	-	-	-	<1.0	-	4.3	<1.0	<1.0
Lead (Dissolved)	<1.0	-	2.5	-	-	-	<1.0	-	<1.0	<1.0	<1.0
Selenium (Dissolved)	1.2	-	1.3	-	-	-	<1.0	-	<1.0	<1.0	<1.0
Zinc (Dissolved)	9.2	-	78	-	-	-	1400	-	170	26	57
Chromium (Hexavalent)	<20	-	<20	-	-	-	<20	-	<20	<20	<20
Total Organic Carbon	24	9.0	16	8.5	4.1	19	13	7.4	8.5	6.4	11
Total TPH >C6-C40	<10	-	<10	-	-	-	<10	-	<10	<10	<10
Total Of 16 PAH's	<2.0	-	<2.0	-	-	-	<2.0	-	<2.0	<2.0	<2.0

Sample Type: RPD

Determinand	13-Aug-2018	26-Sep-2018	30-Nov-2018	14-Dec-2018	29-Jan-2019	28-Feb-2019	29-May-2019	25-Jun-2019	06-Aug-2019	27-Nov-2019	19-Feb-2020
pH	**1%**	**2%**	**9%**	**2%**	**1%**	**1%**	-2%	-2%	-2%	**1%**	**2%**
Electrical Conductivity	**17%**	NC	**4%**	NC	NC	NC	*-102%*	NC	**44%**	**9%**	**35%**
Suspended Solids	NC	NC	-19%	NC	NC	NC	*-144%*	NC	-57%	**33%**	*-157%*
Alkalinity (Total)	**30%**	NC	**42%**	NC	NC	NC	-78%	NC	**56%**	**22%**	**63%**
Chloride	-6%	NC	-11%	NC	NC	NC	*-119%*	NC	**42%**	-30%	0%
Ammoniacal Nitrogen	-56%	-25%	**16%**	**11%**	**13%**	-48%	**74%**	**18%**	-51%	*-109%*	**89%**
Nitrite	**57%**	NC	**96%**	**158%**	**11%**	**31%**	*-133%*	**104%**	-42%	-2%	**18%**
Nitrate	0%	-89%	**44%**	**54%**	-53%	**47%**	*-111%*	-4%	-28%	**20%**	**177%**
Sulphate	-11%	-4%	**52%**	**45%**	-11%	**48%**	*-117%*	**13%**	**23%**	-16%	**37%**
Calcium	**46%**	NC	**11%**	NC	NC	NC	**5%**	NC	**47%**	**62%**	**63%**
Potassium	**47%**	NC	-9%	NC	NC	NC	**18%**	NC	**82%**	**88%**	**93%**
Magnesium	**46%**	NC	**19%**	NC	NC	NC	**6%**	NC	**58%**	**96%**	**45%**
Sodium	**11%**	NC	-4%	NC	NC	NC	**19%**	NC	**45%**	-24%	**7%**
Hardness	**49%**	NC	**12%**	NC	NC	NC	0%	NC	**48%**	**67%**	**57%**
Arsenic (Dissolved)	-67%	NC	-90%	NC	NC	NC	0%	NC	-89%	-75%	-26%
Boron (Dissolved)	-10%	NC	*-153%*	NC	NC	NC	**21%**	NC	**23%**	-1%	*-177%*
Cadmium (Dissolved)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chromium (Dissolved)	-38%	NC	*-138%*	NC	NC	NC	-86%	NC	-11%	NC	NC
Copper (Dissolved)	-45%	NC	*-176%*	NC	NC	NC	NC	NC	-74%	-6%	**8%**
Iron (Dissolved)	**24%**	**27%**	-52%	**57%**	-95%	**173%**	**12%**	**38%**	**8%**	-12%	**96%**
Mercury (Dissolved)	NC	NC	NC	NC	NC	NC	NC	NC	NC	-8%	NC
Manganese (Dissolved)	**139%**	**187%**	**120%**	**196%**	*-193%*	**196%**	*-139%*	**191%**	**191%**	**133%**	**188%**
Nickel (Dissolved)	NC	NC	-82%	NC	NC	NC	NC	NC	-10%	NC	NC
Lead (Dissolved)	NC	NC	-86%	NC	NC	NC	NC	NC	NC	NC	NC
Selenium (Dissolved)	-18%	NC	**14%**	NC	NC	NC	NC	NC	NC	0%	**26%**
Zinc (Dissolved)	-77%	NC	*-174%*	NC	NC	NC	*-171%*	NC	*-189%*	-26%	-96%
Chromium (Hexavalent)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total Organic Carbon	**29%**	-18%	**6%**	-24%	**41%**	**10%**	-54%	-47%	-36%	**53%**	*-110%*
Total TPH >C6-C40	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total Of 16 PAH's	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Notes:

Tables produced based on data provided by GCE. Horizon has not been provided with original laboratory certificates for inspection.

Positive value shows an increase in concentration in pond sample compared with upstream sample from stream (conversely negative value shows reduction in concentration in pond water sample)

NC - Not Calculated

Where one concentration is above the laboratory reporting limit (LRL) and concentration is below, the LRL has been used to calculate the percentage difference.

Where both concentrations are below the laboratory reporting limit (LRL) or not reported the percentage difference has not been calculated.

Denotes increase in contaminant concentration in pond sample compared with upstream sample.

Denotes percentage difference greater than -100%

Denotes percentage difference greater than 100%

Table D6

Existing Eales Farm Landfill - Source Term For Purposes of Hydrogeological Assessment

Determinand	Source Term						
	Distribution	Minimum	Maximum	Mean	SD	Units	Discussion
Localised Hydrocarbon Hotspot Source Area							
Benzo(a)pyrene	Triangular	<0.10	15	1.5	2.9	mg/kg	Relatively mobile PAH selected as indicator compound. Source term concentrations from dataset in Table D1.
Naphthalene	Triangular	<0.10	3.5	0.22	0.48	mg/kg	Relatively mobile PAH selected as indicator compound.
Aliphatic TPH >C16-C21	Triangular	<1.0	54	5	12	mg/kg	Elevated TPH impacts comprised heavy end aromatic and aliphatic hydrocarbons.
Aromatic TPH >C16-C21	Triangular	<1.0	500	30	108	mg/kg	Elevated TPH impacts comprised heavy end aromatic and aliphatic hydrocarbons.
Aromatic TPH >C21-C35	Triangular	<1.0	2500	161	544	mg/kg	Elevated TPH impacts comprised heavy end aromatic and aliphatic hydrocarbons.
Main Source Area							
Arsenic	Normal	LRL	2600	103	294	mg/kg	Elevated concentrations of arsenic considered to represent naturally occurring background concentrations.
Cadmium	Normal	LRL	3.1	0.34	0.54	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Chromium	Normal	14	160	37	19	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Copper	Normal	12	690	99	131	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Manganese	Normal	1000	3300	1935	639	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Mercury	Normal	LRL	2.5	0.29	0.32	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Nickel	Normal	22	110	54	14	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Lead	Normal	5.7	970	130	133	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Zinc	Normal	71	1600	181	188	mg/kg	Based on Eales Farm Landfill soil dataset (Table D1)
Ammoniacal Nitrogen	Uniform	0.01	6.6	-	-	mg/l	In absence of soil concentrations, uniform range adopted between laboratory reporting limit and maximum concentration measured in water (irrespective of whether water sample represents groundwater, surface water or leachate).

Notes

SD - Standard Distribution

LRL - Laboratory Reporting Limit (Element Laboratory at time of report issue)

EQS - Environmental Quality Standard

DWS - Drinking Water Standard

UK - United Kingdom

AA - Annual Average

MRV - Environment Agency Minimum Reporting Value

Table D7

Proposed Eales Farm Landfill Extension - Source Term For Purposes of Hydrogeological Assessment

Determinand	Indicator COPC	Hazardous Pollutant?	MRV (mg/l)	Source Term					Adopted EAL		
				Distribution	Minimum	Maximum	Units	Rationale	Concentration	Units	Rationale
Sum of BTEX (Benzene)	Not considered as part of the assessment. BTEX compounds not detected above the LRL in any soil samples within the existing Eales Farm Waste Mass.	Hazardous substance	0.001	-	-	-	-	-	-	-	-
PAH Sum of 17 (Benzo(a)pyrene)	Modelled as benzo(a)pyrene, assuming 50% of the PAHs comprise benzo(a)pyrene and 50% naphthalene. Note that the maximum concentration of benzo(a)pyrene detected in the Eales Farm Waste Mass is 12 mg/kg.	Hazardous substance		Uniform	0.04	50	mg/kg	Range between LRL (Element Laboratory) and inert WAC Li	0.00005	mg/l	UK AA EQS
PAH Sum of 17 (Naphthalene)	Modelled as naphthalene, assuming 50% of the PAHs comprise benzo(a)pyrene and 50% naphthalene. Note that the maximum concentration of naphthalene detected in the Eales Farm Waste Mass is 2 mg/kg.	Non-hazardous pollutant		Uniform	0.04	50	mg/kg	Range between LRL (Element Laboratory) and inert WAC Li	0.0024	mg/l	UK AA EQS
Mineral Oil (TPH Aliphatic C5-C6)	Modelled as TPH Aliphatic C5-C6.	Hazardous substance (Mineral Oil)		Uniform	0.1	500	mg/kg	Range between LRL (Element Laboratory) and inert WAC Li	15.00	mg/l	WHO DWS
Arsenic		Hazardous substance		Uniform	0.0025	0.05	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.05	mg/l	UK AA EQS
Barium		-		Uniform	0.003	2	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.003	mg/l	LRL (Element Laboratory)
Cadmium		Non-hazardous pollutant	0.0001	Uniform	0.0005	0.004	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.005	mg/l	UK AA EQS
Chromium		Hazardous substance (Chromium VI)		Uniform	0.0015	0.05	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.0047	mg/l	UK AA EQS for Chromium III
Copper		Non-hazardous pollutant		Uniform	0.007	0.2	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.01	mg/l	UK AA EQS
Mercury		Hazardous substance	0.00001	Uniform	0.001	0.001	mg/l	Set at inert WAC Limit (consistent with LRL).	0.00005	mg/l	UK AA EQS
Molybdenum		Non-hazardous pollutant (Moybdate Ion)		Uniform	0.002	0.05	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.002	mg/l	LRL (Element Laboratory)
Nickel		Non-hazardous pollutant (Nickel III)		Uniform	0.002	0.04	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.02	mg/l	UK AA EQS
Lead		Hazardous substance		Uniform	0.005	0.05	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.0072	mg/l	UK AA EQS
Antimony		Non-hazardous pollutant		Uniform	0.002	0.006	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.002	mg/l	LRL (Element Laboratory)
Selenium		Non-hazardous pollutant		Uniform	0.003	0.01	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.003	mg/l	LRL (Element Laboratory)
Zinc		Non-hazardous pollutant		Uniform	0.003	0.4	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.075	mg/l	UK AA EQS
Chloride		Non-hazardous pollutant (Chlorine)		Uniform	0.3	80	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	250	mg/l	UK AA EQS
Fluoride		-		Uniform	0.3	1	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.3	mg/l	LRL (Element Laboratory)
Sulphate as SO_4		-		Uniform	0.5	100	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	400	mg/l	UK AA EQS
Phenol		Non-hazardous pollutant		Uniform	0.01	0.1	mg/l	Range between LRL (Element Laboratory) and inert WAC Li	0.03	mg/l	UK AA EQS
Manganese		-		Uniform	See Table D6		mg/kg	Source concentrations assumed consistent with Eales Farm Landfill model.	0.03	mg/l	UK AA EQS
Ammoniacal Nitrogen		-		Uniform	0.01	6.6	mg/l	In absence of soil concentrations, uniform range adopted between laboratory reporting limit and maximum concentration measured in water (irrespective of whether water sample represents groundwater, surface water or leachate).	0.6	mg/l	UK AA EQS

Notes

COPC - Contaminant of Potential Concern

LRL - Laboratory Reporting Limit (Element Laboratory at time of report issue)

EQS - Environmental Quality Standard

DWS - Drinking Water Standard

UK - United Kingdom

AA - Annual Average

MRV - Environment Agency Minimum Reporting Value

Table D8a
Existing Eales Farm Landfill - Model Assumptions (Source Term Chemistry)

Determinand	Chemical Form	Soil Water Partition Coefficient (Kd)						Soil Water Partition Coefficient (Koc)						Henrys Law Constant						Maximum Solubility						Half Life (Days)					
		Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (unitless)	Single Value / Most Likely (unitless)	Max (unitless)	SD	Rationale	Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (Years)	Single Value / Most Likely (Years)	Max (Years)	SD	Rationale
Arsenic	Inorganic	Triangular	29	117	349.6	-	CONSIM	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	4.41E+05	-	44100	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Cadmium	Inorganic	Lognormal	0.9	240	990	247	CONSIM. Maximum value for loam of unspecified pH.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	6.51E+05	-	65100	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Chromium	Inorganic	Single	-	35	-	-	CONSIM. Maximum value per loam of unspecified pH.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	1.67E+05	-	16700	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Copper	Inorganic	Triangular	40	127	295	-	CONSIM. High values of Kd from unspecified material with FOC=11% not considered sufficiently conservative hence excluded.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	2.93E+05	-	29300	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Manganese	Inorganic	Triangular	3	49	810	-	CONSIM. Minimum, expected and maximum for a sand with unspecified pH.							-	-	-	-	-	-	Normal	-	930	-	93	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Mercury	Inorganic	Lognormal	0.1	450	1500	375	CONSIM. High values of Kd from glacial till unspecified material not considered sufficiently conservative hence excluded.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	65.7	-	6.57	Value adopted for Mercury Chloride, assumed to be the most soluble and likely of mercury compounds	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Nickel	Inorganic	Lognormal	0.9	66	8100	2025	CONSIM. High maximum values not considered sufficiently conservative.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	1.73E+05	-	17300	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Lead	Inorganic	Normal	-	435	-	43	CONSIM. Given extreme range of values normal distribution conservatively adopted around most likely experimental value.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	0.0443	-	0.00443	Value adopted for Lead Sulphate, assumed to be the most soluble and likely of lead compounds.	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Zinc	Inorganic	Triangular	1.1	26	420	-	CONSIM. High values of Kd from unspecified material with FOC=11% not considered sufficiently conservative hence excluded.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	6.06E+05	-	60600	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Ammoniacal Nitrogen	Inorganic	Uniform	0.5	-	2	-	CONSIM. Minimum and maximum for a loam with unspecified pH.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	9.00E+05	-	89990	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.

Notes:
SD - Standard Deviation
Max - Maximum Value
Min - Mrimum Value
CONSIM - Parameter value obtained from CONSIM database.
CL:AIRE- Parameter value obtained from CL:AIRE (2017) Petroleum Hydrocarbons in Groundwater: Guidance on Assessing Petroleum Hydrocarbons Using Existing Hydrogeological Risk Assessment Methodologies.
TPH Criteria Working Group (1998) - Parameter obtained from Total Petroleum Hydrocarbon Criteria Working Group (1996) Series.
Howard - Parameter value obtained from Howard et al (1991) Handbook of Environmental Degradation Rates.

Table D8b
Existing Eales Farm Landfill Hydrocarbon Hotspot - Model Assumptions (Source Term Chemistry)

Determinand	Chemical Form	Soil Water Partition Coefficient (Koc)						Henrys Law Constant						Maximum Solubility						Half Life (Days)					
		Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (unitless)	Single Value / Most Likely (unitless)	Max (unitless)	SD	Rationale	Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (Years)	Single Value / Most Likely (Years)	Max (Years)	SD	Rationale
Benzo(a)pyrene	Organic	Normal	-	9.16E-05	-	9.16E-06	CONSIM	Normal	-	3.43E-05	-	3.43E-06	CONSIM	Normal	-	3.80E-03	-	3.80E-04	SR7	Normal		2.9	-	0.3	Howard et al, 1991
Naphthalene	Organic	Normal	-	1.29E+03	-	1.29E+02	CONSIM	Normal	-	4.90E-02	-	4.90E-03	CONSIM	Normal		32.9		3.29		Uniform	0.55	-	2.74	-	CONSIM
Aliphatic TPH >C16-C21	Organic	Normal	-	6.30E+08	-	6.30E+07	CL:AIRE	Normal	-	4.90E+03	-	4.90E+02		Normal	-	3.00E-06		0.0000003	CL:AIRE	Single	-	9.9E+11	-	-	Assumed no decay of contaminant.
Aromatic TPH >C16-C21	Organic	Normal	-	1.60E+04	-	1.60E+03	CL:AIRE	Normal	-	1.30E-02	-	1.30E-03		Normal	-	6.50E-01		0.065	CL:AIRE	Single	-	9.9E+11	-	-	Assumed no decay of contaminant.
Aromatic TPH >C21-C35	Organic	Normal	-	1.30E+05	-	1.30E+04	CL:AIRE	Normal	-	6.70E-04	-	6.70E-05		Normal	-	6.60E-03		0.00066	CL:AIRE	Single	-	9.9E+11	-	-	Assumed no decay of contaminant.

Notes:
SD - Standard Deviation
Max - Maximum Value
Min - Minimum Value
CONSIM - Parameter value obtained from CONSIM database.
CL:AIRE - Parameter value obtained from CL:AIRE (2017) Petroleum Hydrocarbons in Groundwater: Guidance on Assessing Petroleum Hydrocarbons Using Existing Hydrogeological Risk Assessment Methodologies.
TPH Criteria Working Group (1996) - Parameter obtained from Total Petroleum Hydrocarbon Criteria Working Group (1996) Series.
Howard - Parameter value obtained from Howard et al (1991) Handbook of Environmental Degradation Rates.

Table D8c
Proposed Eales Farm Landfill Extension - Model Assumptions (Source Term Chemistry)

Determinand	Chemical Form	Soil Water Partition Coefficient (Kd)						Soil Water Partition Coefficient (Koc)						Henrys Law Constant						Maximum Solubility						Half Life (Days)					
		Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (unitless)	Single Value / Most Likely (unitless)	Max (unitless)	SD	Rationale	Distribution	Min (ml/g)	Single Value / Most Likely (ml/g)	Max (ml/g)	SD	Rationale	Distribution	Min (Years)	Single Value / Most Likely (Years)	Max (Years)	SD	Rationale
Benzo(a)pyrene	Organic	-	-	-	-	-	-	Normal	-	9.16E-06	-	9.16E-06	CONSIM	Normal	-	3.43E-05	-	3.43E-06	CONSIM	Normal	-	3.80E-03	-	3.80E-04	SR7	Normal		2.9	-	0.3	Howard et al. 1991
Naphthalene	Organic	-	-	-	-	-	-	Normal	-	1.29E+03	-	1.29E+02	CONSIM	Normal	-	4.90E-02	-	4.90E-03	CONSIM	Normal		32.9		3.29		Uniform	0.55	-	2.74	-	CONSIM
TPH Aliphatic C5-C6	Organic	-	-	-	-	-		Normal	-	7.90E+02	-	7.90E+01	CLAIRE	Normal	-	33	-	3.3		Normal	-	36		3.6	CLAIRE	Normal		120	-	12	TPH Criteria Working Group 1996
Arsenic	Inorganic	Triangular	29	117	249.6	-	CONSIM	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	4.41E+05	-	44100	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Barium	Inorganic	Lognormal	0.6	1.4	17	4.1	CONSIM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Cadmium	Inorganic	Lognormal	0.9	240	990	247.3	CONSIM. Maximum value for loam of unspecified pH.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	6.51E+05	-	65100	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Chromium	Inorganic	Single	-	35	-	-	CONSIM. Maximum value per loam of unspecified pH.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	1.67E+05	-	16700	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Copper	Inorganic	Triangular	40	127	295	-	CONSIM. High values of Kd from unspecified material with FOC=11% not considered sufficiently conservative hence excluded.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	2.93E+05	-	29300	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Manganese	Inorganic	Triangular	3	49	8.10E+02	-	CONSIM. Minimum, expected and maximum for a sand with unspecified pH.							-	-	-	-	-	-	Normal	-	930	-	93	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Mercury	Inorganic	Lognormal	0.1	450	1500	375	CONSIM. High values of Kd from glacial till unspecified material not considered sufficiently conservative hence excluded.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	65.7	-	6.57	Value adopted for Mercury Chloride, assumed to be the most soluble and likely of mercury compounds	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Molybdenum	Inorganic	Normal	-	110	-	11	CONSIM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Nickel	Inorganic	Lognormal	0.9	66	8100	2025	CONSIM. High maximum values not considered sufficiently conservative.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	1.73E+05	-	17300	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Lead	Inorganic	Normal	-	435	-	43	CONSIM. Given extreme range of values normal distribution conservatively adopted around most likely experimental value.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	0.0443	-	0.00443	Value adopted for Lead Sulphate, assumed to be the most soluble and likely of lead compounds.	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Antimony	Inorganic	Normal	-	45	-	4.5	RAIS (metallic)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Selenium	Inorganic	Normal	-	9.5	-	0.95	CONSIM. Values from material with FOC=11% ignored.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Zinc	Inorganic	Triangular	1.1	26	420	-	CONSIM. High values of Kd from unspecified material with FOC=11% not considered sufficiently conservative hence excluded.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	6.06E+05	-	60600	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Chloride	Inorganic	Single	-	0	-	-	CONSIM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Fluoride	Inorganic	Normal	-	0.8	-	0.08	CONSIM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Sulphate as SO_4	Inorganic	Single	-	0	-	-	No data available.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Single	-	9.90E+11	-	-	No data available.
Ammoniacal Nitrogen	Inorganic	Uniform	0.5	-	2	-	CONSIM. Minimum and maximum for a loam with unspecified pH.	-	-	-	-	-	-	-	-	-	-	-	-	Normal	-	9.00E+05	-	89990	CONSIM	Single	-	9.90E+11	-	-	Assumed no decay of contaminant.
Phenol	Organic	Uniform	0.22	-	2.2	-	CONSIM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Uniform	0.14	-	0.82	-	CONSIM. Range for biotic half life (anaerobic) adopted.

Notes:
SD - Standard Deviation
Max - Maximum Value
Min - Minimum Value
CONSIM - Parameter value obtained from CONSIM database.
CLAIRE - Parameter value obtained from CLAIRE (2017) Petroleum Hydrocarbons in Groundwater: Guidance on Assessing Petroleum Hydrocarbons Using Existing Hydrogeological Risk Assessment Methodologies.
TPH Criteria Working Group (1996) - Parameter obtained from Total Petroleum Hydrocarbon Criteria Working Group (1996) Series.
Howard - Parameter value obtained from Howard et al (1991) Handbook of Environmental Degradation Rates.

Table D9A
Existing Eales Farm Landfill - Model Assumptions (Hydrogeological Processes)

Determinand	Units	Distribution	Minimum	Mean / Most Likely	Maximum	Standard Deviation	Justification
Effective Rainfall	mm/year	Normal	-	404.8	-	40.5	Calculated from Met Office Annual Rainfall for a nearby weather station (Plymouth, Mountbatten, https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gbvn6nxjm) between 1981 and 2010 (1007 mm/year), combined with combined with CHESS potential evapotranspiration data (501mm/year for well watered grass surface). Factor of 0.8 applied to account for presence of low permeability clay layer to be placed over majority of Eales Farm Landfill. The proposed Eales Farm Landfill Extension (4.41 hectares) with associated Artificially Enhanced Geological Barrier (AEGB) will cover approximately 58% of the existing Eales Farm Landfill mass (7.62 hectares), therefore this is a conservative allowance.
Unsaturated Zone							
Dry Bulk Density	g/cm^3	Uniform	1.7	-	2.0	-	Range based on typical values for well compacted sand, gravel, silts and clay soils.
Air Filled Porosity	Fraction	Normal	-	0.2	-	0.02	Not a sensitive parameter (see sensitivity analysis for details). Value adopted based on Horizon professional experience on earthworks projects.
Water Filled Porosity	Fraction	Normal	-	0.1	-	0.01	Not a sensitive parameter (see sensitivity analysis for details). Value adopted based on Horizon professional experience on earthworks projects.
Fraction of Organic Carbon (FOC)	Fraction	Triangular	0.002	0.013	0.052	0.012	Based on site specific TOC data obtained for waste material (Eales Farm Landfill, see Table D1)
Unsaturated Zone Thickness	m	Single	-	7	-	-	Range of fill thickness recorded from around 1m to greater than 16.4m. Typically fill thickness increases towards the west of the Site. Value adopted to reflect typical waste thickness across Site.
Unsaturated Zone Pathway							
Water Filled Porosity	Fraction	Normal	-	0.1	-	0.01	Not a sensitive parameter (see sensitivity analysis for details). Value adopted based on Horizon professional experience on earthworks projects.
Unsaturated Zone Pathway Thickness	m	Uniform	0	-	3	-	Depth to water below base of waste increases towards the west of the Site. To account for groundwater levels potentially close to or at the base of the waste mass towards the east of the Site (i.e. at base of old historic valley, where water historically flowed in stream and is now assumed to flow around culvert) unsaturated zone reduced to 0m, however in general a thickness of around 3m is more typical (see data in Table D0), increasing to around 7m in wells located towards the north and south of the Site.
Hydraulic Conductivity	m/s	Triangular	5.00E-09	4.45E-06	8.78E-06	-	Maximum and most likely based on site specific data for the bedrock (falling head tests conducted in boreholes BH2B and BH11B, see ESSD for reference), minimum based on BGS data to take account more regional hydraulic conductivity as opposed to localised permeability in boreholes.
Vertical Dispersivity	m	Uniform	0	-	0.3	-	Assumed 10% of unsaturated zone thickness.
Dry Bulk Density	g/cm^3	Uniform	1.8	-	2.4	-	Range for minimum and maximum adopted from weathered and unweathered mercia mudstone respectively (CONSIM).
Aquifer Properties							
Thickness	m	Single	-	30	-	-	Thickness of aquifer estimated based on difference in groundwater elevation at eastern edge of Site and sea water elevation. Not a sensitive parameter, therefore a single (low) value has been adopted. BGS records suggest the aquifer thickness may be between 100m and 200m.
Mixing Zone Thickness	m	-	-	Calculated	-	-	Calculated within CONSIM.
Hydraulic Conductivity	m/s	Triangular	5.00E-09	4.45E-06	8.78E-06	-	Maximum and most likely based on site specific data, minimum based on BGS data to take account more regional hydraulic conductivity as opposed to localised permeability in boreholes.
Hydraulic Gradient		Uniform	0.12	-	0.14	-	Hydraulic gradient based on groundwater difference in groundwater elevations between BH1 and BH19-5.
Dry Bulk Density	g/cm^3	Uniform	1.8	-	2.4	-	Range for minimum and maximum adopted from weathered and unweathered mercia mudstone respectively (CONSIM).
Effective Porosity	Fraction	Uniform	0.21	-	0.41	-	Value for siltstone adopted from CONSIM
Longitudinal Dispersion	m	Triangular	0	0.1	1	-	Maximum pathway assumed to be 1m for purpose of model (i.e. compliance point is immediately adjacent to Site). Mean assumed to be 10% of pathway.
Lateral Dispersion	m	Triangular	0	0.03	0.3	-	30% of longitudinal dispersion.
Fraction of Organic Carbon	-	Normal	0.001	0.002	0.003	-	Three samples of bedrock analysed for TOC. All concentrations below LRL. Range adopted to take into account limited dataset.
Flow Direction	Degrees	Single	-	45	-	-	Groundwater flow in a north-easterly direction.

Table D9B
Existing Eales Farm Landfill - Model Assumptions (Hydrogeological Processes - Hydrocarbon Hotspot)

Determinand	Units	Distribution	Minimum	Mean / Most Likely	Maximum	Standard Deviation	Justification
Effective Rainfall	mm/year	Normal	-	253	-	25.3	Calculated from Met Office Annual Rainfall for a nearby weather station (Plymouth, Mountbatten, https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gbvn6nxjm) between 1980 and 2010 (1007 mm/year), combined with combined with CHESS potential evapotranspiration data (501mm/year for well watered grass surface). Factor of 0.5 applied to account for presence of low permeability clay layer to be placed over entire hydrocarbon hotspot area.
Unsaturated Zone							
Dry Bulk Density	g/cm^3	Uniform	1.7	-	2.0	-	Range based on typical values for well compacted sand, gravel, silts and clay soils.
Air Filled Porosity	Fraction	Normal	-	0.2	-	0.02	Not a sensitive parameter. Value adopted based on Horizon professional experience on earthworks projects.
Water Filled Porosity	Fraction	Normal	-	0.1	-	0.01	Not a sensitive parameter. Value adopted based on Horizon professional experience on earthworks projects.
Fraction of Organic Carbon (FOC)	Fraction	Triangular	0.002	0.013	0.052	0.012	Based on site specific TOC data obtained for waste material (Eales Farm Landfill, see Table D1)
Unsaturated Zone Thickness	m	Triangular	1	3	6	-	Based on review of soil descriptions in borehole logs and chemical testing data, particularly BH10 where greatest impacts identified.
Unsaturated Zone Pathway							
Water Filled Porosity	Fraction	Normal	-	0.1	-	0.01	Not a sensitive parameter. Value adopted based on Horizon professional experience on earthworks projects.
Unsaturated Zone Pathway Thickness	m	Uniform	0	-	3	-	Depth to water below base of waste increases towards the west of the Site.
Hydraulic Conductivity	m/s	Triangular	5.00E-09	4.45E-06	8.78E-06	-	Maximum and most likely based on site specific data, minimum based on BGS data to take account more regional hydraulic conductivity as opposed to localised permeability in boreholes.
Vertical Dispersivity	m	Uniform	0	-	0.3	-	Assumed 10% of unsaturated zone thickness.
Dry Bulk Density	g/cm^3	Uniform	1.8	-	2.4	-	Range for minimum and maximum adopted from weathered and unweathered mercia mudstone respectively (CONSIM).
Aquifer Properties							
Thickness	m	Single	-	30	-	-	Thickness of aquifer estimated based on difference in groundwater elevation at eastern edge of Site and sea water elevation.
Mixing Zone Thickness	m	-	-	Calculated	-	-	Calculated within CONSIM.
Hydraulic Conductivity	m/s	Triangular	5.00E-09	4.45E-06	8.78E-06	-	Maximum and most likely based on site specific data, minimum based on BGS data to take account more regional hydraulic conductivity as opposed to localised permeability in boreholes.
Hydraulic Gradient		Normal	0.12	-	0.14	-	Hydraulic gradient based on groundwater difference in groundwater elevations between BH1 and BH19-5.
Dry Bulk Density	g/cm^3	Uniform	1.8	-	2.4	-	Range for minimum and maximum adopted from weathered and unweathered mercia mudstone respectively (CONSIM).
Effective Porosity	Fraction	Uniform	0.21	-	0.41	-	Value for siltstone adopted from CONSIM
Longitudinal Dispersion	m	Triangular	0	0.1	1	-	Maximum pathway assumed to be 1m for purpose of model (i.e. compliance point is immediately adjacent to Site). Mean assumed to be 10% of pathway.
Lateral Dispersion	m	Triangular	0	0.03	0.3	-	30% of longitudinal dispersion.
Fraction of Organic Carbon	-	Normal	0.001	0.002	0.003	-	Three samples of bedrock analysed for TOC. All concentrations below LRL. Range adopted to take into account limited dataset.
Flow Direction	Degrees	Single	-	45	-	-	Groundwater flow in a north-easterly direction.

Table D10
Proposed Eales Farm Landfill Extension - Model Assumptions (Hydrogeological Processes)

Determinand	Units	Distribution	Minimum	Mean / Most Likely	Maximum	Standard Deviation	Justification
Effective Rainfall	mm/year	Normal	-	506.0	-	50.6	Calculated from Met Office Annual Rainfall for a nearby weather station (Plymouth, Mountbatten, https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gbvn6nxjm)between 1980 and 2010 (1007 mm/year), combined with combined with CHESS potential evapotranspiration data (501mm/year for well watered grass surface).
Unsaturated Zone							
Dry Bulk Density	g/cm^3	Uniform	1.7	-	2.0	-	Range based on typical values for well compacted sand, gravel, silts and clay soils.
Air Filled Porosity	Fraction	Normal	-	0.2	-	0.02	Not a sensitive parameter. Value adopted based on Horizon professional experience on earthworks projects.
Water Filled Porosity	Fraction	Normal	-	0.1	-	0.01	Not a sensitive parameter. Value adopted based on Horizon professional experience on earthworks projects.
Fraction of Organic Carbon (FOC)	Fraction	Triangular	0.002	0.013	0.052	0.012	Based on site specific TOC data obtained for waste material (Eales Farm Landfill, see Table D1)
Unsaturated Zone Thickness	m	Single	-	4.7	-	-	Range of fill thickness planned up to a maximum of around 15m. For modelling purposes, average thickness of 3.5m based on area of 7.2Ha and proposed import volume of 250,000m3.
Unsaturated Zone Pathway							
Water Filled Porosity	Fraction	Normal	-	0.1	-	0.01	Not a sensitive parameter. Value adopted based on Horizon professional experience on earthworks projects.
Unsaturated Zone Pathway Thickness	m	Single	-	1.0	-	-	Assumed nominal 1.0m thick layer of consolidated clay placed in form of layer prior to import of additional waste.
Hydraulic Conductivity	m/s	Single	-	1.00E-07	-	-	Allowance for low permeability layer installed at base of each phase.
Vertical Dispersivity	m	Single	-	0.1	-	-	Assumed 10% of unsaturated zone thickness.
Dry Bulk Density	g/cm^3	Uniform	1.8	-	2.4	-	Range for minimum and maximum adopted from weathered and unweathered mercia mudstone respectively (CONSIM).
Aquifer Properties							
Thickness	m	Normal	-	30	-	3	Thickness of aquifer estimated based on difference in groundwater elevation at eastern edge of Site and sea water elevation.
Mixing Zone Thickness	m	-	-	Calculated	-	-	Calculated within CONSIM.
Hydraulic Conductivity	m/s	Triangular	5.00E-09	4.45E-06	8.78E-06	-	Maximum and most likely based on site specific data, minimum based on BGS data to take account more regional hydraulic conductivity as opposed to localised permeability in boreholes.
Hydraulic Gradient		Uniform	0.12	-	0.14	-	Hydraulic gradient based on groundwater difference in groundwater elevations between BH1 and BH19-5.
Dry Bulk Density	g/cm^3	Uniform	1.8	-	2.4	-	Range for minimum and maximum adopted from weathered and unweathered mercia mudstone respectively (CONSIM).
Effective Porosity	Fraction	Uniform	0.21	-	0.41	-	Value for siltstone adopted from CONSIM
Longitudinal Dispersion	m	Triangular	0	0.1	1	-	Maximum pathway assumed to be 1m for purpose of model (i.e. compliance point is immediately adjacent to Site). Mean assumed to be 10% of pathway.
Lateral Dispersion	m	Triangular	0	0.03	0.3	-	30% of longitudinal dispersion.
Fraction of Organic Carbon	-	Triangular	0.001	0.002	0.003	-	Three samples of bedrock analysed for TOC. All concentrations below LRL. Range adopted to take into account limited dataset.
Flow Direction	Degrees	Single	-	45	-	-	Groundwater flow in a north-easterly direction.

Table D11

Proposed Eales Farm Landfill Extension - Future Background Aquifer Concentrations (Derived From Existing Eales Farm Landfill Model)

Determinand	BH11B Summary Statistics					Future Background Concentrations*			RPD	
						Mean	Maximum	SD	Mean	Maximum
PAH Sum of 17 (Benzo(a)pyrene)	<0.002	NC	<0.002	NC	Sum PAHs not detected above LRL in any samples from BH11B to date.	2.04E-04	7.92E-04	1.22E-04	NC	NC
PAH Sum of 17 (Naphthalene)	<0.002	NC	<0.002	NC	Sum PAHs not detected above LRL in any samples from BH11B to date.	1.60E-01	1.65E+00	2.02E-01	NC	NC
Mineral Oil (TPH Aliphatic C16-C21)	<0.01	NC	0.34	NC	Sum TPH only detected above the LRL in one sample from BH11B to date.	0.00E+00	0.00E+00	0.00E+00	NC	NC
Mineral Oil (TPH Aromatic C16-C21)	<0.01	NC	0.34	NC	Sum TPH only detected above the LRL in one sample from BH11B to date.	5.36E-02	3.60E-01	3.66E-02	NC	NC
Mineral Oil (TPH Aromatic C21-C35)	<0.01	NC	0.34	NC	Sum TPH only detected above the LRL in one sample from BH11B to date.	5.45E-04	4.47E-03	3.81E-04	NC	NC
Arsenic	<0.001	1.09E-03	1.70E-03	2.06E-04		1.39E-02	1.30E+00	9.20E-02	-171%	-199%
Cadmium	<0.00008	9.08E-05	2.20E-04	3.88E-05		3.01E-05	5.12E-03	2.18E-04	100%	-184%
Chromium	<0.001	3.87E-03	1.50E-02	4.08E-03		8.83E-02	6.55E-01	1.03E-01	-183%	-191%
Copper	<0.001	1.58E-03	3.60E-03	9.13E-04		3.55E-03	3.76E-01	2.63E-02	NC	NC
Mercury	<0.0005	NC	<0.0005	NC		9.19E-07	2.36E-04	1.09E-05	NC	NC
Nickel	<0.001	1.15E-03	2.70E-03	4.70E-04		1.72E+01	3.76E+02	3.90E+01	-200%	-200%
Lead	<0.001	1.00E-03	1.00E-03	0.00E+00		1.02E-05	6.37E-03	2.35E-04	NC	NC
Zinc	<0.001	4.58E-03	2.10E-02	6.16E-03		3.56E-02	7.86E+00	2.94E-01	-154%	-199%
Manganese	<0.001	3.17E-01	7.70E+00	1.51E+00		7.02E-04	2.14E-01	7.68E-03	199%	189%
Ammoniacal Nitrogen	<0.05	7.51E-01	3.00E+00	8.05E-01		6.07E-01	3.67E+00	4.96E-01	21%	-20%

Notes

LRL - Laboratory Reporting Limit (Element Laboratory at time of report issue)

* Output from Existing Eales Farm Landfill Model

EFLM - Existing Eales Farm Landfill Model

Statistics assume contaminant concentrations reported below LRL are at the LRL.

SD - Standard Deviation

NC - Not Calculated

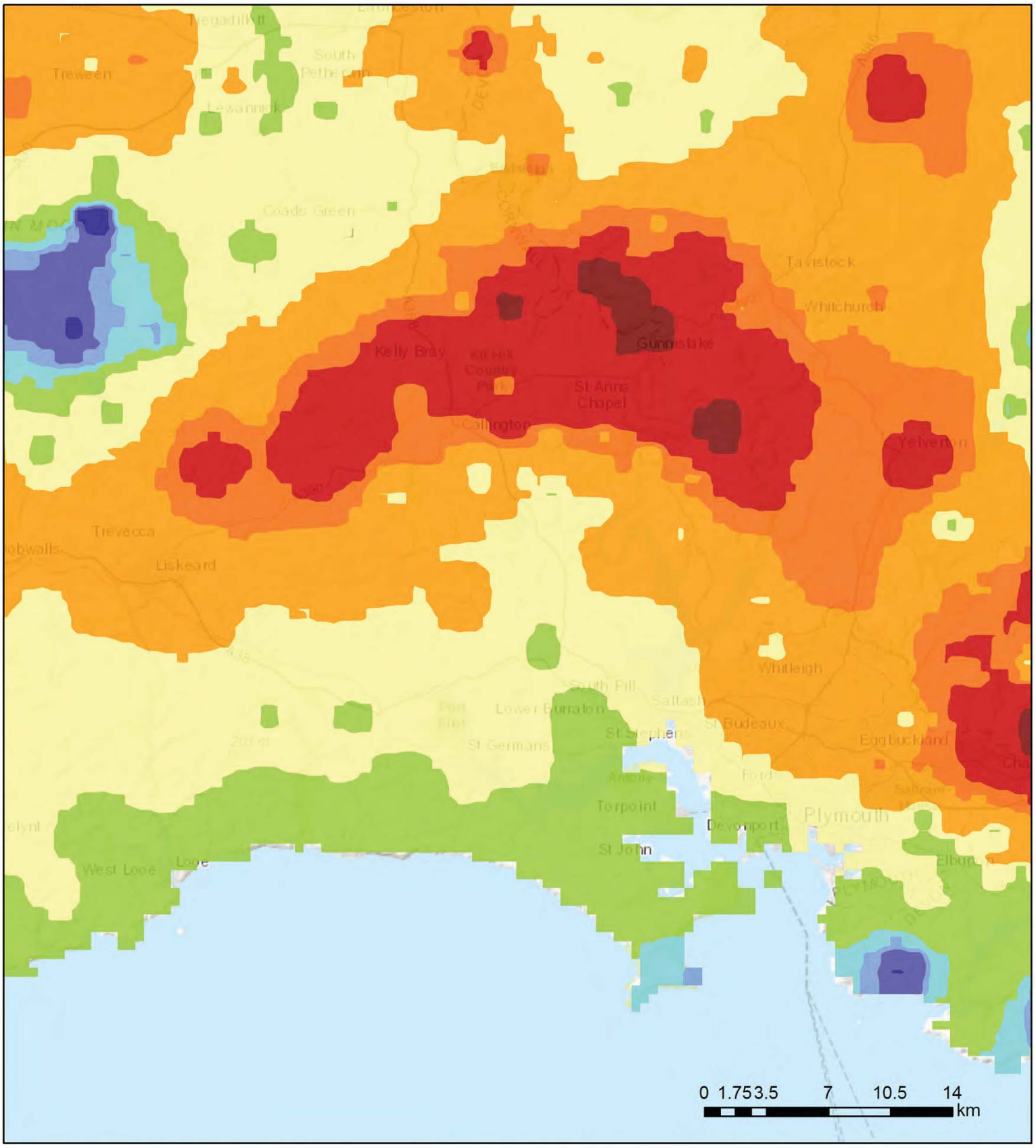
RPD - Relative Percentage Difference between concentrations detected in well BH11B and EFLM output at compliance point. Negative values indicate greater concentrations predicted by model, positive values indicate greater concentrations measured in water samples.

Future Background Concentration Utilised in Model (based on normal distribution).

Appendix E BGS Maps Showing Background Soil Concentrations

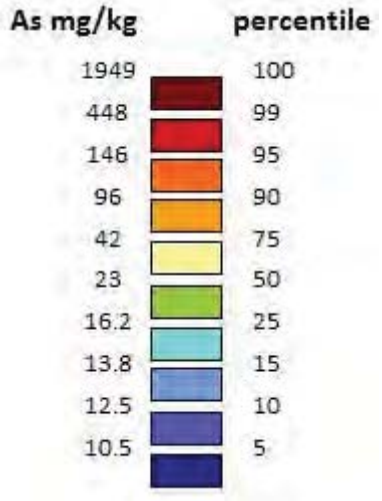
UKSO

UK Soil Observatory



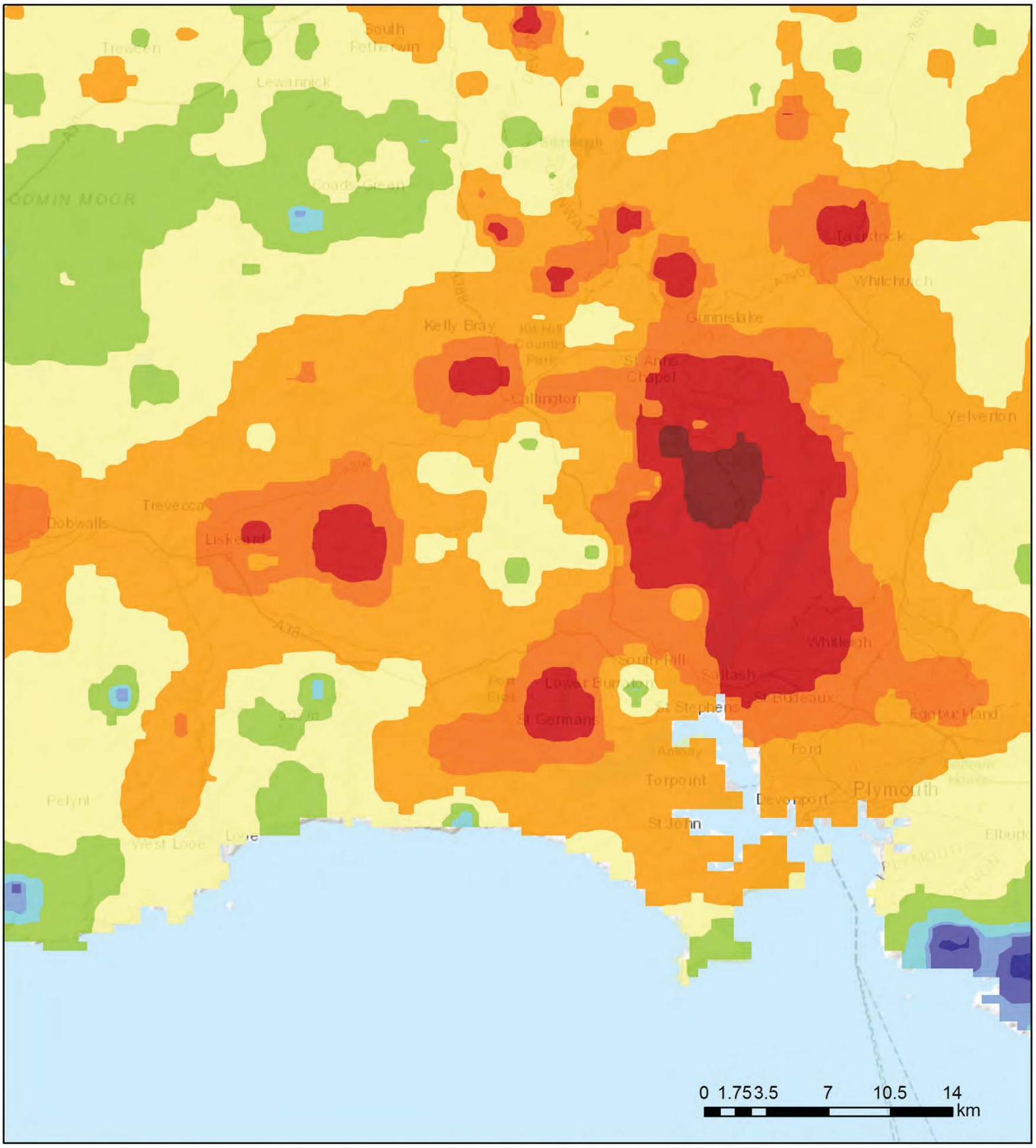
Map Key

Arsenic (As) in soils (SW only)



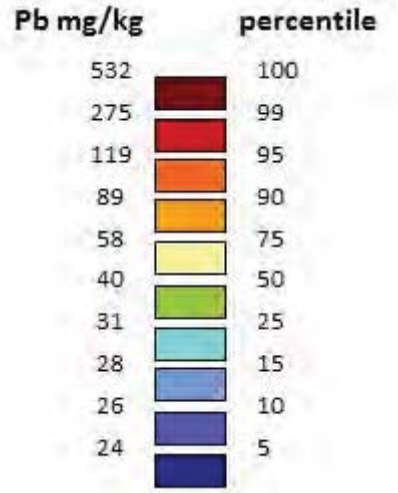
UKSO

UK Soil Observatory



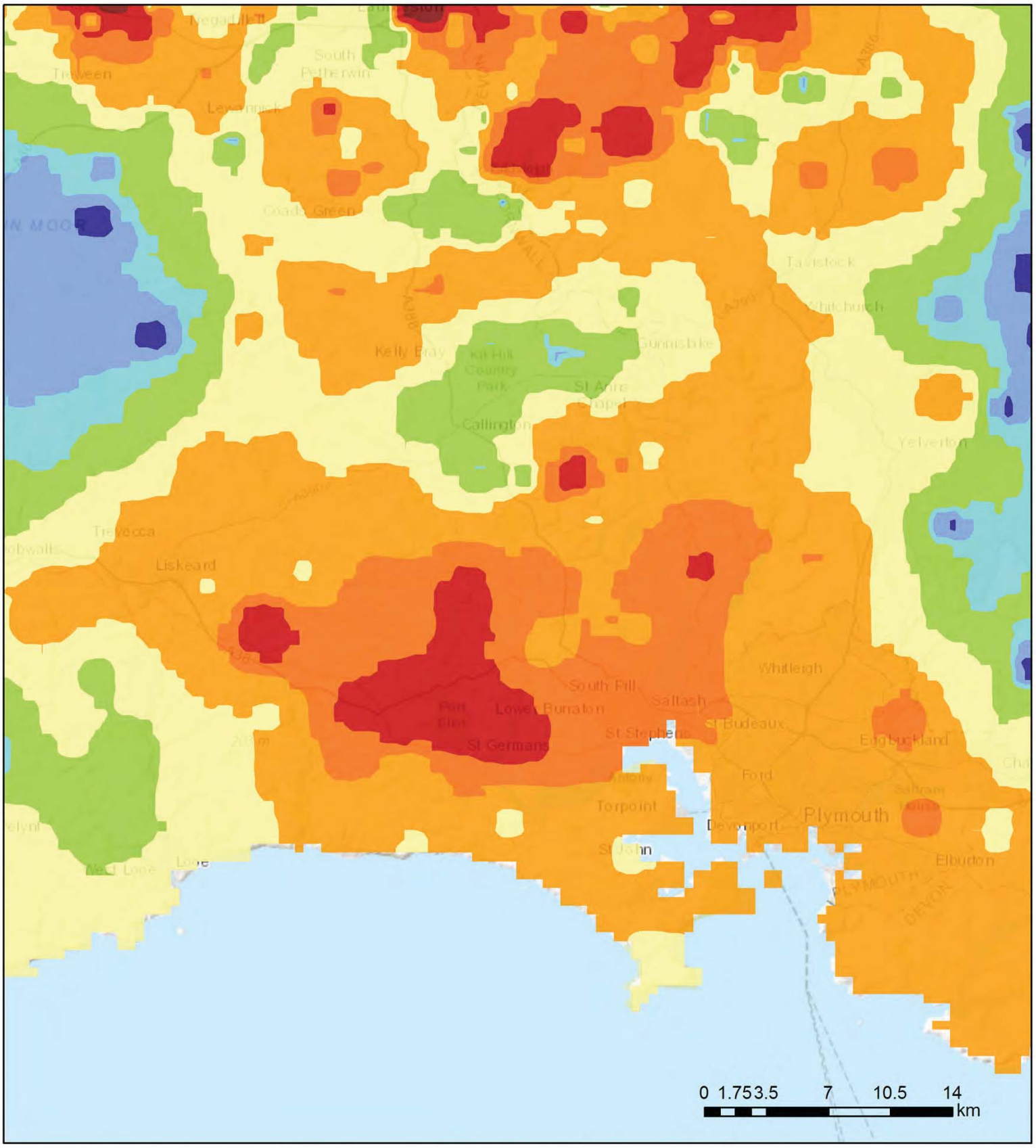
Map Key

Lead (Pb) in soils (SW only)



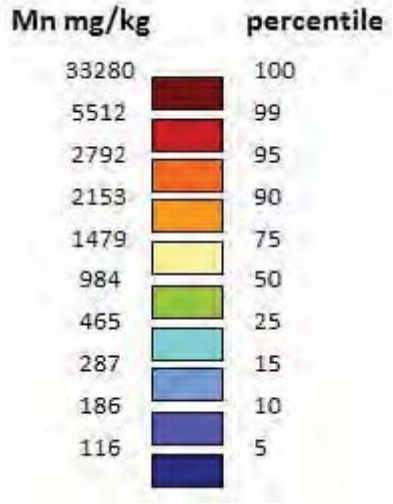
UKSO

UK Soil Observatory

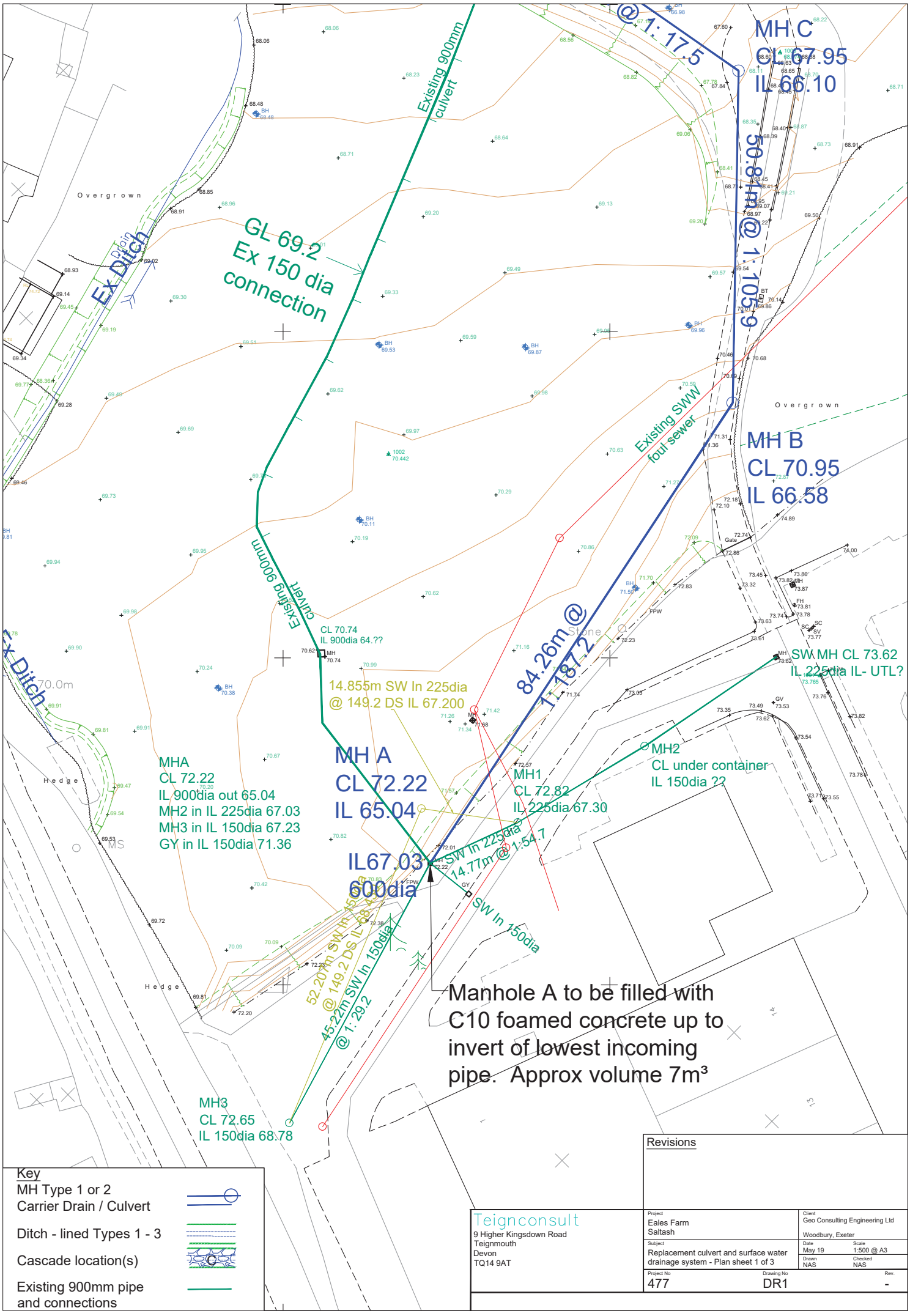


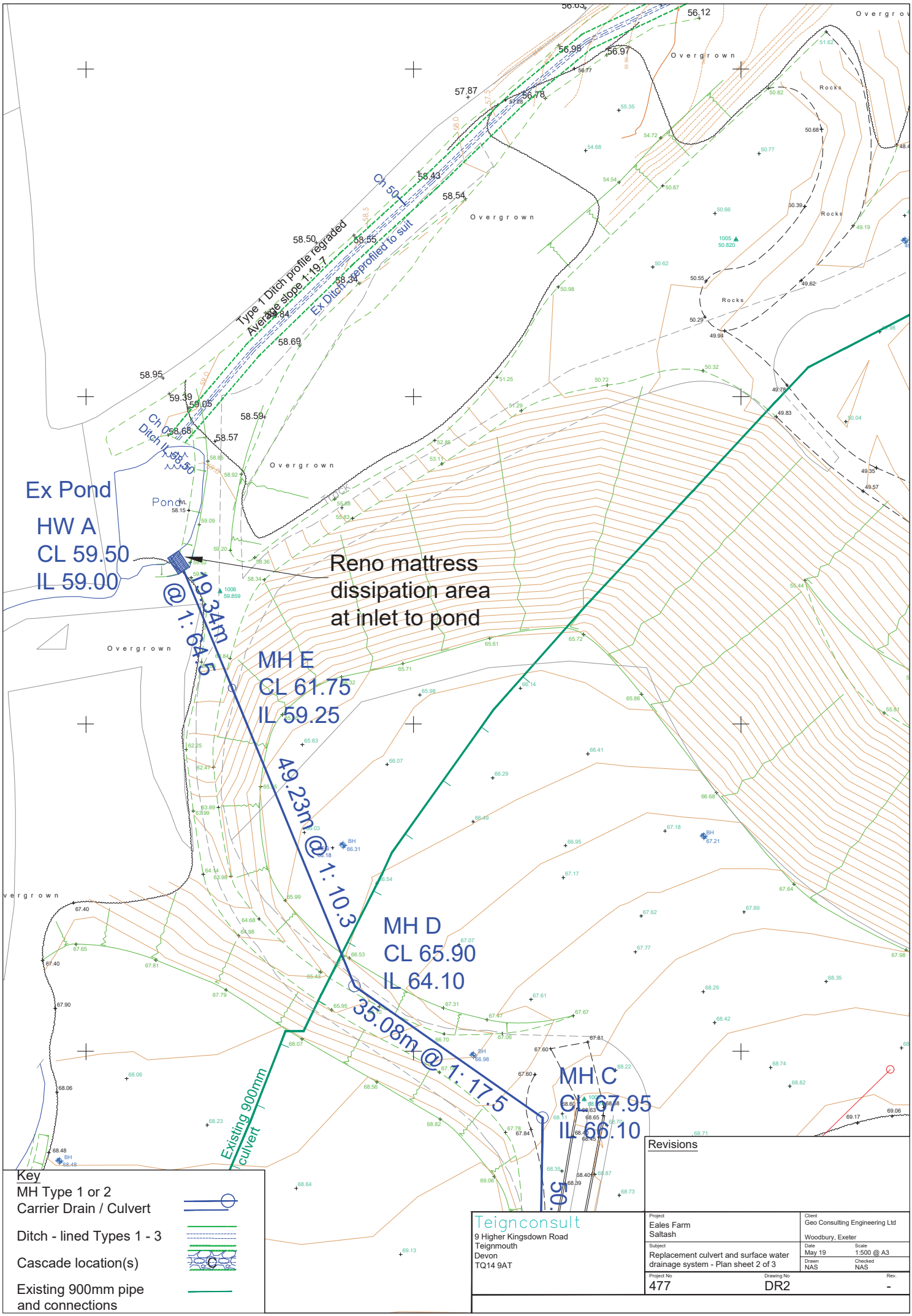
Map Key

Manganese (Mn) in soils (SW only)



Appendix F Proposed Culvert Design


@ 1: 17.5
MH C
CL 67.95
IL 66.10
50.81m @ 1: 105.9
Existing 900mm culvert
GL 69.2
Ex 150 dia connection
Ex Ditch
Overgrown
Existing SWW foul sewer
MH B
CL 70.95
IL 66.58
Existing 900mm CULVERT
CL 70.74
IL 900dia 64.??
14.855m SW In 225dia
@ 149.2 DS IL 67.200
84.26m @ 1: 187.2
MH A
CL 72.22
IL 65.04
MHA
CL 72.22
IL 900dia out 65.04
MH2 in IL 225dia 67.03
MH3 in IL 150dia 67.23
GY in IL 150dia 71.36
MH1
CL 72.82
IL 225dia 67.30
MH2
CL under container
IL 150dia ??
SW MH CL 73.62
IL 225dia IL- UTL?
IL67.03
600dia
SW In 225dia
14.77m @ 1:54.7
SW In 150dia
52.20m SW In 150dia
@ 149.2 DS IL 68.78
45.22m SW In 150dia
@ 1: 29.2
Hedge
Stone
Gate
MH3
CL 72.65
IL 150dia 68.78
Manhole A to be filled with C10 foamed concrete up to invert of lowest incoming pipe. Approx volume 7m³
Key
MH Type 1 or 2
Carrier Drain / Culvert
Ditch - lined Types 1 - 3
Cascade location(s)
Existing 900mm pipe and connections
Revisions
Teignconsult
9 Higher Kingsdown Road
Teignmouth
Devon
TQ14 9AT
Project
Eales Farm
Saltash
Client
Geo Consulting Engineering Ltd
Woodbury, Exeter
Subject
Replacement culvert and surface water drainage system - Plan sheet 1 of 3
Date
May 19
Scale
1:500 @ A3
Drawn
NAS
Checked
NAS
Project No
477
Drawing No
DR1
Rev.
-


Ex Pond
HW A
CL 59.50
IL 59.00
9.34m @ 1: 64.5
Reno mattress dissipation area at inlet to pond
MH E
CL 61.75
IL 59.25
49.23m @ 1: 10.3
MH D
CL 65.90
IL 64.10
35.08m @ 1: 17.5
MH C
CL 67.95
IL 66.10
Existing 900mm culvert
Ch 50
Type 1 Ditch profile regraded
Average slope 1:19.7
Ex Ditch re-profiled to suit
Ch 0
Ditch IL 58.50
Pond
Overgrown
Rocks
Key
MH Type 1 or 2
Carrier Drain / Culvert
Ditch - lined Types 1 - 3
Cascade location(s)
Existing 900mm pipe and connections
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Subject
Replacement culvert and surface water drainage system - Plan sheet 2 of 3
Date
May 19
Scale
1:500 @ A3
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NAS
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477
Drawing No
DR2
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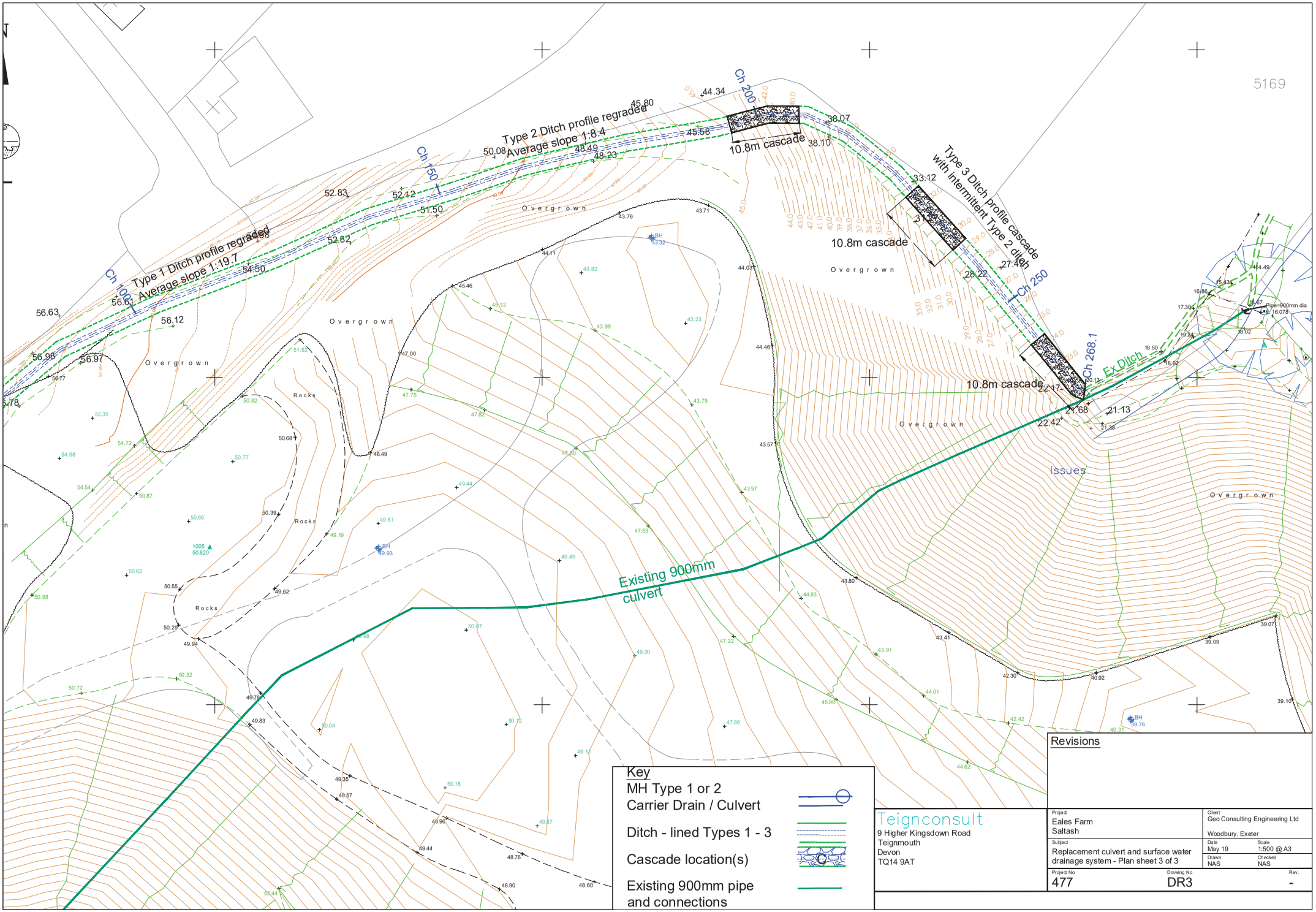

Key

MH Type 1 or 2

Carrier Drain / Culvert

Ditch - lined Types 1 - 3

Cascade location(s)

Existing 900mm pipe and connections

Revisions

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Project: Eales Farm, Saltash

Client: Geo Consulting Engineering Ltd, Woodbury, Exeter

Subject: Replacement culvert and surface water drainage system - Plan sheet 3 of 3

Date: May 19

Scale: 1:500 @ A3

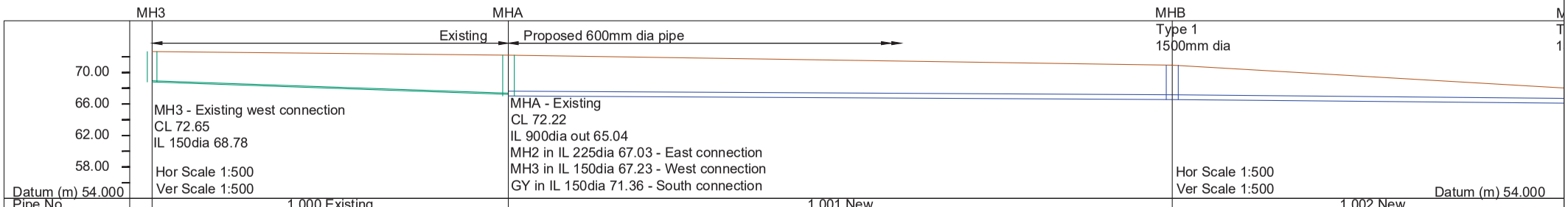
Drawn: NAS

Checked: NAS

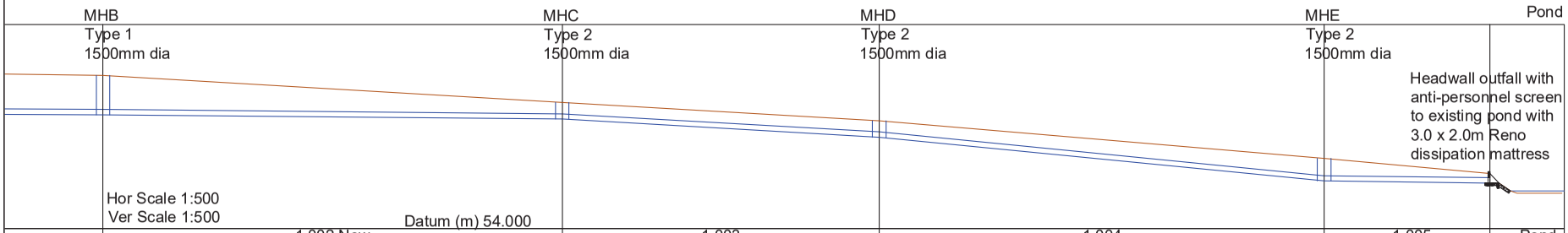
Project No: 477

Drawing No: DR3

Rev.: -



Pipe No	1.000 Existing	1.001 New	1.002 New
Dia (mm)	150	600	600
Slope (1:X)	29.2	187.2	105.9
Cover Level (m)	72.650	72.220	70.950
Invert Level (m)	68.780	67.230 / 67.030	66.580 / 66.580
Length (m)	45.220	84.257	50.810



	1.002 New	1.003	1.004	1.005	Pond
	600	600	600	600	
	105.9	17.5	10.1	73.3	
	70.950	67.950	65.900	61.750	60.000
66.580	66.580	66.100	64.100	59.250	59.000
	50.810	35.080	49.227	18.335	

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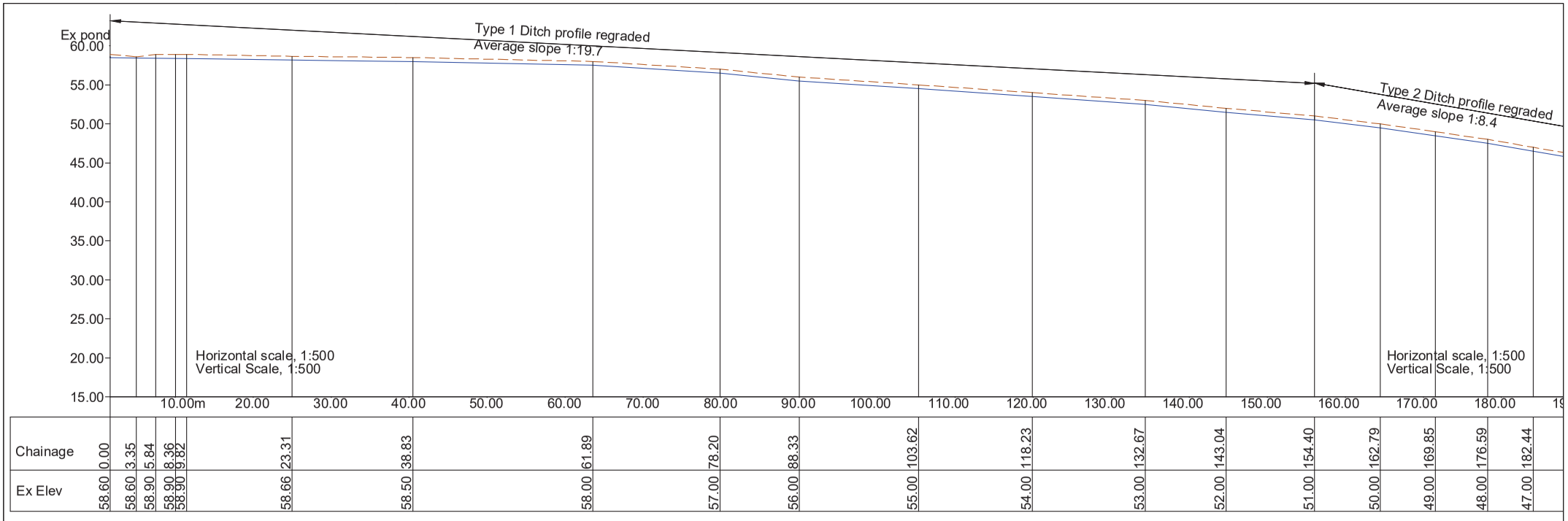
Project: Eales Farm, Saltash
Replacement culvert & ditch outfall

Client: Geo Consulting Engineering Ltd
Woodbury, Exeter

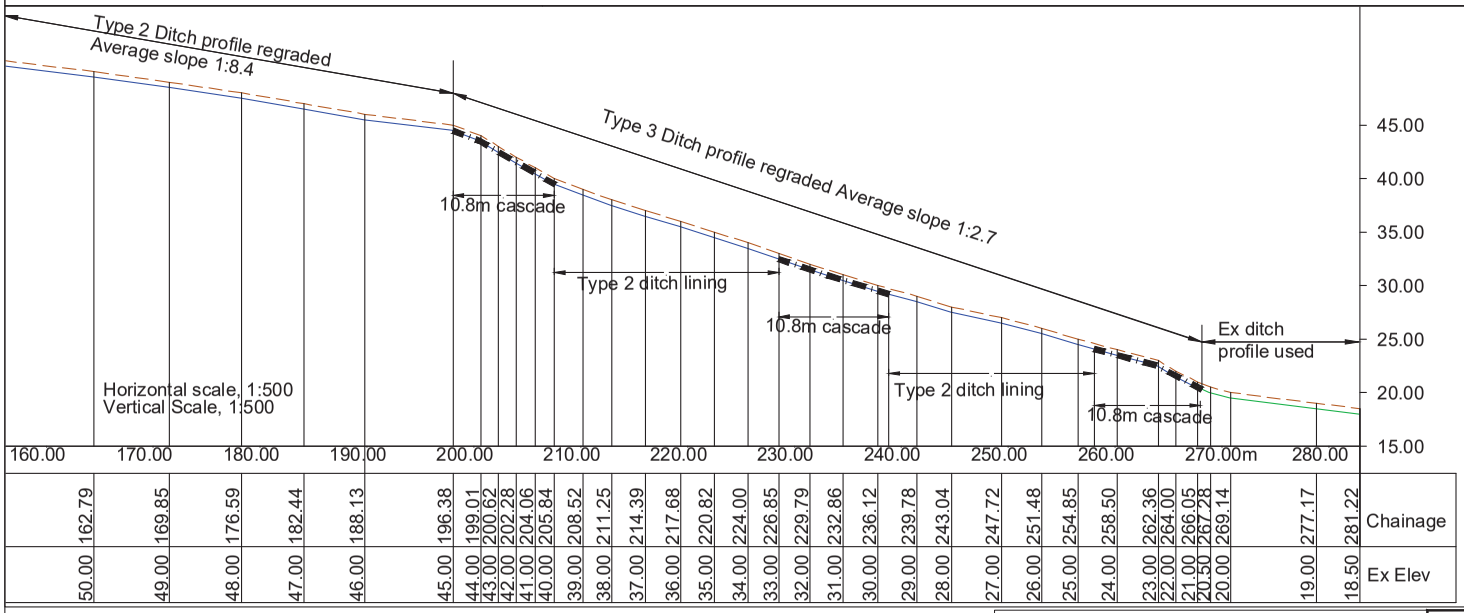
Subject: Surface water drainage - culvert
Long sections sheet 1 of 2

Date: May 19
Scale: 1:500 @ A3
Drawn: NAS
Checked: NAS

Project No: 477
Drawing No: DR4 LS1
Rev: -



Chainage	0.00	3.35	5.84	8.36	9.82	23.31	38.83	61.89	78.20	88.33	103.62	118.23	132.67	143.04	154.40	162.79	169.85	176.59	182.44
Ex Elev	58.60	58.60	58.90	58.90	58.90	58.66	58.50	58.00	57.00	56.00	55.00	54.00	53.00	52.00	51.00	50.00	49.00	48.00	47.00



Chainage	162.79	169.85	176.59	182.44	188.13	196.38	199.01	200.62	202.28	204.06	205.84	208.52	211.25	214.39	217.68	220.82	224.00	226.85	229.79	232.86	236.12	239.78	243.04	247.72	251.48	254.85	258.50	262.36	264.00	266.05	267.28	269.14	277.17	281.22
Ex Elev	50.00	49.00	48.00	47.00	46.00	45.00	44.00	43.00	42.00	41.00	40.00	39.00	38.00	37.00	36.00	35.00	34.00	33.00	32.00	31.00	30.00	29.00	28.00	27.00	26.00	25.00	24.00	23.00	22.00	21.00	20.50	20.00	19.00	18.50

Ditch Type 1 - Typical velocity 2.5 - 3.0m/s lined with Fortrac3D, topsoil and grass seeded

Ditch Type 2 - Typcal velocity 3.0 - 4.0m/s lined with basal liner - Huesker Canal³ 8208 and Fortrac3D.

Ditch Type 3 - Typical velocity 5.0 - 8.0m/s cascade required

Revisions

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Project
Eales Farm, Saltash
Replacement culvert & ditch outfall

Client
Geo Consulting Engineering Ltd
Woodbury, Exeter

Subject
Surface water drainage - ditch outfall
Long sections sheet 2 of 2

Date
May 19

Scale
1:500 @ A3

Drawn
NAS

Checked
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Project No
477

Drawing No
DR5 LS2

Rev.
-

Appendix G Selected Drawings from Envirocheck