



REPORT

Biffa Waste Service Ltd

Eye Landfill, Eastern Extension

Groundwater Monitoring and Management Plan

Submitted to:

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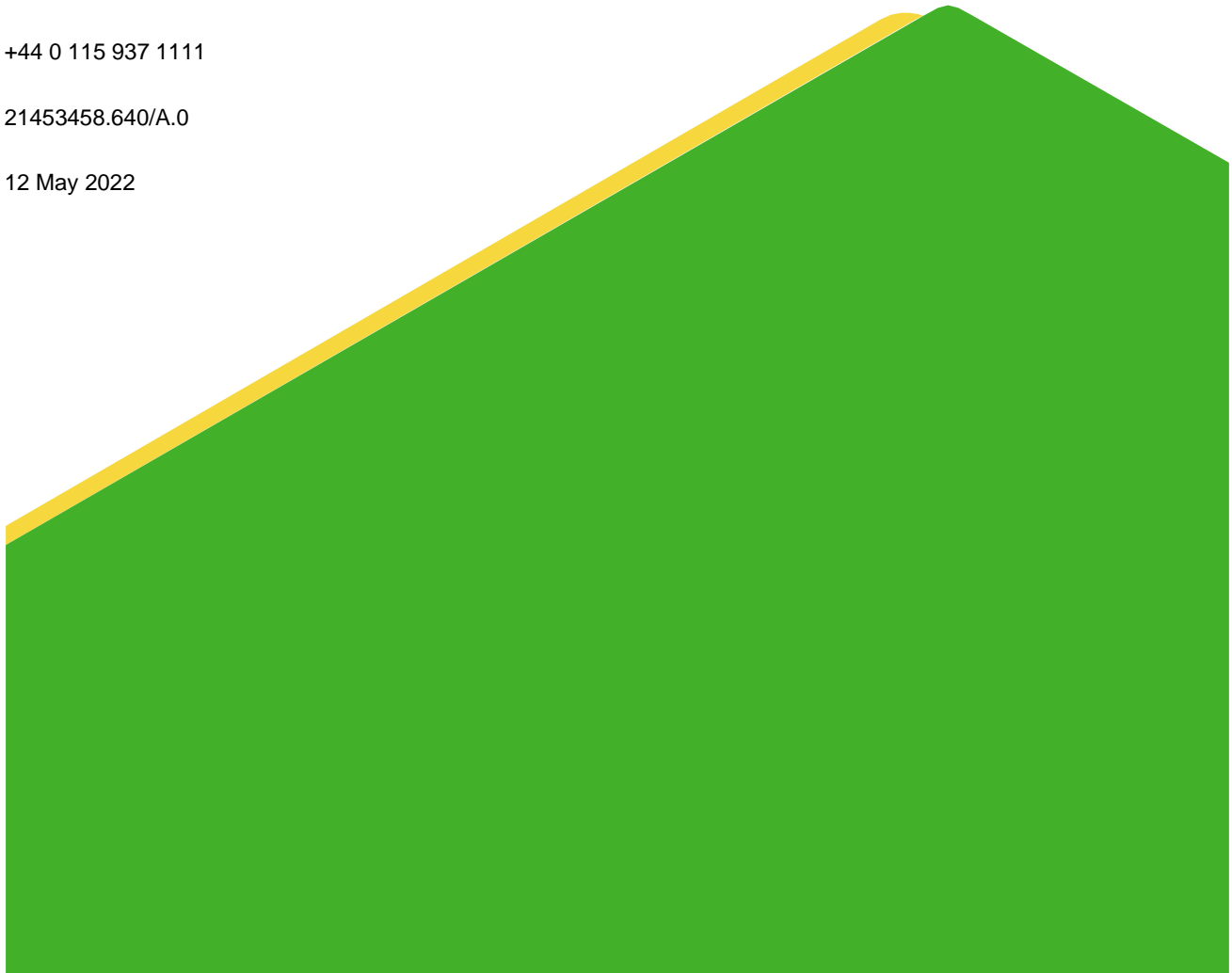
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21453458.640/A.0

12 May 2022



Distribution List

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1.0 REPORT CONTEXT

This report has been prepared by Golder, member of WSP in UK (Golder), on behalf of Biffa Waste Services Ltd (Biffa) and presents a Groundwater Management and Monitoring Plan for the proposed Eastern Extension (Eastern Extension) at Eye Landfill, Eyebury Road, Eye, Peterborough PE6 7TH (the Site).

The Site currently consists of four main areas comprising the Central Area, Northern Extension, North-eastern Extension, and Southern Extension. The North-eastern and Southern Extensions are currently authorised by Environmental Permit (EP) EPR/BP/3537PP. Biffa intends to secure additional void space for non-hazardous waste landfill development at the neighbouring Willow Hall Farm Quarry and Inert Landfill, Willow Hall Lane, Thorney, Peterborough, PE6 0QN, which lies to the east of the Eye Landfill, currently operated by PJ Thory Ltd ('Thory'). Thory currently operate their Quarry and Inert Landfill under EP for inert landfill (EPR/DB3007TZ), which was issued to TAG Industries Ltd in 2016 and transferred to Thory in 2017 (EPR/FB3204MX).

This report details the Groundwater Management and Monitoring Plan to be implemented specifically at the proposed Eastern Extension and is therefore not applicable to other areas of the Site. This Plan is a 'live' document, which shall be updated accordingly as the project is progressed. Consequently, the Plan should be reviewed after 12 months operation at the site and revised as required. The requirements of this Plan may be transferred to a site-specific Groundwater Management and Monitoring Plan developed in accordance with Biffa's Environmental Management System.

This Plan should be read in conjunction with the Permit variation application for the Eastern Extension, in particular Environmental Setting and Installation Design (ESID; ref. 21453458.632), and Hydrogeological Risk Assessment (HRA; ref. 21453458.633).

2.0 GROUNDWATER MANAGEMENT

Shallow groundwater is present in the River Terrace Deposits and currently discharges into the quarry from the lower parts of the quarry face from where it is pumped to the surface water lagoon in the northwest corner. Water is pumped from the lagoon to the Cat's Water Drain (nearby surface water drain).

To facilitate working of sand and gravel in the Eastern Extension, localised groundwater removal is required. Groundwater will continue to be managed and back-drains installed behind the exterior lining system of Cells 9 to 18 so that groundwater will drain into the undeveloped parts of the quarry from where it will be pumped to the surface water lagoon for discharge to the Cat's Water Drain. A back-drain is not required along the Cat's Water Drain or the full height engineered bund.

Groundwater management is required whilst each cell is under development. As the site moves towards completion, it may be possible to 'turn off' the drain behind some completed cells to minimise the groundwater discharging to surface water bodies. In development of Cell 18 (the final cell), the back drain may be accessed by a temporary manhole with submersible pump until such a time that waste levels in the cell are sufficiently high that the pump can be withdrawn.

In order to assess the effectiveness of the leachate control measures, including site engineering and leachate removal, groundwater monitoring boreholes have been installed around the perimeter of the site at the locations as shown on **Drawing HRA3 – Monitoring and Extraction Point Plan**, in order to provide information on background water quality. Several additional monitoring points will be added in the future in order to complete a comprehensive monitoring network in line with Environment Agency ('EA') Landfill Technical Guidance Note 2 (LFTGN02), the proposed locations of which are also shown on **Drawing HRA3 – Monitoring and Extraction Point Plan**.

Details regarding the drains to be placed behind the lined side slopes of the Eastern Extension is presented in the Stability Risk Assessment (SRA) (21453458.634) and Landfill Engineering Design Report (21453458.651) supporting the variation application. Detailed cell design and Construction Quality Assurance (CQA) procedures for engineering the lining system have been and will continue to be described within the CQA Plans submitted to the EA for each cell. A CQA Validation Report, which presents the final 'as built' construction and engineered details of each cell, is also submitted to the EA after construction of each cell.

In the future, once landfilling is complete and pumping ceased, rebound of the surrounding groundwater will occur, which will increase the degree of hydraulic containment at the site.

3.0 GROUNDWATER MONITORING INFRASTRUCTURE

3.1 Location and Installation of Boreholes

There are currently eleven groundwater monitoring boreholes located around the Eastern Extension. Six installed within the River Terrace Deposits and five within the Kellaways Sand as listed in Table GwMP1. The locations of these boreholes are shown on **Drawing HRA3 – Monitoring and Extraction Point Plan**.

Table GwMP1: Groundwater Monitoring Boreholes

Borehole Drill ID	BEDS Name	BEDS Code
River Terrace Deposits		
BHP11/01	BH47	91002470
BHP11/02	BH54	91002540
BHP11/03	BH56	91002560
BHP11/04	BH55	91002550
BHP11/05	BH50	91002500
BHP11/06	BH48	91002470
Kellaways Sand		
BH21-01	BH46	91002460
BH21-02	BH49	91002490
BH21-03	BH51	91002510
BH21-04	BH52	91002520
BH21-05	BH53	91002530

Due to the planned landfilling extent, borehole BHP11/04 will not be included in the future monitoring as it is beyond the required distance from the southern boundary of the site.

In accordance with the HRA, it is proposed to install three pairs of boreholes and six single boreholes adjacent to already existing monitoring points in the vicinity of the Eastern Extension. The location of these proposed boreholes is shown on **Drawing HRA3 – Monitoring and Extraction Point Plan**. In each pair of boreholes, one borehole will be a shallow borehole located within the River Terrace Deposits and the second borehole will be a deep borehole located within the Kellaways Sand.

3.2 Design of Boreholes

The EA's LFTGN02 states that the “*design objectives relating to groundwater monitoring points are:*”

- *To permit an accurate water level or pressure ('piezometric') level to be measured and recorded to an elevation expressed as metres above ordnance datum; and*
- *To enable an appropriate sample to be obtained from the surrounding strata.”*

It also states that “*In strata in which groundwater varies seasonally, the screened section of the borehole should extend below the lowest likely water level by sufficient depth to enable sampling.*”

The Kellaways Sand aquifer is confined and known to exhibit a piezometric head that exceeds the elevation of the top of the Oxford Clay which lies above it. To date minimal variations of water level have been observed at the Eastern Extension and this trend is anticipated to continue. Therefore, the boreholes are screened over up to 6 m interval within the Kellaways Sand, permitting groundwater levels to be measured and representative samples to be collected.

As expected, and because of the ongoing localised dewatering as landfill progresses, groundwater levels in the River Terrace Deposits are variable. The boreholes are typically screened across up to a 6 m thickness such that the water level variation within the unsaturated zone can be measured and samples can be collected.

The design specification for the River Terrace Deposits (shallow) and the Kellaways Sand (deep) monitoring boreholes are shown in **Drawing GwMP1 – River Terrace Deposits Monitoring Borehole Specification** and **Drawing GwMP2 – Kellaways Sand Monitoring Borehole Specification**, respectively.

The boreholes will be drilled at a diameter of 200 mm. Up to a maximum of 6 m slotted HDPE pipe will be installed wholly in the River Terrace Deposits or Kellaways Sand as appropriate. The adjacent geology will be sealed off from the slotted section using bentonite clay in the drilled annulus and plain (i.e. non-slotted) HDPE pipe. The slotted pipe will be surrounded with a filter wrap to prevent the ingress of fines. The annulus between the slotted pipe and the edge of the boring will be filled with a 2 mm to 6 mm clean non-calcareous gravel pack. Bentonite seals will be placed above the filter pack and below the surface concrete. The remainder of the annulus will be filled with clean granular material. An end cap will be fitted to the base of the pipe, while the top of the pipe will be fitted with a removable cap. Secure lockable headworks will be fitted over the top of the borehole and secured into position using concrete.

3.3 Construction Quality Assurance of New and Replacement Monitoring Points

Installation of new or replacement groundwater monitoring boreholes has been and will continue to be undertaken in accordance with the following CQA plan which covers the elements of the design and installation.

The CQA Plans include and will continue to include, but not be limited, to the following:

CQA supervision will be carried out full time during the Site works. The engineer will conduct the following:

- Record the drilling locations;
- Make observations regarding the lithology encountered during drilling and record details regarding water strikes;
- Record the depth of drilling;
- Describe the materials in relation to the specification;
- Record the way installation materials are delivered, handled and stored with reference to the manufacturer's recommendations; and
- Record the installations with reference to the design.

Groundwater monitoring boreholes will be drilled and recorded in accordance with BS 5930 Code of Practice for Site Investigations. Borehole logs and 'as-built' installation details will be forwarded to the Environment Agency (EA) and will provide the following information:

- Labelling of the borehole;
- Date of drilling and installation;
- Geological strata descriptions;
- Groundwater level (and any perched water levels);
- Design of the borehole if more than one type is being used on the Site;
- Depth of borehole (metres) and level of the bottom of the borehole in metres above Ordnance Datum (m AOD);
- Surveyed height of the top of the borehole in m aOD, and the surveyed ground level at the point if it differs; and
- National Grid Reference of the boreholes (10 figure).

A CQA validation report will be provided that includes the above details and borehole construction detail drawings. The CQA validation report will be submitted to the EA within three months of completion of installation.

Following installation, all groundwater monitoring boreholes will be levelled to Ordnance Datum, and an elevation reference mark permanently placed on the point. Where any monitoring well is extended or repaired, the well will be resurveyed within one month and, where necessary, any monitoring results obtained in the intervening period will be corrected according to the revised level.

4.0 MAINTENANCE OF GROUNDWATER MONITORING POINTS

4.1 Borehole Maintenance

Groundwater monitoring boreholes will be maintained in a condition that allows them to fulfil their required purpose. Boreholes will be inspected for damage each time that they are monitored or sampled. Any damage noted will be repaired within a month of detection where possible or where a borehole is damaged such that it requires replacement, a replacement borehole will be drilled within one month subject to availability of drilling contractor, weather conditions and access to the location, and in any event, within no later than six months.

Details of inspections of monitoring boreholes, remedial actions undertaken, or replacement boreholes installed will be recorded in the site diary, to include relevant dates of inspections and remedial works and details of who carried out the inspection or works.

4.2 Borehole Redundancy and Decommissioning

The following details for decommissioning of redundant boreholes have been based on guidelines from the EA.

Decommissioning will commence with the following objectives:

- Remove the hazard of any open hole (safety issues);
- Prevent the borehole acting as a conduit for potential contamination to enter groundwater;
- Prevent the mixing of contaminated and uncontaminated groundwater from different aquifers;

- Prevent the flow of groundwater from one geological horizon to another; and
- Prevent the wastage of groundwater from overflow from artesian boreholes.

The borehole shall be made free from all obstructions. In particular, pipework and the condition of the casing shall be checked to ensure retention of the grout. The hole should be backfilled with uncontaminated material of a similar permeability to that of the geological strata against which they are placed.

When sealing the top of the borehole, the final two metres from ground level should be filled with cement concrete or bentonite grout. A concrete or cement cap should then be installed over the top of the borehole and surrounding ground.

Where possible, the decommissioning process should mimic the existing permeability of the geological stratigraphy and prevent a contamination pathway occurring. For the boreholes installed in the Kellaways Sand, a bentonite or concrete grout seal will be placed between the geological horizons (e.g. the Kellaways Sand and Oxford Clay) to prevent migration of groundwater between rock units.

The following shall be recorded when decommissioning:

- Reasons for abandonment;
- Measurement of groundwater level prior to backfilling;
- The depth and position of each layer of backfilling and sealing material;
- Any changes made to the borehole during abandonment; and
- Any problems encountered during the abandonment procedure.

5.0 GROUNDWATER MONITORING PLAN

The groundwater monitoring programme is in accordance with EA guidance (EA, 2021).

5.1 Monitoring Programme

5.1.1 Groundwater Level Monitoring

Groundwater levels will be measured at quarterly intervals in all of the MEPP monitoring boreholes (including the future proposed borehole once they are drilled and installed). Groundwater levels will be measured to an accuracy of 0.01 metres as metres below ground level (m bgl), and will be calculated as a groundwater level in metres aOD, and will be reported along with the date of the measurement.

5.1.2 Groundwater Quality Monitoring

Groundwater quality will be monitored in existing boreholes: BHP11/01, BHP11/02, BHP11/03, BHP11/05, BHP11/06, BH21-01, BH21-02, BH21-03, BH21-04, and BH21-05; and will also be monitored in the additional proposed boreholes once they are constructed (as shown on **Drawing HRA3 – Monitoring and Extraction Point Plan**).

The quality of groundwater will be monitored by regular sampling and analysis to the same monitoring regime as agreed between Biffa and the EA for Eastern Extension. The proposed suite and frequency of monitoring is summarised in **Table GwMP2** and follows the methodology approved for the Southern and North-eastern Extensions.

Table GwMP2: Proposed Groundwater Monitoring Requirements

Monitoring Point Ref./Description	Parameter	Monitoring Frequency	Monitoring Standard or Method
Up gradient MEPP	Water level, electrical conductivity, chloride, ammoniacal nitrogen, pH	Quarterly	As specified in Environment Agency Guidance TGN02 'Monitoring of Landfill Leachate, Groundwater and Surface Water' (February 2003), Horizontal Guidance Note H1 - Environmental Risk Assessment for permits, Annex J3, version 2.1, Dec 2011, or such other subsequent guidance as may be agreed in writing with the Environment Agency.
	Total alkalinity, magnesium, potassium, total sulphates, calcium, sodium, chromium, copper, iron, lead, nickel, zinc, manganese	Annually	
	Hazardous substances (also including phenol, naphthalene, mecoprop)	Annually for first six years of operation	
Down or cross gradient MEPP	Water level, electrical conductivity, chloride, ammoniacal nitrogen, pH	Quarterly	
	Total alkalinity, magnesium, potassium, total sulphates, calcium, sodium, chromium, copper, iron, lead, nickel, zinc, manganese, phenol, naphthalene, mecoprop	Annually	
	Hazardous substances (also including phenol, naphthalene, mecoprop) detected in leachate	Annually for first six years of operation then every two years	
MEPP	Base on monitoring point (mAoD)	Annually	

Groundwater concentrations will be assessed with regard to the compliance limits and control levels as shown in Table GwMP3 (River Terrace Deposits), and Table GwMP4 (Kellaways Sand). Compliance limits and control levels are set for the down and/or cross-gradient groundwater sampling points for the Kellaways Sand where the groundwater flow direction is understood to be to the southeast, however due to the current limited dataset it is proposed that the compliance limits and control levels are revisited following a further 12 months of collection of data.

Current groundwater elevations, and therefore flow direction, in the River Terrace Deposits is variable, which is likely caused by local groundwater management systems. Therefore, whilst localised groundwater management, such as dewatering, continues, it is recommended that in absence of clearly defined downgradient monitoring points, the shallow groundwater monitoring points shown on the MEPP continue to be monitored. It is proposed that groundwater levels in the River Terrace Deposits are monitored for a twelve-month period following the cessation of localised groundwater management systems, followed by data review and designation of down and/or cross-gradient monitoring boreholes based on the established groundwater flow direction. Compliance limits and control levels will only be applied to the monitoring boreholes deemed to be down and/or cross-gradient.

Table GwMP3: Proposed Control Levels and Compliance Limits for Groundwater in River Terrace Deposit Down and/or Cross-gradient Boreholes

Parameter	Control Level/ Compliance Limit	Borehole Drill ID (BEDS Name and Code)				
		BHP11/01 (BH47 – 91002470)	BHP11/02 (BH54 – 91002540)	BHP11/03 (BH56 – 91002560)	BHP11/05 (BH50 – 91002500)	BHP11/06 (BH48 – 91002480)
Ammoniacal nitrogen (mg/l)	Control level	0.44	0.48	0.39	0.58	0.36
	Compliance Limit	0.49	0.53	0.43	0.64	0.39
Arsenic (mg/l)	Control level	0.00099	0.014	0.009	0.00052	0.009
	Compliance Limit	0.01	0.015	0.01	0.01	0.01
Chloride (mg/l)	Control level	42.3	78.0	48.4	57.7	37.9
	Compliance Limit	250	250	250	250	250
Mecoprop (mg/l)	Control level	0.00004	0.00004	0.00004	0.00004	0.00004
	Compliance Limit	0.0001	0.0001	0.0001	0.0001	0.0001
Naphthalene (mg/l)	Control level	0.0001	0.00013	0.00001	0.0001	0.00001
	Compliance Limit	0.0002	0.0002	0.0002	0.0002	0.0002
Nickel (mg/l)	Control level	0.00411	0.00426	0.00342	0.00584	0.00393
	Compliance Limit	0.02	0.02	0.02	0.02	0.02
Phenol (mg/l)	Control level	0.005	0.005	0.0069	0.005	0.0069
	Compliance Limit	0.0077	0.0077	0.0077	0.0077	0.0077

Table GwMP4: Proposed Control Levels and Compliance Limits for Groundwater in The Kellaways Sand Downgradient Boreholes

Parameter	Control Level/ Compliance Limit	Borehole Drill ID (BEDS Name and Code)		
		BH21-03 (BH51 – 91002510)	BH21-04 (BH52 – 91002520)	BH21-05 (BH53 – 91002530)
Ammoniacal nitrogen (mg/l)	Control level	2.18	4.78	2.84
	Compliance Limit	2.40	5.26	3.12
Arsenic (mg/l)	Control level	0.002	0.009	0.003
	Compliance Limit	0.01	0.01	0.01
Chloride (mg/l)	Control level	1620	1630	2240
	Compliance Limit	1782	1793	2464
Mecoprop (mg/l)	Control level	0.00004	0.00004	0.00004
	Compliance Limit	0.0001	0.0001	0.0001
Naphthalene (mg/l)	Control level	0.0001	0.0005	0.0005
	Compliance Limit	0.0002	0.0002	0.0002
Nickel (mg/l)	Control level	0.001	0.002	0.001

Parameter	Control Level/ Compliance Limit	Borehole Drill ID (BEDS Name and Code)		
		BH21-03 (BH51 – 91002510)	BH21-04 (BH52 – 91002520)	BH21-05 (BH53 – 91002530)
	Compliance Limit	0.004	0.004	0.004
Phenol (mg/l)	Control level	0.005	0.005	0.005
	Compliance Limit	0.0077	0.0077	0.0077

5.2 Action Plan Following Breach of Control Level or Compliance Limit

In the event that the control level or compliance limit are breached for any substance, an action plan will be instigated in order to ensure steps are taken to determine both the source of that substance and the impact it may have upon the identified receptors. The action plan for the Eastern Extension is detailed in **Table GwMP5**.

Table GwMP5: Action Plan Following Breach of a Control Level or Compliance Limit

Contingency Action	Control Level	Compliance Limit
Advise site management and environmental manager of landfill operating company.	✓	✓
If the result is above the control level and outside of the level of uncertainty, the sample will be retested by the laboratory within two weeks to confirm the measurement. If repeat analysis confirms the result is above the control level data will be reviewed by use of statistics and graphical presentation to establish the presence of any trends or patterns. If review of existing monitoring data indicates an increasing trend an additional sample will be taken.	✓	
Notify EA.		✓
If the result is above the compliance limit and outside of the level of uncertainty, the sample will be retested by the laboratory within two weeks to confirm the measurement. If the result is confirmed by the laboratory the boreholes should be resampled within one month. If repeat analysis confirms breach, then a specific action plan will be implemented, including where appropriate review of existing groundwater level, leachate level, groundwater quality and leachate quality monitoring data using statistics and graphical presentation to establish the presence of any trends or patterns, increased monitoring frequency in line with the action plan until concentrations reduce to below the compliance limit and/or review of site management and operations.		✓
In the event that the compliance limit is exceeded for more than six months then a further specific action plan will be submitted to the Environment Agency and implemented, including review of the assumptions incorporated into the conceptual site model, along with the existing risk assessment, and compliance limits if deemed appropriate.		✓

5.3 Quality Assurance of Monitoring and Sampling

5.3.1 Monitoring Personnel

Sampling will be undertaken by staff appropriately trained in environmental monitoring procedures, and who are familiar with the equipment and its limitations. Biffa will ensure that the personnel engaged in monitoring activities are trained to undertake the task. These will comprise the company's own technical personnel, the Site manager or nominated deputy, following appropriate training by technical personnel. All monitoring staff undergo a period of job training and in addition external courses are used to supplement internal training. Results will be validated by the sampling personnel detailed above.

5.3.2 Monitoring Procedures

5.3.2.1 Water Level Monitoring

Before bailing or pumping the sample, the water level will be measured using the electronic dip tape which will be lowered down the borehole until the electronic bleeper sounds. The graduation on the tape will be read to give the depth at which the bleeper starts to sound. Measurement will be taken from the top level of the borehole headworks and recorded to the nearest 0.01 m. These readings will then be converted to a level in metres above Ordnance Datum (m AOD).

5.3.2.2 Sampling

It is proposed that groundwater is sampled in one of three ways:

- With a Waterra pump;
- With a bailer; or
- With a bladder pump.

Samples will only be taken where a sufficient volume of water is available to take a representative sample.

Where bailed samples are taken, the following procedure will be adhered to:

- Bailers used for groundwater monitoring will not be used for leachate sampling to eliminate the risk of cross contamination from leachate;
- The bottom filling bailer will then be lowered into the borehole and allowed to fill;
- The first sample retrieved will be discarded, having been used to rinse the bailer; and
- Where bailed samples are taken, boreholes will not be purged prior to sampling.

Where water samples are pumped using the Waterra system the following procedure will be adhered to:

- Wells have been/will be equipped with the Waterra sampling system. Where sufficient volume and recharge volumes are available boreholes will be pumped until three times the cased well volume of water has been drawn out.
- The required volume to be pumped will be calculated having first measured the water level inside the well and having dipped the bottom of the well, or taking the corresponding value obtained from the borehole drilling and construction logs. (Periodically, the bottom level of the wells obtained from dipping will be compared with the corresponding value obtained from the borehole drilling and construction logs. This will be used to determine whether the wells have silted up and to decide on the need for any borehole maintenance).

- Boreholes will then be pumped until three times the cased well volume of water has been drawn out and a pumped sample taken for analysis. However, in low permeability strata, where recharge rates to the borehole are low, purging three well volumes may be impractical.
- If the borehole is dewatered, a sample will be collected once water levels have recovered sufficiently to provide an adequate sample volume.

Where water samples are pumped using bladder pumps the following procedure will be adhered to:

- Dedicated bladder pumps can be installed in individual boreholes with the pump inlet either in the centre of the screened section or centre of the water column if the groundwater level is below the top of the screen section.
- Groundwater will be purged from the borehole at a rate of approximately 1 litre per minute or less and ensuring that the water level in the borehole does not drop appreciably.
- On initial well development, wellhead parameters comprising pH, electrical conductivity, temperature and dissolved oxygen will be monitored via an in-line flow through cell until these have stabilised, in order to determine the quantity of groundwater that requires to be purged from each individual well.
- The quantity determined for each well will then be noted for future monitoring and purged prior to sampling.
- The flow through cell will be calibrated in accordance with the manufacturer's recommendations.

The samples taken by the above methods are unfiltered, but will get filtered at the laboratory prior to analysis.

Where an in-line meter is used to measure standard field determinands, samples are only taken once the values obtained have achieved stable values. The field determinands which are measured by the flow through cell are pH, conductivity, temperature and dissolved oxygen. The final values obtained are recorded when samples are taken and will be reported with the laboratory results subsequently obtained for the remaining determinands.

Samples will be collected in bottles, and using preservatives where required, supplied by the laboratory and appropriate to the analysis to be undertaken.

Samples taken will be labelled with the time and date of sampling, sampling locations and any other relevant information. Alternatively barcoded sample bottles may be used which detail in bar coded form the above information and additionally details of analysis required.

All samples will be delivered to the analytical laboratory within 24 hours of sampling, using refrigerated courier vehicles supplied by the laboratory. Analyses will be undertaken by a laboratory under UKAS accreditation (equivalent to EN45001). Because of the large batches of samples that will be processed by laboratories, the QA/QC checks implemented will be efficient in identifying any quality control analytical failures. The use of purged sampling techniques at the Site, using Waterra or bladder pumps, will ensure consistency of sampling and reduce sampling errors. Accordingly, it is not proposed to submit additional QC samples (sampling duplicates, field standards, or field blanks) from the site.

The range of determinands detailed above includes an ionic balance for all samples taken for the full range of determinands at quarterly intervals. Groundwater samples which attain an ionic balance within $\pm 15\%$ will be deemed satisfactory. Where the ionic balance falls outside this range, the results will be investigated.

Results will be validated by the sampling personnel detailed above. In addition, the groundwater quality monitoring data is directly downloaded to the Biffa Electronic Database System (BEDS), which contains an automatic system which can flag exceedances of control levels and compliance limits.

5.4 Making and Submission of Records

Records will be kept by Biffa of determinands and sampling points analysed, date of sampling, sampler, results, units and any repeat analysis or laboratory comment, or internal assessment, on the validity of the results.

A copy of the results of sampling and analysis of groundwater and levels measured for groundwater, calculated to metres above ordnance datum, will be forwarded to the EA within one month of being carried out, or as required by the permit, along with details of any parameters which have been identified as being in excess of compliance limits.

Results of laboratory analyses of groundwater will be compared with the compliance limits set out in **Table GwMP3** and **Table GwMP4** within one week of receipt. Any exceedance of the compliance limits set out in **Table GwMP3** and **Table GwMP4** will be notified to the EA.

An annual report will be provided to the EA every twelve months, detailing a review of the environmental monitoring results obtained from the Site during the previous year.. It will contain a detailed review of the environmental monitoring results obtained from the site during the previous year. This review will include an interpretation of the accuracy and validity of results of groundwater monitoring along with other information as per the Permit.

6.0 REFERENCES

- 1) EA, 2003. Guidance on monitoring of landfill leachate, groundwater and surface water. LFTGN02. February 2003.
- 2) EA, 2021. Landfill operators: environmental permits. [Monitor and report your performance - Landfill operators: environmental permits - Guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/monitor-and-report-your-performance-landfill-operators-environmental-permits).

Signature Page

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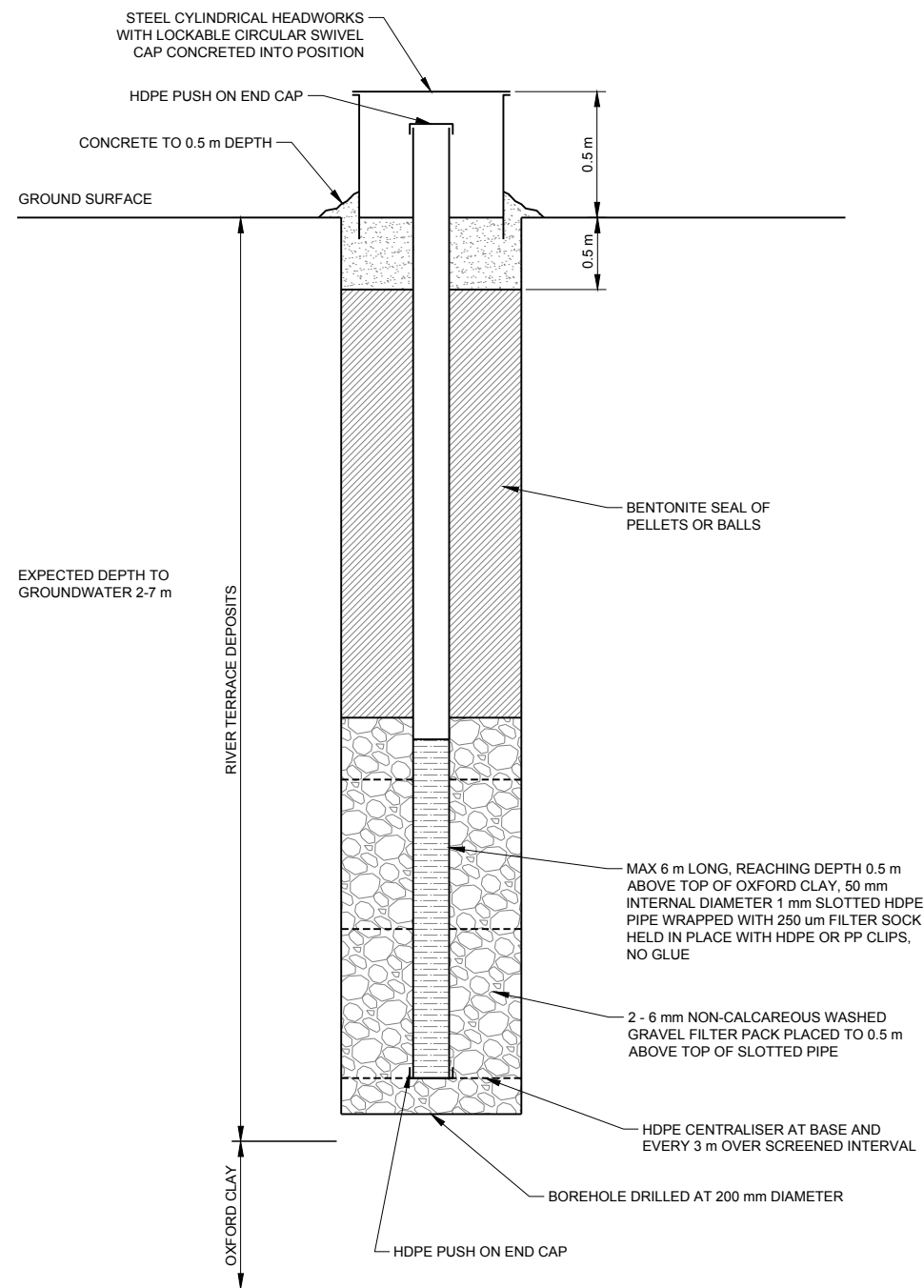


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Drawings



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GOLDER FILE REF 1006-GM-0001 ENGINEER AA REVIEWED BY CMcD

REV.	DATE	DRAWN	DESCRIPTION

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 E-mail: phil.mumford@biffa.co.uk

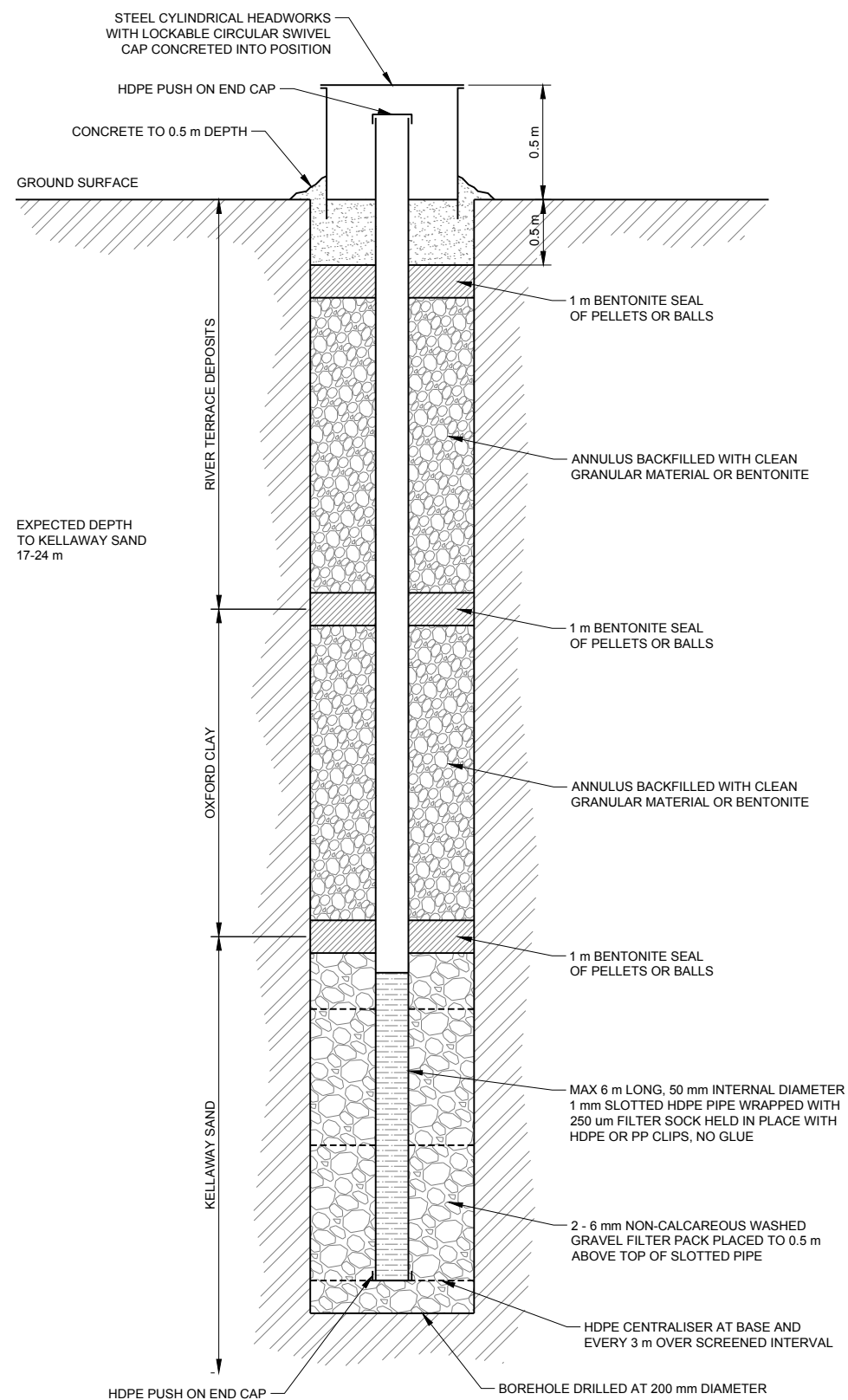
PROJECT Eye Eastern Extension

LOCATION Eye Landfill, Peterborough

DRAWING TITLE River Terrace Deposits Monitoring Borehole Specification

DRAWING No. GwMP1 COMPUTER REF. E52310100

DRAWN TS DATE 23/02/2022 SCALE(S) NTS



wsp GOLDER

GOLDER FILE REF 1006-GM-0002 ENGINEER AA REVIEWED BY CMcD

REV.	DATE	DRAWN	DESCRIPTION

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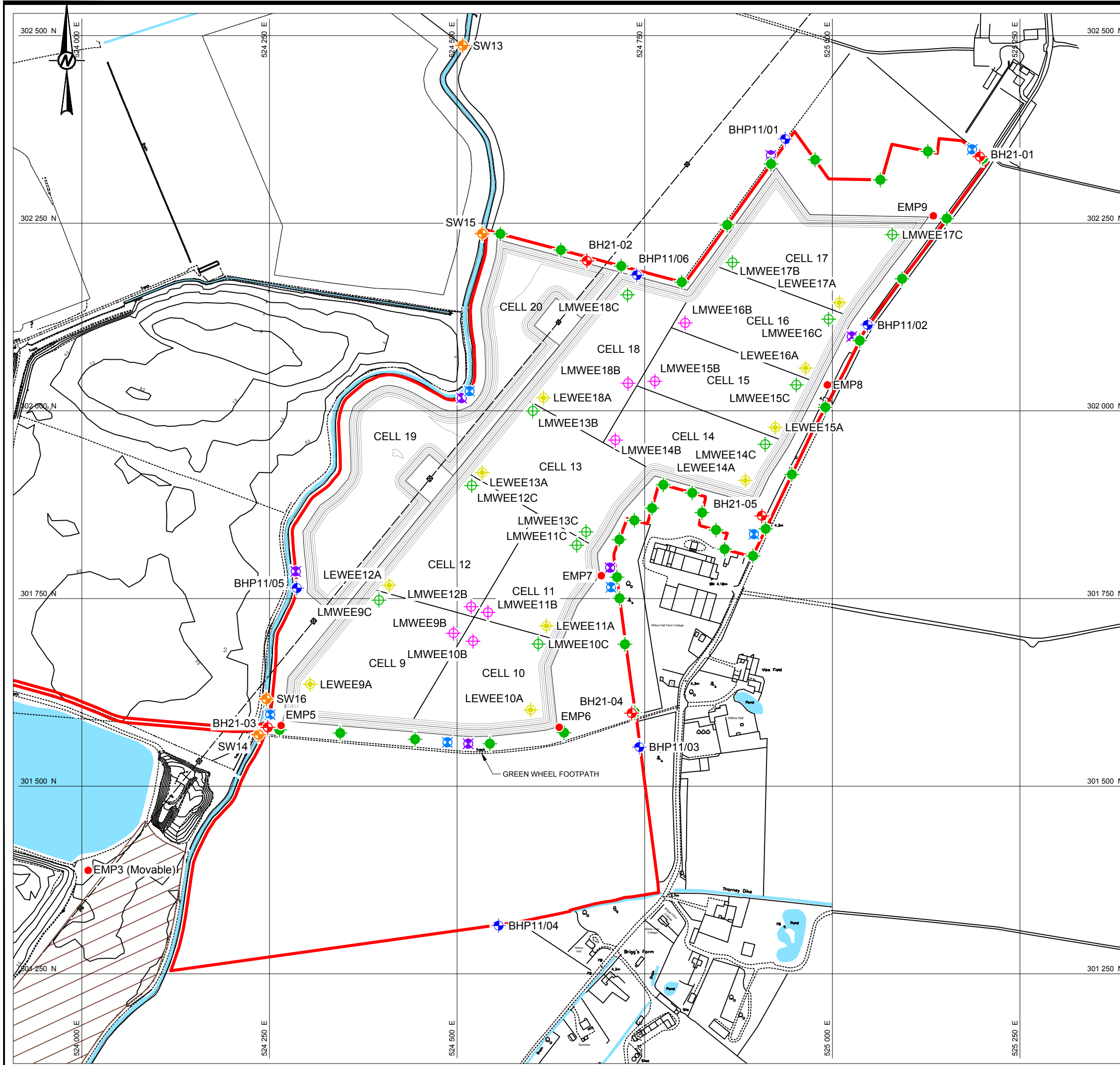
PROJECT Eye Eastern Extension

LOCATION Eye Landfill, Peterborough

DRAWING TITLE Kellaway Sand Monitoring Borehole Specification

DRAWING No. GwMP2 COMPUTER REF. E52310200

DRAWN TS DATE 23/02/2022 SCALE(S) NTS



- LEGEND**
- PLANNING APPLICATION BOUNDARY
 - + EXISTING GROUNDWATER MONITORING BOREHOLE (SAND AND GRAVEL)
 - + EXISTING GROUNDWATER MONITORING BOREHOLE (KELLAWAYS SANDS)
 - + SURFACE WATER MONITORING POINT
 - + PROPOSED GROUNDWATER MONITORING POINT (RIVER TERRACE DEPOSITS)
 - + PROPOSED GROUNDWATER MONITORING POINT (KELLAWAYS SAND)
 - + PROPOSED PERIMETER GAS MONITORING POINT
 - + LEACHATE EXTRACTION WELL EASTERN EXTENSION (UPSLOPE RISER)
 - + LEACHATE MONITORING WELL EASTERN EXTENSION (UPSLOPE RISER)
 - + LEACHATE MONITORING WELL EASTERN EXTENSION (VERTICAL)
 - ENVIRONMENTAL MONITORING POINT

NAME	BEDS DESCRIPTION AND CODE
BH21-01	BH46 - 91002460
BHP11/01	BH47 - 91002470
BHP11/06	BH48 - 91002480
BH21-02	BH49 - 91002490
BHP11/05	BH50 - 91002500
BH21-03	BH51 - 91002510
BHP11/04	BH55 - 91002550
BHP11/03	BH56 - 91002560
BH21-04	BH52 - 91002520
BH21-05	BH53 - 91002530
BHP11/02	BH54 - 91002540

NOTE(S)
 1. INDICATIVE POSITIONS SHOWN ONLY. EXACT LOCATIONS TO BE CONFIRMED IN CELL SPECIFIC CQA PLAN.



GOLDER FILE REF 1005-HR-0005 ENGINEER EMCA REVIEWED BY CMcD

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PROJECT	Eye Eastern Extension		
LOCATION	Eye Landfill, Peterborough		
DRAWING TITLE	Monitoring and Extraction Point Plan		
DRAWING No.	HRA3	COMPUTER REF.	E5239600
DRAWN	TS	DATE	21/02/2022
		SCALE(S)	1:5,000



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