



REPORT

Biffa Waste Services Ltd

Eye Landfill, Eastern Extension

Surface Water Monitoring and Management Plan

Submitted to:

Biffa Waste Services Ltd

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Cressex
High Wycombe
Buckinghamshire
HP12 3TZ

Submitted by:

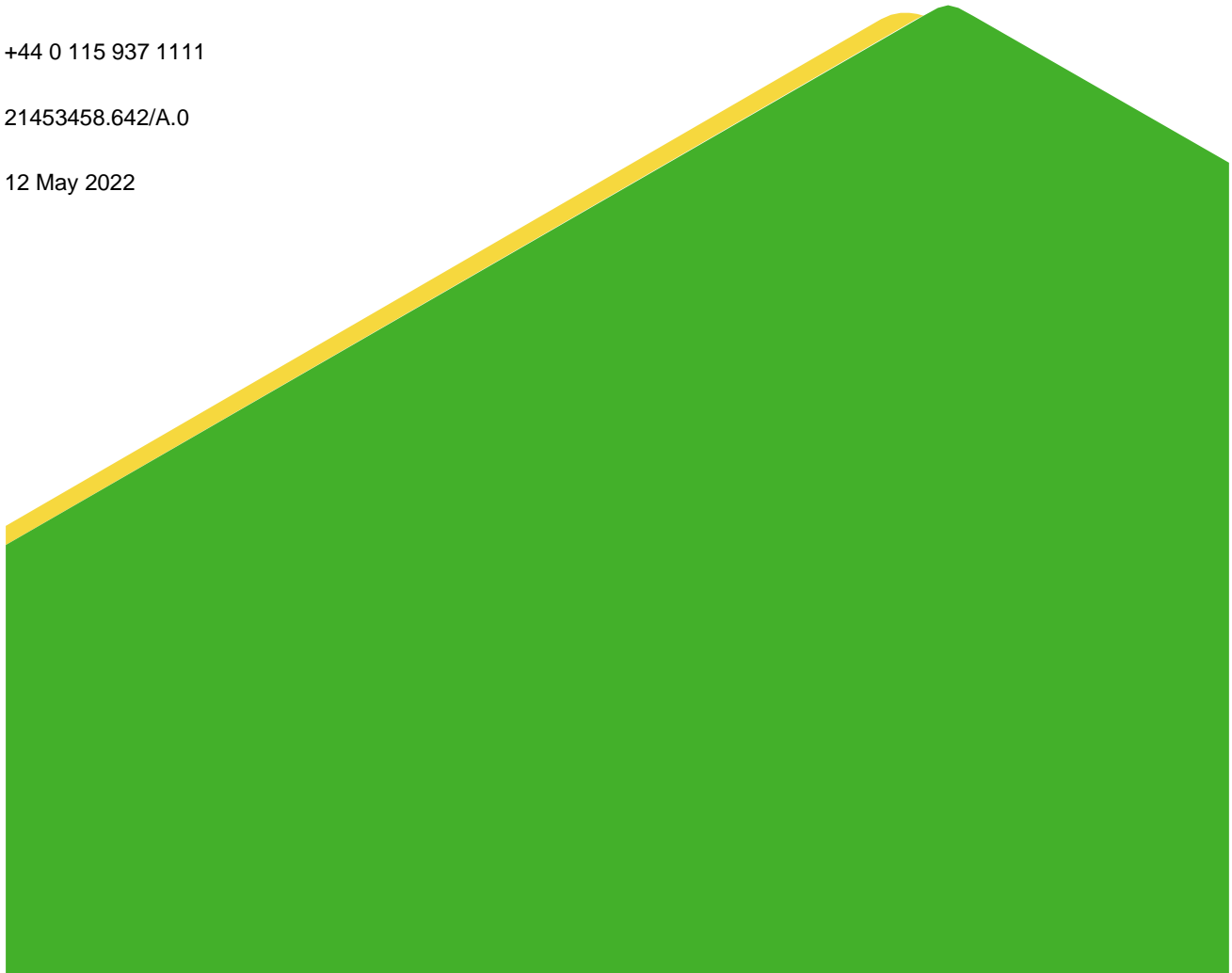
Golder WSP

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Distribution List

Biffa Waste Services Ltd - 1 pdf

Environment Agency - 1 pdf

Golder member of WSP UK Ltd - 1 pdf

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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 Surface Water 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 Surface Water 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 Surface Water 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 SURFACE WATER MANAGEMENT

The landform slopes in the final restoration have been designed to shed surface water to the perimeter of the Site. Surface water run-off from areas of non-hazardous landfill will be collected by marginal and perimeter drains to discharge to the Cat's Water Drain as shown on **Drawing ESID5 - Restoration**. The drains will be installed progressively as each phase of restoration is completed, i.e. as each cell is capped or area of inert waste is completed, the requisite ditches shall be constructed. Ditches will be lined, where constructed above waste, and unlined where, constructed into virgin ground, or over restoration backfill material. The unlined sections of the ditches will provide significant soakaway capacity.

Flow will be directed to feed and sustain surface water ponds, ditches and swales created within the extension to the Wildlife Corridor and along the restored corridor either side of the Green Wheel path.

The surface water management system and sampling points will be inspected at six monthly intervals to ensure that the system is not damaged, or its effectiveness impaired by fouling by vegetation, collapse, silting etc, and any remedial works required will be undertaken within a month or such other period as may be agreed in writing with the Environment Agency (EA). Details of all inspections and remedial works undertaken on the surface water management system will be recorded in the site diary.

3.0 SURFACE WATER MONITORING

3.1 Monitoring Locations

The surface water monitoring locations are shown on **Drawing HRA3 – Monitoring and Extraction Point Plan**. Surface water will be sampled at three locations, one upstream (SW13) and one downstream (SW14) of the Eastern Extension in Cat's Water Drain, and one at the discharge point from the settlement pond in the north-western corner of the landfill into Cats Water Drain (SW15). Sampling will be carried out when drain flow permits.

3.2 Surface Water Quality Monitoring

The surface water quality in Cat's Water Drain is proposed to be monitored following the EA guidance (LFTGN02) during the operational phase of the landfill.

Where flow permits, the surface water is proposed to be monitored monthly for the list of determinands given in **Table SWMP1**. The Compliance Limits are set to the Freshwater Environmental Quality Standard (FW EQS) or, where FW EQS is unavailable, the UK Drinking Water Standard (UK DWS).

Table SWMP1: Proposed Surface Water Monitoring Requirements

Location	Parameter	Frequency	Monitoring Standard or Method
SW13, SW14, SW15	Ammoniacal nitrogen, chloride, suspended solids, visual oil and grease, pH, electrical conductivity	Monthly	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.
	Arsenic, mecoprop, naphthalene, nickel, phenol	Annually	

3.3 Surface Water Quality Emissions Limits

Table SWMP2 shows the compliance limits that are proposed for the SW14 and SW15 monitoring points, based upon existing permit limits, and the finding of the HRA. SW13 will not require compliance limits as it is located upgradient.

Table SWMP2: Proposed Compliance Limits for Surface Water

Determinand	Compliance Limit (mg/l)
Suspended Solids	20
pH	Not <6 nor >9 pH units
Oil and grease	None visible
Ammoniacal Nitrogen	0.39
Arsenic	0.05
Chloride	250
Mecoprop	0.018
Naphthalene	0.0002
Nickel	0.004
Phenol	0.0077

4.0 SURFACE WATER ACTION PLAN

If surface water compliance limits are exceeded, the action plan described in **Table SWMP3** shall be undertaken.

Table SWMP3: Action Plan in the Event of a Breach Surface Water Compliance Limit

Contingency Action	Compliance Limit
Advise site management, environmental manager of landfill operating company and EA.	✓
If the result is above the compliance level 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 surface water sampling point 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 monitoring data using statistics and graphical presentation to establish the presence of any trends or patterns, increased monitoring frequency 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.	✓

5.0 QUALITY ASSURANCE OF MONITORING AND SAMPLING

5.1 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 ensures that the personnel engaged in monitoring activities are trained to undertake the task. These comprise the company's own technical personnel, the Landfill 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 are validated by the sampling personnel detailed above.

5.2 Monitoring Procedures

Samples will only be taken where the water course is flowing and not stagnant, and a sufficient volume of water is available to take a representative sample

Surface water will be sampled using a bailer or a scoop and the following procedure will be adhered to:

- Prior to use, the Teflon bailer/scoop is rinsed with surface water;
- Bailers used for surface water monitoring are not to be used for leachate sampling to eliminate the risk of cross contamination from leachate;
- The bottom filling bailer/scoop is then lowered into the surface water and allowed to fill; and
- The first sample retrieved is discarded, having been used to rinse the bailer.

All samples are unfiltered but are filtered at the laboratory prior to analysis. Samples are collected in bottles, containing preservatives where required, supplied by the laboratory, and appropriate to the analysis to be undertaken.

All samples taken are labelled with the time and date of sampling, sampling locations and any other relevant information. Alternatively bar-coded sample bottles are used which detail in bar-coded form the above information and additionally details of analysis required.

All samples are delivered to the analytical laboratory within 24-hours of sampling, using refrigerated courier vehicles supplied by the laboratory. Analyses are undertaken by a laboratory under UKAS accreditation (equivalent to EN45001). Because of the large batches of samples that are processed by laboratories, the QA/QC checks implemented are efficient in identifying any quality control analytical failures. 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 annual intervals. Samples which attain an ionic balance within $\pm 15\%$ will be deemed satisfactory. Where the ionic balance falls outside this range, the laboratory will be requested to repeat the analysis or to investigate the results provided for errors.

6.0 MAKING AND SUBMISSION OF RECORDS

Records 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 are kept by Biffa.

A copy of the results of sampling and analysis of surface water will be forwarded to the EA in accordance with the Permit, along with details of any parameters which have been identified as being in excess of compliance limits.

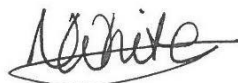
An annual report will be provided to the EA every twelve months, detailing a review of the environmental monitoring results obtained from the Site during the previous year. This review will include an interpretation of the accuracy and validity of results of monitoring along with an interpretation of the trend of the results against compliance limits.

Signature Page

Golder WSP



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Drawings



Legend

- Eastern Extension Application Boundary
- Extraction Boundary (As approved)
- The Green Wheel Recreational Route (Reinstated on its current alignment)
- Diverted Cycleway (Retained as Permissive Path)
- Scheduled Monument (Iron Age and Roman settlement at Bar Pastures)
- Grade II Listed Buildings
- Overhead Electricity Transmission Line (No tree planting within 10m)
- Existing Trees/Woodland
- Proposed Native Trees/Woodland (Refer Planting Mix NW)
- Proposed Native Woodland Edge/Scrub (Refer Planting Mix NS)
- Proposed Native Hedgerow (Refer Planting Mix NH)
- Proposed Water Course/Seasonal Ponds (Clay lined)
- Proposed Marginal Wildflower Seeding (Refer Seed Mix WF1)
- Proposed Wildflower Meadow Seeding (Refer Wildflower Seed Mix WF2)
- Proposed Post Settlement Contours (1.0m intervals)
- Proposed Agricultural Land (3 Fields) (Agricultural seed mix sown on to 300 mm top-soil over 700 subsoil)
- Proposed Stock-Proof Fence
- Proposed Field Gate
- Proposed Wildlife Corridor alongside Cats Water

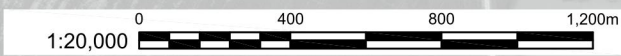
REFERENCE(S)
 BASE MAP TAKEN FROM DRaw PDF REF 008-035-L01, REV 00, DATED 13 JANUARY 2022.



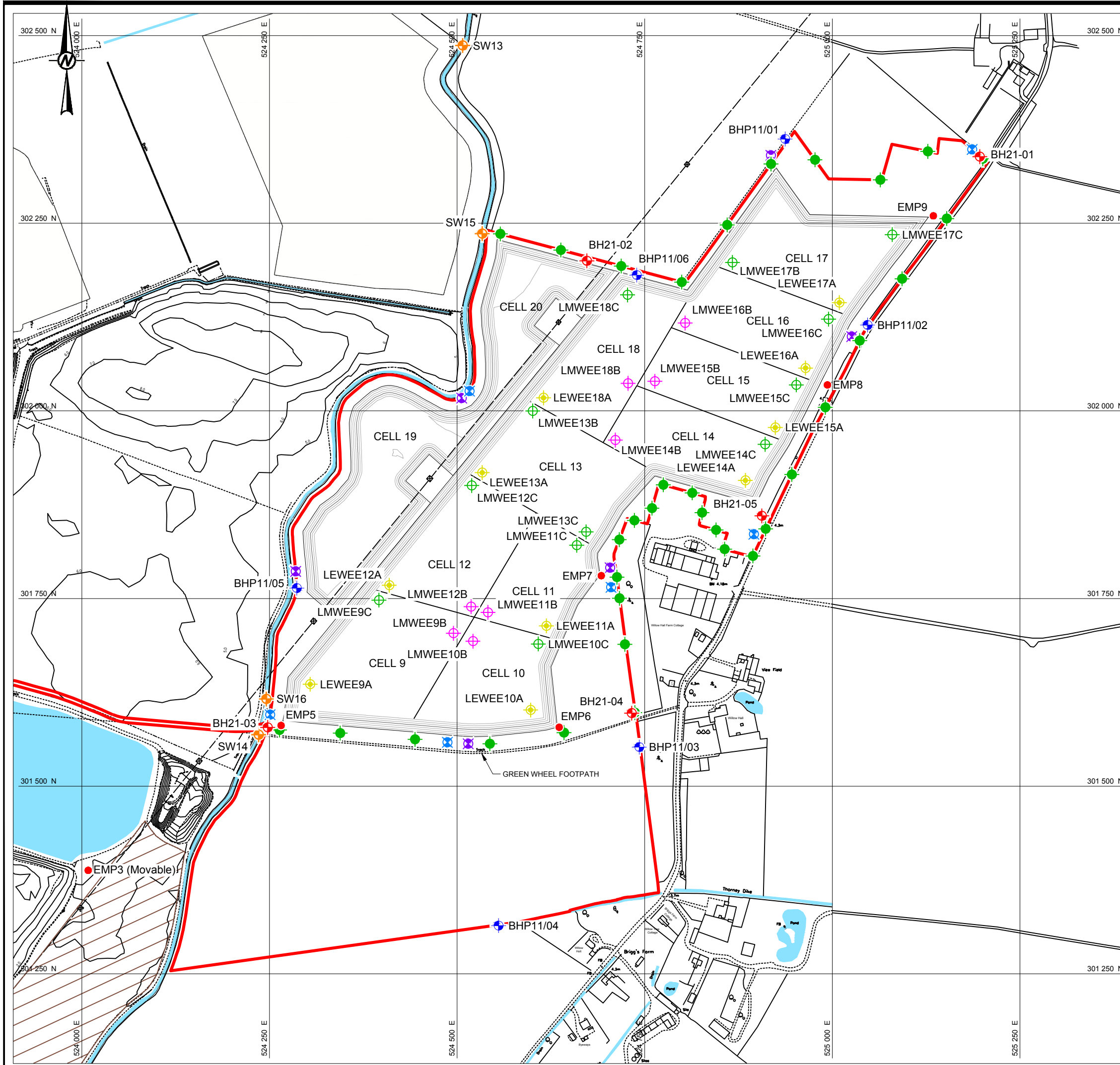
GOLDER FILE REF 1403-PA-0019 ENGINEER NW REVIEWED BY CMcD

REV. DATE DRAWN DESCRIPTION

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PROJECT	Eye Eastern Extension	DRAWN	E.C.S.
LOCATION	Eye Landfill, Peterborough	DATE	25/02/2022
DRAWING TITLE	Restoration	SCALE(S)	1:20,000
DRAWING No.	ESID5	COMPUTER REF.	E5238300



- 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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