



Meece Landfill Site
Surface Water Management Plan
2023

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1. Introduction

This document has been created to give an overview of the current surface water management system at Meece landfill and as an overview of what the final surface water management system will be upon completion of restoration of the landfill site. The document also gives details of the current infrastructure, holding areas, storm drains, carrier lines (buried and surface laid) input and discharge points on and off site.

Meece landfill site is located at Grid Reference SJ 850 341 approximately 1km south of the village of Swynnerton, Staffordshire. The site lies on gently undulating ground with a general fall towards the south and Meece Brook at approximately 1 in 500. The site is located on a former MOD training ground, with the existing MOD training ground present along the southern boundary.

The land to the north, east and west of the site is mainly agricultural; however, anecdotal evidence indicates there is an historic landfill to the west of the site. Prior to use as a landfill site Meece was the site of a Ministry of Defence (MOD) munitions depot. Meece was licenced as a landfill in 1986 under the management of Staffordshire County Council (SCC) who deposited waste in Phase 0 (cells SCC/A-SCC/E) and Phase 1 (cells SCC/F-SCC/G). In 1994 the site was taken over by Poplars Resource Management under Waste Management Licence 4/F/93/0516 who filled Phases 2, 3 and 13A.

Biffa Waste Services, at the time a wholly owned subsidiary of Severn Trent plc, acquired Poplars Resource Management in 1999. To date Biffa has filled Phases 4A, 4B, 4BB, 5A, 5B, 6 and 7 since acquiring the site. Biffa also hold a hazardous waste permit at the site (BW0096IJ) but no cell for hazardous waste has been constructed to date. Currently no infilling with waste is taking place, however restoration material is being deposited above the cap.

1.1 Geology

The site is developed within the Triassic Mercia Mudstone Group, a red marl with thin sandstones, rock salt and gypsum. The regional geological mapping indicates that the Swynnerton Fault cuts through the north-western corner of the site, bringing the underlying Sherwood Sandstone pebble beds to surface. The thickness of the Mercia Mudstone is thought to be approximately 130m.

1.2 Receptors

Regionally, the Mercia Mudstone confines groundwater in the underlying Sherwood Sandstone aquifer. Groundwater within the Mercia Mudstone is generally associated with the more permeable sandstone horizons. Despite being generally thin (often less than 1 m thick) and very well cemented, the sandstone and siltstone horizons may contain and transmit limited quantities of groundwater through fractures. However, these more permeable horizons are often limited in lateral extent.

The north-western corner of the site is located within a Groundwater Source Protection Zone III. The Groundwater Source Protection Zone (SPZ) extents, indicate they it is associated with an abstraction at Mill Meece Pumping Station, approximately 1.6km WSW of Meece 1 Landfill site. However, the SPZ is constrained by the local bedrock geology and is limited to the Sherwood Sandstone aquifer extent which is faulted against the Mercia Mudstone in the vicinity of the site; therefore, the groundwater abstraction is not considered a potential receptor to Meece 1 Landfill.

1.3 Abstractions

There are no known licenced groundwater or surface water abstractions points within site. There are three private water supplies within a 3km radius of Meece Landfill, Darlaston Wood Farm, Slindon House and White House farm.

2.0 Surface Water Management

There are several surface water control lagoons and drainage ditches to manage the surface water flow from site. The site permitted discharge points are listed below. Additional ad hoc sampling is undertaken in various ditches or on-site locations as and when required for additional checks and surface water management.

The surface water management system and sampling points will be inspected at monthly intervals when sampling is undertaken, to ensure that the system is not damaged or its effectiveness impaired by fouling by vegetation, collapse or silting. In the event of a failure or damage arrangements will be made to undertake remedial works to ensure the system is repaired within a reasonable timescale and the Environment Agency will be made aware where necessary in accordance with the sites permit. Details of any major remedial works undertaken on the surface water management system will be included in the annual report.

Permit Monitoring Points

- 2100- SW-Discharge
- 2101- Birch House Road
- 2102- Coates Avenue
- 2103- Horsley Way
- 2104- Meece Avenue

The outfalls for 2100, 2101, 2102, 2103 and 2104 were sealed in 2013 to prevent entering the MOD drainage system before discharging into Meece Brook. The drainage points are located along the Southern boundary and are currently no longer operational. Surface water runoff from the landfill is currently pumped to on-site attenuation/settlement lagoons prior for testing and discharge to sewer.

Off-Site Non-Permitted Monitoring Points These locations have been proposed as the surface water monitoring locations within the 2017 and 2023 HRAR.

- 2110- Meece Brook upstream
- 2120- Meece Brook downstream

Internal- Non-Permitted Monitoring Points – sampling undertaken periodically for additional surface water management checks.

- 2156 Holding lagoon prior to discharge to sewer or surface water. If water is sent to surface water sampling will also be undertaken at 2100 SW discharge.

2.1 External influences

As mentioned, Meece Landfill is also subjected to external surface water influences from the surrounding agricultural land and this is displayed in the drawing in appendices 1.4. The table below shows the flow and feeds of the surface water on site.

Point	Description	Comments
2100	SW Discharge	Run-off collected from the North spine of the site with feeds from the southern boundary-(Point now blocked off for discharge, water diverted to surface water ditches on site)
2101	Birch House Road	Drain point on site. Run-off collected from the North-Western flanks of site.(Point now blocked off for discharge, water diverted to surface water ditches on site)
2102	Coates Avenue	Drain point on site Run-off collected from the North-Western flanks of site. (Point now blocked off for discharge, water diverted to surface water ditches on site)
2103	Horsley Way	Drain point on site. Run-off collected from the Southern flanks of site. (Point now blocked off for discharge, water diverted to surface water ditches on site)
2104	Meece Avenue	Drain point on site, collects surface water from the North Eastern Flanks. (Point now blocked off for discharge, water diverted to surface water ditches on site)
2110	Meece Brook upstream	Meece Brook is located approximately 1.5km down-stream (south-west) of Meece 1 Landfill and water quality within the brook may be influenced by other local land uses including the MOD training area. The sample point is the bridge at Swynnerton Road.
2120	Meece Brook downstream	Meece Brook is located approximately 1.5km down-stream (south-west) of Meece 1 Landfill and water quality within the brook may be influenced by other local land uses including the MOD training area. The sample point is the bridge at Meadow Lane.
Examples of internal Ad hoc sampling locations.		
	Duck Pond	Catchment lagoon at the North/East corner of the site. Water currently retained in lagoon and plans are in place to pump into the Southern Perimeter Ditch then to the Holding Lagoon)
	Frog Bog	Small catchment trench in front of the Duck Pond that used to take all of the surface water run-off from the Northern boundary. (Location currently dry)
	Southern Perimeter Ditch	This collects surface water runoff from the Southern flanks of site then is pumped across site into the Holding Lagoon.
	ATRF Lagoon	Collects rainfall and runoff from around the site weighbridge and the recycled water from the ATRF process
	Holding Lagoon	Collects rainwater from around the office area and some site ditches. Holding lagoon prior to discharge to sewer or surface water.

The soil treatment facility has a small lagoon which collects run-off from the concrete pad. This area produces very small amounts of water and the water is recycled and re-used within the process.

2.2 Discharge Consents

All surface water is retained on site and is contained within ditches and lagoons before being discharged via the sewer consent for the site.

The site has an agreed Trade Effluent Consent with Severn Trent Water (009226V). This allows the discharge of contaminated surface water via the sewer.

2.3 Additional site checks

Additional periodic checks are undertaken of the site surface, the leachate extraction system and gas management system to look for any signs of leaks or damage reducing the potential risk to the surface water system. These check points are identified on drawing provided in appendices 1.5 with areas highlighted to be low, median, or high risk due to the current infrastructure in each of the designated areas A-G.

3.0 Surface water Monitoring

If any surface water ditch or the surface water lagoon contains water during the monitoring visit, then a sample will be taken and monitored for the parameters and frequency as detailed in Permit Tables S3.2. If a low volume of sample is available, the key parameters will be analysed as the priority. Where an insufficient sample is available for any analysis this will be noted within the data returns.

Note: Quality monitoring of surface waters is no longer conducted on the permitted discharge points since being sealed. Additional ad hoc sampling is undertaken in various ditches or on-site locations as and when required for additional checks and surface water management.

3.1 Surface Water Monitoring and Determinant Requirements in accordance with Permit Tables.

The following tables are from the latest permit variation EPR/BV4967IW/V012 Issued 18/04/17.

Table S3.2 Point source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point Ref. & Location	Parameter	Source	Limit (incl unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
Emission points 2100, 2101, 2102, 2103, 2104 on drawing ESID 5 dated 10.09.03 revision 2.	Oil and grease	Surface water collection system	Non visible	Spot Sample	Weekly	In accordance with Environment Agency document LFTGN02 (enter current version number and issue date) 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water' or such other subsequent guidance as may be agreed in writing with the Environment Agency
	Suspended Solids		25 mg/l		Quarterly	
	pH		>6.5 but no greater than 8.5 pH units		Quarterly	
	Ammoniacal - N		0.5 mg/l		Quarterly	
	Chloride		250mg/l		Quarterly	

Monitoring Point Ref. /Description	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
MEPP	Ammoniacal nitrogen Chloride Suspended Solids Visual Oil and Grease pH electrical conductivity	Monthly	Spot sample	As specified in Environment Agency Guidance TGN02 'Monitoring of Landfill Leachate, Groundwater and Surface Water' (February 2003) and 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.

Ad Hoc additional sampling may be required following an exceedance of a limit, the determinants will be sample specific. All sampling will be undertaken in accordance with the monitoring procedures detailed below.

3.2 Monitoring Procedures, Personnel and Validation Results

Sampling will be undertaken by staff appropriately trained in the environmental monitoring procedures, and who are familiar with the equipment and its limitations.

- The appropriate sample bottle will be filled in accordance with the laboratory guidance on how to fill each bottle.
- All samples will be delivered to the laboratory within 24 hours of sampling where possible and these will be transported using refrigerated courier vehicles supplied by the laboratory.
- All samples will be analysed in a suitably accredited laboratory that operates externally verified quality control procedures and checks on analytical work. These include spiked samples, blanks etc.
- On account of the large batches of samples that are processed by such a laboratory, the QA/QC checks implemented are efficient in identifying any quality control failures.
- Accordingly, it is not proposed to submit additional QC samples (sampling duplicated, field standards or field blanks) from site, as this will only duplicate the controls already being implemented by the laboratory.
- Field readings will be undertaken such as temperature where required and additional field checks for Ammonia as an example may be taken if required to undertake additional checks.
- Analysis results will be uploaded on to our electronic database either manually or directly via the laboratory.
- Sampling personnel will validate results.
- Quality monitoring data uploaded to the Biffa Environmental Data System, is subject to an automatic electronic flag system for readings above any permitted limits or control values.
- These flags are automatically emailed to a designated group of people for that site.
- Additional monitoring can then implemented where necessary and additional controls put in place if required.
- Any exceedance of a permit limit will require a schedule notice to be completed. All schedule notices are subject to an internal verification procedure prior to submission to the Environment Agency.

3.3 Surface water Contingency Action

In order to migrate any breach in the surface water quality the below contingency action will be followed alongside the internal guidance DPL02 Environment Management.

Appropriate Contingency Action	Timescale
Advise Site Management	Immediately
Advise Operator's Environmental Manager	1 Week
Advise Environment Agency	1 Week
Confirm by repeat sampling and analysis	1 Month
Review and trend monitoring information	Annually

4. Making and Submission of Records

Records will be kept electronically, and the data will be periodically reviewed. This review will include the 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 surface water will be forwarded to the Agency as required by the permit Table S4.1 Reporting. The Environment Agency will be informed of any parameters above their associated limit by means of a schedule notification.

Data will be provided to the Environment Agency at the frequencies detailed within the permit. An annual report will be provided to the Agency every 12 months detailing a review of the environmental monitoring results obtained from the site during the previous year. The review will include an interpretation of the trend of the result against background and control/permit limits.

5. Surface water Infrastructure Update

Northern Flank/boundary:

To improve surface water control on the northern flank, upper and lower surface water control ditches will be put in place to prevent flooding of the boundary. The ditches will be put in place upon completion of restoration of the flank. The upper ditch (300mm depth with outer berm) will catch and control upper surface water from rainfall and flow and feed into the duck pond. The lower ditch (300mm depth with outer berm) will catch residual surface water flow and into surface water control ditches along the lower northern boundary. Additional catchment/settlement ponds are to be built to capture the water and to be pumped into the duck pond.

Duck pond:

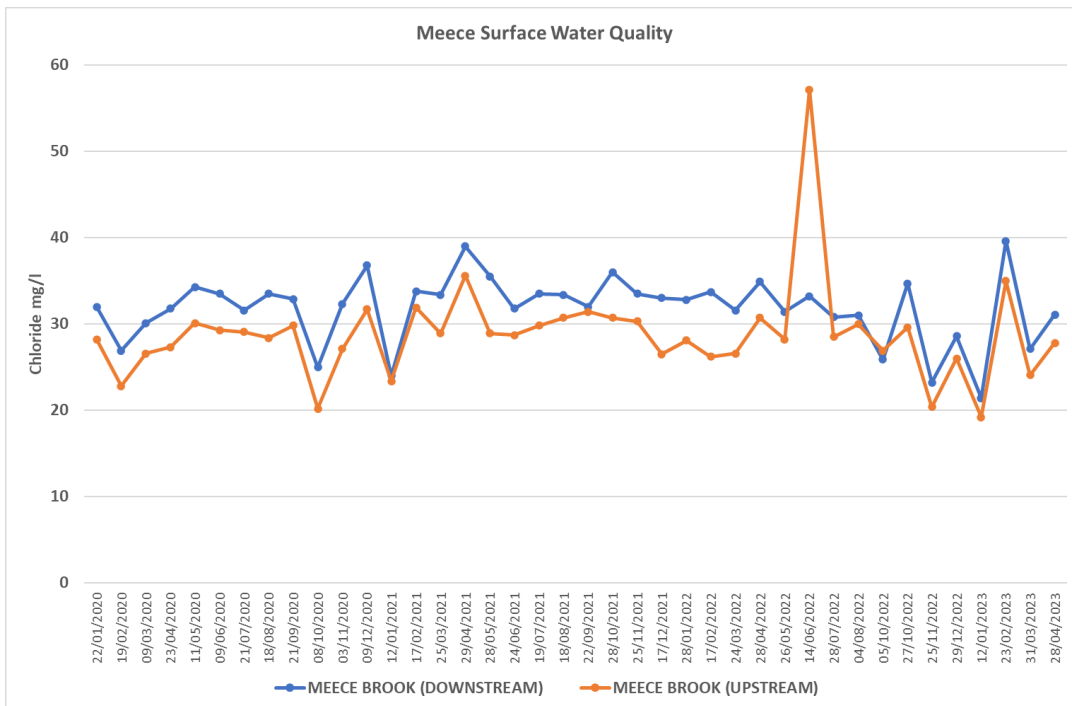
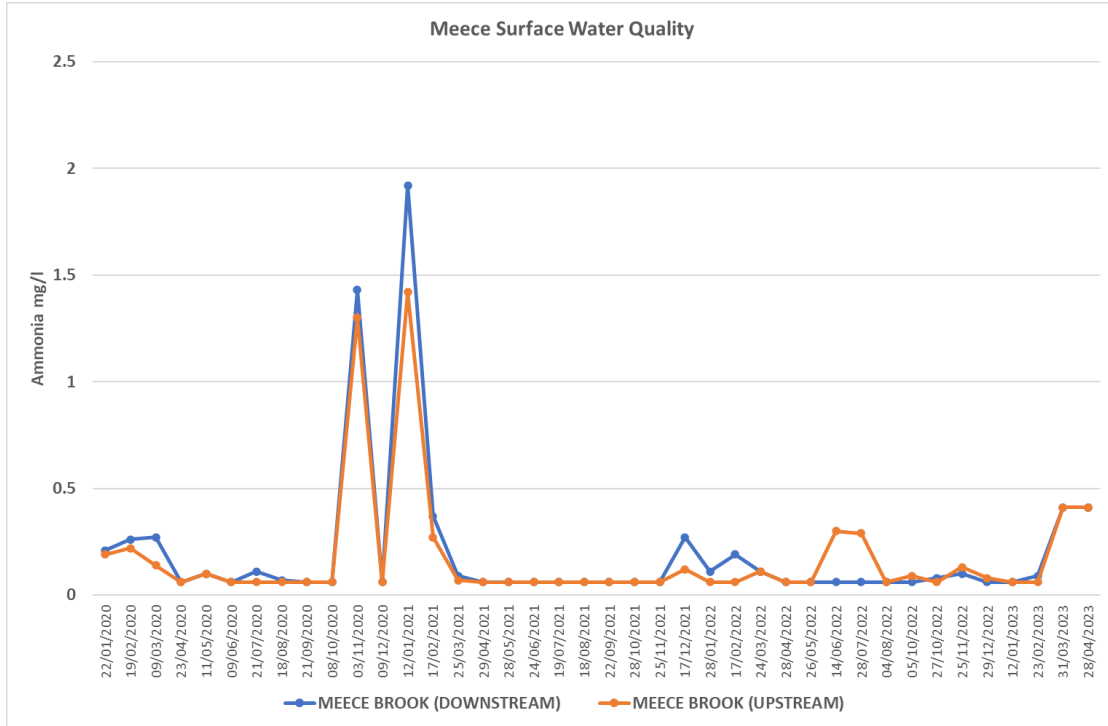
An additional surface water control flow has been put in place to allow pumped water to run from the duck pond to flow to the southern perimeter ditch and in turn the holding lagoon (lagoon A) adjacent to the office. The flow line has been put in place to give further surface water control of the duck pond to prevent overtopping and to give additional water feed to the

holding lagoon A. The water in this lagoon is used to feed the wheelwash and for dust suppression on site, it can also be used to feed the Aggregate treatment facility on site.

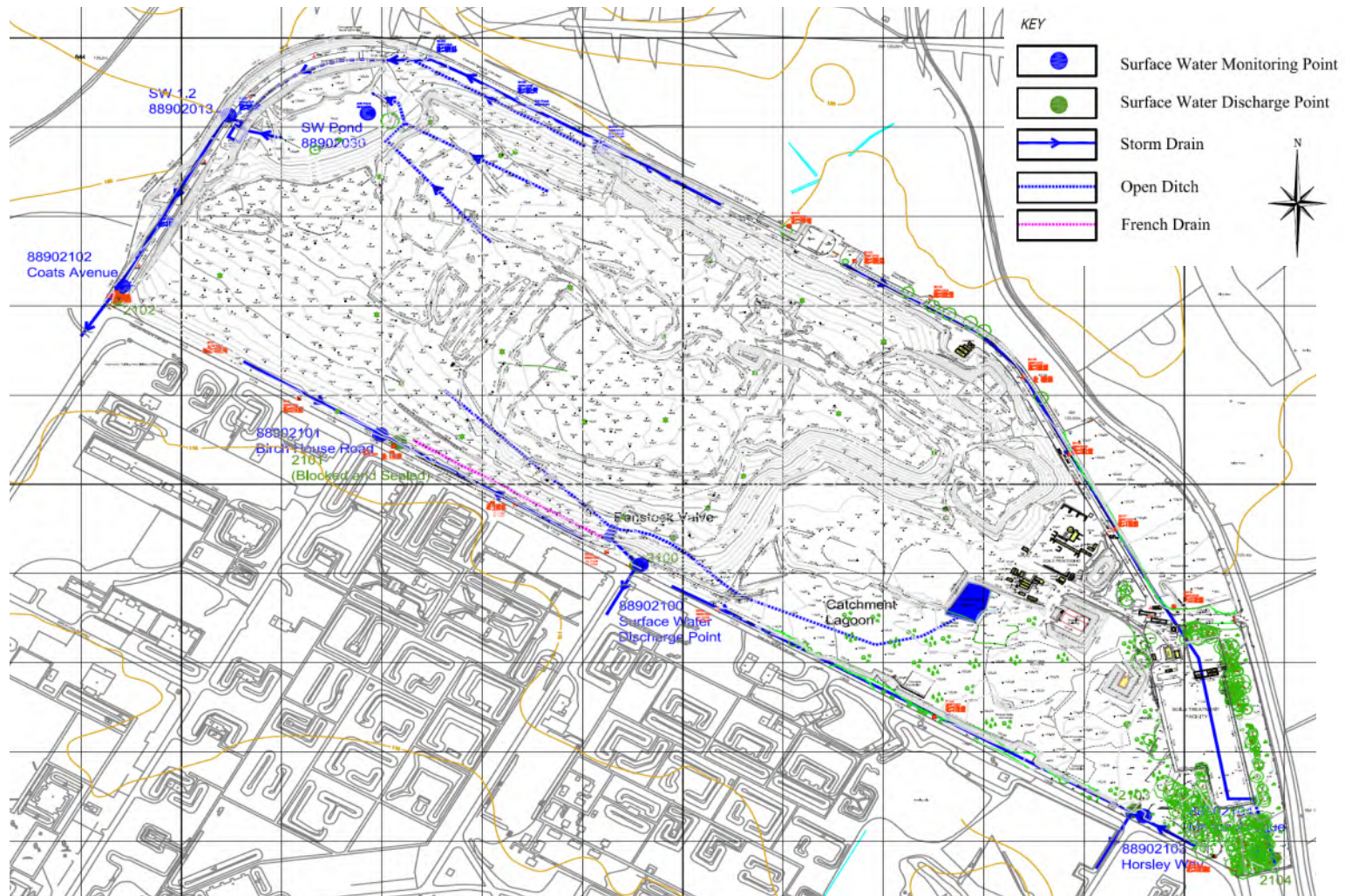
The final restoration plan of Meece is included in the appendices section 1.6.

APPENDICES

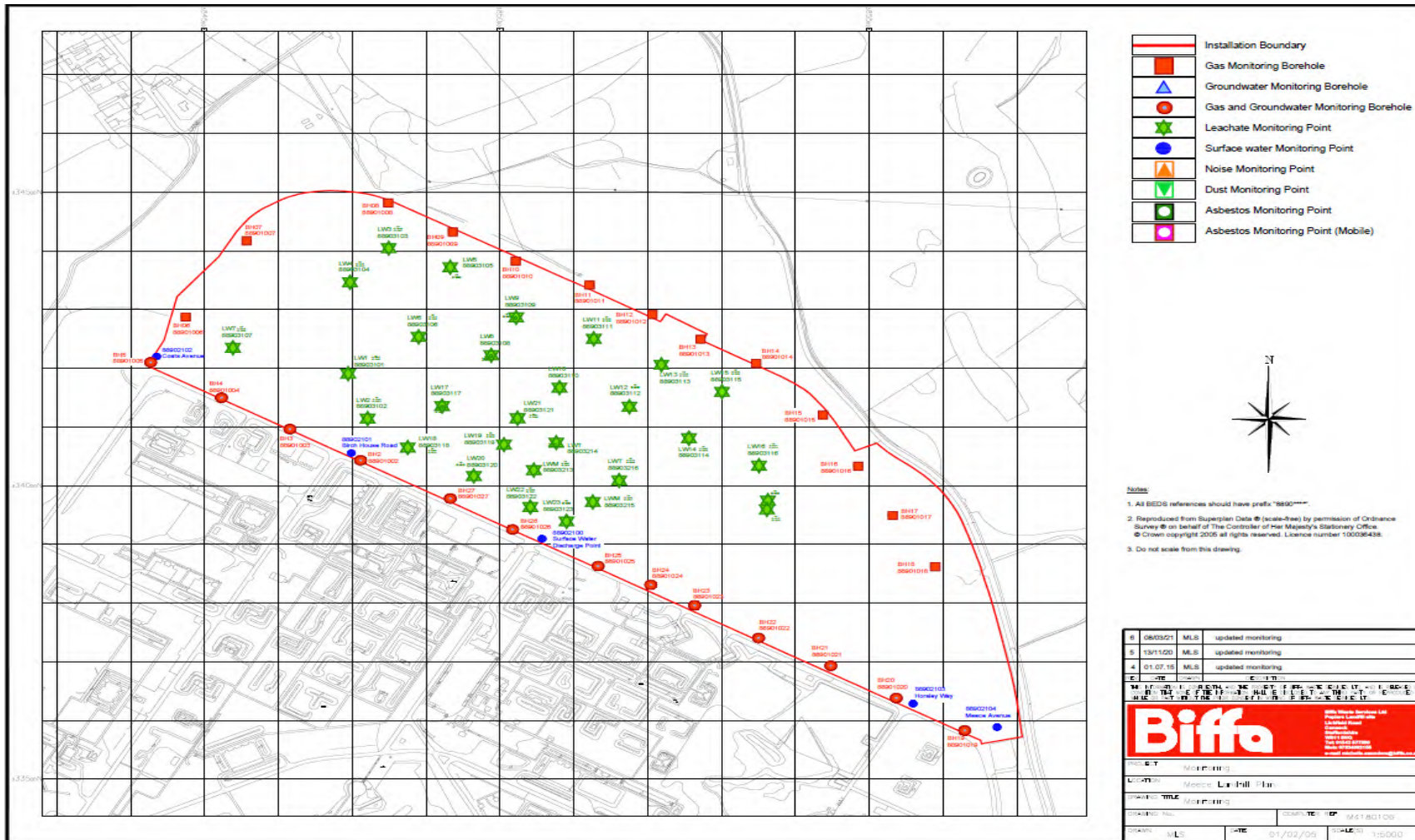
1.1 SURFACE WATER QUALITY MONITORING CHARTS



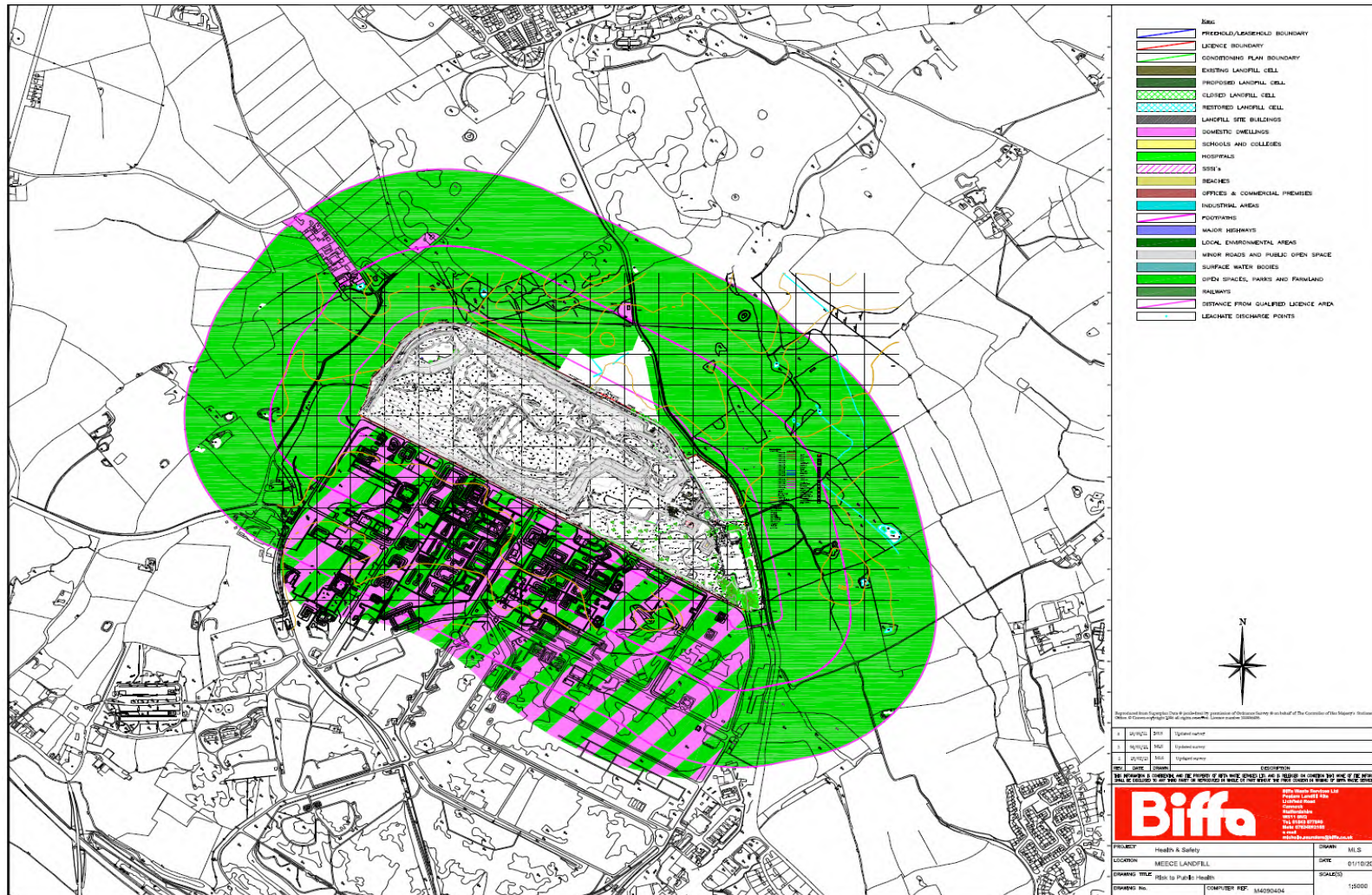
1.2 SURFACE WATER PLAN



1.3 MONITORING INFRASTRUCTURE PLAN



1.4 EXTERNAL INFLUENCES



1.5 Surface water Risk Plan



1.6 Restoration Plan

