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## Meece 1 Landfill

### Supporting Statement and Non-Technical Summary

**Biffa Waste Services Limited**

**Report No. 14-K6094-ENV-R001**

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**Disclaimer: Please note that this report is based on specific information, instructions, and information from our Client and should not be relied upon by third parties.**

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# 1 Introduction

## 1.1 Non-Technical Summary

### Background

This report has been prepared by ByrneLooby Partners (UK) Limited (ByrneLooby) on behalf of Biffa Waste Services Limited (Biffa) in support of an application for a variation to Environmental Permit Ref. EPR/BV4967IW to

1. allow Biffa to discharge trade effluent associated with the permitted operations to sewer;
2. amend permit limits for leachate levels in accordance with the recent Hydrogeological Risk Assessment Review (HRAR) produced by Swan Environmental Limited in June 2023;
3. amend Permit Limits for groundwater quality in accordance with the recent Hydrogeological Risk Assessment Review (HRAR) produced by Swan Environmental Limited in June 2023;
4. revise the monitoring schedules in accordance with the recommendations set out within the recent HRAR produced by Swan Environmental Limited in June 2023;
5. add two monitoring points for the Meece Brook as recommended within the recent HRAR produced by Swan Environmental Limited in June 2023;
6. update the surface water management plan for the site which is referenced as an operating technique;
7. Add operation of a Reverse Osmosis (RO) Leachate Treatment Plant (LTP);
8. Revise monitoring schedule and add Permit Limits for effluent discharge in accordance with recommendations set out within the Surface Water Risk Assessment (report ref. 14-K6094-ENV-R003); and
9. Amend the Permit Boundary to increase the Permitted area.

In accordance with the above, this application seeks to make the following changes to EPR/BV4967IW:

- Update Table S1.1 “activities” to include discharges of trade effluent to foul sewer “from the balancing tank to point of entry to sewer” as a directly associated activity;
- Revise activity A9 reference “Description of specified activity” to include “discharges of treated effluent from the RO LTP”;
- Update Table S1.1 “activities” to include a new activity for the RO LTP “D9 - Physico-chemical treatment of waste (Section 5.4 A (1) (a) (ii), Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving physicochemical treatment). Treatment

and disposal of landfill leachate and other trade effluent from the permitted activities on site using Reverse Osmosis (RO). Maximum permitted volume for treatment 54,750 m<sup>3</sup>/year. From storage to discharge of treated effluent (permeate)”.

- Update Schedule 3 to include a Table (Table S3.11) referencing “point source emissions to sewer” from the balancing tank and treated effluent discharge from RO LTP
- Update Table S3.1 “leachate level limits and monitoring requirements” to revise the permitted limits;
- Update Table S3.3 “groundwater – emission limits and monitoring requirements” to revise the permitted limits;
- Update Table S3.7 “groundwater – other monitoring requirement” in line with the proposed changes to indicator substances;
- Update Table S3.2 “point source emissions to water”
  - in accordance with the revised surface water management plan; and
  - to include discharge emission point at the RO LTP; and
  - revise Permit Limits in accordance with the Surface Water Risk Assessment (report ref. 14-K6094-ENV-R003).
  - Remove existing surface water limits from 88902104 Meece Avenue due to the RO plant discharges and offsite influences on this discharge.
- Update Table S3.10 “surface water – other monitoring requirements” in to include upstream and downstream monitoring points within the Meece Brook; and
- Update Table S1.2 “operating techniques” to reference the revised Surface Water Management Plan.

There are three Environmental Permits for various waste activities at the site. Meece 1 Landfill is operated by Biffa under Environmental Permit ref. EPR/BV4967IW along with a hazardous soils treatment facility (STF) which has been developed with the eastern part of the permitted area. The site is operated by Biffa Waste Services Limited (Biffa), which is hereafter referred to as the Operator.

Historically Meece Landfill was operated as a hazardous co-disposal site from 1986 until 2004 when it was split into two areas, Meece 1 and Meece 2. Meece 1 continued to receive the non-hazardous component of the waste streams after 2004. Meece 2 is authorised under a separate Permit (Reference EPR/BW0096IJ) for the receipt of hazardous wastes. However, to date landfilling in this part of the site has not commenced.

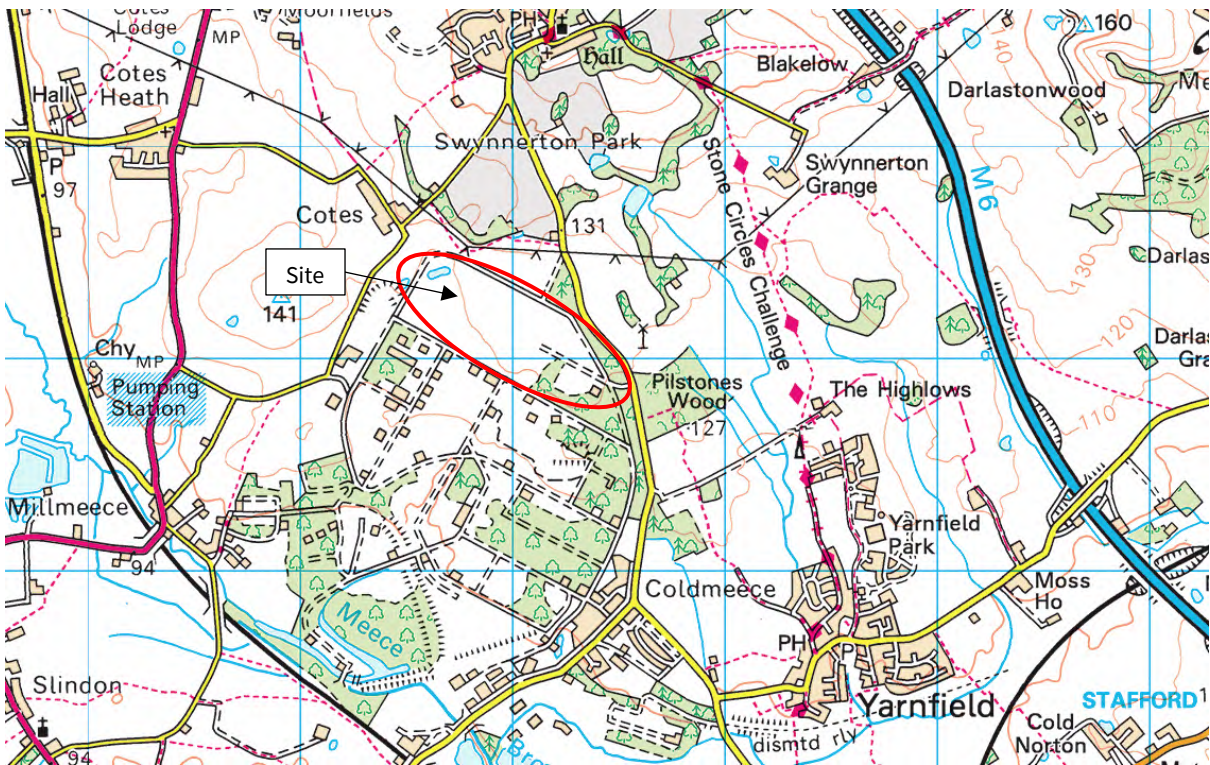
Landfilling at the site commenced prior to 1996 with the site to date developed as twelve cells (Phase 0 to Phase 7 and 13A). Meece 1 was mothballed in 2008 following the completion of Phase 7. The eastern part of the site therefore remains as void space.

A hazardous soils treatment facility (STF) has been developed across the undeveloped Phase 11 and 12 footprints. A separate Permit (Ref. EPR/EB360FM) has also been issued for an aggregate treatment recycling facility at the site which processes street cleaning residues.

### Site Setting

The Meece waste management facility is accessed via Meece Avenue, Swynnerton, Cold Meece, Stone, Staffordshire, ST15 0QN. The site is located at National Grid Reference (NGR) SJ 384960 334104 and is situated in a predominantly rural area comprising small villages, wooded areas and agricultural fields. The site is bound to the south by the Swynnerton Training area, a former Ministry of Defence site, and to the east by Swynnerton Road. To the north of the site are agricultural fields and ~300m to the west lies the village of Cotes. The site location and surrounding features are illustrated on **Figure 1**.

**Figure 1 – Site Location and Surrounding Features**



### Proposed Changes to the Permit

#### (1) Trade effluent discharge

Trade effluent from the site is to be discharged to sewer in accordance with the Trade Effluent Discharge Consent (TEDC) Ref. 009226V which Biffa have negotiated with Severn Trent to allow the discharge of trade effluent to the public sewer. Following a recent site visit, it was recommended by the local Environment Agency Officer that the discharge to sewer activity was added to the Permit. To avoid dual regulation, it is normal practice that any emission limits associated with the sewer discharge activity are regulated by the TEDC.

The discharged trade effluent will ultimately end up at the Eccleshall and Sturbridge Wastewater Treatment Works (WwTW) following mixing along the length of the sewer line with other inputs from a variety of sources. Following treatment at the receiving WwTW, the treated effluent will be discharged to the River Sow. An Environmental Risk Assessment (Report Ref. 14-K6094-ENV-R002) has been prepared in supported of the proposed changes to the Permit and is attached as Appendix A. The overall operation of the site will remain the same and there is perceived to be negligible additional risk from the proposed amendments to the Permit.

The trade effluent is to be discharged under the terms of the agreed TEDC. The TEDC limits the nature and strength of the trade effluent discharge.

(2) Changes to Leachate Level Permit Limits

The June 2023 HRAR recommended that changes to the leachate level permit limits were made. A summary of the current and proposed leachate levels is provided in Table 1 below. Justification for the proposed changes is provided in the HRAR which accompanies this application.

**Table 1 - Current and Proposed Leachate Level Permit Limits**

Phase	Well ID	Current Limit as set out in 2023 HRAR	Proposed Limit from 2023 HRAR
		mAOD	mAOD
0	LW1	117.00	120.06
0	LW2	117.34	117.34
0	LW3	120.31	121.00
0	LW4	121.04	122.04
0	LW7	120.00	121.00
1	LW5	122.14	123.14
1	LW6	119.49	121.00
2	LW8	121.12	122.12
2	LW9	120.84	122.00
2	LW10	120.70	121.70
2	LW11	119.30	122.20
3	LW12	121.00	122.00
3	LW13	121.90	122.90
3	LW14	121.07	122.07
3	LW15	122.03	123.03
4A	LW17	No limit	No limit
4B	LW18	114.40	117.00
4BB	LW20	113.50	117.00
5A	LW21	No limit	No limit
5B	LW19	No limit	No limit
6	LW22	113.50	117.00
6	MW1	113.50	117.00
6	MW2 (3214)	No limit	No limit
7	LW23	113.50	117.00
7	MW1	113.50	117.00
7	MW2 (3216)	No limit	No limit



Phase	Well ID	Current Limit as set out in 2023 HRAR	Proposed Limit from 2023 HRAR
		mAOD	mAOD
13	LW16	122.00	123.00
8	None, Unbuilt	113.50	None, Unbuilt
11	None, Unbuilt	113.50	None, Unbuilt
12	None, Unbuilt	113.50	None, Unbuilt

(3) Changes to Groundwater Quality Permit Limits

The June 2023 HRAR recommended that changes to the groundwater quality permit limits were made. Justification for the proposed changes is provided in the HRAR which accompanies this application. The recommendations are set out below:

- a) **Ammoniacal-N permit limits should be revised** - Revised permit limits for ammoniacal-N have been proposed based on a predicted (back-calculated) 95%ile concentration at the compliance borehole that protects the receptor. Due to the existing concentrations of ammoniacal-N at BH02 and BH26 being in excess of the revised permit limits, it is proposed that these are suspended and replaced with action levels. These action levels would be reviewed and revised down on an annual basis until such a time that the risk-based permit limit has been achieved.
- b) **Chloride permit limits should be revised and suspended** - It has been recognised within recent HRARs that a lower compliance limit should be set for chloride in accordance with modern environmental quality standards that apply to the Meece Brook (the receptor). Revised permit limits for chloride have been proposed based on either a predicted (back-calculated) 95%ile concentration at the compliance borehole (that protects the receptor) or at the relevant EAL, whichever is the higher. However, higher concentrations of chloride are present at the upgradient borehole BH13 (average of 1,028mg/l for 2015 to 2022) as well as at the downgradient monitoring points. Hence, there is an expectation that the revised permit limits will be breached. Due to this, it is proposed that permit limits for chloride are suspended, and action levels set at a higher concentration. These action levels would be reviewed and revised down on an annual basis until such a time that the EAL or other risk-based permit limit has been achieved.
- c) **Arsenic should be introduced as an indicator substance** - Arsenic (as a hazardous metalloid) should be included as an indicator substance in replacement of cadmium (a transition metal) which has been re-designated as non-hazardous. Due to a lack of background data, it is proposed that an assessment limit is utilised until sufficient data has been collected to set Permit limits. A proposed permit limit could be set out within the next HRAR.

- d) **Cadmium should be retained as an indicator substance and permit limits should be revised** - Revised permit limits for cadmium have been proposed based a predicted (back-calculated) 95%ile concentration at the compliance borehole that protects the receptor.
- e) **Nickel should be introduced as an indicator substance** - Nickel was introduced in 2017 as a priority contaminant to be modelled and it is proposed that a permit limit is set for this substance. Permit limits for this substance have been proposed based on the maximum upgradient concentration found at the site.
- f) **2,4-dimethylphenol permit limits should be revised** - Revised permit limits for this substance have been proposed based on the freshwater EQS of 7.7µg/l.
- g) **O-Xylene should be removed as an indicator substance** - O-Xylene is not present within the leachate at environmentally significant concentration and should be removed as an indicator substance.
- h) **Permit limits for BH19 to 24 should be suspended** - Several monitoring points have been installed downgradient of future void space and it is proposed that permit limits are suspended at these monitoring points until these areas are developed. Permit limits will be proposed for these locations prior to upgradient cells being developed.

A summary of the current and proposed limits is provided in Table 2 below.

**Table 2 - Current and Proposed Groundwater Permit Limits**

	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Proposed
Location	Ammoniacal-N (mg/l)		Chloride (mg/l)		Cadmium (µg/l)		2,4-dimethylphenol (µg/l)		O-Xylene (µg/l)	Arsenic (µg/l)	Nickel (µg/l)
BH2	3.00	5.56	1000	438	1	6	2	7.7	3	5.6	50
BH3	3.00	3.33	2000	250	1	6	2	7.7	3	5.6	50
BH4	3.00	3.26	1500	250	1	6	2	7.7	3	5.6	50
BH5	3.00	3.10	250	250	1	6	2	7.7	3	5.6	50
BH19	3.00	None	250	None	1	None	2	None	3	None	None
BH20	3.00	None	250	None	1	None	2	None	3	None	None
BH21	3.00	None	250	None	1	None	2	None	3	None	None
BH22	3.00	None	250	None	1	None	2	None	3	None	None
BH23	3.00	None	250	None	1	None	2	None	3	None	None
BH24	3.00	None	250	None	1	None	2	None	3	None	None
BH25	3.00	3.10	250	250	1	6	2	7.7	3	5.6	50
BH26	3.00	3.10	250	250	1	6	2	7.7	3	5.6	50
BH27	3.00	4.59	250	493	1	6	2	7.7	3	5.6	50

**Notes:** Red values - assessment level only (see text above for further explanation)

To protect water quality within the Meece Brook the compliance limits for non-hazardous pollutants at the groundwater are set at a predicted (back-calculated) 95%ile concentration at the compliance borehole, that protects the receptor or at the relevant EAL, whichever is the higher.

(4) Add two new monitoring points for the Meece Brook

Proposals are being made to amend the surface water monitoring requirements in line with site operations. Since ~2012, the historical point source emissions from the surface water management system have been sealed. At the time of writing there are currently no point source emissions to surface water at the site, although work is ongoing to restart discharge from the permitted points Any surface water which collects in the surface water management system is pumped to a holding lagoon before being discharged to sewer.

Hence, it is proposed to amend Table S3.2 to include the proposed future discharge points in line with the revised SWMP as set out in Table 7. Furthermore, additional monitoring within the Meece Brook is being proposed and this is set out in Table 8.

(5) Revisions to the monitoring schedules

The proposed revisions to the monitoring tables set out in Schedule 3 of the Permit are presented below. No changes are proposed to Permit Tables S3.4, S3.5, S3.6, S3.8 and S3.9.

The revisions to the tables are in line with the proposed changes to permit compliance limits and substances as set out elsewhere within this report.

**Table 3 - Table S3.1 Leachate Level limits and monitoring requirements**

<b>Table S3.1 Leachate Level limits and monitoring requirements</b>			
<b>Monitoring Point reference / description</b>	<b>Limit</b>	<b>Monitoring Frequency</b>	<b>Monitoring Standard</b>
<b>Operational Cells or Phases</b> (Any cells or phases that do not have a final engineered cap agreed in accordance with the landfill engineering condition, 2.5)			
Future phases	113.50 mAOD	Monthly	As specified in Environment Agency Guidance TGN02 (February 2003) or other subsequent guidance as may be agreed in writing with the Environment Agency. Or as otherwise agreed with the Agency as part of a leachate monitoring plan.
<b>Non-operational Cells or Phases</b> (Any cells or phases that have a final engineered cap agreed in accordance with the landfill engineering condition, 2.5)			
LW1	117.00 mAOD	Quarterly	As specified in Environment Agency Guidance TGN02 (February 2003) or other subsequent guidance as may be agreed in writing with the Environment Agency. Or as otherwise agreed with the Agency as part of a leachate monitoring plan.
LW2	117.34 mAOD		
LW3	120.31 mAOD		
LW4	121.04 mAOD		
LW7	120.00 mAOD		
LW5	122.14 mAOD		
LW6	119.49 mAOD		
LW8	121.12 mAOD		
LW9	120.84 mAOD		
LW10	120.70 mAOD		
LW11	119.30 mAOD		
LW12	121.00 mAOD		
LW13	121.90 mAOD		
LW14	121.07 mAOD		
LW15	122.03 mAOD		
LW17	No limit		
LW18	114.40 mAOD		
LW20	113.50 mAOD		

<b>Table S3.1 Leachate Level limits and monitoring requirements</b>			
<b>Monitoring Point reference / description</b>	<b>Limit</b>	<b>Monitoring Frequency</b>	<b>Monitoring Standard</b>
LW21	No limit		
LW19	No limit		
LW22	113.50 mAOD		
MW1	113.50 mAOD		
MW2 (3214)	No limit		
LW23	113.50 mAOD		
MW1	113.50 mAOD		
MW2 (3216)	No limit		
LW16	122.00 mAOD		

**Table 4 - Table S3.9 Leachate other monitoring requirements (no change)**

<b>Table S3.9 Leachate – other monitoring requirements</b>				
<b>Monitoring point reference or description</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
<b>Operational Cells or Phases</b> (Any cells or phases that do not have a final engineered cap agreed in accordance with the landfill engineering condition, 2.5)				
MEPP	pH, EC, total alkalinity, ammoniacal nitrogen, Chloride, COD, BOD, cadmium, chromium, copper, lead, nickel, iron, arsenic, magnesium, potassium, total sulphates, calcium, sodium, zinc, manganese	Quarterly	At leachate compliance point as listed in table S3.1.  As specified in Environment Agency Guidance TGN02 (February 2003) and Horizontal Guidance Note H1 – Environmental Risk Assessment for permits, Annex J3, version 2.1, Dec 2011) with one sampling point per cell / phase or such other subsequent guidance as may be agreed in writing with the Environment Agency.	None
MEPP	Hazardous substances	Annually		
MEPP	Depth to base (mAOD)	Annually		
<b>Non-operational Cells or Phases</b> (Any cells or phases that have a final engineered cap agreed in accordance with the landfill engineering condition, 2.5)				
MEPP	pH, EC, total alkalinity, ammoniacal nitrogen, Chloride, COD, BOD, cadmium, chromium, copper, lead, nickel, iron, arsenic, magnesium, potassium, total sulphates, calcium, sodium, zinc, manganese	Annually	As specified in Environment Agency Guidance TGN02 (February 2003) and Horizontal Guidance Note H1 – Environmental Risk Assessment for permits, Annex J3, version 2.1, Dec 2011) with one sampling point per cell / phase or such other subsequent guidance as may be agreed in writing with the Environment Agency.	None
MEPP	Hazardous substances	Once every four years		
MEPP	Depth to base (mAOD)	Annually		

**Table 5 - Table S3.3 Groundwater – emission limits and other monitoring requirements**

<b>Table S3.3 Groundwater – emission limits and other monitoring requirements</b>					
<b>Monitoring Point reference</b>	<b>Parameter</b>	<b>Limit</b>	<b>Reference Period</b>	<b>Monitoring Frequency</b>	<b>Monitoring Standard</b>
BH2	Ammoniacal-N	5.56 mg/l <sup>(5)</sup>	Spot Sample	Quarterly	As specified in Environment Agency Guidance TGN02 (February 2003) 'Monitoring of landfill leachate, groundwater and surface water', 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.
	Chloride	438 mg/l <sup>(5)</sup>			
BH3	Ammoniacal-N	3.33 mg/l			
	Chloride	250 mg/l <sup>(5)</sup>			
BH4	Ammoniacal-N	3.26 mg/l			
	Chloride	250 mg/l <sup>(5)</sup>			
BH5	Ammoniacal-N	3.1 mg/l			
	Chloride	250 mg/l <sup>(5)</sup>			
BH25	Ammoniacal-N	3.1 mg/l			
	Chloride	250 mg/l <sup>(5)</sup>			
BH26	Ammoniacal-N	3.1 mg/l <sup>(5)</sup>			
	Chloride	250 mg/l <sup>(5)</sup>			
BH27	Ammoniacal-N	4.59 mg/l			
	Chloride	493 mg/l <sup>(5)</sup>			
BH2, BH3, BH4, BH5, BH25, BH26 and BH27	Cadmium	6 µg/l			
	2,4-dimethylphenol	7.7 µg/l			
	Arsenic	5.6 µg/l <sup>(1)(4)</sup>			
	Nickel	50 µg/l			
BH19, BH20 and BH21 <sup>(2)</sup>	-	-			
BH22, BH23 and BH24 <sup>(3)</sup>	-	-			

<sup>(1)</sup> Arsenic compliance limit to be revised in accordance with IC on collection of sufficient data to set baseline levels.

<sup>(2)</sup> Compliance limits for BH19, BH20 and BH21 to be set in accordance with IC prior to development of Phases 11 and 12

<sup>(3)</sup> Compliance limits for BH22 to 24 to be set in accordance with IC prior to the development of Phase 8

<sup>(4)</sup> Compliance limits to be suspended and replaced by assessment levels until IC completed

<sup>(5)</sup> Compliance limits to be suspended and replaced by assessment levels which are to be revised down annually until below the compliance limit

Note: BHs 21, 22 and 23 are common to Meece 2 Hazardous Waste Landfill

**Table 6 - Table S3.7 Groundwater – emission limits and other monitoring requirements**

<b>Table S3.7 Groundwater - Other Monitoring Requirements</b>			
<b>Monitoring Point</b>	<b>Parameter</b>	<b>Monitoring Frequency</b>	<b>Monitoring Standard</b>
Upgradient MEPP  (BH8, BH9, BH10, BH12, BH13, BH15 and BH18)	pH, Water Level, EC, NH <sub>4</sub> -N, Cl, Ni, 2,4-dimethylphenol, Cd, As, NO <sub>3</sub>	Quarterly	As specified in Environment Agency Guidance TGN02 (February 2003) 'Monitoring of landfill leachate, groundwater and surface water', 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.
	Alkalinity, Mg, K, SO <sub>4</sub> , Ca, Na, Cr, Cu, Fe, Pb, Zn, Mn, COD, TOC, TON	Annually	
	Hazardous substances	Annually for first 6 years of operation	
Down or cross gradient MEPP	Water Level, EC, NH <sub>4</sub> -N, Cl, Ni, 2,4-dimethylphenol, Cd, As, NO <sub>3</sub>	Quarterly	As specified in Environment Agency Guidance TGN02 (February 2003) 'Monitoring of landfill leachate, groundwater and surface water',

(BH2, BH3, BH4, BH5, BH19, BH20, BH21, BH22, BH23, BH24, BH25, BH26, BH27 and BH06)	pH, Alkalinity, Mg, K, SO <sub>4</sub> , Ca, Na, Cr, Cu, Fe, Pb, Zn, Mn, COD, TOC, TON	Annually	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.  After the initial 6 year monitoring period for hazardous substances, if the results of quarterly or annual monitoring suggest an increase in contamination, the operator shall also undertake a full leachate hazardous substances screen.
	Hazardous substances	Annually for first 6 years of operation, then every two years	
MEPP	Base of monitoring point (mAOD)	Annually	

**Table 7 - Table S3.2 Point Source Emissions to water (other than sewer) – emission limits and other monitoring requirements**

<b>Table S3.2 Point Source Emissions to water (other than sewer) – emission limits and other monitoring requirements</b>						
<b>Monitoring Point reference</b>	<b>Parameter</b>	<b>Source</b>	<b>Limit</b>	<b>Reference Period</b>	<b>Monitoring Frequency</b>	<b>Monitoring Standard</b>
SW discharge 2100, 2101, 2102, 2103, 2104 – as shown on MEPP	Ammoniacal-N	Surface water collection system	0.5mg/l	Spot Sample	Quarterly when discharging	As specified in Environment Agency Guidance TGN02 (February 2003) ‘Monitoring of landfill leachate, groundwater and surface water’, or such other subsequent guidance as may be agreed in writing with the Environment Agency.
	Chloride		250mg/l			
	pH		>6.5 and <8.5 pH units			
	Suspended Solids		25mg/l			
	Oil and grease		Non visible			
2104 (Meece Avenue)	Ammoniacal-N	Surface water collection system	No limit			
	Chloride		No limit			
	pH		No limit			
	Suspended Solids		No limit			
	Oil and grease		No limit			
RO LTP “Treated Effluent” – as shown on MEPP at NGR SJ 85075 34335	Ammoniacal-N	Treated Leachate	4.8mg/l	Spot Sample	Monthly	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.
	BOD		39mg/l			
	Chloride		1,965mg/l			
	Chromium		0.037mg/l			

Table S3.2 Point Source Emissions to water (other than sewer) – emission limits and other monitoring requirements						
Monitoring Point reference	Parameter	Source	Limit	Reference Period	Monitoring Frequency	Monitoring Standard
	Iron		7.8mg/l			As specified in Environment Agency Guidance TGN02 (February 2003) 'Monitoring of landfill leachate, groundwater and surface water', or such other subsequent guidance as may be agreed in writing with the Environment Agency.
	Free Cyanide		0.008mg/l			
	Orthophosphate		1.0mg/l			
	Suspended Solids		60mg/l			
	Visible Oil and Grease		None visible			
	Maximum Volume		150m <sup>3</sup> /day			

Note: The surface water discharge points were blocked but will be brought back into use in the future.

**Table 8 - Table S3.10 Surface water – other monitoring requirements (no change)**

Table S3.10 Surface water - Other Monitoring Parameters				
Monitoring Point	Parameter	Monitoring Frequency	Monitoring Standard or method	Other Specifications
MEPP Drawing	pH, EC, NH <sub>4</sub> -N, Cl, Ni, 2,4-dimethylphenol, Cd, As	Monthly	Spot Sample	As specified in Environment Agency Guidance TGN02 (February 2003) 'Monitoring of landfill leachate, groundwater and surface water', 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.
2110 – Meece Brook upstream	DOC, TON, Ca, K	Quarterly		
2120 – Meece Brook downstream				

Note: Action levels for the Meece Brook are set for the downstream monitoring point and are set out within the site's SWMP

**Table 9 - Table S3.11 Point source emissions to sewer – emission limits and other monitoring requirements**

Table S3.11 Point source emissions to sewer – emission limits and other monitoring requirements						
Monitoring Point reference	Parameter	Source	Limit	Reference Period	Monitoring Frequency	Monitoring Standard
Holding lagoon (2156)	-	Surface water management system	-	-	-	-
Balancing tank	-	Landfill leachate	-	-	-	-
Treated effluent from RO plant	-	Treated Effluent	-	-	-	-

(6) Surface Water Management Plan (SWMP)

The existing SWMP is appended to this report as Appendix G.

A revised SWMP is being prepared for the site and will be provided in due course to support the application and for inclusion in the permit.

(7) Addition of a Reverse Osmosis (RO) Leachate Treatment Plant (LTP)

In order to improve the long-term leachate management options for the site to increase capacity for leachate removal and disposal, the installation of an RO Leachate Treatment Plant is proposed. A dual discharge route is required because the TEDC volumetric limit is insufficient for the site's effluent demands. The following two disposal routes are proposed:

1). Up to 100m<sup>3</sup>/day of untreated leachate and other trade effluent directly to the sewer (where TEDC limits are met)

2). Up to 150m<sup>3</sup>/day of treated leachate via the RO Plant to the Meece Brook.

It is proposed that the treated effluent from the RO Plant will be discharged at discharge/sampling location 88902104 'Meece Avenue' demarcated on the site's Monitoring Plan appended to this report as drawing ref. M4180107-2022. Utilising the surface water discharge for the high-quality effluent produced from the RO plant will enable a consistent volume of leachate to be treated whilst the TEDC capacity is used for other effluents produced at the site.

The proposed sampling location will be situated at NGR SJ 85075 34335 at the point effluent discharges from the RO Plant. The substances to be monitored and the associated Permit Limits have been proposed within the supporting Surface Water Risk Assessment (ref. K6094-ENV-R003) and are set out in Table 7 above.

(8) Amend the Permit Boundary to increase the Permitted area

An extension to the permitted area is required to accommodate the RO Plant including the ISO container housing, CO<sub>2</sub> stripping tower and associated leachate influent and effluent infrastructure.

The proposed extension to the Permitted area is illustrated on Drawing M4032700.

A Site Condition Report has been prepared for the extension area and is provided in Appendix K.



## 1.2 Supporting Documents

This permit variation application, as set out in this Supporting Statement, is supported by the following documents:

- Environmental Risk Assessment for Sewer Connection (Appendix A);
- Applications Forms (Appendix B);
- Management System Certificate and Summary (Appendix C);
- Summary of Relevant Convictions (Appendix D);
- Technical Competence Certificate (Appendix E);
- Hydrogeological Risk Assessment Review (Appendix F);
- Surface Water Management Plan (Appendix G);
- Surface Water Risk Assessment for RO Plant (Appendix H);
- BAT Assessment for RO Plant (Appendix I);
- Environmental Risk Assessment for RO Plant (Appendix J);
- Site Condition Report for RO Plant (Appendix K);
- Email 'Meece landfill Biffa Waste Services Limited – TEC 009226V' (Appendix L);
- Drawings

## 2 Application Structure

This report has been prepared in response to the following questions raised in Application Form A, Form C2, Application Form C3 and Application Form C6, which have been completed in support of the permit variation application. These questions ask the Operator to provide the following:

- Form A Q5C: Details of all Directors;
- Form C2 Q2: The type of permit variation applied for;
- Form C2 Q3: Demonstration of operator competence;
- Form C2 Q4: Consultation
- Form C2 Q5: Supporting Information;
- Form C2 Q6: Environmental Risk Assessment;

- Form C3 Q1: Activities being varied;
- Form C3 Q2: Emissions to Air, Water and Land;
- Form C3 Q3: Operating Techniques;
- Form C3 Q4: Monitoring;
- Form C3 Q6: Resource Efficiency and Climate Change;
- FormC6 Q1: About the variation you are applying for;
- FormC6 Question 5: Should the discharge be made to the foul sewer?;
- FormC6 Question 6a: Explain why the effluent will not be treated?;
- FormC6 Question 7: What will be in the effluent?;
- FormC6 Question 8: Environmental risk assessments and modelling;
- FormC6 Question 9: Monitoring;
- FormC6 Appendix 5: Question 5.5 – Does the discharge reach the watercourse or canal by flowing through a surface water sewer?
- Form F1 Question 2: Payment.

## 2.1 Application Form A

### 2.1.1 Question 5c and Appendix 1 – Please give details of the directors

Date of birth information for Directors and Secretaries.

The required details of the Directors of Biffa Waste Services Limited are as follows.

- Name: Michael Robert Mason Topham  
Role: Director  
Date of birth: 20/11/1972
- Name: Paul Anthony James  
Role: Director  
Date of birth: 25/02/1967
- Name: Michael Charles Davis  
Role: Director  
Date of birth: 26/07/1965
- Name: Sarah Parsons  
Role: Secretary  
Date of birth: 06/11/1970
- Name: Dr Maxine Eleanor Mayhew  
Role: Director  
Date of birth: 03/08/1973

The correspondence address is:

Coronation Road,  
Cressex,  
High Wycombe,  
Bucks,  
HP12 3TZ

## **2.2 Application Form C2**

### **2.2.1 Question 2b – Changes or additions to existing activities**

The proposed changes are set out within the non-technical summary above (Section 1.1).

An Environmental Risk Assessment (Report Ref. 14-K6094-ENV-R002) has been prepared in support of the proposed changes to the sewer discharge and is attached as Appendix A.

A HRA review has been prepared for the site and is attached as Appendix F in support of the proposed changes to leachate level and groundwater quality permit limits.

A revised SWMP is attached as Appendix G.

A Surface Water Risk Assessment (Report Ref. K6094-ENV-R003), BAT Assessment (Ref. K6094-ENV-R004), Environmental Risk Assessment (Ref. K6094-ENV-R005) and a Site Condition Report (Ref. K6095-ENV-R006) have been prepared in support of the proposed RO LTP and extension of the Permit boundary. These supporting documents are appended to this report.

### **2.2.2 Question 3a – Relevant Offences**

A summary of relevant convictions is provided in Appendix D.

### **2.2.3 Question 3b – Technical Competence**

The Operator has provided evidence of technical competence in Appendix E. In addition to Meece Landfill, Chris Blakeman provides technical competence cover at the following sites:

- Poplars Landfill Site, Lichfield Road, Cannock, Staffordshire, WS11 8NQ – Permit Ref. EPR/BW0584IL
- Fenton Manor Landfill, Lordship Lane, Fenton, Stoke on Trent, Staffordshire, ST4 2RR – Permit Ref. BB3006KP
- Marchington Landfill Site, Moreton Lane, Marchington, Staffordshire, DE6 5BZ – Permit Ref. GB3105KU/T001
- Newstead Landfill Site, Alderflat Drive, Newstead Ind., Trentham, Stoke On Trent, Staffordshire, ST4 8HX – Permit Ref. TP3596FC/V010

### **2.2.4 Question 3c – Finances**

The relevant persons have not been subject to insolvency or bankruptcy; the proposed changes to the permit do not influence or change the current financial provision arrangements.

### **2.2.5 Question 3d – Management Systems**

The site is operated in accordance with a site management system which complies with the requirements of ISO14001. A copy of the ISO14001 certificate is attached in Appendix C. A summary of the management system is also provided in Appendix C.

### **2.2.6 Question 4a – A sewer managed by a sewerage undertaker**

A permit variation application is being submitted to allow the Operator to discharge trade effluent associated with the permitted operations to sewer. Trade effluent from the site is to be discharged to sewer in accordance with the Trade Effluent Discharge Consent (TEDC) Ref. 009226V which Biffa have negotiated with Severn Trent to allow the discharge of trade effluent to the public sewer.

### **2.2.7 Question 5a – Provide a plan or plans for the site**

Drawings are appended to this supporting statement illustrating the following:

- Permit Boundary for the Environmental Permit Ref. EPR/BV4967IW (Drawing Ref. M4230703);
- Revised Permit boundary (Drawing Ref. M4032700) including RO plant extension area;
- Location of discharge point to sewer (Drawing Ref. 01 “Route and Connection”);
- Monitoring point plan (Drawing Ref. M4180107); and
- RO plant location and layout (Drawing Ref. M4032800 and M4032900)

### **2.2.8 Question 5b – Do any of the variations you plan to make need extra land to be included in the permit?**

An extension of the current permitted boundary is required to include the area on which the RO LTP will be located. A revised permit boundary including the proposed extension area is illustrated on Drawing M4032700.

A Site Condition Report (ref. K6094-ENV-R006) for the proposed extension area (Appendix K).

### **2.2.9 Question 5c – Provide a non-technical summary**

Section 1.1 of this permit application supporting statement contains the ‘Non-Technical Summary’ as required by Question 5c of application form part C2.

### 2.2.10 Question 6 – Environmental Risk Assessment

The following risk assessments have been prepared in support of this permit variation application:

- Report Ref. 14-K6094-ENV-R002 for assessing the proposed discharge to sewer (Appendix A);
- Report Ref. NS\_0115\_10 (Hydrogeological Risk Assessment Review) in support of the proposed changes to leachate level and groundwater quality permit limits (Appendix F);
- Report Ref. 14-K6094-ENV-R003 for assessing the RO plant discharge on the Meece Brook (Appendix H); and
- Report Ref. 14-K6094-ENV-R005 for assessing the RO plant on other nearby receptors (Appendix J).

## 2.3 Application Form C3

### 2.3.1 Question 1a – Activities being varied

The application is seeking to include discharges of trade effluent to foul sewer “*from the balancing tank to point of entry to sewer*” as a directly associated activity. A TEDC has been agreed with Severn Trent which stipulates conditions under which the discharge can be carried out.

In addition to the above, the application is seeking to include a RO LTP activity to allow treated leachate to be discharged to and disposed of to the Meece Brook. It is proposed to add “*D9 - Physico-chemical treatment of waste (Section 5.4 A (1) (a) (ii), Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving physicochemical treatment). Treatment and disposal of landfill leachate and other trade effluent from the permitted activities on site using Reverse Osmosis (RO). Maximum permitted volume for treatment 54,750 m<sup>3</sup>/year. From storage to discharge of treated effluent (permeate)*” to permit table S1.1.

The other proposed changes do not amend the already permitted activities.

### 2.3.2 Question 1b – Types of Waste Accepted and Restrictions

The waste types and capacities are to remain the same as the current permit (See Permit Table S1.1 ‘activities’). This variation is not seeking to make any changes to the permitted waste types.

### 2.3.3 Question 2 and Question 4– Emissions to Air, Water or Land

Emissions to air, water and land will remain the same as the current permit.

Treated effluent from the RO plant will be released into the existing surface water management system. Hence, there are no new point source emissions to surface water. Albeit the discharge at Meece Avenue will comprise of a combination of sources (off-site surface water, treated effluent and run-off from the capped landfill). Revisions to the monitoring regime have been proposed in accordance with the supporting risk assessments.

Significant emissions to air as part of the leachate treatment activity are not expected to occur. As discussed with the Environmental Risk Assessment (Report ref. K6094-ENV-R005), it is not anticipated that VOCs or other substances of concern will be emitted in significant quantities from the proposed carbon dioxide stripping tower associated with the leachate treatment plant.

### 2.3.4 Question 3a – Technical Standards

A Best Available Techniques (BAT) Assessment (Report Ref. 14-K6094-ENV-R004) for the proposed leachate treatment activity has been completed utilising BAT conclusions provided within the European Commission’s 2018 Best Available Techniques Reference (BREF) Document<sup>1</sup>. This

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<sup>1</sup> A. Pinasseau et al. (2018) Best Available Techniques (BAT) Reference Document for Waste Treatment [https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/JRC113018\\_WT\\_Bref.pdf](https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/JRC113018_WT_Bref.pdf)

document is provided. The site is currently permitted, and technical standards for the permitted operations remain the same as those which are already listed in the permit. within Appendix I.

### **2.3.5 Question 3a1 – References to any of your own documents in Table 1.2 Operating Techniques**

It is proposed that the Operating Techniques set out in Tables S1.2 are amended to include a reference to the revised SWMP. Any historical references to the SWMP should be removed.

### **2.3.6 Question 3c – Types and Amounts of Raw Materials**

Minor quantities of raw materials may be required in relation to the operation of the leachate treatment plant. The quantities required are set out within the accompanying BAT assessment (Appendix I).

### **2.3.7 Question 3d – Information for Specific Sectors (Appendix 4)**

This variation is not seeking to change any parts of the permit which would influence previously provided information relevant to the information for specific sectors, therefore no further information is provided.

### **2.3.8 Question 4a – Describe the measures you use for monitoring emissions by referring to each emission point**

Changes to the monitoring arrangements for the landfilling activity relate to the permitted limits rather than the measures in place for monitoring.

Monitoring for the sewer connection will be carried out in accordance with the requirements of the TEDC as agreed with Severn Trent and sampling will be undertaken from the agreed sample point.

Monitoring arrangements for the proposed leachate treatment plant are set out within the supporting BAT Assessment (Appendix I).

### **2.3.9 Question 4b – Point Source Emissions to Air Only**

No operational changes that will affect the landfill gas system have been proposed. Emissions to air will remain unchanged.

### **2.3.10 Question 6 – Resource Efficiency and Climate Change**

This application does not include landfill gas engines.



## **2.4 Application Form C6 (relating to water discharges)**

Due to the dual requirement to add a sewer connection and the leachate treatment plant, application form C6 has been completed twice; once for each proposal. Hence, there are two copies provided labelled as:

- Part C6 (for sewer); and
- Part C6 (for RO plant)

Additional information in relation to both proposals is provided below (where necessary).

### **2.4.1 Question 1a - About the variation you are applying for**

The proposed changes are set out within the non-technical summary above (Section 1.1).

A permit variation application is being submitted to allow the Operator to discharge trade effluent associated with the permitted operations to sewer. The maximum daily discharge to sewer will be 100m<sup>3</sup>/day.

A permit variation application is also being submitted to allow the Operator to discharge treated leachate resulting from the RO leachate treatment process. The maximum daily discharge for the RO plant will be 150m<sup>3</sup>/day.

The following questions have been completed in accordance with Table 1 of Form C6 for both the sewer connection and RO plant:

- Question 1 - all parts
- Question 2 – part c
- Question 3 – parts b, c, d, e and f
- Question 4 – not required
- Question 5 – parts a and b
- Question 6 – all parts
- Question 7 – parts a, b, c, d, e and f
- Question 9 – all parts

For the sewer connection:

- Question 8 – parts e and f
- Question 10 – not required (see below)

For the RO plant:

- Question 8 – parts c, e and f
- Question 10 – Part b.
- Appendix 5.

#### **2.4.2 Question 1d - Have you obtained all the necessary permissions in addition to this environmental permit to be able to carry out the discharge?**

Trade effluent from the site is to be discharged to sewer in accordance with the TEDC Ref. 009226V which Biffa have negotiated with Severn Trent to allow the discharge of trade effluent to the public sewer.

#### **2.4.3 Question 5 – Should the discharge be made to the foul sewer?**

A Permit Variation Application is being submitted to allow the Operator to discharge trade effluent associated with the permitted operations to sewer. Trade effluent from the site is to be discharged to sewer in accordance with the Trade Effluent Discharge Consent (TEDC) Ref. 009226V.

Up to 100m<sup>3</sup>/day can be discharged to sewer in accordance with the TEDC, however this volume is insufficient for the site's effluent discharge demands, as described in the attached Appendix N which details the communication between Biffa Waste Services Ltd and Severn Trent Water Ltd (STW) who operate the receiving sewage treatment plant Eccleshall and Sturbridge Wastewater Treatment Works (WwTW). Within this communication, an email received from Samantha Clowe of STW on Wednesday 1<sup>st</sup> February 2023 confirms that, due to the small size of the receiving sewerage works, STW denied Biffa's request to increase the site's daily discharge to sewer to 200m<sup>3</sup> and instead the limit must remain 100m<sup>3</sup>/day.

A request from Biffa to increase the limit of substances proposed to be discharged including chloride and COD, was also denied. Hence, treatment would be required in order to discharge the leachate to sewer.

#### **2.4.4 Question 6a – Explain why the effluent will not be treated?**

The Operator is proposing to dispose of Trade Effluent to sewer in accordance with the conditions set out within the TEDC. Treatment may not be required prior to discharge and therefore this question has been left as 'no' within the C6 form for the sewer connection.

Nevertheless, this application is also seeking to add an RO plant to the facility and therefore treated effluent may also be discharged to the sewer (where there is a requirement to meet the TEDC limits and capacity at the RO plant allows). Hence, the C6 form for the RO plant has been marked 'yes'.

#### **2.4.5 Question 7 – What will be in the effluent?**

The site is an operational non-hazardous landfill and soil treatment facility, and the proposed effluent will be consistent with that expected from these types of operations.

The following risk assessments have been prepared in support of this permit variation application:

- Report Ref. 14-K6094-ENV-R002 for assessing the proposed discharge to sewer (Appendix A); and
- Report Ref. 14-K6094-ENV-R003 for assessing the RO plant discharge on the Meece Brook (Appendix H).

Details of the expected worst-case effluent quality are provided in these documents. The TEDC limits the quality of the effluent which can be discharge to sewer. Permit limits are proposed for the RO plant.

#### **2.4.6 Question 8 – Environmental risk assessments and modelling**

The following risk assessments have been prepared in support of this permit variation application:

- Report Ref. 14-K6094-ENV-R002 for assessing the proposed discharge to sewer (Appendix A); and
- Report Ref. 14-K6094-ENV-R003 for assessing the RO plant discharge on the Meece Brook (Appendix H).

#### **2.4.7 Question 9 – Monitoring**

Monitoring will be carried out in accordance with the requirements of the TEDC as agreed with Severn Trent. Additional ad-hoc sampling may be undertaken to confirm effluent quality prior to discharge. The location of discharge point to sewer is shown on Drawing Ref. 01 “Route and Connection”.

Both the effluent sampling and flow monitoring will be collected at the same monitoring point “Treated Effluent”, located at the RO Plant outlet at NGR SJ 85075 343335.

The flow will be measured using an MCERTS flow meter. However, as the RO plant has not yet been commissioned, a certificate number cannot be provided.

#### **2.4.8 Appendix 5: Question 5.5 – Does the discharge reach the watercourse or canal by flowing through a surface water sewer?**

The treated effluent will discharge into an existing network of surface water drains, discharging into a culvert leading to the Meece Brook at discharge point 88902104 ‘Meece Avenue’ demarcated on the Site’s Environmental Monitoring Plan (MEPP) Drawing Ref. M4180107-2022. The site’s surface water system is a legacy from when the site formed part of a Munitions factory with the MOD site to the south. The drainage system is still connected to the drains/sewers in the MOD site which then discharge to the Meece Brook via that system.

## 2.5 Application Form Part F1

### 2.5.1 Question 2 - Payment

The application fee is expected to be as follows:

- Normal variation for non-hazardous landfill - £11,388
- New application for physico-chemical treatment of waste - £13,443
- Habitats assessment - £779

Part of the application fee (£11,388) was submitted in on 20<sup>th</sup> December 2022. The remaining fee (£14,222) was submitted in May 2024).

Remittance advice for the two transactions will be provided.

Appendix A – Environmental Risk Assessment (for Sewer Connection)

Appendix B – Application Forms

Appendix C – Management System Certificate and Summary

Appendix D – Summary of Relevant Convictions



Appendix E – Technical Competence Certificate

Appendix F – Hydrogeological Risk Assessment Review

Appendix G – Surface Water Management Plan

Appendix H – Surface Water Risk Assessment (for RO Plant)

Appendix I – BAT Assessment (for RO Plant)

Appendix J – Environmental Risk Assessment (for RO Plant)

Appendix K – Site Condition Report (for RO Plant)

Appendix L – Email ‘Meece landfill Biffa Waste Services Limited –  
TEC 009226V’



Drawings



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