



# Surface Water Management Plan

Middlemarsh Landfill Irrigation Scheme

Report No. 14-K6143-ENV-R004

July 2024

Revision 00

FCC Environment (UK) Ltd

# Document Control

## Project

Middlemarsh Landfill Irrigation Scheme

## Client

FCC Environment (UK) Ltd

## Document

Surface Water Management Plan

## Report Number:

14-K6143-ENV-R004

## Document Checking:

Date	Rev	Details of Issue	Prepared by	Checked by	Approved by
July 2024	00		<i>Jennie Walker</i>	<i>Craig Fannin</i>	<i>Craig Fannin</i>

**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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## Drawings

- 001A Middlemarsh As-Built Surface Water Management Plan 2016
- K6143-1000 Irrigation Layout Plan
- 716M2263E Environmental Monitoring Plan (EMP)

## [1] Introduction

### [1.1] Report Objectives

This Surface Water Management Plan has been prepared by Ayesa (ByrneLooby Partners (UK) Limited) on behalf of FCC Environment (UK) Limited (FCC) in support of an application to vary Permit Ref. EPR/BV4410IC/V008 to add a recovery activity at the Middlemarsh Landfill. The site is operated by Lincwaste Limited (the Operator), a wholly owned subsidiary of FCC Environment (UK) Limited.

A permit variation application has been submitted to enable the use of the site's leachate as a summer irrigant to the restored landfill surface. The leachate is a stabilised non-hazardous landfill leachate which will be used to replenish the soil moisture deficit on a seasonal basis. Irrigation is being implemented to encourage and sustain vegetation cover at the site and prevent vegetation dieback for the protection and maintenance of the soil cover and the capping layer by the presence of a healthy vegetation cover in a low effective rainfall area of the country. Irrigation could be carried out utilising water extracted from an aquifer or the surrounding drainage channels. However, in the context of the Waste Framework Directive<sup>1</sup> (and waste hierarchy) and the priority of water resources to be applied to agriculture and domestic supplies as well as sustaining river ecology it is proposed to utilise stabilised non-hazardous leachate as a substitute.

This report has been produced to satisfy the Environment Agency's (the Agency's) request set out within a Request for Further Information Notice dated 25<sup>th</sup> June 2024. The Agency request for a Surface Water Management Plan (SWMP) is listed below for reference:

*Question 5. Provide an updated surface water management plan with respect to increased monitoring associated with potential risks from irrigation with leachate.*

This document should be read in conjunction with

- ByrneLooby (2022) Middlemarsh Irrigation Scheme Overview. Report K6143-R01

which provides further information on the rationale for irrigation at Middlemarsh Landfill; and

- ByrneLooby (2022) Middlemarsh Irrigation Risk Assessment. Report K6143-R03 which assesses the risk of the use of stabilised non-hazardous landfill leachate as an irrigant.

### [1.2] Site Location and Development

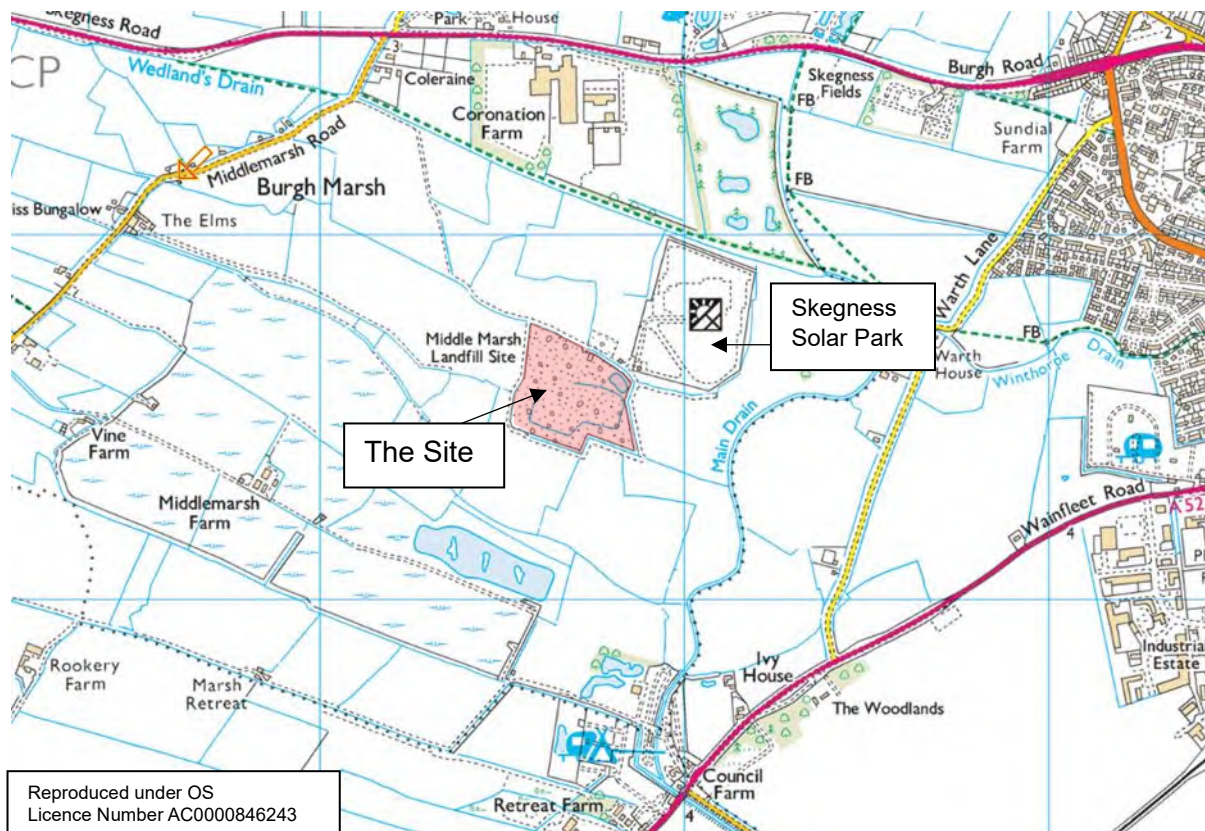
Middlemarsh Landfill is located in the fenlands a short distance from the Wash, 2km to the west of Skegness at National Grid Reference TF 537 635 (Figure 1). The site is accessed via Middlemarsh Lane, Burgh-Le-Marsh, Skegness, Lincolnshire, PE24 5AD and is located within a predominantly rural area. Middlemarsh Landfill is surrounded by a mixture of agricultural and marsh land. A solar farm is positioned to the north-east of the site.

There are a limited number of sensitive habitats sites within close proximity to the Middlemarsh Landfill. An area of deciduous woodland is located 660m to the south-east of the site. The closest habitats site is Gibraltar Point which is characterised as a Site of Special Scientific Interest (SSSI) and a Special Area of Conservation (SAC) some 3.2km to the south-east of the site.

<sup>1</sup> Directive 2008/98/EC of the European Parliament and of the Council, 19 November 2008

Middlemarsh Landfill is a closed, capped and restored non-hazardous Municipal Solid Waste (MSW) landfill site which is under a “Definitive Closure” phase. Leachate and landfill gas are both actively managed at the site in accordance with the site’s Environmental Permit and associated risk assessments.

**Figure 1 Site Location and Surrounding Features**



### [1.3] Irrigation Scheme

The surrounding land is low lying fenland, in which water levels are artificially managed by the Lindsey Marsh Inland Drainage Board (IDB), who convey the excess waters to the Wash 6km to the south of the site during winter and after storm events, in combination with sustaining water for agricultural need between April and October. This prioritising water availability solely for agricultural need limits water available from spring to early autumn, and hence non-agricultural soils become water stressed due to the low Effective Rainfall Rates in the East of England.

The irrigation scheme comprises an alternative water resource, utilising the low-rate application of site-derived stabilised leachate. Irrigation is to be undertaken at a controlled rate using a porous / drip flow across a central 2.3ha area within a wider 3.6ha zone of the landfill (Figure 2).

Irrigation is intended to be restricted to within the main surface water run-off interception channels, and only extrapolated out to the wider steeper sloped areas following the initial operation of the system that demonstrates the infiltration characteristics of the ground surface are suitable (*i.e.* no excessive run-off due to slope gradient).



**Figure 2 Irrigation Zone within Capped and Restored Area Captured by Surface Water Drainage Zone**



Irrigation during the summer season will therefore be carried out at a rate of ~1mm/day. This is below the daily water need (3mm/day) of a standard grass crop growth during the irrigation season and thus can be deliberately limited in order to prevent run-off from occurring whilst maintaining the aim of improvement to soil and vegetative cover during the driest periods of the year. This rate is based upon a continuous moisture need and consideration of soil infiltration characteristics.

Changes to the application rate will be based on a two-weekly review of weather conditions and will be reduced if there is a particularly wet or cool summer and increased temporarily up to 3mm per day for extended drought conditions.

Therefore, irrigation will be undertaken at a typical rate of

- 1mm/day, equivalent to
- 20 - 36m<sup>3</sup>/day within a central 2.3ha area; that is set within a 3.6ha attenuation and run-off capture area
- typically, 2,000m<sup>3</sup> and up to 3,240m<sup>3</sup> of irrigant is to be applied over a 90 – 120-day period (mid-May to mid-September)

The commencement of irrigation and cessation of irrigation will be determined on a year-by-year basis.

Irrigation will be undertaken at a rate of up to 1mm/day throughout the season except for the duration of predicted storm events and weather forecasts which predict more than 5-days of continuous wet and cloudy weather whereby evapotranspiration is not expected to be of significance with respect to grassland health.

Further details of the derivation of the application rate are provided within Report K6143-R01 Middlemarsh irrigation Scheme.

## [2] Surface Water Management and Drainage Strategy

### [2.1] Surface Water Management System

The position of existing internal surface water drains can be seen on drawing ref K6143-1000.

The site's surface water run-off is collected within drainage ditches constructed within the perimeter of the landfill footprint which flows towards an on-site lagoon in the northeastern corner of the site where particulates settle out from suspension. Water flow is attenuated and stored within the settlement lagoon before being discharged to the eastern channel at a controlled rate via a carrier drain.

The surface water is discharged from the settlement lagoon at a controlled rate and there is a valve control which can be closed, and discharge stopped in the event of a failure of the controlled irrigation programme or other unexpected event that could be detrimental to the receiving waters.

Following discharge, surface water is channelled from the site towards the "Main Drain" some 260m east of the site (Figure 4). The "Main Drain" flows from north to south before joining the Cow Bank Drain and then the Wainfleet Haven (Steeping River) to discharge into the Wainfleet Harbour area of the Wash at Gibraltar Point.

The proposed position of the irrigation scheme pipework has been designed to maintain a 10-metre standoff from the internal surface water management channels and the hedge line within the boundary of site. The indicative layout of the irrigation scheme and associated pipework is illustrated in Drawing K6143-1000.

### [2.2] Risk of Flooding

The site forms a land raise above low elevation level fenlands where water levels are artificially managed by the Lindsey Marsh IDB. The surrounding area is therefore prone to flooding unless managed; hence it is located in a wider area designated as Flood Zone 3, *i.e.* land which has a high probability of flooding from rivers and the sea (Figure 3).

The Lindsey IDB manage a series of artificial surface water channels by actively pumping surface run-off waters into the "Main Drain" (Figure 4) which carries the excess flow in a southerly direction from a point some 280m east of the site to the Cow Bank Drain and then the Wainfleet Haven (Steeping River) to discharge into the Wash at Wainfleet Harbour at Gibraltar Point.

Although the IDB's main task is to prevent lands flooding in winter or after severe storms, there is a secondary function to prioritise and manage all available waters in summer for agriculture.

The irrigation programme has been designed so as not to contribute to the wider flood risk, by only applying irrigant when there is low to negligible risk to contribute to “flood events”, *i.e.* to limit irrigation to periods when growing season evapotranspiration effects will exceed recharge rates to ground.

No irrigation is to take place during late autumn to early spring when the risk of flooding is greatest.

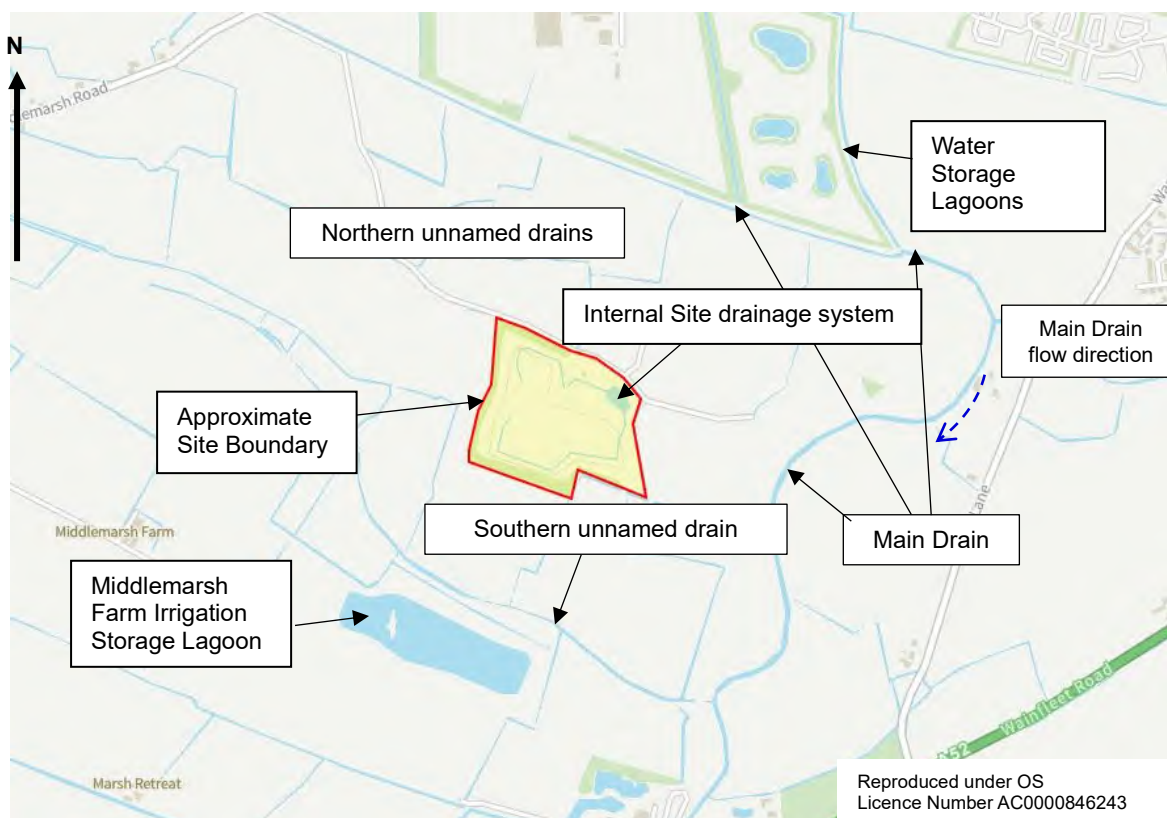
**Figure 3 Flood Risk Mapping<sup>2</sup>**



<sup>2</sup> Flood risk information for this location - Flood map for planning - GOV.UK (flood-map-for-planning.service.gov.uk)



**Figure 4** Nearby Surface Water Features



### [2.3] Landfill Surface Water Management

Within the restored landfill footprint, there is a ring of drainage ditches constructed into the above cap restoration soils which collects surface run-off from the majority (circa 3.6ha) of, and steeper sloped central area of the site, which direct the run-off flows towards an on-site lagoon in the northeastern corner of the site.

The lagoon acts as both a settlement and flow attenuation pond that discharged under consented limits via a piped outlet connection to an IDB managed channel that parallels the eastern flank of the site where the waters enter the wider management network.

The position of existing internal surface water drains can be seen on Drawing K6143-1000. All irrigation is to be undertaken within 2.3ha of the 3.6ha area encapsulated by the ring of above cap drainage channels and therefore will be captured by the on-site lagoon.

Water levels in the settlement lagoon are managed by the operator, with discharged rate controlled to enable both particulate settlement and to balance the off-site discharge flow rate. There is a valve setting which can be closed in the event that contamination is suspected, and the discharge stopped as a pollution control measure.

This lagoon does not typically discharge during summer due to insufficient volume, therefore even in the event of a storm event there is a low likelihood of a discharge occurring. Notwithstanding this, irrigation will cease following extended wet periods, where the soil moisture deficit would be satisfied directly.

Given this low to negligible risk and the aim of the proposed irrigation scheme to provide only maintenance doses of moisture to prevent a soil moisture deficit on a seasonal basis and not irrigate when there is a risk of storm run-off volumes, there are no proposals to make changes to the surface water management system and associated infrastructure at the site.

Furthermore, maintaining or increasing vegetation growth on the engineered cap, in turn maintains or increases the water storage capacity of the topsoil profile, reducing the rate in which run-off escapes the landfill and entering the drainage channels and the wider surface water network. The flood risk is therefore not increased by the proposed irrigation scheme.

## [2.4] Preventing unacceptable discharges to ground and surface water

Irrigation rates are intended to replenish the soil moisture deficit in the restored surface in order to prevent excess leachate accumulating on the restored landfill. Consequently, it is not expected that a “contaminated” run-off that could contribute to a direct leachate release will be generated. Moreover, as concluded within the Irrigation Scheme Risk Assessment (ref. 14-K6143-ENV-R03), under the majority of weather conditions, it is reasonable to expect that all irrigant will percolate into the soil, where the irrigation water component will be utilised by the surface vegetation to support growth, without inducing surface water run-off.

The site’s leachate has a composition within the concentration range expected for the WRAP (2011)<sup>3</sup> compost and anaerobic digestate products (Table 1). Consequently, the restoration soil’s grassland habitat will not be subjected to different chemistries to that found within an agricultural setting where compost, manure and digests are applied to fields. The site is surrounded by agricultural fields, therefore the chemistry of the irrigated leachate applied to the surrounding soils and surface water will be consistent with the products applied to the fields surrounding the site.

**Table 1** Extract from WRAP (2011)<sup>3</sup> Table 5 – 10-Year Average Leachable Organic Content for Digestate Compared with Abstracted Middlemarsh Site Average (2022) at the Leachate Tank

	BOD	COD	NH <sub>4</sub> -N	TN	Cl	K	P
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Food Based Digestate#1	5,550	29,300	5,650	5,650	2,750	2,660	128
Food-Based Digestate#2	13,010	49,180	5,310	5,310	3,752	1,190	60
Manure Based Digestate	5,430	51,840	2,310	2,310	1,450	2,940	147
Green Compost #1	4,350	68,380	395	396	905	1,190	15
Green Compost #2	540	62,160	7	551	1,190	2,070	20
Green Compost #3	810	61,630	65	72	1,110	1,600	24
Green Compost #4	780	63,330	3	15	390	575	18
Green/Food Compost#1	6,370	72,050	511	516	2,250	2,660	90
Green/Food Compost#1	400	37,820	280	435	1,780	2,180	28
Green/Food Compost#1	630	77,350	7	55	457	768	24
<b>Site Chemistry (2022)</b>							
Middlemarsh Leachate Tank	40	1,360	894	894	1,330	435	
Proposed Application Rate	250	2,500	1,000	1,000	2,750	1,500	

Shaded cells, application upper concentration limit  
 TN – Total Nitrogen

<sup>3</sup> [https://www.wrap.ngo/sites/default/files/2020-09/WRAP\\_Compost\\_Anaerobic\\_Digestate\\_Quality\\_Welsh\\_Agriculture.pdf](https://www.wrap.ngo/sites/default/files/2020-09/WRAP_Compost_Anaerobic_Digestate_Quality_Welsh_Agriculture.pdf)

## [2.5] Surface Water Monitoring

### [2.5.1] Monitoring Programme

Surface water run-off from the restoration soils is managed and controlled via the existing surface water management network detailed in drawing ref. K6143-1000.

Monitoring is undertaken within the lagoon that the surface water drainage discharges into (SW2), and at the point of discharge (SW Discharge) in accordance with Permit Table S3.3. Monitoring is also undertaken in the receiving channel which follows the eastern perimeter of the site at the northeast and southeast corner of the site (SW3 and SW5), where the channel connects with the wider IDB network as illustrated on Drawing 716M263.

To date, monitoring has been undertaken at monitoring location ‘SW Discharge’ on a quarterly basis for the periods when discharges take place, hence there is frequently no data collected between June and September each year, and on a monthly basis at the other surface water monitoring points.

It is proposed to increase the surveillance of the SW2 lagoon sample and the SW Discharge from the site to a monthly basis during the summer irrigation period and following autumn period (*i.e.* May to November). Periods of no discharge at SW Discharge will be specifically identified with a “zero discharge” for each compliance substance, with the “point in time” SW2 lagoon sample concentration noted and reviewed to determine any trends that may be occurring.

Monthly monitoring of locations SW2, SW3, SW4 and SW5 (as shown on Drawing 716M263) will continue as required within Permit Table S3.10.

### [2.5.2] Background Monitoring Data

The objective of the monitoring programme is to demonstrate control of the run-off solution discharged from the site and consistency of the water quality in the receiving channel as monitored at SW3 and SW5.

Permit limits are set for suspended solids, ammoniacal-N, nickel, zinc, toluene, xylene and mecoprop in the SW Discharge solution. There is no expectation, or application proposal to vary or change the limits as currently set. In this regard, only ammoniacal-N, chloride, nickel and zinc could potentially be used as a proof of concept as the organic substances are all highly degradable under surface conditions and there is neither enough of each substance in the leachate to cause harm or the potential for them to accumulate in the soils being irrigated.

As a demonstration of “proof of concept”, SW2, SW3 and SW5, the locations directly connected to the site’s surface water discharge will be monitored to the inorganic compliance suite when an irrigant is applied, and into the following month post cessation of irrigation.

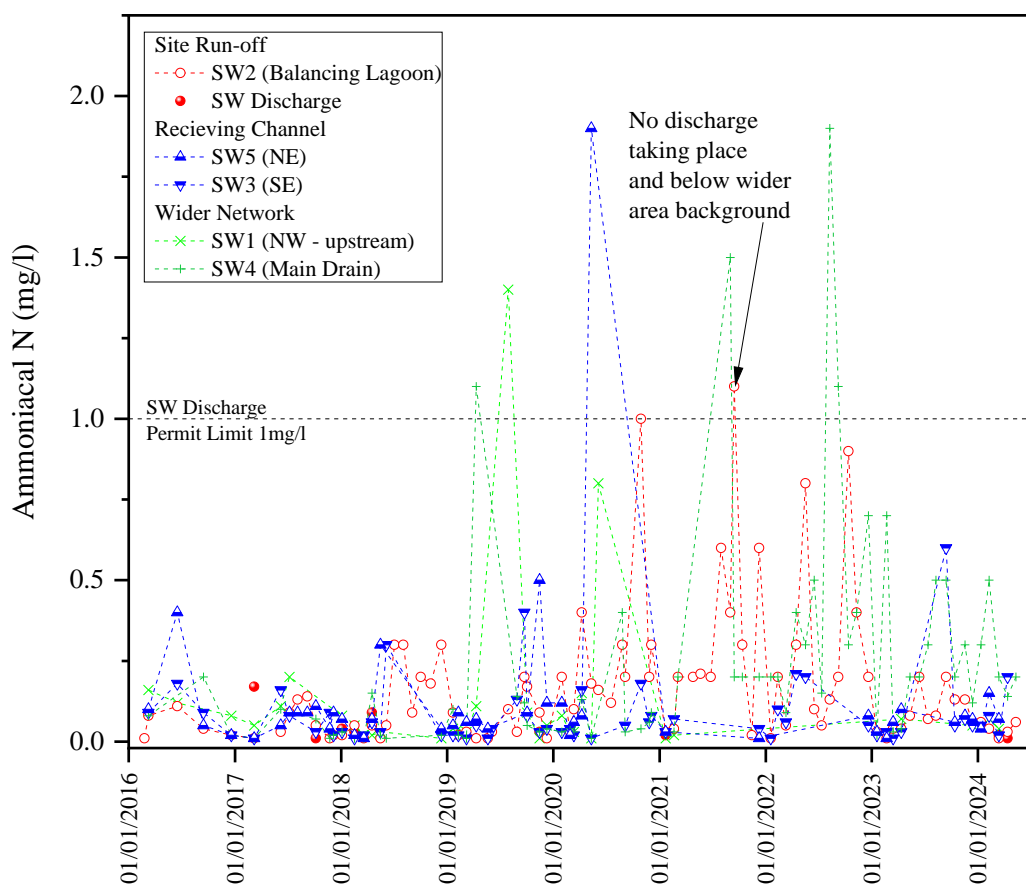
Monitoring data for the years 2016-2024 is presented in Table 2 with primary landfill indicators presented in Figure 5 and Figure 6 for the site run-off and the wider monitored network. This data is presented as demonstrative of the background quality dataset which can be used at SW3 and SW5 to demonstrate if any environmental impacts occur from the irrigation, in the unlikely event that surface water containing leachate becomes run-off and enters the wider surface water management network.

**Table 2 Surface Water Priority Substances (2016-2024) and Discharge Limits**

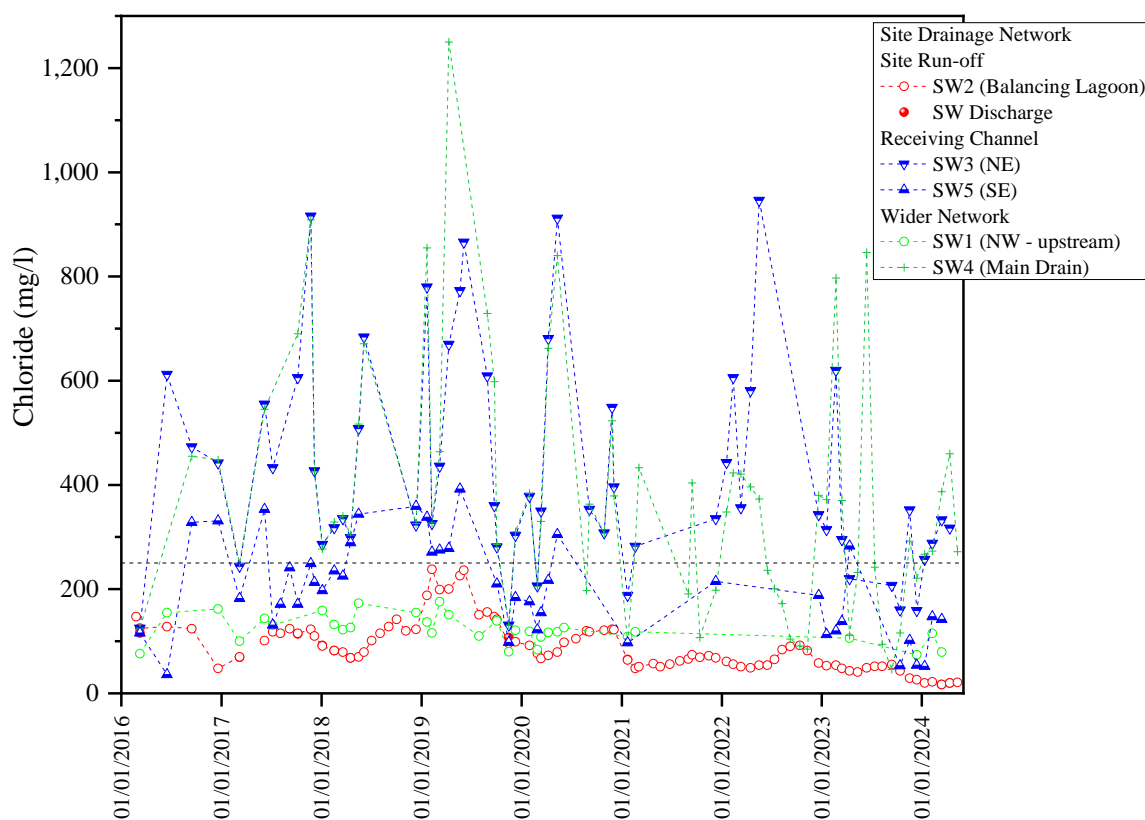
	SW2 & SW Discharge				SW3			SW5		
	Internal Lagoon and Discharge Point				External drain SE of Site			External drain NE of Site		
	Min	Ave	Max	SW Discharge Permit Limit & Proposed SW2 Action Level	Min	Ave	Max	Min	Ave	Max
	mg/l									
Ammoniacal-N	0.01	0.16	1.10	<b>1.00</b>	0.01	0.09	0.60	0.01	0.13	1.90
Chloride	17	88	238		125	429	946	36	202	392
Suspended Solids	5	21	136*	<b>50</b>						
Nickel	<0.001	0.006	0.018	<b>0.2</b>	<0.005	0.073	0.436	<0.008	0.111	0.8
Zinc	0.002	0.013	0.141	<b>0.5</b>						

SW2 Lagoon only. Caused by disturbing sediments at low water levels. No discharge taking place.  
 Note background SW3 and SW5 chloride levels are in excess of site contributions and EQS to date

**Figure 5 Surface Water Ammoniacal-N**



**Figure 6 Surface Water Chloride**



The historic dataset indicates that ammoniacal-N (Table 2 and Figure 5) has remained below the SW Discharge Permit Limit of 1mg/l for the sampled discharge to the receiving drain. Within the external surface water drainage network surrounding the site, a maximum of only 1.9mg/l has been recorded at monitoring point SW4 and SW5.

These both exceeded the site’s run-off water quality as monitored in the SW2 lagoon and at the discharge point and demonstrate that the ammoniacal-N data within the external drainage network is influenced by run-off generated by surrounding agricultural fields where fertilizer use is prevalent.

Elevated chloride has been identified throughout the external IDB drainage network, with a maximum of 909mg/l to the northwest of the site at SW4, 392mg/l at the northeast corner drain monitoring point SW5 and a maximum 946mg/l at the southeast corner drain monitoring point SW3, as well as 1,250mg/l in the “main drain” which is remote from the site.

Given that the site’s run-off at SW2 and at the SW Discharge has not exceeded 175mg/l, the background variation is not attributable to the Middlemarsh landfill.

The background chloride increases during the late spring/summer months when the drains are subject to evaporation and where agricultural chemicals are being applied (Figure 6). Consequently, given this background effect, a Permit Limit has not been set for chloride.

The data indicates a background chloride influence of a magnitude which is not considered to be capable of being exceeded following seasonal irrigation periods. Given that the external background exceeds the chloride EQS and is at a level whereby an irrigation discharge is unlikely to be



discernible on this background affected, it is not considered appropriate to apply an action level for chloride.

Zinc and nickel, two primary priority metals within the leachate have remained below the Permit Limit for the discharge in all locations tested. This limit is not expected to be exceeded during irrigation but will continue to be monitored to the existing Permit Limits, where in the case of nickel, the background presence is periodically in excess of the discharge consent limits due to background influences.

The proposed irrigation scheme will not increase the risk of uncontrolled discharges from the landfill.

### [2.5.3] Proposed Action Levels

It is proposed that action levels are assigned to SW2 based on the SW Discharge Permit Limits as described in Table 2 and monitoring increased from a quarterly compliance schedule to monthly. This will provide the Operator with an opportunity to instigate a Contingency Action Plan as described in Section [3].

### [2.5.4] Data Assessment

On completion of analysis, the laboratory will send the surface water quality data to the Operator. A representative of the Operator will make an independent review of the data.

Where substances are observed above the Action Levels listed in Tables 2 and 3 for SW2 and SW Discharge, an action plan will be devised. The Action Plan will include the following actions:

- increased monitoring surveillance of irrigated leachate and surface waters;
- preventing surface water discharge (closing penstock valve), and;
- suspending irrigation whilst further monitoring is conducted.

Where a breach of an Action Level is identified due to an off-site source, the Action Level will be revised accordingly to take account of the background source. This will prevent unnecessary breaches in the future.

If there is a suspicion that a Permit Limit has been exceeded at SW Discharge or could be exceeded from an increasing trend in the preceding SW2 lagoon, the Contingency Action Plan will be implemented.

## [3] Contingency Action Plan

If there is, or there is a risk of, an exceedance of a Permit Limit at monitoring point SW Discharge, the following course of actions are instigated:

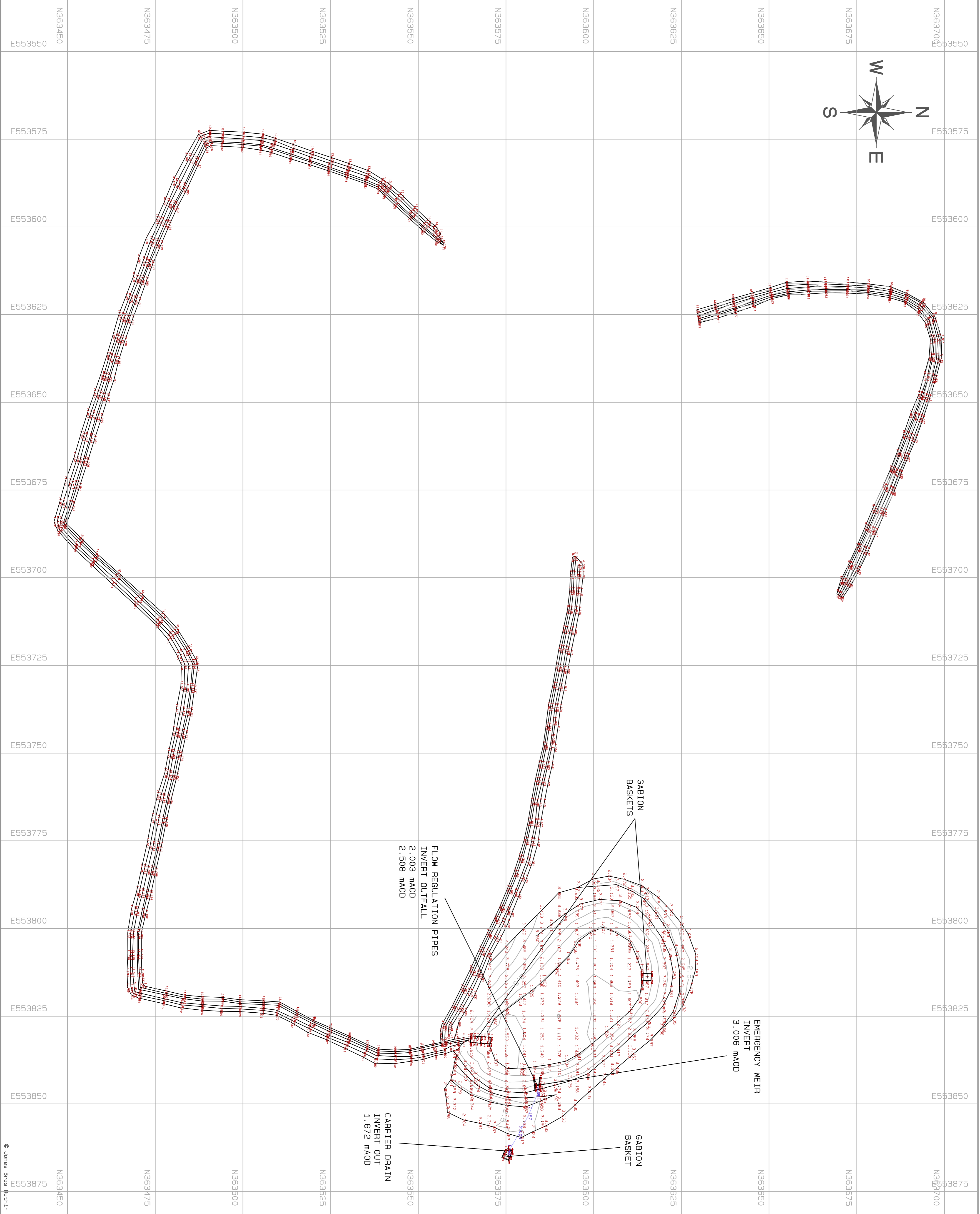
- A retest of the original sample retained by the laboratory will be instructed. This retest may identify if the first result was erroneous.
- If the retest confirms that the Permit Limit has been breached, the penstock valve will be closed to prevent further discharge of surface water to the receiving watercourse. The Environment Agency will be notified within 24 hours of the confirmation. A further sample will be taken at SW Discharge within 5 working days and re-tested.

- Where the repeat sampling identifies an on-going breach of the Permit Limit, a review of the surface water management system and nearby alternative sources will be carried out to identify a potential cause.
- Where there is a second repeated breach of a Permit Limit, the wider surface water management system will be sampled and re-tested.
- Where evidence of contamination, excessive sedimentation or any other factors that may compromise the efficiency of the system are identified through the review of the on-site surface water management system, remedial measures will be undertaken as soon as practicably possible.

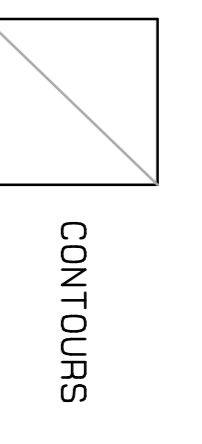
In parallel to the contingency action plan, general maintenance actions will be implemented, including repair of any defects where flow is impeded as identified during routine walkover checks and monthly monitoring visits, at the following:

- The connecting surface water ditches,
- the settlement lagoon,
- re-aligning irrigation pipework if excessive moisture is accumulating causing preferential flow channels to appear.

## Drawings



**KEY:**



SURVEYOR: CAI JONES  
 GRID USED: NATIONAL  
 ALL LEVELS RECORDED  
 IN METRES ABOVE  
 ORDANCE DATUM

ASBUILT  
 DRAWING

REV.	DATE	PREPARED BY / COMMENT	CHECKED BY	DATE	DE	DE
A	24 Jan 2017	Prep	C.J.		DE	DE



from waste to resource

Project name  
**MIDDLEMARSH LANDFILL SITE**  
 SURFACE WATER MANAGEMENT 2016  
 Drawing title  
**LAGOON, CARRIER DRAIN AND DITCH CONSTRUCTION**



Scale (A1)	Date	Drawn By	Checked By
1:500	24 Jan 2017	C.J.	D.E.
Drawing Number	Sheet Number	Revision	
001	1 of 1	A	





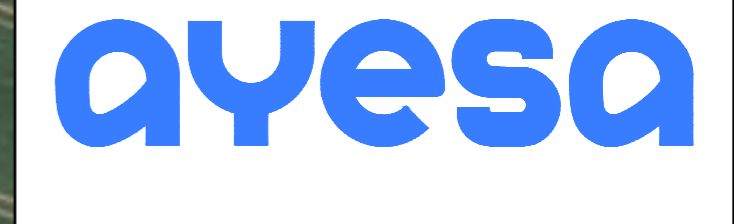
GENERAL NOTES

1. DO NOT SCALE OFF DRAWING.
2. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
3. ALL LEVELS IN METRES (ORDNANCE DATUM) UNLESS OTHERWISE NOTED.
4. SURVEY INFORMATION SUPPLIED BY FCC ENVIRONMENT

LEGEND

- FCC OWNERSHIP BOUNDARY
- PERMIT BOUNDARY
- IRRIGATION PIPEWORK AREA
- INDICATIVE IRRIGATION PIPEWORK LAYOUT
- WATERCOURSE/BALANCING POND
- ☒ SURFACE WATER MONITORING POINT
- - - RESTORATION CONTOURS
- LEACHATE COLLECTION TANK
- - - IRRIGATION AREA

PO2	04.07.24	FOR ISSUE	JM	JW	CF
PO1	03.07.24	FOR REVIEW	JM	JW	CF
Rev	Date	Description	By	Chk	App



PROJECT  
MIDDLEMARSH LANDFILL SITE  
IRRIGATION R10

DRAWING TITLE  
EXISTING SITE LAYOUT  
AND AREA OF IRRIGATION

STATUS	FOR ISSUE	SUITABILITY	—
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Date: 03/07/24	Scale: 1:1,000	Drawn: JM	Chk: JW	App: CF
Project No: K6143	Drg. No: K6143-1000	Rev: P02		





**NOTES:**

- ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.
- DO NOT SCALE FROM THIS DRAWING.
- ANY ANOMALIES IDENTIFIED WITH THE DETAILS SHOWN ON THIS DRAWING ARE TO BE BROUGHT TO THE ATTENTION OF FCC ENVIRONMENT (UK) LIMITED PRIOR TO CONSTRUCTION WORKS COMMENCING.

**LEGEND:**

- Ownership Boundary
- Landfill Gas Monitoring Borehole
- Landfill Gas Surface Monitoring Point
- Combined Gas/ Groundwater Monitoring Point
- Upgradient Combined Gas/ Groundwater Monitoring Point
- Down/Cross Gradient Combined Gas/ Groundwater Monitoring Point
- Gas Flare Stack
- Landfill Gas Extraction Point
- Landfill Gas Extraction/ Leachate Monitoring Point
- Condensate Unit (Knock-out Pot)
- Gas Manifold
- Groundwater Monitoring Borehole
- Groundwater Pumping Point
- Surface Water Monitoring Point
- Upgradient Groundwater Monitoring Point
- Down/Cross Gradient Groundwater Monitoring Point
- Leachate Collection Point
- Leachate Monitoring Point
- Leachate Recirculation Point
- Leachate Collection Sump
- Leachate Discharge Sampling Point
- Leachate Detection Point
- Underdrainage Monitoring Point
- Settlement Monitoring Point
- Drain/ Dewatering Tank
- Valve
- As-built Cell Footprint

Revision	Date	Description	By	CHK
E	17.01.18	Site survey updated & LCP7A2 added	BS	GB
D	25.07.16	Boreholes removed & amended	BS	GB
C	11.05.16	BH02/05 removed, BH02/14 surveyed position	BS	GB
B	11.02.16	Proposed BH02/14 added	BS	GB
A	23.12.15	Gas well updates	BS	GB

Reference files:  
 Information taken from plans:  
 Site Survey: 716J5047

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 6 Skilings Court, White Rose Way, DONCASTER DN4 5NU, Licence No 0100031673



Site: **MIDDLEMARSH LANDFILL SITE**

Drawing Title: **Environmental Monitoring Plan**

Drawn By: BS	Checked By: GB	Date: 17.01.18	Scale: 1:1500	Paper Size: A2
Status: FINAL	Revision: E	Drawing No: <b>716M263</b>	Plan Number: <b>PLAN 4A</b>	



Cell Survey by the Client Date: 17-Nov-18  
 Cell 6-9 by the Client Date: 17-Nov-18  
 Cell 11-14 by the Client Date: 17-Nov-18