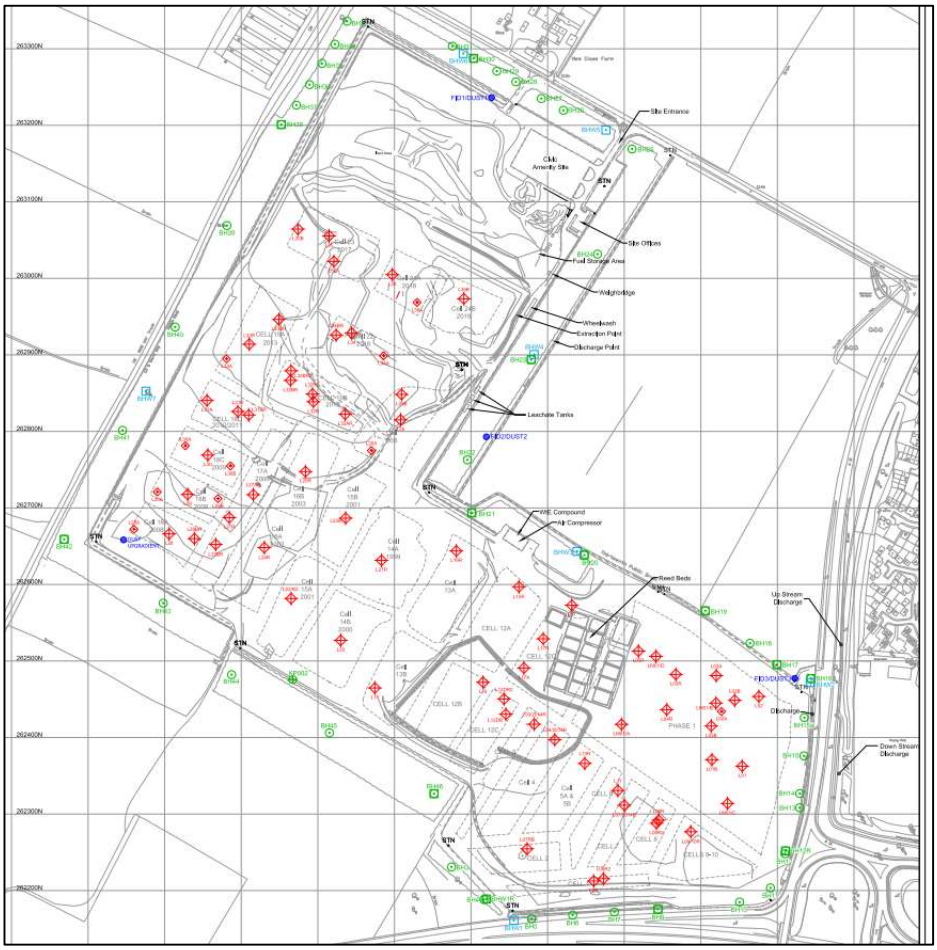
1714 Milton Landfill
Environmental Permit Variation Application
March 2022

NON TECHNICAL SUMMARY

Milton Landfill is a non-hazardous landfill, which is located on, Butt Lane, Milton, Cambridgshire, CB24 6DQ, approximately 4km north of Cambridge city centre. It can be located by National Grid Reference TL 465 632.

The site is operated by FCC Environment, under permit number BV4584IU, originally issued in 2005 and most recently varied in 2016. Landfilling has been undertaken at the site since the 1980s. Earlier phases of landfilling included some hazardous wastes. Landfilling in Phases I and II is complete and the site is progressing towards the remaining few cells in Phase III, towards the north of the site, as shown in Figure 1.

Figure 1: Site Layout (taken from MEPP)



A permit variation application is being made to address a number of issues as listed below:

- To revise the leachate compliance levels;
- To increase the annual tonnages of waste and restoration materials;
- To surrender small areas of land, which have not been landfilled;
- To include new groundwater monitoring boreholes and associated compliance limits;
- To reduce the number of leachate wells used for regular monitoring;
- A revised surface water management scheme.

Leachate Compliance Levels

Milton Landfill has a Leachate Management Plan which is updated annually. This details the current leachate management infrastructure, demonstrating that new wells have been installed in Phase I during 2018 and several other wells have been installed during 2020 in Phase III, to improve and maintain leachate control.

As the site is approaching completion FCC are reviewing the governing leachate level. The option to raise the level is being considered, such that it is closer to the natural equilibrium which will establish once the site is complete and management control ceases. A detailed review of the geological conditions at the site demonstrates that worst case conditions for the east of the site are over conservative for other parts of the site. Higher levels are proposed site wide, with the Phase III levels on the west being higher than Phase I and II on the east.

Current leachate compliance levels are variable across the site. This is related partially to different base levels as the site has developed. Compliance levels are summarised in Table 1.

Table 1: Current Leachate Compliance Levels

Phase / Cell	Leachate Well	Limit (mAOD)	Cell base (mAOD)
Phase III - operational	L26, L26A, L28B, L32R2, L32AR, L32BR2, L33R, L33A, L33BR	6.5	3.01 – 4.9
Phase I	All cells	6.5	-3.68 – 5.69
Phase II Cell 3	L03/2014R	8.1	4.9
Phase II Cell 2	L07RB	8	5.35
Phase II Cell 6	L11	8.4	6.38
Phase III Cell 12C	L12DR2	9.5	5.36
Phase III Cell 12A	L15R	8	6.01
All remaining cells*		6.5	

It is understood that the general compliance level of 6.5m AOD was introduced to maintain leachate below the lowest level of the River Terrace Deposits, the base of which is at 6.7m AOD at the lowest point on the east of the site. This would give 0.2m of hydraulic containment with respect to the base of the River Terrace Deposits.

The borehole logs for the current monitoring network reveal that the base of the shallow River Terrace Deposits is around 9m AOD, or higher in the western half of the site, with the base as high as 10.4m AOD in borehole W07. Therefore, lateral migration of leachate in to the River

Terrace Deposits cannot occur when leachate levels are compliant.

A risk assessment has been undertaken to determine a suitable rise in leachate compliance levels. For the majority of the site this would maintain a minimum of 0.2m hydraulic containment with respect to the base of the River Terrace Deposits. The degree of hydraulic containment with respect to the groundwater level in the River Terrace Deposits will obviously be greater than that relative to the base of the deposits. For a short section of the eastern site perimeter a quantitative seepage assessment has been undertaken. Here leachate levels would rise above the base of the River Terrace Deposits and just slightly above the average groundwater level, which is approximately 1m above the base of the deposits. A worst case assessment of the potential effects of lateral migration of leachate into the River Terrace Deposits has been undertaken, which concludes that the likelihood of adverse impact is low.

The base of the site rests on 16 – 25m of low permeability Gault Clay, which in turn overlies the Greensand aquifer. The thickness of Gault Clay is greater than the thickness of 10m referred to as being a protective cover above an aquifer, referenced in the Environment Agency's recently updated Manual for the Production of Groundwater Source Protection Zones. This means the risk of leachate migration to the Lower Greensand is very low. However, the HRA has also included a quantitative assessment of risks to the Greensand aquifer at depth below the confining thickness of Gault Clay. The risk assessment has been undertaken, using Landsim and results concur with a low level of risk to the Lower Greensand from current and proposed leachate compliance levels.

It is recommended that compliance levels are raised to 9m AOD in Phase III on the west, 8.5m AOD in the east of Phase III (Cells 12A, 12C, 13A, 14A, 15B and 20B) and 8m AOD in Phases I and II on the east. Where current cell-specific compliance limits are slightly higher than these proposed increases, no change will be required. Full details of the proposed changes are presented in McDonnell Cole Ltd: 2021: Hydrogeological Risk Assessment for Milton Landfill. Report reference 1714-HRA-R2.1.

Revisions to the designated leachate monitoring wells

In addition to the review of leachate levels, FCC seeks to consolidate the monitoring of leachate quality in line with Regulatory Position Statement (RPS) 156. The site has a large number of retro-drilled wells and subdivided cells. Monitoring wells have been selected to provide an adequate number of monitoring points in line with RPS 156, as well as being representative of all areas of the site. A new list of designated monitoring wells for assessing leachate quality is proposed. All wells will continue to be monitored for leachate level.

Annual Waste Tonnages

The permit variation will also be used to address annual waste input limits. The current approved tonnages are 150,000 of non-hazardous waste per annum. FCC seeks to increase this to 200,000 tonnes per annum to cover recent increases in tonnages arriving to site. This increase will allow cells to be completed and capped more quickly, which will be beneficial to leachate management.

A revised Restoration Plan is presented. This incroporates the tonnages required to achieve final restoration of the site, which has been based on recent topographical surveys.

Low Risk Surrender

A narrow area of land adjacent to the eastern perimeter of the landfill is required for improvement works to the adjacent highways (A10/A14). The area has been investigated by trial pitting and has been proven to be outside the area of landfilling. This has been discussed with the Environment Agency and it has been agreed that the land can be removed from the current landfill permit boundary as a low risk surrender. Details of the investigations and drawings of the area for surrender are presented in McDonnell Cole Ltd document 1714-LRS: Supporting Document for Low Risk Surrender.

An area north of the landfill area, adjacent to the household waste site has also been identified for surrender. This has been used for storage of materials over a concrete surface. The area has been cleared and will be surrendered for potential extension of the household waste site.

Replacement Boreholes

As part of the highway improvements two of the perimeter monitoring boreholes have been compromised. Therefore, replacements have been constructed. The water quality from the new installations has been reviewed and water quality compliance limits are proposed. Details of the water quality, new compliance limits and the borehole logs are presented in the HRA.

Updated Documents

A revised gas risk assessment has been prepared by Byrne Looby, 2021, reference 5375-R001.

A revised stability risk assessment has been undertaken by Sirius, 2021, reference WR7788, Rev 2.

A revised detailed Surface Water Management Plan has been produced by Sirius, 2020, reference WR7544/01. This incorporates a new attenuation lagoon in the northeast of the site, to take clean surface water runoff. Discharge from the lagoon will be to the Thirteenth Public Drain. The current environmental permit includes a surface water discharge point. This was previously used by an effluent treatment plant, which is no longer present on site. Monitoring of the discharge from the new attenuation pond to the Thirteenth Public Drain will continue in line with the existing permit conditions. The permit boundary will be extended slightly to the east to accommodate the lagoon.

A revised Environmental Risk Assessment has been produced by McDonnell Cole Ltd, 2021, reference 1714-ERA, to account for the changes proposed in this environmental permit variation.