Permitting decisions- Refusal

We have decided to refuse the variation for Grunty Fen Landfill Site operated by East Waste Limited.

The variation application is to amend leachate level compliance limits from 1.5 m above base to a defined mAOD, remove groundwater compliance limits, removal of weekly gas compound readings and update Permit Table S3.2 to reflect site management (gas engine and flare).

We consider that in reaching that decision we have taken into account all relevant considerations and legal requirements.

Purpose of this document

This decision document provides a record of the decision making process. It:

- highlights key issues in the determination
- gives reasons for refusal
- summarises the decision making process in the decision considerations section to show how the main relevant factors have been taken into account.

Unless the decision document specifies otherwise, we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the refusal notice.

Summary of our decision

Reasons for refusal

The Application is refused on the following grounds:

We are not satisfied that the Operator has provided adequate justification or robust evidence to support removing groundwater quality compliance limits from the permit, or sufficient evidence to demonstrate that raising leachate levels would present an acceptable risk to groundwater or surface water. The refusal reasons are set out in detail in the key issues section below.

We have reached this decision in line with the following regulations, objectives and requirements of Environmental Permitting Regulations (England and Wales) Regulations 2016 Schedule 22 paragraph 6 and 7 parts (3) and (5), Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

Key issues of the decision

Groundwater Compliance Limit removal

We are not satisfied the Operator provides adequate justification or robust evidence to remove groundwater quality compliance limits from the permit's technical precautions. Below is summary reasoning for our conclusion.

The Operator seeks to remove all groundwater quality compliance limits from the permit. These limits are essential for identifying landfill-derived contamination, assessing whether impacts are unacceptable and meeting statutory requirements under the Environmental Permitting Regulations 2016. Their removal would prevent the permit from achieving these purposes and is therefore unacceptable.

The Operator uses various interpretations and explanations of what they conclude their data shows, including conclusions about relationships between the site geology interpretation and water it contains, with groundwater legislation, regulation and GOV.UK guidance to substantiate their conclusions:

- about the Water Framework Directive (WFD) designations and definitions of groundwater, water body, aquifer, and guidance presented in UK Technical Advisory Group on the Water Framework Directive Defining & Reporting on Groundwater Bodies – Final 300312 (UKTAG-Final 300312);
- about the bedrock strata the site is constructed in not being considered to constitute either an "aquifer" or "body of groundwater" as defined by the Water Framework Directive,
- that the WFD quantifies an aquifer as a rock bearing a sustainable useable quantity of water in excess of 10m3/d on average, a criterion not met by the Kimmeridge Clay "porewater" (site data)
- regarding their observations of water within monitoring boreholes conceptually being "porewater" not groundwater.
- that "porewater" within the clay geological bedrock as a whole is not laterally extensive or of sufficient volumes / yield (or ability to flow), hence the aquifer designation of Unproductive Strata;
- that distinct geological horizons containing 'Shells' in the site geology discussed in previous reviews are not laterally extensive, or of sufficient thickness to link credible volumes of water to a receptor, and or contain sufficient water to fulfil the role of a "water body" as defined by the Water Framework Directive;
- that the geology in which the site is constructed being unproductive strata,
- that the Kimmeridge Clay and underlying Ampthill Clay the site has potential to impact, cannot be considered groundwater pathways or receptors.

Conclusion: The Environment Agency is not satisfied with the Operator's conclusions regarding the matters in the bullet points immediately above for reasons summarised below.

The geology the site is constructed in is the Kimmeridge Clay (c.0.5-1m thick), underlain by the Ampthill Clay (c.27m), which the Operator correctly identifies are designated by the Environment Agency as unproductive strata. Although unproductive strata are largely unable to provide usable water supplies and unlikely to have surface water and wetland ecosystems dependent on them, they can contain groundwater.

The Operator's justification is based on their conclusion that water in the Kimmeridge Clay and underlying Ampthill Clay constitutes "porewater" rather than groundwater, and that no groundwater pathways or receptors exist. To substantiate their conclusion, they provide interpretation in their Hydrogeological Risk Assessment Review – K0165-BLP-R-03-2 - April 2024 (2024 HRAR) of Water Framework Directive definitions and specific UKTAG-Final 300312 guidance text to support their new interpretation of the site-specific geology which conflicts with:

1. the long pre-established hydrogeological conceptual understanding of the site (over 30-38 years), which recognises the presence of groundwater within the geology in which the site is constructed and which has been consistently agreed between the Operator, the regulator and the Planning Inspector since 1997 Appeal Decision,
2. the regulatory history of the Site, and
3. previous assessments conducted over the landfill's operational life.

It is the applicant's responsibility to demonstrate that this established understanding of the CSM should change in light of new, site-specific information.

Previous Appeal

In the case of this application, the evidence and information submitted do not demonstrate any material change to the original conceptual site model as adopted by the Planning Inspector in previous appeal decisions.

Permit history not discussed in the permit variation application shows on 9th July 1996 East Waste Limited (Operator) appealed the Cambridgeshire County Council's Notice of Waste Management Licence Modification dated 8th February 1996 for Grunty Fen Landfill Site issued under Section 37 of the Environmental Protection Act 1990 (1996 Appeal).

Waste Management Licence conditions the Operator appealed against included site groundwater compliance monitoring conditions including frequency of monitoring.

The permit appeal process for the Planning Inspectorate decision for ENVIRONMENTAL PROTECTION ACT 1990 - SECTION 43 APPEAL BY EAST WASTE LTD ref: T/APP/WM/96/62/P5 dated 16 April 1997 and associated documents includes statements we consider show the Operator presented fundamentally the same reasoning they present in their current application to remove groundwater compliance monitoring provisions of the extant permit.

The Operator's 1996 Appeal included the Operator statement that:

'*the Grunty Fen site is situated in an area which is designated as non-aquifer where the geology is predominantly clay* and that *the Agency has produced no evidence of the usability, utilisation or potential abstraction rates of groundwater*'.

The Appeal Decision April 1997 shows the Planning Inspector concluded:

- 'Paragraph 12 of Regulation 15 of the Waste Management Licensing Regulations 1994 states that expressions used in the Regulation have the same meaning as in Council Directive 80/68/EEC. In the Directive groundwater is defined as ''all water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil''. It does not specify that the definition is dependent on whether or not groundwater is useable or whether strata are classified as an aquifer. Groundwater in line with the Directive exists at the site and, therefore in line with paragraphs 1 (b) and (8) of Regulation 15 of the Waste Management Licensing Regulations 1994 the inclusion of a time limit within the licence is appropriate'.

- 'the frequency of groundwater monitoring should reflect the current frequency as set out in the 1 October 1992 licence modification'.

The Planning Inspectorate's 1997 Appeal Decision definitively established that groundwater exists in the geology beneath the site, irrespective of aquifer productivity, and confirmed the need for groundwater compliance monitoring.

The groundwater related provisions of the Waste Management Licensing Regulations 1994 (WML Regulations 1994) and Council Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances are referenced in the Appeal Decision April 1997. These provisions have been retained in the regulatory framework of the Environmental Permitting Regulations (England and Wales) Regulations 2016 ('EPR2016') and Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the '2017 Regulations') which superseded the WML Regulations 1994 and Council Directive 80/68/EEC. The retention of the groundwater provisions as explained in this paragraph means the interpretations in the Appeal Decision April 1997 remain as valid in the modern regulation framework as at the time of the Appeal Decision April 1997.

Hydrogeological Risk Assessment (HRA)

It is our understanding that all Hydrogeological Risk Assessment (HRA) and Hydrogeological Risk Assessment Review (HRAR) documents since the Appeal Decision April 1997, except the one submitted with the application, acknowledged the presence of groundwater in the site geology and treated it as part of the conceptual site model including as a receptor. There is no evidence showing occurrence of any geological changes at the site since 1997 that would alter the geology, or hydrogeological properties of the Site conceptual model.

The Operator's 2024 HRAR refers to a series of five HRA's/HRAR's between 2004 and 2021 and these were documents previously used to review the hydrogeological risk status. The listed documents omit reference to a 2015 HRA we know exists for the site and provides no explanation for the reason for this omission. Although, the documents referenced were not included in the application submission, our records show the 2015 HRA and 2016 HRAR contain statements acknowledging the presence of groundwater within the geology underlying the site, consistent with Planning Inspector's conclusions in 1997.

The Operator provides various site specific geological and hydrogeological data, data assessments / interpretations in their application, and provide their conclusions of what those data assessments may show about the Site geology and water it contains. The Operator has compared their conclusions on these matters with various provisions of current groundwater legislation, regulation and GOV.UK guidance to try to substantiate their opinion as to why:

- water in the geology of the site is 'porewater' and not groundwater, and
- no groundwater 'pathways' or 'receptors' exist at the site for pollutants to leak from the site into.

Regarding whether pore-water or groundwater is present in the geology surrounding the site, the Operator has not shown to our satisfaction their new site-specific data is suitable to replace previously long-standing and agreed site investigation data about the site's geological and groundwater conditions, and the site's conceptual site model.

We conclude that there has been no material change to the geology in which the site is constructed since its original development, and a substantial number of the Operator's conclusions in the current application are inconsistent, and in some cases contradictory to:

- findings of the 1997 Planning Inspectorate Appeal Decision regarding the presence of groundwater at the site and the need for groundwater compliance monitoring,
- site-specific data and interpretations at the time of site design and construction, specifically the Peter Scott Engineering Guide and WS Atkins Assessment Report 1992,
- pre-established Site-specific geological and hydrogeological data assessments and conclusions agreed between the Operator and

Environment Agency since the Planning Inspectorate Appeal Decision 1997 and prior to the variation application now submitted,
- published British Geological Survey (BGS) literature confirming groundwater within the Kimmeridge Clay in locations comparable and geographically close to the site (6km West-Northwest).

The Operator's 2024 HRAR presents statements explaining they believe their groundwater monitoring boreholes act as "collection sumps" for surface-derived water. Were the Operator to be correct on this matter we conclude it raises serious concerns about the reliability of groundwater data the Operator has used in their current assessments. Specifically, it would:

- undermine the validity of the Operator's groundwater interpretations and assessment conclusions, and
- require robust, site-specific alternative data to support any reassessment, data which is currently unavailable.

The Environment Agency cannot rely on the Operator's conclusions regarding the presence of groundwater within the site's geology when groundwater monitoring data on which those conclusions depend is compromised.

Technical Summary Assessment

The Operator's document 2024 Technical Summary – Kimmeridge Clay Hydraulics argues the current conceptualisation is incorrect and out of date, and the only future pathway of concern is overtopping of sidewall containment.

The Operator argues the Kimmeridge Clay and Ampthill Clay are not receptors. To support their argument, the Operator conducted hydraulic tests in June 2023 on BHM12, BHM6 and BHM9, and rising heads tests on BHM5, BHM10 and BHM3. The Operator has not explained within the application why BHM7 was excluded which had the most appreciable water strike.

The Operator's assessment shows the hydraulic tests all yielded <10m^3 which the Operator concludes in Section 2.4 show ''*these associated thin (impersistent layers) in addition to the bedrock strata are not considered to constitute either an "aquifer" or "body of groundwater" as defined by the Water Framework Directive*'.

The document then goes on to state in Section 3 ''*The WFD quantifies an aquifer as a rock bearing a sustainable useable quantity of water in excess of 10m^3/d on average, a criteria not met by the Kimmeridge (site data)*''.

The value of 10m^3/d the Operator refers to does not define what constitutes groundwater as this is defined in Article 2 Clause 2 of the Water Framework Directive but rather defines specific groundwater bodies requiring greater protection at a regional and national scale. Protection of groundwater at the local scale is achieved through the Environmental Permitting Regulations (England and Wales) Regulations 2016. The UKTAG-Final 300312 document cited by the Operator confirms this distinction.

Whilst assessing the application, our assessment shows the Operator's hydraulic tests were conducted in the hottest June on record, following a dry May, and did not consider the seasonal variations in groundwater levels shown in Figure 14 of the HRAR.

Peter Scott Engineering Report states: *It would be unwise to minimise the possibility of horizontal movement of fluids through mudstone. The presence of brown weathering on discontinuities in Mudstone A in borehole 11, suggest fracture permeability. The lack of water may be more and expression of low rainfall, and possibility the disruption of groundwater flow at shallow levels by the construction of cells*.'

The 1996 Appeal documents show at that time the site had six groundwater compliance monitoring boreholes based on the provisions of Waste Management Paper 4 (WMP4).

'Table 2.2.8 The trigger levels for emissions into groundwater' contained in the permit determined 29/04/2005 under Pollution Prevention and Control (England and Wales) Regulations 2000 Landfill (England and Wales) Regulations 2002 (2005 PPC permit) also contained six groundwater compliance monitoring points as 'Emission point references: BHM1, BHM2, BHM5, BHM7, BHM9, and BHM11.

These monitoring point locations and numbering are consistent with groundwater monitoring locations shown on a site map contemporary to the 1996 Appeal.

'Table S3.4 Groundwater – emissions limits and monitoring requirements' of the extant permit includes groundwater compliance monitoring points BHM1, BHM2, BHM7, and BHM9 as shown on Operator drawing no. 65M174.

Although the current permit contains two fewer groundwater compliance monitoring points than those identified as necessary in April 1997 Appeal Decision and 2005 PPC permit, we conclude this reduction does not represent a significant change to the site's 1997 established groundwater compliance monitoring points.

We reach this conclusion because the only change in groundwater compliance monitoring between the 2005 PPC permit and the current permit is the removal of boreholes BHM5 and BHM11. These boreholes were located up gradient of the previously postulated south-easterly groundwater flow directions, and their removal is consistent with the current permitting approach to groundwater compliance monitoring which is based on GOV.UK guidance that supersedes WMP4 guidance.

The Operator's 2024 HRAR quotes the UKTAG-Final 300312 statement that: '*In reality, pore waters in low permeability subsoils (e.g. clays) do not represent groundwater as a receptor, because they do not provide a useful water resource and pollutants going to surface water receptors travel at velocities that are measured on a millimetre-scale per year. Therefore, water in these deposits should not be subject to the same management objectives as, for example, aquifers or groundwater bodies'* and relies on this statement and their Site-

specific data of the geology surrounding the site to justify removal of the existing groundwater compliance monitoring.

The Operator's application of UKTAG-Final 300312 statement above fails to account for the Appeal Decision April 1997 and the long established conceptual site model. Our view following this variation application fails to demonstrate that the groundwater does not exist on site and additionally to this, the UKTAG-Final 300312 statement does not show groundwater management objectives for a landfill are unnecessary, which is the outcome the Operator's proposal would create.

Groundwater Assessment Conclusion

For the reasons set out above, the Environment Agency is not satisfied the application shows the long-established conceptual understanding that groundwater is present in the site's geology no longer applies, or that the proposal included in the variation would result in the permit:

- containing requirements needed for the purpose of what groundwater quality compliance limits are for,
- achieving the conclusions of the Planning Inspectorate Appeal Decision 1997 that directly relate to the groundwater compliance monitoring technical precautions of the extant permit, or
- meeting the objectives and requirements of Environmental Permitting Regulations (England and Wales) Regulations 2016 Schedule 22 paragraph 6 and 7 parts (3) and (5), Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

Following assessment of the variation application, our view on the above has not changed with regards to the previous appeal decisions.
The Operator's reliance on the UKTAG-Final 300312 document to justify the removal of groundwater compliance monitoring cannot override the regulatory framework for this site. The UKTAG-Final 300312 text cited is generic, non-statutory guidance published in 2012, long after the Appeal Decision of April 1997, and it does not address nor does it have authority to modify the site-specific requirements defined by the permit and our assessment of the evidence provided.

The 1997 Appeal Decision is in our view relevant today and established a clear and detailed conceptual site model (CSM) for the site and determined that groundwater (including in low-permeability strata and porewater) represented a receptor requiring ongoing monitoring and control to manage leachate-related risks. These findings form part of the site's regulatory history and remains valid unless formally varied through the appropriate permitting mechanisms. The Operator's variation application does not provide any new technical evidence capable of displacing the Inspector's conclusions, nor does it demonstrate to us that the hydrogeological risks, that we believe still exist, identified in the Appeal Decision have been eliminated.

By contrast, UKTAG-Final 300312 is a broad national guidance document intended to support the classification and reporting of groundwater bodies under the Water Framework Directive. It does not provide direction on landfill-specific compliance regimes, nor does it assess the hydrogeological characteristics of this site. The generalised UKTAG-Final 300312 statement regarding porewater in low-permeability clays does not equate to a regulatory conclusion that groundwater management objectives at landfill sites are unnecessary. It simply describes the behaviour of such materials in a regional groundwater context and does not override site-specific regulatory determinations based on detailed evidence and risk assessment.

The Operator's interpretation that because UKTAG-Final 300312 notes that porewater in clays may not represent a "useful water resource" means groundwater compliance monitoring at this site is no longer required, misapplies the purpose and scope of the UKTAG guidance. Groundwater compliance points at landfills are not established to protect abstractions; they are established to demonstrate containment performance, confirm compliance with Environmental Quality Standards, and manage risks of leachate escape to any environmental receptor, irrespective of resource value. Nothing in UKTAG-Final 300312 addresses these landfill-specific functions or concludes that monitoring requirements should be withdrawn under such circumstances. The UKTAG-Final 300312 guidance states that '*Successful management of groundwater requires consideration of the spatial extent of the groundwater body. The focus of the WFD status assessment(s) is on regional management issues;* ***with local scale "prevent or limit" management issues largely falling under the remit of other legislative and regulatory controls, e.g. Habitats Directive, IPPC Directive, Groundwater Directive etc****.'* This shows that the UKTAG-Final 300312 document referred to only applies to Defining & Reporting on Groundwater Bodies and is not something used for ensuring the EPR 2016 Prevent and Limit requirements are satisfied.

In addition, the temporal relationship between the two documents is critical. The UKTAG-Final 300312 report was published fifteen years after the Appeal Decision and could not have informed the Inspector's assessment. A later, non-statutory technical advisory document cannot retrospectively amend, weaken, or invalidate the regulatory obligations determined through the permit.

For these reasons, the Operator has not demonstrated that the requirements of the 1997 Appeal Decision are obsolete or that the site's long-established conceptual site model has fundamentally changed. Consequently, the UKTAG-Final 300312 statements cited provide no valid basis for removing groundwater compliance monitoring at this site, and the Operator's proposal would inappropriately eliminate essential groundwater management objectives that remain necessary to regulate leachate containment and ensure protection of the wider environment.

Leachate Level increase proposal

We are not satisfied the Operator provides adequate justification or robust evidence to increase the leachate level compliance limits 'Table S3.1 – Leachate level limits and monitoring requirements' of the extant permit based on:

- the 1997 Appeal Decision;
- the requirements of the EA's Manage leachate guidance;
- the absence of a Groundwater Risk Assessment;
- the absence of evidence demonstrating monitoring infrastructure adequacy;
- the absence of containment performance assessment under increased leachate head; and
- the absence of any new information that overturns the established conceptual site model,

The Environment Agency is not satisfied that the Operator has demonstrated that raising leachate levels would present acceptable risk to groundwater or surface water. Below is summary reasoning for our conclusion.

The proposed variation seeks to replace the existing leachate compliance limits (1.5 m above base) with a new "overtopping-based" elevation system tied to freeboard beneath the sidewalls ('freeboard' is the difference between the top surface elevation of leachate acting against the landfill cell side wall containment engineering and the elevation of the top of the landfill cell side wall containment engineering, it is synonymous with the term 'stand-off')
There is an absence of suitable groundwater risk assessment containing the suitable data and data analysis / interpretation assessing the proposal against each of the criteria Landfill Operator's: environmental permits - Manage leachate - Guidance - GOV.UK show's needs to, and for some criteria must, be included in such risk assessment.

Absence of the required risk assessment may result from the Operator's conclusion that groundwater is non-existent at this site, a conclusion we do not agree with *"Leachate level control is not required to protect a non-existent groundwater resource. Surface water (drainage ditches) can be protected by managing leachate to a safe elevation below the sidewalls of the site at an elevation below 'overtop level'." For* reasons explained in the 'Key Issues of the decision – Groundwater Compliance Limit removal' we don't agree with this Operator conclusion, and conclude the application needs to include the risk assessment specified in Landfill Operator's: environmental permits - Manage leachate - Guidance - GOV.UK.

'Table S3.1 – Leachate level limits and monitoring requirements' in the extant permit shows leachate level monitoring standard and method needs to be as specified in LFTGN02 to protect the Environment or such other subsequent guidance as may be agreed in writing with the Environment Agency. The

variation application does not look to change the leachate monitoring method specified by the extant permit.

The Operator seeks their proposed leachate level increase part of their variation application without:

- providing a Groundwater Risk Assessment (GRA) specific to assessing the risk of the proposed leachate levels to groundwater which meets the minimum standard of Landfill Operator's: environmental permits - Manage leachate - Guidance - GOV.UK (Manage Leachate), and which Manage Leachate guidance explains the proposed increase in leachate levels must include for proposed increases to leachate compliance levels,
- providing suitable evidence that the sites groundwater quality data is reliable for assessing whether there is evidence of existing groundwater pollution due to leachate from the cells or phases where increased leachate levels is proposed, which our leachate guidance mentioned above shows is required for this part of the application,
- the Operator knowing what the minimum elevation of the top of the sidewall containment engineering is, or showing where in the site that minimum elevation is, critical information needed when wanting to move to operate a sites leachate levels using a small leachate 'freeboard' elevation based compliance system,
- providing sufficient and suitable evidence showing the sites leachate level monitoring method adheres to LFTGN02 requirements, despite Table S3.1 – Leachate level limits and monitoring requirements in the extant permit requiring adherence to this guidance. The application provides information that we conclude shows the sites leachate level monitoring does not meet the minimum standards of LFTGN02 because:

    - the application shows not all the sites landfill cells possess the minimum number of leachate level monitoring points LFTGN02 shows a site of this size and number of waste cells requires, with some landfill waste cells bordering sensitive geology only possessing one leachate monitoring well of dual purpose (extraction and monitoring), which is less than the minimum standard the LFTGN02 requires (two monitoring points remote from the point of abstraction.) Some landfill waste cells are shown to be positioned, designed, operated, and monitored in ways we conclude result in those wells being incapable of providing reliably accurate leachate level monitoring data, with the high degree of confidence we believe is required, to show control of leachate and leachate levels at elevations that ensure necessary freeboard is achieved and preventing leachate overtopping the sidewall containment engineering and adversely impacting groundwater or off site.

    - it is not shown to our satisfaction the sites leachate level monitoring infrastructure and monitoring method for all the landfill cells is fit for purpose and capable of providing reliably accurate rest leachate levels

(leachate levels that have fully recovered from effect of leachate extraction either from the monitoring point leachate level is measured or an adjacent monitoring point), particularly in the critical high risk cell side wall areas where risk of leachate overtopping the sites containment engineering into the environment exists.

- although the Operator reports their leachate levels obtained from the leachate monitoring wells where leachate extraction / pumping also takes place, are recorded 24hrs after the pumping from the well has ceased, the application contains no data showing how the 24hr period was determined as appropriate for ensuring reliable rest leachate levels are recorded for the leachate level monitoring points, data LFTGN02 explains should be provided and checked annually. This means we have low confidence.

- showing, as Landfill Operator's: environmental permits - Manage leachate - Guidance - GOV.UK explains, requires for applications to increase leachate levels, that the site's existing leachate management (infrastructure, monitoring method, and collection system) in all the affected landfill cells can transport leachate to the extraction sumps, both before and after the increase in leachate level or maintain the current or proposed leachate level with the level of control and precision required, because:

  - some of the Operator's most recent (July – September 2025) leachate level data show leachate levels greater than the permit compliance limit of 1.5m above the base, particularly evident with leachate levels reported for cells 8/9Ext and 4,

  - some critical leachate level graphical data used in the application is too cluttered to allow meaningful reliable interpretation and conclusions to be drawn about:
    - leachate level trends relative to sidewall elevations;
    - the effectiveness of existing leachate extraction;
    - compliance with the current 1.5 m above base leachate level limit,

  - some of the leachate level monitoring wells are retro-drilled wells and are therefore not in direct connection with the basal drainage system or original leachate extraction sump. Such wells cannot extract leachate collected and transported by the sites leachate drainage blanket or from the original extraction sump connected into that leachate drainage system, conditions which create uncertainty with representativeness of leachate levels reported from these wells and leachate extraction efficiency preventing showing with high confidence whether the existing leachate drainage and extraction system can effectively manage current and proposed leachate levels,

  - some of the Operator's information and explanations are unclear and indicating that Cell 3, located in the northern part of the site within the

permitted boundary, contains only a retro-drilled well and no leachate extraction pump. If this is the case, leachate management within the cell may be unreliable, and the resulting leachate level monitoring data may not provide sufficient confidence that the required freeboard is being maintained along the cell's northern sidewall containment engineering, which is adjacent to sensitive groundwater receptors.

The application does not include sufficient data to validate the Operator's explanations that leachate removal rates at the site have been capable of maintaining compliance with the current 1.5m head permit limit. Such data is essential to enable us to assess whether the drain/extraction system can maintain higher levels applied for. Our assessment found there is absence of data and data analysis suitable for interpreting the relationship between, and response of, leachate levels to the individual or combined rates and volumes of leachate extracted (monthly and/or annually) from each landfill cell, and from the site as a whole, data and data analysis that would typically be required to support explanations about:

- the relationship between leachate extraction and resultant leachate levels, and
- whether leachate drainage and extraction systems can maintain leachate levels in the site.

The absence of the information detailed in the above means that the Operator has not provided sufficient evidence to demonstrate leachate monitoring infrastructure and methods comply with LFTGN02 and that the site's leachate level monitoring system can reliably identify, measure, and control the risk of leachate impacting groundwater beyond the landfill containment engineering. Furthermore, deficiencies in monitoring well design, location, number, representativeness, and leachate level recovery verification reduce confidence that reported leachate levels reflect actual resting leachate conditions across the landfill, particularly in the highest risk sidewall areas. In the absence of clear evidence that the leachate drainage, collection and extraction systems can effectively maintain and control either current or increased leachate levels, together with a lack of analysis explaining historic exceedances of permit limits and the relationship between extraction rates and leachate levels, we cannot conclude with confidence that the monitoring data are fit for purpose or capable of providing an adequate early warning of containment failure or loss of leachate control that may arise from the proposed increase in leachate levels.

Without a site-specific Groundwater Risk Assessment, reliable groundwater quality data, accurate knowledge of the minimum sidewall containment elevations, and robust evidence that leachate monitoring infrastructure and methods comply with LFTGN02 and are capable of maintaining leachate levels are the proposed levels and reliably showing meeting those leachate levels, there is no robust basis for us to determine the freeboard necessary to prevent leachate overtopping the containment system or for assessing whether current or proposed leachate levels pose an unacceptable risk to groundwater.

In Section 5 of the Operator's Technical Note (April 2024), the Operator concludes:

"Leachate level control is not required to protect a non-existent groundwater resource. Surface water (drainage ditches) can be protected by managing leachate to a safe elevation below the sidewalls of the site at an elevation below 'overtop level'."

We do not accept this conclusion. It is inconsistent with:

- the current Environment Agency leachate management guidance (Landfill Operator's: environmental permits - Manage leachate - Guidance - GOV.UK).
- the binding regulatory findings of the Appeal Decision 45534, 16 April 1997

The Operator has not provided the required groundwater risk assessment in support of their proposal to significantly alter (increase) leachate levels, and our assessment concludes there is insufficient reliable groundwater quality and leachate level information for us to accept the Operator's proposal.

The key issues section on groundwater included within this decision document explains our position regarding groundwater being present on site and is therefore a receptor to protect.

Relevant Regulatory History and Requirements

Findings of the 1997 Appeal Decision

The Appeal Inspector's findings in *Licence Modification Appeal 45534* (16 April 1997) remain part of the site's regulatory baseline:

- Appeal Decision Paragraphs 8-10 established groundwater is present beneath the site under the Directive 80/68/EEC definition, regardless of aquifer classification or usefulness for abstraction. This remains the legal foundation for all compliance controls at the site. The Operator's claim of a "non-existent groundwater resource" is therefore not supported by the regulatory history and cannot be relied upon to remove leachate control obligations.
- Leachate accumulation was an identified operational issue requiring management.
- Leachate monitoring and leachate level control were explicitly required under Conditions 9.3, 9.4 and 9.6 (See Paragraphs 34–42 of Appeal Decision 1997). The Inspector upheld these controls and did not permit their removal.
- The conceptual model recognised that containment performance depends on controlled leachate heads, not solely on overtopping risk (Paragraphs 5–7; 34–41

These findings establish that leachate control is part of the core technical precautions of the site.

There has been no material change since the previous applications seeking this amendment. Accordingly, the findings of the 1997 Appeal Decision remain relevant and provide further support for our conclusion that the proposed changes have not been adequately justified in this variation application.

Current EA Guidance – "Manage leachate"

The Environment Agency's published landfill guidance requires that any request to increase leachate levels must be supported by must be supported by a groundwater risk assessment including, as a minimum:

1. Predicted effects on groundwater quality.
2. How the Operator will maintain the revised leachate level.
3. Site-specific plans, drawings and cross sections of the existing basal liner, cell and phase separation bunds referenced to ordnance datum.
4. Site-specific leachate flow calculations.
5. Maximum leachate level – provision of a maximum leachate level and justified 'stand-off.'
6. Existing monitoring data.

The Operator has not included the necessary risk assessment as part of the application because as previously explained the Operator does not consider that groundwater exists within the site. As per our key issues section above on groundwater compliance limits the Environment Agency does not agree with this view because there is no evidence there have been changes to the site's geology since the original permit was granted and we consider that there has been nothing to change the way in which the Inspector dealt with groundwater present in the geology on the site in the Planning Inspector' decision letter following the appeal in 1997 Appeal Decision.

<u>Deficiencies in the Operator's Submission</u>

1. **Absence of a Groundwater Risk Assessment (GRA)** - The Operator has not submitted any GRA. As a result:
   - No assessment has been provided of the impact of higher leachate heads on hydraulic gradients, potential migration, or liner performance.
   - No modelling has been submitted to show that raised heads will not increase the risk of lateral movement through geological heterogeneities. The assessment provided of the relationship between leachate levels and water levels in the Kimmeridge Clay or Ampthill Clay is insufficient as they assume groundwater is not present, hence they failed to take account of groundwater in their assessment.

This is a fundamental omission. Environment Agency guidance states that a GRA is mandatory where leachate levels are proposed to increase, as it is required to assess the risk to groundwater and other receptors from the proposed increase in leachate levels.

2. **Leachate Infrastructure** - Absence of sufficient evidence confirming monitoring infrastructure fitness-for-purpose. GOV.UK guidance states that applications to increase leachate levels will only be accepted where the leachate extraction and monitoring infrastructure is fit for purpose.

The Operator asserts that their monitoring infrastructure meets LFTGN02 but provides insufficient evidence to support this. Our assessment found:

- The site does not currently meet the minimum number of monitoring points required by LFTGN02 ("at least two monitoring points in addition to a sump for each hydraulically separated cell <5 ha").
- Several high-risk perimeter areas (cells 3, 7, 10) lack monitoring capable of reliably recording leachate conditions where risk is greatest.
- Ten of twelve monitoring wells (83%) are combined extraction/monitoring wells, which LFTGN02 warns is a well configuration that could produce misleading leachate levels unless specific monitoring methods and annual tests are undertaken.
- There is insufficient data showing the leachate level monitoring method adheres to LFTGN02 which is the appropriate guidance for the activity permitted.

The data is insufficient in showing the leachate collection system in all affected cells can transport leachate to the extraction sumps, both before and after the increase in leachate level. Therefore we cannot be satisfied that the drainage/extraction system can maintain higher leachate levels because:

- The leachate level monitoring infrastructure and method have not been shown by the Operator to our satisfaction to adhere to LFTGN02 and some of the recent monitoring shows leachate levels exceeded the current compliance limit of 1.5m above the base in Cells 8/9Ext and 4 (July–September 2025).
- Several retro-drilled wells are not connected to the leachate drainage blanket and therefore cannot extract leachate collected within the existing drainage system or the original extraction sump. As a result, the leachate levels reported from these wells may not be representative of conditions within the site, and the effectiveness of leachate extraction cannot be demonstrated. Therefore we cannot be satisfied that the current leachate drainage and extraction system can adequately manage existing and proposed leachate levels.
- Cell 3 located on the northern site boundary, which borders sensitive geology, contains only one retro-drilled well LR03R with no extraction pump, meaning there is no means of extracting leachate from cell 3, leaving no reliable method to control or verify leachate levels in that cell.

Given these deficiencies, we cannot be satisfied that the site has infrastructure capable of maintaining the proposed higher leachate levels or preventing unacceptable risks to the environment.

3. **Leachate Monitoring** - LFTGN02 states 'Routine groundwater or leachate level measurements from monitoring points should record the rest water level. If pumping is being carried out from either the monitoring point to be measured or an adjacent monitoring point, this could produce misleading level measurements.'

The Operator reports using a "24-hour pump suspension" but provides no recovery test data demonstrating how the 24hr period the operator specified has been derived, or how it was established as being appropriate for ensuring reliable rest leachate levels are recorded for the leachate level monitoring points. As a result:

- Reported leachate levels from pumped wells may significantly underrepresent true leachate levels.
- Monitoring data cannot reliably show achievement of the 'stand-off' distance the Operator has concluded their proposed leachate levels will achieve, or what the true standoff distance their leachate levels is.
- We are prevented from being satisfied that the Operator's proposed leachate levels represent an acceptable level of risk to groundwater in the site geology .
- A significant discrepancy (approximately 2.5 m) exists between leachate levels recorded in the pumped and unpumped wells in Cell 8/9Ext despite being <30 m apart. Without recovery testing, these differences cannot be interpreted reliably.

Retro-drilled wells (L03R2 and L08/9ExtR2) are not connected to the drainage blanket and may have drainage radii <50 m, making them unable to monitor perimeter leachate effectively.

4. **No evidence overturning the Appeal Decision conceptual model** - The Operator does not provide sufficient evidence to demonstrate that the Appeal Inspector's findings are no longer valid in respect of:
    - new geological evidence,
    - new hydrogeological characterisation, or
    - monitoring data of sufficient quality

The Operator's argument relies instead on a reinterpretation of UKTAG guidance, but the Appeal Decision already determined that groundwater exists at the site and must be protected (8–10). In summary the Operator has not provided the risk assessment information that the Environment Agency guidance requires in accordance with before any increase in leachate levels can be accepted, or which is sufficient to overturn the Appeal Decision conceptual model and groundwater presence in the site geology.

The evidence submitted with this application does not clearly demonstrate the absence of groundwater within the site geology.

5. **Consideration of Groundwater Data Quality -** We have significant concerns regarding the reliability of groundwater data (level and quality) used in the Operator's assessments. These concerns undermine the validity of current groundwater interpretations. Existing groundwater pollution cannot be confidently ruled out due to surface water ingress into groundwater monitoring boreholes adversely affecting leachate levels and groundwater quality as identified by the Operator. This situation means we can't reliably and robustly assess whether there is evidence of existing groundwater pollution due to leachate levels from the cells or phases where increase levels are proposed. Such an assessment is necessary as detailed in Landfill Operator's: environmental permits - Manage leachate - Guidance - GOV.UK (Manage Leachate).

6. **Consideration of Leachate Level Data Presentation** - The leachate level graph Figure 3 in the 2024 HRAR (1993–2023) is unclear because it is overly congested and not cell-specific. It does not allow meaningful interpretation of:
   - leachate level trends relative to sidewall top elevations;
   - leachate level compliance with the current 1.5 m limit, which is also compounded by the graphical data plot 'mAOD' vertical scale used and absence of showing the equivalent 'mAOD' of the 1.5 m compliance limit on the graph.
   - the effectiveness of leachate extraction;

The Operator has not provided a comparative analysis of leachate levels and extraction volumes. This analysis is essential to assess whether the leachate drainage, collection and extraction system can maintain higher levels, particularly given the Operator's assertion that leachate removal rates have maintained compliance with the current 1.5 m head permit limit. The Operator has also not validated the sidewall/cap interface levels around the perimeter of the waste containment, including at the junctions between waste cells. As a result, comparisons between graphed leachate level data and uncertain sidewall/cap interface minimum elevations cannot provide reliable groundwater risk conclusions based on either current or proposed freeboard. The Operator's documents acknowledge that this data was absent at the time of application.

7. **Data Required to Progress the Application** - The Operator's technical report assumes that the only relevant pathway is surface leachate breakout and that groundwater does not exist. This assumption is incorrect and leads to absence of the required groundwater risk assessment for increased leachate levels.

The 2024 HRAR fulfils the purpose of a six-yearly review as required in the permit but does not include the groundwater risk assessment required to address the risk resulting from changes to leachate levels and groundwater monitoring compliance limits. This is due to:

- the limited scope of 2024 HRAR;

- the absence of key data required by our guidance as specified in this document and
- deficiencies and uncertainties in site-specific leachate, groundwater, and engineering data.

We conclude there is currently insufficient reliable and robust data available for either the Operator or the Environment Agency to adequately complete a groundwater risk assessment of the proposed leachate level increased in a manner consistent with GOV.UK (Manage leachate).

The variation includes a request to amend the permit monitoring table S3.8 Landfill Gas – other monitoring requirements, to remove the weekly gas compound readings. The Environment Agency does not agree with the Operator that this limit can be removed because it is a minimum requirement. Monitoring is required as it is a safety issue to ensure that there is not too much oxygen present. There is scope within condition 3.5.1 to request a derogation from the required frequency from the local area officer and this to be considered on a case-by-case basis. Currently there is an agreement with the local Environment Agency area team to reduce this monitoring frequency. However, the Environment Agency cannot accept the change to this monitoring table in the permit, as the agreement could change with regards to this monitoring and would need to revert back to the limits in the table as a minimum requirement.

Other issues not resolved

The variation application has been refused on the principal reasons of unacceptable risk to groundwater and surface water, as explained above. There are however a number of additional issues in relation to the application that the Operator has not yet provided information that satisfies us. Should the Operator decide to re-apply for a variation of the permit in the future these matters will also need to be addressed. As the Environment Agency has decided to refuse the application on the principal issues of groundwater protection we consider it to be unreasonable to put the Applicant to the expense of trying to resolve these additional issues at this time.

Accordingly, we have not identified the issues below as reasons for refusal but remain dissatisfied with the information the Applicant has provided to date.

The variation application also requested an amendment of permit monitoring Table S3.2 Point source emissions to air, to reflect the site management of gas using a gas engine and flare. In order to assess this within a future variation, the application must include an engine downsize report and an updated gas management plant for the site. These were not included in this application.

The Environment Agency's role during permit determination is to assess the application that has been submitted and to reach a decision to grant or refuse based upon the information available. Once an application has been duly made, there is no requirement for the regulator to facilitate substantial redevelopment of key application documents in order to enable a permit to be granted. While Schedule 5 notices can be served on the applicant to obtain clarification or

supplementary information where necessary, their use is discretionary. They are not intended to provide an open-ended mechanism for applicants to undertake significant redesign, reworking or replacement of fundamental application documents where the regulator is already in a position to reach a decision. In this case, the concerns identified extend beyond matters that can reasonably be characterised as clarification and would require substantial revision of a number of key elements of the application.

Summary of our decision

The legal framework

In determining whether a proposed increase in landfill leachate levels can be permitted, the Environment Agency must be satisfied that the activity complies with the requirements of the Environmental Permitting (England and Wales) Regulations 2016, including the groundwater protection provisions for groundwater activities, and that it will not result in an unacceptable risk of pollution to groundwater or other controlled waters. The Agency also considers the objectives of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, ensuring the proposal will not cause deterioration in the status of any groundwater body or compromise compliance with environmental objectives, together with its duties under the Water Resources Act 1991 to protect controlled waters. In addition, the proposal is assessed against the performance requirements of the Landfill Directive and associated landfill permitting guidance, including whether the landfill engineering, leachate management system and hydrogeological risk assessment demonstrate that the increased leachate level will remain contained and will not lead to adverse impacts on groundwater quality or the environment.

Environmental Permitting (England and Wales) Regulations 2016 (EPR)
This is the primary regulatory mechanism controlling activities that may result in pollutants entering groundwater. Schedule 22 defines a **“groundwater activity”** and establishes the permitting requirements for direct and indirect inputs of pollutants to groundwater. Activities that could cause groundwater pollution generally require an environmental permit unless specifically exempt.
Examples include:

- Direct discharges of pollutants to groundwater.
- Activities that may result in indirect inputs through soil and subsoil.
- Certain waste, landfill, land spreading and industrial activities that pose a groundwater pollution risk.

The EPR groundwater regime incorporates the requirements formerly derived from:

- The **Groundwater Directive (2006/118/EC)**.
- The **Water Framework Directive (2000/60/EC)**., [assets.pub...ice.gov.uk]

A key principle is Schedule 22 that:

- **Hazardous substances** must not be directly discharged to groundwater.
- Inputs of **non-hazardous pollutants** must be prevented or limited so that groundwater quality objectives are not compromised.

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 - *2016 EPR together with WER 2017 have transposed groundwater requirements of the WFD 2000 and Groundwater Directive 2006 so the regulations therefore have ensured environmental requirements were not lost whilst facilitating in the change from old to new directives.*

Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 - *implement the requirements of the Water Framework Directive and require protection and improvement of groundwater bodies. They establish environmental objectives, including:*

- *Preventing deterioration of groundwater status.*
- *Protecting, enhancing and restoring groundwater bodies.*
- *Preventing or limiting inputs of pollutants to groundwater.*

Water Framework Directive 2000/60/EC

Water Resources Act 1991
The Water Resources Act provides broader powers to prevent and control water pollution. It includes offences relating to polluting controlled waters and underpins the Environment Agency's regulatory role in protecting groundwater resources.

Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (commonly referred to as the Landfill Directive).

For a proposed increase in landfill leachate levels, the Environment Agency considers the requirements of the Landfill Directive by assessing whether the landfill will continue to be operated in a manner that prevents or reduces, as far as possible, adverse effects on the environment, particularly pollution of groundwater, surface water and soil. The Agency evaluates whether the landfill engineering systems, leachate management infrastructure, and hydrogeological risk assessment demonstrate that the increased leachate levels will remain adequately contained within the landfill and that the long-term environmental performance of the site will not be compromised. The proposal must show that there will be no unacceptable increase in the likelihood of leachate escape, liner failure, or pollutant migration, and that the landfill will continue to meet the environmental protection objectives established under the Landfill Directive and implemented through the environmental permitting regime.

Decision considerations

Section 108 Deregulation Act 2015 - Growth Duty

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 100 of that Act in deciding whether to grant this permit variation.

Paragraph 1.3 of the guidance says:

“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance, and its purpose is not to achieve or pursue economic growth at the expense of necessary protections. This also promotes growth amongst legitimate Operator’s because the standards applied to the Operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.