

# **Environment Agency permitting decisions**

## **Bespoke permit**

We have decided to grant the permit for Sutton Courtenay (Phase 3) Landfill Site operated by Waste Recycling Group (Central) Limited.

The permit number is EPR/TP3330AT.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

## **Purpose of this document**

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

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

## **Structure of this document**

- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

## **Description of the main features of the Installation**

The permit is granted to Waste Recycling Group (Central) Limited to operate an installation carrying out activities covered by the description in Section 5.2 Part A(1)(a) in Part 1 to Schedule 1 of the Environmental Permitting Regulations - the disposal of waste in a landfill for non-hazardous waste and landfill.

The Sutton Courtenay Site is situated approximately 13 km to the south of the city of Oxford in Oxfordshire.

The Phase 3 Landfill will occupy quarry void resulting from historic gravel extraction in an area of approximately 11.4 hectares.

The site comprises an engineered containment system, including basal lining system, sidewall lining system, capping system and leachate monitoring/collection system. The phasing of the site will consist of Phases 1 to 4 which will be progressively constructed, filled, capped and restored.

The proposed non-hazardous (non-biodegradable) wastes to be deposited consist of excavation, construction/demolition wastes and similar industrial wastes with a low level of contamination.

The overall capacity of the installation is 1.14 million cubic metres. The Permit limits the disposal of waste to 450,000 tonnes per year.

The main emissions from the site are likely to be leachate, surface water, dust, odour, litter and mud and small amount of landfill gas.

The sensitive receptors include groundwater in the Lower Greensand deposit and superficial deposits to the north of the site boundary, the River Thames with a direct conceptual link from the site through the superficial deposits to the river and human receptors.

## **Key issues of the decision**

### **Leachate Drainage System and Artificial Sealing Liner**

Waste Recycling Group (Central) Limited, a subsidiary of FCC Environment (UK) Limited, submitted a permit application for the disposal of non-hazardous waste at their Sutton Courtenay (Phase 3) landfill site near Abingdon, Oxfordshire. The non-hazardous wastes will be restricted to wastes with a low biodegradable content identified as suitable for quarry restoration fill by HM Revenue and Customs in the Landfill Tax (Qualifying Material) Order 2011 (as amended).

In the application document the applicant (WRG) concluded that leachate collection and management is not necessary due to the restrictions on the nature of the wastes to be deposited and the quality of the leachate likely to be produced. However, WRG proposed a leachate monitoring chamber within each phase of land-filling to check that the quality of leachate is as expected but no drainage system was proposed. Data from UK soil investigations, leachate data from a hazardous landfill (Eardswick Hall) and a site in the Netherlands that had a similar waste inventory were used to determine the leachate source term for the site.

In justifying the proposal for requiring no leachate management, WRG stated that the intended waste mass would mainly comprise low permeability soils and that the leachate generated on site would be of such a quality that there would be no requirement to manage leachate head either in the short or long term.

The initial concerns we identified were as follows:

- Landfilling of the range of wastes proposed in this fashion is not typical and as such there are few permitted examples where data on leachate and gas can be examined.
- A single well within each phase increases the risk of returning unrepresentative results.
- The absence of a point of extraction linked to a drainage layer effectively eliminates any contingency action to remove any leachate generated. A target pad would allow a collection well to be installed retrospectively if required.
- The presence of a leachate drainage system also serves to distribute any leachate present more evenly, reducing the risk of a point source emission of localised leachate accumulation.
- The Landfill Directive (LfD) requirements for an artificial sealing liner and drainage layer are absolute for non-hazardous and hazardous

landfills. The specification may only be reduced if justified by risk assessment.

For these reasons we considered that WRG needed to increase the number of proposed wells within each phase and also provide a drainage layer in the base that would collect any leachate produced. This would satisfy the requirements of the LfD for a non-hazardous landfill. A secondary advantage is that this would allow real world empirical leachate data to be collected from the range of waste types proposed and would assist in increasing confidence in conceptual models for sites of this type.

Consequently we asked WRG to revise the engineering proposals (Schedule 5 Notice dated 15 June 2015) to include a drainage system in the base of the site to allow for representative sampling of leachate and to include a target pad in the low point of the cell to enable retrospective installation of leachate collection wells.

In response WRG proposed to install four rubble drains (50m in length, 0.5m in depth and 1m wide) following deposition of 0.5m of waste in Phase 1. The excavated drain was to be backfilled with suitable drainage aggregate. A target pad was also to be installed in the vicinity of the lowest point in each Phase.

Additionally, WRG proposed that following completion of Phase 1, a comparison of the data obtained would be undertaken and compared to that obtained from a similar soils site without 'rubble' drains. If this data confirms that there is no significant benefit to installing a degree of collection infrastructure, as predicted, discussions will be held with the Agency regarding the need to install such measures in the following phases. Conversely, if the data confirms that leachate needs to be collected to protect the environment, then collection infrastructure would be installed.

On 4<sup>th</sup> August 2015 WRG, through TerraConsult, submitted a revised proposal replacing the rubble drains with spine drains. This involved constructing four spine drains per phase that would radiate away from the leachate monitoring point with target pad in the vicinity of the lowest point in each phase.

We reviewed the revised proposal and identified the following additional concerns:

- a. The proposed wastes are neither inert nor hazardous – therefore they must be non-hazardous and the site must be designed in accordance with LfD standards for a landfill for non-hazardous waste.
- b. The landfill is sub-water table and as such the groundwater flow into the landfill could lead to increased leachate production. The LfD requires that leachate and contaminated water are collected. Also the leachate level needs to be managed in order to keep the landfill hydraulically contained. The proposed spine

drains would not provide a good means of leachate collection and extraction across the whole cell area.

- c. The drainage system would need to include proposals to minimise the migration of fines into the drainage blanket (e.g. installation of filtration geotextile over the drainage blanket).
- d. We accepted that the specification for leachate drainage layer maybe reduced if supported by risk assessment but the level of reduction proposed was not acceptable as this would not allow WRG to influence the leachate head across the whole site when required.
- e. WRG proposed a single well within each phase. However it was unclear how each well would be used for leachate level and quality monitoring as well as for extraction. We needed justification for the proposal.

Because of the above concerns, we issued another Schedule 5 notice requesting a revised proposal. We asked WRG to provide the following information:

- a) A revised design and specification of the leachate drainage layer and extraction system, including the number of extraction points.
- b) Information to demonstrate that the proposed design and specification of the leachate management system will be able to manage leachate heads and so prevent leachate from overtopping at the site to comply with the requirements of the LfD.
- c) A leachate management plan which includes information regarding how leachate levels will be managed and at what level leachate extraction will commence and how extracted leachate will be managed/disposed of.
- d) Details of how potential damage to the underlying 0.5m liner would be prevented during the placement of the drainage system and deposition of waste.
- e) Details of the likely durability of the leachate drainage blanket and whether it will be effective over the lifetime of the site.

On the 9<sup>th</sup> December 2015 WRG, through TerraConsult, submitted an updated design. The design was summarised as follows:

- The diameter of the leachate monitoring point internal pipework was increased to 300mm to accommodate a pump, should one be required, and the number of potential extraction points (i.e. monitoring points that could be utilised for extraction of leachate) remained unchanged in that 4 are provided for a site with a basal plan area of 6.3 hectares;
- The spine drains and associated pipe work retained;
- The base of the site would be graded towards the leachate monitoring point in accordance with Environment Agency guidance EPR 5.02;
- A drainage layer of graded granular aggregate (in the range 20 to 40 mm) in accordance with the specification given in Environment Agency guidance EPR 5.02. This aggregate would be initially installed across

the basal area of Phase 1 to a minimum thickness of 100mm.

In a separate letter dated 9 December 2015 WRG asked us to reconsider whether leachate collection is necessary based on the information provided. WRG still considered that the Conceptual Site Model (CSM) and Hydrogeological Risk Assessment (HRA) demonstrate that leachate management is not required to either protect groundwater or surface water and that the additional expenditure of installing leachate management infrastructure is disproportionate to the potential benefits. WRG argued that the application followed principles previously accepted by the Environment Agency (EA) during the permitting of non-hazardous wastes sites taking only HMRC qualifying materials to restore quarries.

Our position remains that leachate collection should be required for all non-hazardous landfill sites where there is a need to manage leachate in order to protect the environment. However, we are willing to review this position for this site if site specific monitoring data collected from the first phase of the site corroborates the conceptual model and the conclusion of the Hydrogeological Risk Assessment. We adopted this position because other similar applications/sites which do not have a leachate drainage system have failed to satisfy us that the environment can be adequately protected without it. For example, site data from Runfold Landfill suggests that leachate has been building up at the site and that its quality is not fit for discharge to a pond. These findings are in contradiction to the original design and risk assessments for that site which suggested that leachate would not be generated in significant quantities or have significantly impaired quality.

There are four cells proposed for Sutton Courtenay Phase 3. In our response to WRG on 22 January 2016 we recommended that there should be a drainage layer in the first cell to allow site specific evidence to be collected to either support the conclusion that leachate management is not required or to justify the need to provide more extensive leachate drainage for all future cells. Following the review of the monitoring data from Phase 1 the permit can then be varied as appropriate for the remaining three cells/phases.

Furthermore, we stated that the leachate drainage layer proposed failed to meet the minimum thickness of 300mm and was not an equivalent industry and EA recognized standard. This reduced our confidence that leachate could be efficiently removed from cell 1/Phase 1 and that representative monitoring data could be collected from this cell to aid future risk based decisions to reduce or improve the leachate management system. A thicker drainage blanket would also reduce the risk of clogging and encrustation over time and increase the effectiveness of the drainage layer.

In an email dated 02 February 2016 the applicant stated that the technical assessments they have done in line with EA guidance proved that a full drainage blanket is not needed in these sites and that we have not given sound technical reasons for requiring a drainage blanket. The email went on to say that other competitor sites do not have this requirement in their permits. WRG said that a drainage blanket would make the site uneconomic as the

gate fee would not cover the cost of installing the drainage infrastructure. They said not only is there no environmental impact but their ability to compete in the market and complete these deep quarry sites is being seriously prejudiced.

Our duty is to prevent or reduce risk of environmental pollution by ensuring new landfill sites employ the best available techniques from the start which would ensure compliance with the LfD including Article 10. In doing so we are required to take cost-benefit into consideration. We are willing to consider alternative drainage materials that could bring the costs down. However, WRG have not provided a cost-benefit analysis of the proposal or information on the feasibility of alternative cheaper drainage materials. We have requested this information at two previous meetings with WRG but there was no commitment on their part to provide detailed information.

To resolve the issue we held another meeting with WRG on 07 March 2016 to discuss the reasoning behind the requirement for a full drainage blanket at the Sutton Courtenay (Phase 3) landfill site. During the meeting WRG considered the current proposal for a reduction to a 100mm drainage blanket to be adequate and justified by their risk assessments. The applicant reiterated that the site would not be financially viable if the requirement for a full drainage blanket is imposed on them, and this is the primary reason for their technical challenge to the EA's position. We again asked for a breakdown of the actual cost of constructing a leachate collection blanket at each individual site including Sutton Courtenay Phase 3. This was originally requested in our meeting in September 2015.

WRG also expressed concern that inert sites and some existing non-hazardous sites have not been subject to these additional engineering costs and will have an unfair competitor advantage.

We repeated our position that there would be significant value in collecting site specific empirical data in the form of leachate volumes and quality from the first phase of operations before deciding whether or not the operator's conceptual model and technical presumptions are correct. At this stage we considered further technical discussion would be of limited value in the absence of real site data collected during the first phase of operations. WRG disagreed with this, and expressed concern that only very short term data would be available within the time frames (3 – 4 years) they plan to operate the site and that their current technical justification is strong enough in its own right. We believe evidence gathered during the filling of the first phase will provide useful information about whether leachate collection is necessary in future cells. The site does not need to be 'filled and capped' before we can reach meaningful conclusions about quantities of leachate produced. Also the risk during the operational phase is likely to be the highest due to the increased infiltration rates through exposed wastes.

We also suggested that using both virgin and secondary aggregate with reduced physical properties would potentially reduce costs, without needing to compromise on the drainage thickness. WRG's view on this was that neither

virgin nor secondary aggregates are cheap enough to source and install for this site and may, in the case of some secondary aggregates, introduce a problem associated with high sulphate content.

While further discussion of alternative drainage materials would have helped us to reach a decision, this information has not been immediately forthcoming from the operator. So we have now taken the opportunity to review all of the information that has been provided by the applicant as part of this permit application, to determine whether a pragmatic solution can be found without there being any detrimental impact to the environment.

After final consideration of all factors including the information presented at our meetings regarding the costs and the issues with the use of secondary aggregates, we have decided, for the first phase, to accept the proposal of a 100mm drainage layer for site specific reasons, even though the specification fails to meet the minimum recognised 300mm industry standard. The environmental site setting at Sutton Courtenay is less sensitive than other sites where we would expect a full drainage blanket. For example, there are physical constraints as identified in the site conceptual model that we consider should act to reduce the risk of leachate escaping from the waste so that we do not consider there will be an input of hazardous substances to groundwater or an input of non-hazardous substances that causes pollution:

- The superficial deposits (Northmoor Sand & Gravel) have been excavated to the south and west of the site, therefore removing a potential groundwater receptor in these locations and leaving in-situ Gault Clay and Kimmeridge Clay separated by a thin layer of Lower Greensand.
- The remaining in-situ superficial deposits are present across the entire northern edge and across part of the eastern edge of the site. If there was sufficient leachate present to overtop the containment engineering on these boundaries, there would be a low potential for it to enter the superficial deposits which are in hydraulic continuity with the River Thames located 600m to the north. However, groundwater levels in both the Northmoor Sand & Gravel and Lower Greensand Horizons (superficial deposits) are higher than the level of the top of the waste mass. This is aided by groundwater levels being close to the ground surface, which at least in part is elevated above the level of the wastes. Hydraulic containment would theoretically be maintained should there be a future uncontrolled increase in leachate levels at the site.
- The depth of waste at the site is relatively shallow (14m) with a consequential reduced operational time period where wastes will be exposed to higher rates of infiltration and leachate generation prior to capping.

Therefore the risk of leachate building up and bypassing the containment engineering and flowing onto the surrounding ground surface is reduced, but not eliminated completely. Taking account of the above, we consider that the



inclusion of a drainage blanket, albeit at a reduced specification, will provide a safeguard as a means to control leachate in this phase should this become necessary and allow the collection of data on leachate generation.

On this basis, for Phase 1, we are prepared to accept the leachate drainage design proposal as set out in the second Schedule 5 response dated 09/12/15. The design comprises a 100 mm thick aggregate leachate collection layer with associated pipework together with the provision of a target pad.

The design of the site will be reviewed based on data obtained from the first cell/phase of operations as part of the requirement of the landfill engineering condition 2.5 and Pre-operational measure for future development, PO2, in the permit. Increased sampling/monitoring of the leachate will be required to enable both the operator and ourselves to review the suitability of both the groundwater risk assessment for the site and, as a result, the design of the leachate collection blanket for future cells. Should the results of this further review identify that the first phase has not performed as predicted and that the risk to the environment from future phases would be unacceptable, enhanced leachate management proposals will be required for subsequent phases. This is likely to be a full industry standard leachate collection blanket. We will require WRG to implement this as part of the engineering proposal for the subsequent cells. Under condition 2.5.2 they can only construct subsequent cells where we have confirmed we are satisfied with the cell layout drawing for that cell. We would not confirm this if we are not satisfied with the existing leachate proposals.

Evidence of leachate quality, production and potential effects on cap stability will need to be assessed. Leachate quality will need to be compared against background groundwater quality or Environmental Assessment Levels; evidence of leachate build up will need to be assessed; the need to pump/manage leachate to maintain levels will be assessed; records of volumes pumped/removed, development of short and long term site water balance; assessment of cap stability in relation to saturated waste conditions associated with a potential leachate level rise. These should all form part of an assessment to inform a decision on the most appropriate specification for a leachate drainage blanket for future cells.

### **Waste Acceptance Criteria - TOC Limit (total organic carbon)**

The leachate source term from Eardswick Hall landfill site was used as part of the hydrogeological risk assessment process for Sutton Courtenay (Phase 3) Landfill Site. Eardswick Hall was permitted for soils that were classed as hazardous. We do not consider this as an ideal source term for use at other sites as we consider that it is possible that an element of dilution of the leachate with surface water occurs at this site. It may therefore not be as conservative as presented.

WRG's consultant, TerraConsult, considered their own database of analytical data including both total soil concentrations and leachability analysis. While

this data may be representative of some of the waste types proposed to be accepted at Sutton Courtenay (Phase 3), there remains uncertainty due to the range of wastes proposed. As a result WRG is expected to regularly check for leachate (and if present, its quality) as well as reviewing the waste streams accepted.

WRG proposed a TOC waste acceptance limit of 10%. However, as there is no proposal for a gas collection system we required WRG to adopt a more appropriate limit of 6% as this is the limit used at hazardous waste landfills with the aim of limiting the organic content of the waste mass. However, it was agreed that 70% of samples will need to achieve TOC limit of less than 6%. In written agreement with Environment Agency this limit can be raised if the dissolved organic carbon (DOC) is less than 1000mg/kg. Regular in waste gas monitoring is required to be carried out to determine whether the organic content of the waste is giving rise to a significant gas source term. If this happens, WRG will need to manage the landfill gas either by installing gas engine or flare as required by the LfD. This monitoring also acts as a further check on the waste acceptance procedures carried out at the site.

## Annex 1: decision checklist

This document should be read in conjunction with the Duly Making checklist, the application and supporting information and permit/ notice.

Aspect considered	Justification / Detail	Criteria met
		Yes
<b>Receipt of submission</b>		
Confidential information	A claim for commercial or industrial confidentiality has not been made.	✓
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on commercial confidentiality.	✓
<b>Consultation</b>		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with our Public Participation Statement and our Working Together Agreements.	✓
Responses to consultation and web publicising	The web publicising and consultation responses (Annex 2) were taken into account in the decision.  The decision was taken in accordance with our guidance.	✓
<b>Operator</b>		
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our web guidance on what a legal operator is.	✓
<b>European Directives</b>		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
<b>The site</b>		
Extent of the site of the	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility.	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
facility	A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.	
Site condition report	<p>The operator has provided a description of the condition of the site.</p> <p>We consider this description is satisfactory. The decision was taken in accordance with our guidance on Conceptual model, environmental setting and installation design (ESID).</p>	✓
Biodiversity, Heritage, Landscape and Nature Conservation	<p>The application is within the relevant distance criteria of a protected species.</p> <p>A full assessment of the application and its potential to affect the species has been carried out as part of the permitting process. We consider that the application will not affect the features of the species.</p> <p>We have not formally consulted on the application. The decision was taken in accordance with our guidance.</p> <p>The Protected Species within 500m of the site are mainly affected by changes in water level/flow/chemistry/temperature; nutrient enrichment; acidification; siltation/smothering; sand/gravel extraction; migration barriers (up and downstream); entrapment; physical damage (hydropower turbines); introduction of disease; watercourse modification; and exploitation.</p> <p>However, no new point source discharge to water is permitted as part of the proposed activities and no discharge of process effluent/leachate is permitted. Precipitation that falls on the waste will be retained by the engineered clay lining system. The engineered liner, installed on the base and sidewalls will prevent contamination of surface waters by uncontrolled run-off. No physical barriers are required to be installed in the water course. Therefore, there is no potential for impact.</p>	✓
<b>Environmental Risk Assessment and operating techniques</b>		
Environmental	We have reviewed the operator's assessment of the	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
risk	<p>environmental risk from the facility.</p> <p>We have reviewed the following risk assessments provided by the operator:</p> <ul style="list-style-type: none"> <li>• Hydrogeological Risk Assessment (HRA)</li> <li>• H1 Risk Assessment (Amenity and Accidents)</li> <li>• Landfill Gas Risk Assessment</li> <li>• Stability Risk Assessment</li> </ul> <p>With the exception of the HRA the operator's risk assessments are satisfactory. See key issues for further detail regarding the HRA.</p>	
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes.</p> <p>We are satisfied that the operator has adequate waste acceptance procedures/criteria in place to ensure that biodegradable wastes that have the potential to generate gas or contain pollutants above the criteria used in the risk assessment are not accepted. See key issues for limit on TOC.</p> <p>We are satisfied with the following measures proposed to reduce the risk of odour emission at the site:</p> <ul style="list-style-type: none"> <li>• Regular olfactory monitoring will be conducted and will take account of meteorological conditions and potential impacts of odour (however unlikely) on receptors.</li> <li>• The operator will document all events or complaints received associated with odour, regardless if the site is the likely cause or it is attributed to another source.</li> <li>• At pre-acceptance stage if any of the identified wastes are listed by the waste producer as containing dredgings, ash or track ballast the producer will be requested to provide a commentary of the olfactory nature of the wastes. Any wastes identified at this stage as being highly odorous will not be accepted. All wastes identified by the producer as containing dredgings, ash or track ballast will be subject to olfactory monitoring undertaken during acceptance at site. Any highly odorous wastes identified at this stage will be rejected.</li> </ul>	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<ul style="list-style-type: none"> <li>• All wastes deposited will be inspected by the site operatives and should any load be identified as highly odorous it will be quarantined and the site manager informed and a decision taken whether to reject (re-load the waste) or immediately cover it accordingly.</li> <li>• A periodic review will be undertaken of odour related issues in order to identify any particular wastes, waste producers or waste haulier that generate odorous wastes, resulting in actions that could include refusing the wastes or prohibiting the deliveries from specific sources.</li> <li>• Operations/wastes identified as generating unacceptable emissions of odour will be reduced or suspended until effective remedial actions have been taken or weather conditions resulting in the fugitive emissions have moderated.</li> <li>• Additional quantitative monitoring may be implemented, if complaints are received and the corrective actions above have not resolved the problem.</li> </ul> <p>The above measures comply with the requirements of our H4 Odour management guidance note. We agree with the scope and suitability of key measures, but this should not be taken as confirmation that the details of equipment specification design, operation and maintenance are suitable and sufficient. That remains the responsibility of the operator.</p> <p>We are also satisfied the operator has adequate measures in place to prevent accidents, control noise and dust emissions as well as other fugitive emissions from the site.</p> <p>The operator has proposed a 0.5m artificial geological barrier (AGB) which will increase in thickness by 10% to provide a sacrificial layer to mitigate damage resulting from the placement of drainage aggregate. Artificial sealing liner has not proposed. However the AGB is underlain by more than 35m of in-situ material (Kimmeridge Clay) above the Corallian Limestone thus providing additional mitigation against potential risk to groundwater and enhancing the capacity for leachate collection.</p> <p>See key issues for details of the engineering proposal for</p>	

Aspect considered	Justification / Detail	Criteria met
		Yes
	leachate collection.	
<b>The permit conditions</b>		
Waste types	<p>We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.</p> <p>We are satisfied that the operator can accept these wastes for the following reasons:</p> <ul style="list-style-type: none"> <li>• The permitted waste codes are in the standard list of wastes for non-hazardous landfill.</li> <li>• The risk assessments have been carried out using these wastes as the source term.</li> </ul> <p>We made these decisions with respect to waste types in accordance with Landfill Directive and Waste Framework Directive.</p>	✓
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <p>We have imposed the following pre-operational conditions:</p> <ul style="list-style-type: none"> <li>• Pre-operational Measure PO1 to ensure that background gas concentrations for Methane and Carbon Dioxide are determined prior to waste disposal so that compliance and action limits can be derived as appropriate for Methane and Carbon Dioxide monitored in perimeter boreholes.</li> <li>• Pre-operational measure for future development PO2 to ensure the performance of the leachate drainage layer for Phase 1 is reviewed prior to construction of future phases and subsequent deposit of wastes in these phases.</li> </ul>	✓
Incorporating the application	<p>We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.</p> <p>These descriptions are specified in the Operating Techniques table in the permit.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit.</p> <p>The following substances have been identified as being emitted in significant quantities and ELVs have been set for those substances.</p> <ul style="list-style-type: none"> <li>• Ammoniacal Nitrogen and Chloride for emissions to water,</li> <li>• Cadmium, Sulphate and Ammoniacal Nitrogen for emissions to groundwater.</li> </ul> <p>It is considered that the ELVs for the substances described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.</p> <p>Leachate level limit of 46.5 mAOD has been imposed to prevent overtopping and potential issues with cap stability. This limit will be 2m below the cap and 1m below minimum groundwater levels in the Lower Greensand.</p>	✓
Monitoring	<p>We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.</p> <p>We have imposed monitoring requirements for groundwater, landfill gas, leachate and surface water. These monitoring requirements have been imposed in order to confirm that operational procedures are effective to prevent pollution and to verify the conceptual model and conclusion of the risk assessment for the site.</p> <p>We imposed monthly monitoring for non-hazardous substances and six monthly monitoring for hazardous substances in the leachate. We would normally require quarterly monitoring for non-hazardous substances and annual monitoring for hazardous substances. However, we increased the frequency of monitoring so that sufficient data can be collected from the first phase in order to assess the need for a drainage blanket for subsequent phases. The monitoring frequency will revert to quarterly monitoring for non-hazardous substances and</p>	✓



Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>annual monitoring for hazardous substances once sufficient data has been collected and agreed with the Environment Agency.</p> <p>We made these decisions in accordance with EPR 5.02 and our standard monitoring requirements for landfills.</p>	
Reporting	<p>We have specified reporting in the permit.</p> <p>We made these decisions in accordance with our standard reporting requirements for landfills.</p>	✓
<b>Operator Competence</b>		
Environment management system	<p>There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with our guidance on what a competent operator is.</p>	✓
Technical competence	<p>Technical competency is required for activities permitted. The operator is a member of an agreed scheme.</p>	✓
Relevant convictions	<p>The National Enforcement Database has been checked to ensure that all relevant convictions have been declared.</p> <p>Relevant convictions were found and declared in the application. We considered relevant convictions as part of the determination process and consider that the operator has put plans in place to prevent future occurrence.</p>	✓
Financial provision	<p>There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with our web guidance on what a competent operator is.</p> <p>The financial provision arrangements satisfy the financial provisions criteria.</p>	✓

## Annex 2: Consultation and web publicising responses

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process. (Newspaper advertising is only carried out for certain application types, in line with our guidance.)

Response received from
Public Health England
Brief summary of issues raised
No issues raised.  The PHE are satisfied that a suitable dust management system has been proposed. They are also assured from the documents provided that there will be little odour, landfill gas and leachate released from the type of waste being used in this landfill.
Summary of actions taken or show how this has been covered
No action required.

Response received from
Director of Public Health, Oxfordshire County Council
Brief summary of issues raised
No issues raised.
Summary of actions taken or show how this has been covered
None required.

Response received from
Environmental Protection, Vale of White Horse District Council
Brief summary of issues raised
No issues raised.
Summary of actions taken or show how this has been covered
None required.

Oxfordshire County Council Planning Department and Health & Safety Executive were consulted. However no responses were received.

This proposal was also publicised on our website between 15/05/15 and 15/06/15 and no representations were received.