

# Environment Agency permitting decision

## Variation

We are minded to issue the variation for Westmill Waste Management Facility operated by Biffa Waste Services Limited.

The variation number is EPR/DP3431PC/V005.

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.

This is a draft decision document, which accompanies a draft variation notice.

It explains how we propose to determine the applicant's application, and why we have included the specific conditions in the draft variation we are considering issuing to the applicant. It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position. Unless the document explains otherwise, we have accepted the applicant's proposals.

The document is in draft at this stage, because we have yet to make a final decision. Before we make this decision we want to explain our thinking to the public and other interested parties, to give them a chance to understand that thinking and, if they wish, to make relevant representations to us. We will make our final decision only after carefully taking into account any relevant matters raised in the responses we receive. Our mind remains open at this stage, although we believe we have covered all the relevant issues and reached a reasonable conclusion, our ultimate decision could yet be affected by any information that is relevant to the issues we have to consider. However, unless we receive information that leads us to alter the conditions in the draft variation, or to reject the application altogether, we will issue the variation in its current form.

In this document we frequently say "we have decided". That gives the impression that our mind is already made up; but as we have explained above, we have not yet done so. The language we use enables this document to become the final decision document in due course with no more re-drafting than is absolutely necessary.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

The operator has submitted a new permit variation application (V008) for additional gas engines alongside the determination of this variation application (V005).

The operator has applied to

- Install and operate no 2. additional landfill gas engines; and
- Install and operate a PpTek siloxane removal system which will pre-treat landfill gas
- Conditions as set out in Schedule 2 of the variation notice will be amended to change the activity references due to the addition of a new directly associate activity

Application (V008) is a less complex application and therefore a decision on this application will be most likely be made well before a decision has been made on landfill application V005.

As a consequence of Application V008 we may have to make additional changes to the consolidated permit template (V005) we are consulting upon in order to incorporate the changes applied for under V008 application should this variation be issued

The changes applied for under variation application V008 will have no impact on the changes applied for under variation application V005 or our assessment of that application but are mentioned for information.

## **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, web publicising and newspaper advertising responses

## **Key issues of the decision**

The operator has applied for a variation to the permit for the following,

- To add additional waste codes to the permit;
- To amend leachate head levels; and
- To amend pre/post settlement levels

In support of the requests above the operator has submitted updated risk assessments, emissions modelling and management plans for odour, dust and noise, these are discussed in the relevant sections below

We have assessed the operator's requests as follows:

### **Addition of waste codes**

The operator has applied to add non hazardous healthcare wastes to the list of waste codes permitted for disposal within Westmill landfill.

The proposed Non hazardous health care wastes are categorised under European Waste Catalogue codes 18 01 04 and 18 02 03. These codes represent healthcare wastes which are non infectious and do not require special handling. For example dressings, plaster casts, linen, disposable clothing and diapers.

The operator also intends to accept wastes classified under European Waste Catalogue code 20 01 99. This code covers all other non hazardous fractions not otherwise specified in other waste codes. Waste accepted under this code will be limited to non-clinical human and animal hygiene waste (not arising from healthcare and/or related research i.e. not including waste from natal care, diagnosis, treatment or prevention of disease). These waste types include material from childcare facilities and kennels. The restrictions under this waste code have been outlined in the variation notice. Like the above waste codes these wastes are classified as non infectious and therefore are not subject to special handling requirements in order to prevent infection.

### **Why these wastes are acceptable at the landfill**

The proposed wastes are suitable for disposal in the landfill as they non hazardous, not subject to special handling requirements and present a similar risk to a majority of the wastes already accepted at the site. The operator has stated in the application that the amount of health waste to be accepted at the site under the above EWC codes will only make up a small fraction of the waste which will be deposited annually. Therefore the waste will not significantly impact on the emissions from the landfill. Based on the points above and the operator's proposals for managing of these wastes and any associated emissions, we have determined the acceptance of these wastes will not result in any significant risk impact on emissions from the site.

## **Increasing of leachate levels across the landfill to 2 metres**

### **Westmill 2 (cells 1 – 10, eastern section of landfill)**

The operator has proposed to increase the level of leachate which can accumulate in the base of landfill cells from one metre to two metres. Leachate levels (previously referred to as the leachate head) within the base of the landfill are actively maintained through leachate extraction and treatment via the onsite leachate treatment plant.

We have assessed the operator's seepage risk assessment and Hydrogeological Risk Assessment (HRA) and consider that it is unlikely the increase in leachate levels will result in a significant impact on emissions to groundwater. The operator has demonstrated that the landfill infrastructure has been appropriately designed in line with the requirements of the landfill directive and has been lined with the Dense Asphaltic Concrete (DAC) which is considered to represent the best available technique to contain leachate within the landfill. In addition, the operator has provided technical landfill diagrams to demonstrate there is sufficient drainage infrastructure to maintain the 2m leachate levels. This infrastructure includes a leachate drainage blanket of 500mm in depth (above industry standard) with appropriate collection pipe work and abstraction points which is adequately maintained and managed.

The operator's hydrological risk assessment (HRA) demonstrates that the site would be compliant with the groundwater provisions up to a leachate level of 4.9 metres. Each cell is lined with 2 - 2.5m metre high bunds providing upto 0.5 metres of freeboard (freeboard being the distance between the leachate levels compliance limit and the height of the engineered bunds). The freeboard combined with the operator's commitment to maintain leachate at pre-determined control levels will ensure the leachate level compliance limit is not breached. This will prevent over spill and leachate flowing freely between landfill cells. This will allow reliable monitoring and the ability to effectively identify changes in leachate levels or issues at the site such as leaks. Based on the conclusion of the risk assessment we consider the increase in leachate compliance levels up to 2 metres to be acceptable and present minimal risk to the environment. We are satisfied that the infrastructure proposals are in line with the requirements of the landfill directive. To demonstrate that the operator is effectively implementing their proposals they will be required to monitor leachate level monthly to ensure leachate levels are effectively controlled.

### **Leachate level compliance during staged cell engineering**

After examining the site's infrastructure drawings in detail it has been noted that not all of the site's inter-cell bunding has yet been completed or redesigned to a standard which will appropriately contain the rise in leachate compliance levels from 1m to 2 m. Until the infrastructure in these cells has been completed to an appropriate standard, the operator will be unable to implement the 2 metre leachate level in accordance with our guidance and the Landfill Directive.

We have therefore amended the permit's operating techniques table (S1.2) to only allow 2 m leachate compliance levels to be applied within appropriately

engineered landfill cells. To support this we have inserted pre-operational condition 9 into the permit which requires the operator to demonstrate to us that appropriate intercell bunding infrastructure is in place within a cell prior to implementing the 2 metre compliance limit in that cell.

This condition will require the operator to demonstrate to the Environment Agency that each cell has engineered bunds which provide sufficient freeboard to effectively contain 2m leachate levels within individual landfill cells before increasing levels in that cell.

The operator will be required under pre-operational condition 10 to submit a revised leachate management plan to the Environment Agency which shall be implemented on Environment Agency approval. This document shall demonstrate, that the operator's leachate treatment plant has the capacity to adequately treat the volumes of leachate generated by the landfill. This will ensure the leachate drainage and extraction infrastructure is capable of maintaining effective leachate extraction under a two metre leachate level and determine if upgrades to the infrastructure are needed.

The operator is also required to derive leachate control levels, justify these levels in relation to compliance levels and provide a contingency plan which demonstrates the actions to be taken upon a breach of the control levels. Once the leachate management plan has been approved it will be written into table S1.2 and become an operating technique under condition 2.3.1. If the operator fails to comply with the approved leachate management plan it may be considered a breach of the permit condition and enforce action may taken as necessary.

Based on the operator's proposals, the assessments they have undertaken and the conditions we imposed with the permit we are satisfied that there will be sufficient controls in place to allow the operator to increase the leachate level in Westmill 2 landfill cells to 2 metres.

## **Westmill 1 (cell 0)**

The operator has proposed a 2m leachate level compliance limit within Westmill 1 (cell 0). They have undertaken a hydrogeological risk assessment (HRA) to determine the suitability of a 2m leachate head within Westmill 1 in line with the existing leachate levels and the projected 2m leachate level in the leachate seepage modelling.

The operator has demonstrated in their application that they have undertaken groundwater monitoring up-gradient and down gradient of Westmill 1 whilst maintaining the existing 2m leachate compliance levels. The monitoring results outlined in their HRA show that the operator has effectively managed groundwater contaminant concentrations in line with the control levels and compliance limits as set out in their agreed ground water management plan to prevent significant impact on groundwater.

This combined with the fact that the waste within cell 0 was deposited within this cell a number of years ago and leachate concentrations are now likely to be very weak sufficiently demonstrates that maintaining the current 2m leachate level within Westmill 1 will not present a significant risk to groundwater.

Based on the result of the HRA, the monitoring controls in place and the age of the cell we are satisfied that a 2m leachate level will not result in unacceptable discharges to groundwater, allowing ongoing compliance with established groundwater control levels and compliance limits.

## **Proposal to update the Pre settlement and post settlement drawings of the landfill**

### **Assessment of landfill settlement**

The operator has undertaken a review of the landfill's settlement profiles using landfill settlement modelling provided by SKM Enviro Limited. This model used records of previous waste deposits as an input. Each waste type was placed into groups based on its level of decomposition (e.g. food waste being high and plastic being low) and assigned a decomposition factor. The model then used these predetermined decomposition factors to determine by how much the combined waste mass is predicted to break down, therefore determining how much the waste volume will drop by as it decomposes.

The review identified that the landfill profile settlement may be significantly higher than that previously predicted. The modelling predicted that the landfill profile will settle by 32% which is more than double that of the original 15% settlement rate modelled. The operator has gone on to demonstrate that as a result of this deficiency it is unlikely the existing agreed post settlement profile will be achieved using the existing 15% pre-settlement levels. As a result of the settlement modelling report the operator has applied to revise the pre settlement profiles to ensure an appropriate landform is achieved post settlement.

### **Why does the pre settlement profile need to be revised?**

The operator is required to engineer the landfill with the intention of producing a final landfill profile which meets the criteria of the Landfill Directive, Environment Agency guidance and planning permission. This involves depositing waste strategically and predicting the settlement rate in order to achieve a final landfill landscape with an even domed profile.

Based on the predicted landfill settlement unless pre-settlement levels at Westmill Landfill are revised at the site in line with the 32% recommendations in the SKM Enviro Limited settlement report, it is unlikely the landfill will achieve the dome feature design in the original post settlement plans. This could result in the waste mass settling evenly which could lead to damage to landfill containment and pollution mitigation infrastructure, such as gas and leachate collection pipework. If the domed profile is not achieved this will prevent effective water shedding and may lead to ponding which could damage the landfill cap.

### **Where the waste will be deposited**

Although the operator's revised pre-settlement profile will result in additional waste being deposited across the entire landfill, additional non hazardous waste disposal will only be authorised within active cells or planned future landfill cells (cells 5 – 10).

The operator has stated in the application that they will not strip back the cap of landfill cells to deposit additional wastes in cells which have been completed. In areas of the landfill which have already been filled and capped the operator plans to deposit inert or treated soil wastes directly on top of the cap as additional restoration materials so as to achieve continuation of the domed landfill profile.

### **How the profile of the landfill will change**

#### Pre settlement

In the short term the revised pre settlement levels will raise the height of the landfill. Non hazardous waste will be deposited within active and future landfill cells (cells 5 – 10). This will result in height contours of the waste mass in these areas (from the base of the landfill) increasing by 17% on top of the previous agreed pre settlement landfill contours which were based on the original 15% predicted settlement levels.

Other landfill cells which have been finished and capped to contain the waste mass will receive an additional 1-2 metres of inert material to meet the revised profile. The revised pre-settlement heights will differ between finished and active cells as non hazardous waste deposited in active cells will settle more than inert waste deposited above cap on completed cells.

### Post settlement

The operator has decided to lower their post settlement profiles after discussion with the local authority. This is in order to achieve a more appropriate final profile and reduce the amount of waste which must be applied to landfill in order to achieve an appropriate post settlement profile. Therefore in the long term the operator's modelling demonstrates that new pre settlement profiles will result in a lower post settlement profile with appropriate domed structure.

### **Our assessment of the technical suitability of the revised pre-settlement profile**

#### **Pre settlement report**

We have reviewed the SKM Enviro Report and settlement modelling alongside a settlement modelling validation report and additional clarification and justification submissions from the operator. The report and supporting documents have taken into account a wide range of waste composition data and factors which have influenced this data over time e.g. land filling policies. Based on the data and methods they have used to model the settlement we are satisfied that their conclusion provides an appropriate settlement prediction. To determine the reliability of these settlement figures we have compared the proposed 32% settlement rate to settlement rates at other biodegradable landfill sites. The predicted settlement is in line with findings at other sites where higher settlement rates have been successfully implemented.

#### **Accounting for variability in landfill settlement**

As the proposed rate of landfill settlement is modelled on a predicted rate there is the potential for fluctuation in the actual levels of settlement. The operator has addressed this in the documents Environment Setting and Installation Design (ESID) Appendix 1, SKM Enviro Ltd settlement report and in additional information submissions. The risk assessments were based on a worst case scenario to take into account slight variations in the predicted settlement. We have reviewed the risk assessment and supporting documentation and are satisfied that the operator's conservative approach takes into account slight deviation from the predicted settlement and appropriately concludes differential settlement is unlikely to have an effect on the environment.

To ensure that deviation from the predicted settlement is minimal the operator has stated they will continually monitor settlement to ensure the landfill is meeting key indicators in order to demonstrate that the landform is developing appropriately. In the event the settlement is above or below the predicted settlement figures the operator has confirmed they will work with the Environment Agency to take appropriate remedial action to adjust landfill deposits to maintain an appropriate profile, including re-grading. The operator has stated that with the new level of predicted settlement, it could take up to 150 years to achieve the final profiles. However the operator's report demonstrates that the majority of this settlement will take place within the first

60 years in line with typical landfill settlement and the last 5 percent over the next 90 years.

Due to the points above we are satisfied that the operator has appropriately modelled and predicted the landfill settlement rate and has proposed appropriate management procedures to manage the settlement over time in order to ensure the settlement achieves the predicted profile

### **Review of updated landfill engineering risk assessments as a result of changing pre settlement levels**

To demonstrate the revised presettlement level will not have a negative impact on the landfill, the operator has submitted revised landfill specific risk assessments to identify any potential impacts. The risk assessments include a Stability Risk Assessment, Landfill Gas Risk Assessment and Hydrological Risk Assessment. The outcome of these risk assessments is incorporated into the operator's conceptual model for the Environmental Setting and Installation Design of the landfill.

The stability risk assessment reasonably concludes there will be no impact on infrastructure in regards to stability.

The Landfill Gas risk assessment reasonably concludes that there will be no significant environmental impact caused as a result of increasing the waste and that existing gas management arrangements will ensure that gas is properly managed. We have identified to the operator that there may be a need for further gas engines in the future and the operator has applied for and been permitted to add an additional gas engine.

The Hydrogeological Risk Assessment concludes that there will be no additional risk to groundwater as a result of waste surcharging. Numerical modelling indicates that there will be no discernible discharge of hazardous substances to groundwater and non-hazardous substance emissions will be sufficiently limited to avoid pollution. The predicted modelling levels in respect of chloride and ammoniacal nitrogen indicate that discharges of non-hazardous pollutants will continue to occur from the unengineered areas of the Westmill 1 site, but at levels no greater than already exist at present.

The HRA considered the potential impact upon leachate volumes in Westmill 1 as a result of non hazardous waste surcharging above the Interface lining system ILS and additional inert wastes to be placement upon Westmill 1. The operator used Palisade's @Risk software to undertake the evaluation. An additional annual amount of leachate of around 95 m<sup>3</sup> is calculated to be generated. The analysis concluded that there is unlikely to be any significant increase in leachate levels 1.

In regards to managing the impacts of leachate production due to potential increase as a result of presettlement levels, the operators Hydrogeological Risk Assessment demonstrates that in the worse case scenario leachate levels of up to a height of up to 4.9 metres could be maintained in the

operational phase and up to 23 metres post-closure with no significant biodegradation in the aquifer pathway. The operator has proposed to maintain leachate limits at 2 metres, which is well within the worse case scenario therefore the risk to the environment from leachate contamination is low.

In relation to managing leachate within the landfill over the extended predicted settlement period of 150 years, the operator has committed to monitoring and managing the landfill source term decline post closure (source term is the combined total of all contamination released into the environment). This is until monitoring results show that active management of the landfill is no longer required to ensure ongoing protection of the environment.

The operator has also put in place a financial provision aftercare plan which will ensure sufficient funds are available for ongoing maintenance and aftercare of the site until the site is fit for permit surrender. We are therefore satisfied that, subject to the permit conditions imposed, the revised profile is acceptable.

### **Differentiation between Environment Agency assessment of pre settlement levels and Local authority assessment of pre settlement levels**

In determining the proposals for the change in pre/post settlement profile and height we consider whether the proposed change will result in pollution of the environment or harm to human health. We do not consider the effect on landscape or landscape features as this is a matter for the local planning authority. The Operator must comply with both the permit and the planning permission, so where the Operator makes changes to the permit they must also satisfy the local planning authority that the changes are acceptable in terms of the matters for which they have regulatory control.

### **Updating the landfill cell location drawings**

The operator has applied to split cells 6 and 7 into smaller cells, 6N, 6S and 7N and 7S. This is to aid the change in the pre-settlement profiles. We have reviewed the operator's risk assessments and the proposal for the new cell layout and have determined the change in layout is acceptable and unlikely to result in a negative impact on the landfill engineering and infrastructure. As this is a minor adjustment to the landfill infrastructure it should not impact on emissions from the site.

### **Amenity issues**

#### **Odour Management**

The operator has applied to increase the height of the landfill's pre-settlement profile. To support this proposal they have submitted a revised odour management plan to demonstrate they will implement appropriate measures to manage odour in accordance with the techniques outlined in our guidance. In addition they have submitted a revised odour modelling, an odour impact assessment and an H1 risk assessment as a part of the application as outlined below.

- The odour management plan and risk assessments outline the odour management techniques and mitigation measures the operator proposes to implement at the site. The documents detail source

identification, assessment criteria, monitoring regimes, operational matrix of potential releases, control measures, contingency measures responsibility, estimated timescales for resolving odour issues and an indication of the need to notify us in the event of potential occurrence and contingency procedures to be adopted by the operator as part of this proposal.

- The predictive odour modelling and odour impact assessment proposed four odour management scenarios and applied them to predictive odour modelling based on a worst case location. The data from the modelling was used to determine how each management scenario impacted on the odour emission zone of influence in order to demonstrate how effective each odour scenarios would be at preventing odour impact on nearby sensitive receptors.

We have reviewed the operator's odour management procedures and odour impact assessment using our guidance How to Comply with Your Environmental Permit for Landfill (EPR 5.02) and working with the operator we have established a series of operating techniques and management systems which incorporate techniques we consider to be in line with our guidance and appropriate to prevent significant odour emissions from the site. The reasoning behind our decision is outlined in the section below

### **Odour impact modelling**

The operator produced an odour impact assessment for the revised pre settlement levels based on predictive odour modelling. They applied four odour management scenarios to predictive odour models using site specific data to predict how effectively each of the odour management proposals minimised the risk of odour at nearby receptors. The odour modelling used input data including waste types, deposit locations, time and wind direction to model the zone of influence for odour emissions. Predicted odour emissions were assessed against our H1 guidance which states that odour is unlikely to cause a nuisance unless it is above  $1.5_{\text{OUE}}/\text{m}^3$ . The meteorological data is based on 5 years of observed data at Stansted airport (20 km to the north east from 2004 to 2008).

The operator's odour impact assessment and modelling is based on the worst case scenario. Using a cautious approach should ensure predictions of odour are conservative, further decreasing the likelihood of odour impact. The operator has used the following as a worst case scenario:

- Emission from a location where the waste deposit is closest to sensitive receptors. Cell 8 is the closest landfill cell to nearby sensitive receptors and therefore the north west boundary has been used for the 'worst case' scenario.
- Applying an odour unit benchmark of  $1.5_{\text{OUE}}/\text{m}^3$  which is based on the 98th percentile of hourly average concentrations of odour modelled over a year at the site/installation boundary. This figure has been applied to the modelling as it is the most stringent odour unit benchmark used for highly offensive odours in our H4 odour guidance.

The results of the model are plotted using zones of influence on a map of the site which display the area where odour is likely to breach  $1.5_{\text{OUE}}/\text{m}^3$ . Each

odour management scenario shows the scale of the zone of influence and can be used to determine whether there is likely to be an odour impact under that scenario.

The odour impact assessment uses four operating scenarios A, A1, A2 and A3 to determine the most appropriate method to manage odour at the site.

- **Scenario A.** represents the deposit of waste within cell 8 with no abatement measures for an entire year. This scenario is not acceptable and will therefore not be allowed under this permit.
- **Scenario A1** represents limiting the deposit of waste in the north eastern area of cell 8 to low odour waste types (50% reduction in odour rates applied).
- **Scenario A2** represents the deposit of wastes in the north eastern area of cell 8 during 6 months of the year (October – March) with waste deposits for the remaining 6 months to be undertaken in cell 9.
- **Scenario A3** represents the deposit of additional waste Cell 8 only when wind is from a direction of 225°-135°, with waste deposition in Cell 9 occurring when the wind is from a direction of 135°-225°.

The operator's report determined that Scenario A (no mitigation) would result in a slight breach of the odour criterion ( $1.5 \text{ ou}_{\text{E}/\text{m}^3}$ ) and therefore shall not be implemented. The other three scenarios A1, A2, and A3 were shown to reduce the predicted odour emission zone of influence indicating that they could effectively mitigate emission to prevent an impact on sensitive receptors. As the modelling was based on the worst case scenario and results were conservative it is reasonable to conclude that scenarios A1, A2 and A3 would effectively manage odour emissions at the site.

#### **Moving deposit of wastes to cell 9 during unsuitable wind conditions**

Scenario A3 involves the deposit of waste within cell 9 when conditions are unfavourable for waste deposit within cell 8. To demonstrate moving waste deposit to cell 9 will be an effective measure to mitigate odour emission in unfavourable conditions the operator, as part of their scenario A3 assessment has modelled a predicted a zone of influence for cell 9.

The predictive modelling showed that the odour emission zone of influence produced from moving waste deposits into cell 9 during unfavourable conditions is not within the vicinity of sensitive receptors and there is unlikely to result in an impact.

As this modelling demonstrates that deposit within cell 9 is unlikely to impact on sensitive receptors due to the vicinity of its zone of influence, it indicates that cell at a further distance from receptors are also unlikely to result in an impact.

#### **Odour Impact audit**

In order to determine the accuracy of the operator's modelling we have carried out an audit of the operator's modelling and reviewed the inputs and rules applied. In addition to this we have applied two alternative relevant wind data sets to the model, one from Stansted airport and another from a small air field Andrewsfield. This was in order to test the sensitivity of the operator's modelling to determine whether applying different wind datasets could have

an impact on the operator's modelling results. Our audit resulted in the following conclusions.

- Our audit agreed with operator's conclusion that it is likely there will be an exceedence of the most offensive odour impact limit criterion ( $1.5 \text{ ou}_{\text{E}/\text{m}^3}$ ) at more than one sensitive receptor under the operators proposed Scenario A. (This scenario represents the deposit of waste within cell 8 with no abatement measures for an entire year).
- Our audit indicated that we cannot rule out an exceedence of ( $1.5 \text{ ou}_{\text{E}/\text{m}^3}$ ) at a sensitive receptor when considering mitigation Scenario A2.
- Our audit agreed with the operator's conclusion that Scenarios A1 and A3 are unlikely to result in offensive odours greater than  $1.5 \text{ ou}_{\text{E}/\text{m}^3}$  at the nearest sensitive receptor.

As a result of the assessment carried out by the operator and our audit of their data, we conclude that potential odour emissions produced as a result of the revised Pre-settlement levels are unlikely to be at levels which will cause nuisance if operations are limited to a combination of scenarios A1 and A3 only.

The operator has stated that they will implement a combination of only scenarios A1 and A3 in cell 8 alongside their odour management plan to effectively manage odour at the site. We are therefore satisfied that the operator intends to implement appropriate techniques to manage odour emission from the site.

### **Defining low odour waste types – scenario A1**

To determine which wastes codes are suitable for deposit as low odour waste types under scenario A1, we have worked with the operator to agree which waste codes can be accepted for deposit in cell 8 when using this scenario. The waste deemed to be low odour wastes are specified in the variation notice in table S2.1.

Some of these wastes codes will be classified as low odour wastes subject to a risk assessment. These particular codes cover waste streams which can be easily divided into odorous and low odour waste loads at source and through the sites acceptance procedures. Codes with waste streams which are mainly odorous or batches of wastes which are impractical to divide between odorous and low odour wastes are not included as low odorous wastes e.g. biodegradable waste and market wastes.

Mixed municipal waste can be considered a low odour risk waste based on its source and content. This waste code covers domestic industrial and commercial waste from a variety of sources. Municipal waste from civic amenity sites or commercial premises which have been subject to effective waste pre-sorting procedures to remove biodegradable content are considered to be a sources of low odour waste streams. Waste producers such as domestic homes or commercial food retailers are likely to produce wastes which are considered a high odour risk therefore municipal waste from these sources will not be deposited in cell 8 under scenario A1.

We have worked with the operator to define the waste sources and types which are acceptable under the waste code 20 03 01 - mixed municipal waste. We are satisfied that the operator has effective acceptance procedures and knowledge of their waste streams which will allow them to control the waste types they accept as low odour wastes. It has therefore been agreed that only wastes from low odour waste sources e.g. source segregated waste, will be accepted under this waste code as low odour wastes. This requirement has been incorporated into the permits operating techniques table (S1.2) as a relevant operating technique.

### **Impact of scenario A1 on cell 8 settlement**

The operator has identified that the prospect of restricting waste types to low odorous wastes could potentially impact on the amount of biodegradable waste within cell 8, resulting in differential settlement in comparison to the surrounding cells.

The operator has assessed the risk of differential settlement within cell 8 as a result of restricting waste types and has determined it is unlikely differential settlement will be a significant issue. This is based on the following:

- The operator intends to apply a combination of scenarios A1 and A3 to control odour within cell 8. This will prevent the composition of the waste mass used in settlement predictions from changing dramatically.
- Low odour waste types do contain waste which will degrade so will contribute to landfill settlement.
- The settlement modelling undertaken by SKM Enviros Limited and operators risk assessments take into account differential settlement. The operator appropriately applied the principles in this report to conclude that differential settlement is unlikely to have an impact on the integrity or performance of the cap.

As an additional control measure to ensure minimal differential settlement, the operator will also monitor settlement in the cell and where it is necessary, deposit additional restoration materials to account for any undulations.

### **Odour management plans**

To support the odour management scenarios outlined in the odour modelling, the operator has reviewed the odour management plan for the site. The plan clearly outlines the management techniques the operator will implement at the site in order to manage odour from future waste deposits.

### **Site Acceptance**

Controlling the deposit of potentially odorous wastes will be managed through the sites waste pre-acceptance and site acceptance criteria. At the pre-acceptance stage if wastes are considered to present a high odour risk they will not be sent to the landfill site. If wastes are considered to present a potential odour risk which could be appropriately mitigated, the operator will accept the waste at the site on the basis they are given at least 24 hours warning prior to the waste being delivered to put the appropriate odour mitigation in place and to prepare for the handling of the waste.

### **Odour mitigation during deposit of waste**

The operator will prioritise the deposit of potentially odorous wastes. These wastes will be placed at the foot of the working face and the operator will ensure they are not within 1 metre of the surface or the flank of the working face. The wastes will then be appropriately compacted to minimise the surface area exposure to air and covered immediately using less odorous waste materials. The size of the operational area where fresh waste is deposited will be kept to a minimum to limit the surface area of exposed waste, reducing air exposure and associated odour emissions.

The operator will ensure that there is a sufficient supply of materials to use as daily cover, in line with Environment Agency guidance for the use of landfill cover materials. The daily cover material will consist of low odour waste (e.g. soils) which will be used to cover filling areas when these areas are not in operation. Cover will be applied in a progressive manner throughout the day as areas are filled and at the end of the day the entire active face will be covered.

### **Additional odour mitigation**

In addition to the mitigation measures outlined above, the operator has stated that the following measures will be applied

- The use of vehicles with faster unloading mechanisms to limit the time waste is exposed to the air.
- When depositing waste the operator will take into account the general wind direction, taking account of nearby sensitive receptors.
- Application of odour management sprays.
- Erection of odour fences to increase turbulence of airflow and maximise mixing and dispersion.
- Use different tipping area in unfavourable conditions e.g. wind speed, time of day and features identified in previous odour assessments.
- Gas and leachate extraction infrastructure, landfill capping and maintaining leachate levels in the landfill cells
- Specific procedures in place to manage abnormal weather conditions, failure of gas or leachate extraction or other conditions which may result in potential odour emissions.

We have assessed the operator's risk assessments, odour modelling and the proposals in their odour management plan and have considered them in conjunction with the existing site. We are satisfied that the operator has proposed appropriate odour management techniques to manage the site in its entirety and are satisfied the measures will prevent potential odour as a result of the revised pre-settlement profiles.

### **Odour management through location of waste deposits**

The revised landfill pre-settlement profile will not result in additional non hazardous waste being deposited across the entire landfill. Only landfill cells which on issue of this permit variation are active or are yet to be engineered and filled as authorised by the existing permit permission will be allowed to accept additional non hazardous waste in order to achieve the revised pre settlement profile. This will ensure:

- Non hazardous wastes are only to be accepted in active and future un-tipped areas which are already permitted to accept these waste types. Non hazardous waste will not be tipped on areas which have been capped and completed.
- Wastes with a greater potential for odour are restricted to certain areas. This will allow the operator to target their odour management and mitigation.

Landfills cell which have already been completed and capped will only receive inert or soil like wastes to build up these cells to the revised pre-settlement levels. Non hazardous waste will not be deposited above the landfill cap. In regards to odour management this will ensure;

- The majority of the landfill will be built up using low odour inert or soil waste therefore minimising the risk of odour
- There will be no stripping back of the cap to deposit additional waste.
- Historic odour issues at previous locations will not reoccur.

### **Odour monitoring**

To demonstrate the measures the operator has proposed are effective and to continuously improve the site's odour management performance the operator has proposed a series of monitoring procedures to be implemented across the landfill site as follows.

### **Olfactory monitoring**

All landfill personnel will be required to report odours and odour risks immediately to the site manager who will have responsibility for managing site emissions.

To isolate and effectively target odour emissions the operator will employ specific odour assessors who will undertake olfactory monitoring. The assessors will be non operational employees who are not directly exposed to waste in order to prevent desensitisation to odour emissions. Odour assessors will follow an odour inspection procedure which the operator has outlined in their application. They will undertake daily odour monitoring at certain strategically located points around the site's boundary and weekly in the surrounding locality. Particular attention will be paid to sensitive locations in the vicinity of operational areas of the landfill. Assessors will record time, date, weather, odour type, location and intensity during their routine monitoring and produce an odour assessment report form to determine the effectiveness of the site's odour management measures in order to establish whether further action needs to be taken.

### **Landfill gas monitoring**

Flame Ionisation Detection will be carried out at specific location along the boundary of the site on a monthly basis. This system allows the site to monitor emissions levels and to pinpoint and isolate excessive odorous emissions using marker compounds for odorous gas. The operator has stated, if high levels of Volatile Organic Compounds (VOC's) are detected the source will be investigated and remediation techniques will be implement to manage the odour. An additional round of monitoring will then be undertaken to determine compliance and if odour persists monitoring and remediation will continue until the site is in compliance. Remediation measures are outlined in the odour management plan and include gas extraction and fortnightly balancing of the gas field, limiting the active area and placement of cap or cover materials

### **Monitoring Complaints**

On receiving a complaint the circumstances, time and date will be recorded and the operator will carry out additional olfactory monitoring daily for 5 days and assess meteorological data to determine the source of the odour and ascertain the appropriate mitigation. If odour emissions persist additional monitoring and surveys will be conducted to ascertain the degree of impact and the appropriate contingency measures implemented.

### **Meteorological data**

The operator will collect meteorological data via the onsite weather station. This data will be used to:

- Compare odour monitoring results and complaints with wind direction to identify and isolate the source of odours.
- Identify potential weather conditions which could present a high risk of potential odour pathways. This will allow the operator to appropriately manage their activities to mitigate the risk.

We have assessed the monitoring proposals outlined by the operator against our guidance and are satisfied that appropriate procedures are in place to effectively monitor odour from the landfill and to identify and isolate sources of odour emissions.

### **Specific odour management conditions**

Permit condition 3.3.1 states that 'Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the environment agency, unless the operator has used appropriate measure, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise odour.'

This condition requires that all appropriate measures proposed by the operator must be implemented. In the event odour is detected and the operator has not applied the measures outlined in the application, enforcement action can be taken. In the unlikely event that the site is applying all the appropriate measures and there are still odour issues at the site the operator will be required to work with us to develop additional management and mitigation measures to address the issues.

## **Operational Technical Guidance**

The operator has confirmed in the application that they will operate in accordance within the standards outlined in Environment Agency Guidance How to Comply with Your Environmental Permit (EPR 1.00) and additional guidance for Landfill (EPR 5.02).

## **Incorporating operating techniques into the permit**

The operator proposed some of the odour management techniques outlined above via additional information responses submitted during the permitted application process. We assessed these submissions alongside the proposals in the application and are satisfied that these techniques will be effective at managing amenity issues and are in accordance with our guidance. We have therefore incorporated them into the operating techniques table of the permit (Table S1.2). These incorporated operating techniques are enforced through Condition 2.3.1 of the permit which requires activities to be operated in the manner described in the documentation specified in Table S1.2. We therefore do not consider that odour will cause pollution outside the site.

## **Dust emissions**

To support the proposals in the application the operator has reviewed their dust control measures for the site and submitted a revised H1 risk assessment. This document identifies the potential sources of dust emissions from the landfill activity and outlines the mitigation measures the operator will implement at the site to minimise emissions and pathways for impact.

## **Dust produced by delivery vehicles and mobile plant**

- Waste is brought on to the site in enclosed vehicles. Vehicles that are not enclosed will be appropriately sheeted to contain dust.
- The main access roads are swept with a mechanical road sweeper as and when required to clear debris and prevent associated dust emissions.
- Speed limits are in place at the site to reduce the dust mobilised during vehicles movements.
- During dry conditions a water bowser is available to spray the installation roads and operational areas, prior to and during vehicles movements.

## **Dust from the landfill operations**

- Waste with the potential to produce dust emissions is identified at waste pre acceptance and acceptance stages. The operator will put appropriate measures in place at the site to manage the risk.
- High dust risk wastes will be dampened down using water sprays to minimise the dust released during the handling and disposal process. Once the waste has been deposited it will be immediately covered over with non-dusty wastes.
- Daily cover will be employed when tipping is not occurring.
- The size of the tipping face will be minimised to reduce the amount of dust released during filling.

## **Amenity Dust Monitoring**

Dust monitoring for amenity purposes is incorporated into the permit through the operating techniques tables. The operator has a nominated competent person to undertake regular checks at the boundary of active cells and in residential areas to check for dust. If dust is detected additional works will be undertaken in order to identify and manage the source.

In the event of complaints the operator will undertake monitoring daily to identify the source of emission, target their dust management procedures and to establish the emission has been mitigated.

## **Litter**

To support the proposals in the application the operator has reviewed their litter control measures for the site and submitted a revised H1 risk assessment. This document identifies the potential sources of litter emissions from the landfill activity and outlines the mitigation measures the operator will implement at the site to minimise emissions and pathways for impact.

- Waste is brought onto the site in enclosed vehicles to prevent litter escaping during transport. Vehicles which are not suitably enclosed will be appropriately sheeted to minimise the escape of litter.
- Waste deposited at the tipping face is immediately compacted in order to immobilise the waste and prevent windblown litter.
- The operational area is minimised in order to contain exposed waste and reduce windblown litter
- Cover material will be applied to the active face to prevent windblown litter from escaping from the operational area while inactive.
- Mobile litter screens are employed to capture windblown litter. Screens are strategically placed in relation to sources of litter, such as downwind of the operational area of the landfill.
- Routine litter collection patrols which collect any litter that escapes from the operational area. In the event litter leaves the boundary of the site immediate action is undertaken to remove the litter and if necessary additional personnel will be employed to collect litter.

## **Noise**

To support the proposals in the application the operator has reviewed their noise control measures for the site and submitted a revised H1 risk assessment. This document identifies the potential sources of noise emissions from the landfill activity and outlines the mitigation measures the operator will implement at the site to minimise emissions and pathways for impact.

The operator has identified the main source of noise pollution as vehicles delivering and depositing wastes at the site. They have stated that it is unlikely there will be a significant increase in noise from the site, as the number of deliveries is not expected to increase as the annual tonnage at the site will not change.

To manage noise from the operation the operator has in place a series of measures to minimise the noise from site machinery including the following

- Where appropriate site plant are fitted with silences.

- All machinery is maintained in line with the manufacturer's instructions to ensure efficient operations and minimal noise emissions.
- The site roads will be appropriately maintained and speed limits imposed to reduce the noise from vehicle movements around the site.
- The site operations only take place within the specified operating times outlined in the site's planning permission.

Noise is managed and controlled through noise conditions within the permit specifically conditions 3.4.1, 3.4.2. These conditions require the operator to undertake activities in a manner that will not result in noise pollution. Should noise pollution occur the operator will be required to submit to the Environment Agency a noise management plan under condition 3.4.2. We will require all measures outlined in the noise management plan to be implemented.

### **Pests**

The operator has identified in their H1 risk assessment the potential for common landfill pests to be a potential issue at the site. They have therefore produced a bird, vermin and insect management plan to outline the specific management techniques which will be implemented at the site to mitigate the risk. Pests are a risk associated with the general landfill activities therefore are not necessarily a direct result of this proposal. The operator has demonstrated that the core operations at the landfill will not change therefore an increase in waste pre-settlement levels is unlikely to result in a significant increase in pest issues at this site

To ensure that operations continue to be undertaken in such a way as to minimise pests at the site the operator will implement the following management techniques;

- Wastes are compacted immediately after deposit to reduce the surface area of the exposed waste.
- Waste deposits are covered with inert and soil based daily cover at the end of each operating day. Areas covered with daily cover wastes which have not received waste for 7 days and will not receive waste for another 7 days it will be covered with an intermediate soil and inert cover materials which will be applied at a minimum depth of 20cm.
- Restrict the size of the active waste deposit areas, reducing the potential for pests to come into contact with the waste.
- Scavenging birds will be managed by use of bird kites, helium balloons, birds of prey and scarecrows. If these are ineffective gas cannons or pre recorded distress calls may be employed.

To ensure pest mitigation measures are effective the operator will undertake regular inspection of operational areas to identify potential infestations. In the event of an infestation intermediate action will be taken, including the application of insecticide sprays. If necessary specialist contractors will be employed to deal with any pest problems identified. In the event that particular wastes streams are identified as being the source of the pests, the installation

will cease to accept these problematic waste streams until further prevention methods have been put in place.

We have reviewed the operator's risk assessments and management procedures, some of which are outlined above. We are satisfied the operator has appropriately identified emissions which could arise from the site, highlighted potential emission pathways and outlined appropriate mitigation techniques in line with the requirements of our guidance which will prevent pests having an unacceptable impact.

### **Emissions management through permit conditions**

To effectively manage emissions at the site we have included a number of regulatory controls within the permit to ensure the operator implements the proposals set out in their application and, operate the site in accordance with the requirements of our guidance.

- Condition 1.1.1 of the permit requires the operator to undertake the landfill activity in accordance with their environmental management system which we review as a result of there being a significant change in their operation.
- Condition 2.3.1 of the permit requires the operator to operate their activities in the manner described in table S1.2. This table incorporates the technical standards which the operator has stated in the application.

In the unlikely event the management techniques proposed by the operator are not effective or do not manage emissions to a satisfactory standard the following conditions require the operator to take appropriate action to minimise and remediate the impact and to review their management systems to implement additional controls to prevent a reoccurrence.

- Where an emission is not covered by other conditions, condition 3.2.3 of the permit requires the operator, if notified by the Environment Agency that their activities are giving rise to pollution, to submit to the Environment Agency a revised emissions management plan. These plans will be reviewed by the Environment Agency and once approved they must be then implemented at the site. In the event the operator fails to implement all appropriate measures as outlined in the management plans, the Environment Agency may seek to undertake enforcement action at the site.
- Condition 3.3.1 of the permit requires the operator, if notified by the Environment Agency that their activities are not free from odour at levels likely to cause pollution outside the site, to revise their odour management plans and demonstrate to the Environment Agency that they can effectively manage odour at the site. If the operator fails to implement the appropriate mitigation measures outlined in the approved odour management plan, the Environment Agency may seek to take enforcement action against the operator.

- Condition 3.4.2 of the permit requires the operator, if notified by the Environment Agency that their activities are giving rise to noise pollution, to submit to the Environment Agency a revised noise and vibration management plan. Once the plan has been approved by the Environment Agency the operator will then be required to implement the revised measures outlined in the management plan.

We are satisfied that the above conditions and the operating techniques incorporated into table S1.2 provide us with appropriate regulatory control to ensure that the operator undertakes the activity in line with the requirements of our guidance and in a manner that will prevent pollution of the environment or harm to human health. The conditions also allow us to work with the operator to ensure they take appropriate action to prevent and remediate emissions should emissions occur. In the event the operator cannot demonstrate they have implemented their proposals or the measures agreed with the Environment Agency the conditions also allow us to consider enforcement action.

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## Annex 1: decision checklist

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

Aspect considered	Justification / Detail	Criteria met
		Yes
<b>Consultation</b>		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.	✓
Responses to consultation, web publicising and newspaper advertising	The web publicising, consultation and newspaper advertising 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 variation of the permit. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator.	✓
<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 facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility.  A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.	✓
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of nature conservation, protected species and protected habitats.  A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<p>not affect the features of the sites.</p> <p>The proposals under this application do not result in addition of land or activities. The revision of pre settlement levels will only increase in the height of the waste mass, the annual throughput will not change. Therefore the proposals will not significantly change the scope of previous habitat assessments.</p> <p><b>SSSI's (site of special scientific importance) - Downfield Pit, Westmill</b></p> <p>Natural England has specified in their site citations the relevant operations which should not take place within the vicinity of the SSSI. The relevant activities include dumping and spreading or altering of the protected site. The SSSI is 150 meters from the landfill therefore the site is not within the immediate vicinity of the protected site. We therefore do not expect the operator's proposals to result in any relevant activities which could physically reach the site and alter the complex sequence of Pleistocene gravels and tills features of the site'.</p> <p><b>European protected sites - SAC's (special areas of conservation) , SPA's, (special protected areas) RAMSAR's (Wetlands)</b></p> <ul style="list-style-type: none"> <li>- Wormley-Hoddesdonpark Woods SAC - features Dry Woodlands &amp; scrub</li> <li>- Lee Valley SPA /Ramsar - Birds of lowland freshwaters and their margins</li> </ul> <p>These sites are sensitive to disturbance (noise), physical damage, smothering, siltation, and acidification. The operator has submitted a risk assessment and emissions management plan which outlines potential emissions and demonstrates that the site has sufficient infrastructure to prevent unacceptable levels of emissions These measures include but are not limited to those discussed under the 'key issues' section of this document,</p> <p>In regards specifically to groundwater, emissions are monitored to ensure that downstream concentrations of pollutants are consistent with the upstream existing concentration. Additionally the site has infrastructure in place to manage leachate within the landfill. Leachate generated is actively extracted, treated and then discharged to sewer to minimise the impact on groundwater.</p> <p>Due to the measures outlined above and the fact that all the protected sites are over 3km away from the landfill site, we are satisfied that there will be no likely significant effect on any European protected site.</p>	

Aspect considered	Justification / Detail	Criteria met Yes
	<p><b>Natural and Environmental Rural Council (NERC) and Local wildlife sites</b></p> <p>The site is within the immediate vicinity of 5 of these sites. We have assessed the emissions from the site as a result of the changes proposed under this variation and have determined, due to the emission types and the mitigation measures specified in the key issues of this document there is an insignificant risk of impact on these sites.</p>	
<b>Environmental Risk Assessment and operating techniques</b>		
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator has submitted the following documents which are discussed within the 'key issues' section above:</p> <p>Hydrogeological Risk Assessment Stability Risk Assessment Gas Risk Assessment Odour management plan Odour impact assessment H1 Risk assessment</p> <p>The operator's risk assessment is satisfactory.</p>	✓
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes.</p> <p>Operational procedures have been submitted as part of the application which cover different aspects of site operations including the following;</p> <ul style="list-style-type: none"> <li>• Waste pre-acceptance;</li> <li>• Waste acceptance;</li> <li>• Waste storage;</li> <li>• Emissions from the process;</li> <li>• Abatement of fugitive emissions; and</li> <li>• Monitoring and reporting.</li> </ul> <p>The proposed techniques/emission levels are in line with the requirements and benchmark levels contained within 'How to Comply with Your Environmental Permit for Landfill (EPR 5.02)'. We consider them to represent appropriate techniques for the facility.</p>	✓
<b>The permit conditions</b>		
Waste types	We have specified the permitted waste types, descriptions and quantities, which can be accepted at the	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<p>regulated facility. We are satisfied that the operator can accept waste codes 18 01 04, 18 02 03 and 20 01 99 for the following reasons</p> <ol style="list-style-type: none"> <li>1) The wastes are non-hazardous.</li> <li>2) The healthcare waste is non infectious and not subject to special handling.</li> <li>3) The waste is of a suitable nature to be accepted at this landfill and the properties are similar to those wastes already accepted.</li> </ol> <p>In order to ensure the recommendations of the odour impact assessment are appropriately implemented we have specified the low odour waste types which can be accepted under odour management scenario A1 (deposit of low odour waste in cell 8) These are included in table S2.1. Working with the operator we have agreed which wastes are:</p> <ul style="list-style-type: none"> <li>• From odorous sources so cannot be considered low odour.</li> <li>• Contain clearly defined odorous and non odorous source which can be risk assessed to select low odour wastes.</li> <li>• Are from non odorous sources or are low odour wastes in nature.</li> </ul>	
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions. We have inserted the following pre operational conditions:</p> <ul style="list-style-type: none"> <li>• Pre-operational condition 9 requires the operator to demonstrate prior to increasing the leachate compliance level to 2 metres in Westmill 2, that each landfill cell has appropriate intercell bunding in place with sufficient freeboard. This is to prevent leachate overspill into other landfill cells.</li> <li>• Pre-operational condition 10 requires the operator to demonstrate prior to increasing their leachate compliance level to 2 metres in Westmill 2 that the leachate plant and extraction infrastructure have the capacity to manage the revised level.</li> <li>• The site has previously been subject to fires within the waste mass. Pre operational condition 11 requires the operator to demonstrate prior to depositing any further non-hazardous waste in active landfill cells in order to meet revised pre-settlement profile, that any thermal incidents in that</li> </ul>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	cell have been fully resolved and effective procedures are in place to prevent them.	
Improvement conditions	<p>Based on the information in the application, we consider that we need to impose improvement conditions.</p> <p>We have inserted improvement condition 14 which requires the operator to submit a consolidated version of the site's management system to the Environment Agency. This will ensure the latest versions of the site's management plans and operating techniques are made available to the Environment Agency to allow effective regulation of the site.</p>	✓
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 S1.2 in the permit.</p>	✓
<b>Operator Competence</b>		
Environment management system	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 RGN 5 on Operator Competence.	✓
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. A post conviction plan was submitted by the operator and assessed as satisfactory.</p> <p>The operator satisfies the criteria in RGN 5 on Operator Competence.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
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 RGN 5 on Operator Competence.</p> <p>The financial provision arrangements satisfy the financial provisions criteria.</p>	✓

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## 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.

Response received from
Councilor Warman (Alan)
Brief summary of issues raised
Concerns raised regarding: <ul style="list-style-type: none"><li>• the operator's past performance and compliance history</li><li>• why we are considering the application</li><li>• to extent to which we consider public opinion</li></ul>
Summary of actions taken or show how this has been covered
<p><b><u>Why we are assessing the application</u></b></p> <p>The application has been submitted in order for the Operator to demonstrate that under the revised proposal they will achieve a final domed profile which will assist water shedding and prevent damage to landfill infrastructure. As described in the key issued section of this document the operator has commissioned modelling to determine if the previously agreed settlement modelling which assumed a predicted waste settlement rate of 15% would achieve a final post settlement profile which meets the criteria of their planning and addresses the requirements of landfill directive. The revised modelling demonstrated that settlement would most likely exceed 15% and unless additional waste was added to the landfill it was most likely the landfill profile would settle beyond the original prediction, leading to a final profile which would be uneven and could lead to damage to the landfill cap and ponding of water.</p> <p><b><u>Addressing public comments</u></b></p> <p>To ensure the public are fully consulted on the proposals in this application we have undertaken engagement and consultation in line with the Environment Agency's customer charter. On submission of the application the public were consulted on the proposals for 20 working days using various media. This process is repeated for an additional 20 working days to consult the public on our minded to issue/refuse decision.</p> <p>All relevant issues highlighted through public consultations were collated and taken into account during the determination. Each concern relevant to the proposals in this application has been listed in this annex of this document along with an explanation of how the concern has been addressed during the determination of this variation application. We have worked with the operator to ensure they demonstrate each of their proposals are necessary and that they have appropriate emissions management procedures in place to address those issues at the site which are of concern to the public.</p> <p><b><u>Review of the operator's management procedures and development and additional management plans, modelling and assessments</u></b></p> <p>The operator has acknowledged in the application that there have been historic issues as this site and has demonstrated that they will implement effective measures to tackle the issues presented by the site.</p>

The operator has undertaken

- A review of all potential sources of emissions;
- A review of the risk assessment and management plans developed in line with the recommendations our guidance and the requirements of the Landfill Directive;
- A review of the emissions management techniques; and
- Additional odour impact assessments, odour modelling and odour mitigation strategies;

We have assessed the operator's risk assessments and management plans and are satisfied that the operator intends to implement measures that are in line with our landfill guidance and will be effective in preventing pollution of the environment or harm to human health. Based on the controls proposed in the application and subsequently required in the permit, we are satisfied that the operator can operate the site in a manner that will not adversely impact on receptors.

See also the following response for further information on past performance and compliance.

Response received from

MP Mark Prisk

Brief summary of issues raised

Concerns raised regarding:

- the operator's compliance history
- previous issues at the site regarding air pollution, environmental amenity and community consultation.

Summary of actions taken or show how this has been covered

### **Compliance history**

#### **Previous convictions and compliance**

The operator has submitted a post conviction plan to the Environment Agency for assessment which outlines the company's offences. The company has reviewed and updated the management systems and ways of working to prevent further breaches of the permit in the future. We have assessed the post conviction plan and have determined that along with the updated management systems and ways of working it is sufficient to prevent future compliance issues.

#### **Present and future compliance**

In order to ensure future compliance with the permit

- The operator has submitted updated versions of the management plans, including emission management plans, and has produced additional impact assessments to demonstrate that the site can be managed in accordance with permit conditions;
- We have worked with the operator to developed the site's operating techniques and have incorporated into Table S1.2 of the permit the requirement for these improvements to be implemented;
- The operating techniques by which the operator must operate the site have been incorporated into the permit via table S1.2 as they are in line with our guidance.

Based on the revised management plans the operator has submitted, our work with the operator to develop their site management and the technical standards incorporated into the permit we are satisfied that the operator's proposals recognise the issues at the site and proposed appropriate improvements and management techniques to address these issues. Please refer to the key issues section of this application more information on how the operator will ensure compliance with the permit.

**Emissions management.**

The operator has submitted management plans, operating techniques and an H1 environmental risk assessment which outline potential sources of emissions with counter measures to control these emissions. We have assessed the management systems and mitigation proposals and have determined that that they are in line with the measures contained within our guidance 'How to Comply with Your Environmental Permit for Landfill (EPR 5.02)'. Please refer to the Key issues section of this document for further information on emission management at the site.

**Public consultation**

The Environment Agency has carried out extensive consultation with the public to ensure they are aware of the operator's proposals to vary the permit and to allow them the opportunity to provide their views and concerns.

The details of the application were published on the Environment Agency website as a website advert which contained links to electronic versions of the application. In addition paper copies and CDs containing the application were made available at the Environment Agency Hatfield office, Apollo court, the local authority public register and at the local library.

To make people aware that an application was available for consultation we put together an engagement plan highlighting the stakeholders and other interested groups in order to determine the most effective consultation methods. We sent out application packs to the local liaison group and the local residents within our consultation area telling them about the application. We also sent emails to local MP's and the Ware online community forum.

Over a hundred public consultations were received by the Environment Agency demonstrating that the level of consultation was effective.

Each relevant issue raised regarding this application has been addressed during the determination of this variation application as set out in this annex.

Response received from
Health Protection Agency
Brief summary of issues raised
Ensure an accident management plan is in place, as per Sector Guidance Note IPPC S5.02 which is updated with regard to proposed changes on site. Based on the emission rates applied and standoff distances from Downfield Court Cottages and Hanbury Manor Hotel, the land-filling of typical non-hazardous waste is not predicted to exceed 1.5 ou <sub>E</sub> /m <sup>3</sup> (as an hourly 98 <sup>th</sup> percentile). This level equates to just above the odour threshold (of 1 ou <sub>E</sub> /m <sup>3</sup> ) and where complaints are unlikely to occur.

Based solely on the information contained in the application supplied to us, the overall impact from the site is considered to be low due to the management and control measures in place at the site to minimise emissions. However, given the proximity of residential receptors to future operating cells and the site boundary, there is the potential for nuisance issues to occur. The Environment Agency should ensure that control and mitigation measures for potential nuisance issues (i.e. odour; noise and vibration; particulate matter; and birds, vermin and insects) are sufficient so emissions are prevented and minimised beyond the site boundary and every mitigation measure available to minimise the odour to the closest residential properties be used.

The response outlined in this representation is based on the following general assumptions:

The permit holder shall be using 'best available techniques' in accordance with Article 2(11) of the IPPC Directive; Comments will be sought from the Food Standards Agency for matters relating to impact on human health of pollutants deposited on land used for the growing of food crops or animal rearing; and,

Summary of actions taken or show how this has been covered

**Accident management plan**

The operator has an accident management plan in place as required by permit. The operator's accident management is required to meet the recommendations in our guidance and be reviewed and updated on a regular basis, in the event of an accident or as a result of substantial operational change.

**Odour management – vicinity of new cell to public receptors**

The operator has submitted an odour management plan, undertaken odour modelling and produced an odour impact assessment to determine the impact of the proposals on receptors. The modelling appropriately identifies the sources of emissions and pathways for impact while the management plans contain information to show how the operator will manage and mitigate offsite emission as per our guidance. Please refer to the key issues section of this document which expands on odour management techniques outlined above.

**Ensure control and mitigation measures are in place to manage odour, noise, vibration, particulate matter and pests**

The operator has submitted an H1 risk assessment which identifies the potential sources of emissions at the site, determines the level of risk and presents proposals for the mitigation and management of each risk. In addition the operator has produced site specific management plans to demonstrate how they will effectively manage, mitigate and monitor specific problematic issues for the site.

We have assessed the operators management plans and consider that they adequately address the risk assessments.-. Please refer to the key issues section of this document for more information on site emissions management.

**Implementing the requirements of the landfill directive**

As outlined above we have assessed the operator proposals against the

requirements of the Landfill Directive. The operator's proposals incorporate the recommendations and principles outlined in our guidance and are therefore acceptable. In addition the new management techniques associated with the odour scenarios proposed by the operator (see key issues section) demonstrates the operator intends to manage the operation in a way which will prevent the site from impacting on nearby receptors.

**Food Standard Agency consultation**

The Environment Agency consulted the Food Standard agency but no comments were received.

**Response received from**

Local Authority – Environmental Health

**Brief summary of issues raised**

Scenario A3 - Deposition of additional waste in north-eastern area of Cell 8 only when wind is from a direction of 225°-135° with waste deposition in Cell 9; when wind is from a direction of 135°-225° will take place.

How would you make sure that this condition would be complied with and would there be a tolerance level before you identify a breach of condition?

The Environment Agency analysis of the Impact Assessment identified an exceedence of the indicative criterion of 1.5ouE/m<sup>3</sup> at Downfield Farm Cottages 2 scenario A2 (i.e. deposition of additional waste in north-eastern area of Cell 8 only during 6-months of the year (October – March) with waste deposition in the remaining 6-months undertaken in Cell 9). Would it be possible to eliminate this scenario as an option?

Should the permit be granted, will the EA monitor the site to ensure that the odour impact limit criterion (1.5ouE/m<sup>3</sup>) will not be exceeded at the nearest sensitive receptors?

**Summary of actions taken or show how this has been covered**

**Checking compliance with conditions**

We have determined that odour management scenarios A1 and A3 are acceptable at this site. The requirement to implement these approved odour management scenarios is incorporated into the permit's operating techniques table (S1.2) and enforced via permit condition 2.3.1 (operating techniques). The operator has stated they will check the wind direction prior to depositing odorous wastes in cell 8. In order to ensure compliance with the wind direction odour scenario we can check waste acceptance and deposition records against the on-site weather station results. The operator will, as part of their management systems, ensure wind direction is checked and appropriate prior to waste deposits.

**Eliminate scenario A2**

We consider that scenario A2 is not sufficient to mitigate odour emissions from the landfill, therefore this scenario is not allowed under the permit.

**Will the Environment Agency monitor the site?**

Odour will be monitored via sniff tests around the site during our compliance visits to ensure mitigation is effectively implemented and we will monitor odour

complaints to assess compliance against the odour condition.

## Web publicising responses

Response received from
Public Responses
Brief summary of issues raised
<ul style="list-style-type: none"><li>• Odour</li><li>• Air pollution</li><li>• Stripping back of the old cap</li><li>• Smell of deodorisers</li><li>• Use of Stansted airport wind patterns to representative weather patterns at the site.</li></ul>
Summary of actions taken or show how this has been covered
<p><b><u>Odour management</u></b></p> <p><b>Odour impact assessment and modelling</b></p> <p>Because of the sensitivity of the site, the operator submitted odour modelling which reviewed the potential odour impact on nearby receptors. The modelling used site specific data to model four odour management scenarios A, A1, A2 and A3. Each scenario involved different odour mitigation and management techniques involving varying meteorological conditions and waste types, which could potentially be applied in combination depending on time of year. The modelling produced odour zones of influence for each scenario which outlined how likely they each were to exceed of the most stringent odour criterion (<math>1.5 \text{ ou}_{\text{E}/\text{m}^3}</math>) at the nearest sensitive receptor. We have assessed the modelling submitted with the application and conclude that scenario A1 and A3 are unlikely to result in an exceedence of the odour criterion (<math>1.5 \text{ ou}_{\text{E}/\text{m}^3}</math>). An impact could not be ruled out under scenarios A and A2 and therefore they will not be allowed under the permit. Please refer to the key issues section of this document for a full explanation of the odour modelling and our assessment of the operator's results.</p> <p><b>Odour management plans</b></p> <p>The operator submitted a revised odour management plan in support of the application which we have assessed and consider to contain acceptable measures to control odour at the site. The odour management plan has been included as an operating technique in Table S1.2. please refer to the key issues section of this document for more information</p> <p><b>Permit odour management conditions</b></p> <p>Odour is controlled through the following conditions</p> <p>Condition 3.3.1 – ensures that the site is operated using all appropriate measures to prevent odour, including those in the site's management plan.</p> <p>Condition 2.3.1 – requires to the operator to operate the site in accordance with the operating techniques specified in Table S1.2. If the operator does not</p>

operate the site in accordance with the odour management scenarios and the waste stream specifications specified in this table, this is a breach of permit and we can take enforcement action accordingly.

Please refer to the key issues section of this document for further information on the conditions in the permit and the Environment Agency guidance and operating techniques which have been incorporated into the permit. Based on the different controls incorporated into the permit we are satisfied the site will be operated in accordance with our guidance, and that there are sufficient controls included within the permit to effectively regulate the site.

### **Air pollution**

The Landfill Gas risk assessment reasonably concludes that there will be no significant environmental impact caused as a result of increasing the waste and that existing gas management arrangements will ensure that gas is properly managed. Our audit of the operator's GasSim modelling indicated that the increase in waste will produce sufficient gas to require an additional gas engine. The operator confirmed they would apply for an additional gas engine, an activity which has been permitted as part of a separate variation to this permit.

### **Concerns regarding removal of the landfill cap**

The operator will not remove the landfill cap as result of implementing the revised pre settlement levels. To achieve the revised profile, only active or future landfill cells will be subject to additional non-hazardous waste.

Landfill cells which have already been capped will receive restoration materials including inert waste listed as suitable for restoration as specified in Table S2.2 only. These materials will be deposited on the cap to the height of 1- 2 metres to ensure the landfill is capped to achieve a suitable dome structure.

### **Smell of deodorisers**

The operator has installed a deodorising system as an odour management tool to minimise odour emissions from the landfill. The operator holds meeting with the public to allow them to raise concerns regarding the management of site and will take on board public comments when selecting masking agents.

### **How is Stansted air port representative of this site**

#### **Why the operator selected this data set**

The operator has used data from Stansted airport in their modelling data as this is the closest location with meteorological features similar to those of the landfill site. Wind rose data from Stansted has been compared with data from the landfill's onsite weather station and the prominent wind directions and regularity of wind directions are comparable.

To test the sensitivity of the operator's odour modelling data based on the Stanstead data and review the operator's conclusions we applied two alternative sets of relevant wind data to the operator's modelling. These wind data sets were from an alternative relevant location Andrewsfield airfield and an older set of Stansted airport windrow data.

Applying these data sets to the odour model allowed us to see how much the variation in wind data impacted on the odour modelling results which dictate

the effectiveness of the operator's odour management scenarios. Testing sensitivity is done on a worst case scenario therefore any figures which highlighted a potential breach in the most significant odour criterion must be taken into account.

Based on the information above, we are satisfied that Stansted conditions are representative for Westmill landfill and are appropriate for use in the models.

Response received from
Public Responses
Brief summary of issues raised
<ul style="list-style-type: none"> <li>• Dust,</li> <li>• Particulates and</li> <li>• Health Impacts</li> </ul>
Summary of actions taken or show how this has been covered
<p><b><u>Dust management</u></b></p> <p>The operator has submitted an H1 risk assessment which identifies the main sources of dust emissions from the site and outlines the dust mitigation methods proposed to manage emissions from the site. We have assessed the methods proposed by the operator and consider them to be sufficient to control dust at the site.</p> <p>To ensure dust is appropriately managed at the site, the permit contains condition 3.2 which outlines the requirement for the operator to appropriately manage 'Emissions of substances not controlled by emission limits'. This condition can be considered to be breached, unless the operator has implemented appropriate measures as set out in a management plan to manage emissions such as dust.</p> <p>Please refer to the Key issues section of this document for further information regarding the dust control measures proposed at the site and the permit controls in place.</p> <p><b><u>Health impacts of dust and particulates</u></b></p> <p>We have consulted the Health Protection Authority (HPA) on the operator's application and taken into account their advice when assessing the operator's application. We have outlined how the operator's proposals and our permit conditions address their concerns above. Health impacts of dust have been considered in the application and effective dust prevention methods in line with our guidance have been proposed. Please refer to the key issues section of this document for dust management methods.</p>

Response received from
Public Responses
Brief summary of issues raised
<p>Litter</p> <p>Health Impacts</p>
Summary of actions taken or show how this has been covered
<p><b><u>Litter</u></b></p> <p>The operator has outlined in their H1 risk assessment potential sources of litter emissions from the landfill activity and has demonstrated how they intend to control any litter arising as a result of the proposals. We have assessed the</p>

mitigation measures and have determined that they will be sufficient to adequately control litter at the site).

In addition the permit contains the condition 3.2 which covers the regulation of emission of substances not controlled by emission limits. This condition is in place to ensure the operator does not cause pollution. This condition can be considered to be breached, unless the operator has implemented appropriate measures as set out in a management plan to manage emissions such as litter.

Please refer to the key issues section of this document for more information on how the operator's operating techniques and the permit condition will manage litter emissions from the site

**Health impacts**

We have consulted on the application with the Health Protection Authority (HPA) and taken into account their advice when assessing the operator's application.

We are satisfied the operator's litter prevention methods are in line with our guidance and will be effective including to adequately address Health Impacts and our permit contains appropriate conditions to ensure these measures are implemented.

Response received from
Public Responses
Brief summary of issues raised
Noise
Summary of actions taken or show how this has been covered
<p>The operator has outlined in the H1 risk assessment potential sources of noise from the activity and has outlined the measures they intend to implement in order to manage noise emissions from the site as a result of the proposed amendments. We have assessed their mitigation measures and have determined that they satisfy the requirements of the Landfill Directive and are in line with our guidance.</p> <p>Permit condition 3.4.1 requires that the operation is free of noise at levels likely to cause pollution and requires the operator to implement appropriate measures to appropriately manage noise emissions from the site.</p> <p>Condition 3.4.2 of the permit requires the operator, in the event site is giving rise to noise and vibration pollution outside the site, to submit a noise and vibration management plan to us. The noise and vibration management plan is to then be implemented and reviewed to ensure it is effective.</p> <p>Please refer to the key issues section of this document for more information on how the operator and the permit will manage noise emissions from the site. The site's planning permission outlines the site operating hours.</p>

Response received from
Public Responses
Brief summary of issues raised
<ul style="list-style-type: none"> <li>• Additional traffic</li> <li>• Mud and debris dragged outside the site</li> </ul>

- Waste dropping off the back of lorries
- Vehicles emissions

Summary of actions taken or show how this has been covered

**Additional Traffic and vehicle emissions**

The offsite movement of vehicles falls outside the scope of the Environmental Permitting Regulations. The planning permission restricts the operating hours of the site and vehicle movements.

**Mud and debris leaving the site**

The operator has identified that mud and litter being dragged outside the site by delivery lorries is a potential risk. To demonstrate That this risk can be adequately controlled, the following mitigation measures have been proposed;

- Constructing hard surfaced access roads from the installation entrance up to the vehicle wheel wash to minimise the potential for mud to be carried outside the site.
- On leaving the site all vehicles will be required to enter the wheel wash.
- A road sweeper will be hired on a regular basis to clean the main access road and other hard surfaced area in the installation to maintain clean conditions.
- The operator will carry out daily inspections of the facility including the access roads and the wheel wash to ensure they are in effective working order.

**Waste dropping off the back of lorries**

Litter will be managed by using enclosed lorries for deliveries or appropriately sheeted vehicles to prevent litter escaping from trucks during transport. The annual permitted tonnage of waste for the site will not change therefore the risk of litter from vehicles will not increase as there will be no additional vehicle movements from the site.

Condition 3.2 within the permit requires the operator to implement the measures they have outlined in their management plans to manage the emission of substances not controlled by emission limits such as litter. The operator will be in breach this condition if they do not implement appropriate measures to manage emissions such as litter. Please refer to the key issues section of this document for more information on litter management.

Response received from

Public Responses

Brief summary of issues raised

Vermin including Seagulls and Flies

Summary of actions taken or show how this has been covered

The operator is required to appropriately manage pests at the site. The operator has identified the activities likely to attract pests and have produced a pest management plan which outlines how they will manage pests at the site and the mitigation techniques they intend to put in place to minimise their occurrence. We have assessed the operator proposals and have determined they are sufficient to adequately control pests at the site. These measures

are explained further in the 'Key Issues' section above.

Response received from

Public Responses

Brief summary of issues raised

The extension of landfill operations beyond 2017

Summary of actions taken or show how this has been covered

This matter is outside the scope of the Environmental Permitting Regulations. The length of the sites operational life is outlined in the sites planning permission.

Response received from

Public Responses

Brief summary of issues raised

- Increase in the height of the landfill
- Visual Impact
- Why additional non-hazardous wastes are proposed instead of inert non odorous materials to make up pre settlement levels
- The benefit of increasing pre-settlement levels

Summary of actions taken or show how this has been covered

**Increase in the height of the landfill**

The proposals will not result in an increase in height of the landfill once the waste mass has settled (known as the post settlement profile). The increase in the pre settlement profile will be a short term impact and is required to ensure that the landfill settles in such a way as to achieve the post settlement profile and achieve a domed profile to help with water shedding.

In addition the revised post settlement landfill profile submitted with the application is lower than that previously agreed with the Environment Agency and Local Planning Authority. This is due to pressures outside the remit of this variation notice. Therefore long term post settlement height of the landfill will be lower than previously agreed

The operator will monitor the rate of settlement as per permit condition 3.5.3 which requires them to do an annual topographical survey in order ensure the predicted post settlement modelling drawings are achieved.

The operator has submitted revised gas, hydrogeological, seepage and stability risk assessments to the Environment Agency to identify the risks and sources of emissions associated with the increase in the Presettlement levels of the landfill. We have assessed the operator's risk assessments and have determined the operator's proposals are appropriate and will not result in any significant environmental impact. Please refer to the Key issues section of this document for more information

**Visual Impact**

The temporarily increased height of the landfill in regards to its visual impact falls outside the scope of the Environmental Permitting Regulation and is part of the planning process.

**Why non-hazardous waste is being deposited instead of less odorous inert wastes**

The operator will deposit a combination of non-hazardous wastes and low

odour inert or soil wastes to achieve the revised profiles.

The operator is not permitted to remove the landfill cap in areas of the landfill that have been completed in order to achieve revised settlement levels. Therefore completed landfill cells will receive inert or soil wastes for deposit above the landfill cap to increase the height of finished cells, the height of increased cells is expected to increase by a maximum of 1-2 m. This will ensure that older completed cells are still able to achieve revised post settlement levels without becoming a source of odour emissions.

These capped areas account for the majority of the landfill site's surface area, incorporating the whole of Westmill 1 and Westmill 2 cells 1- 5. Therefore a majority of the site will be covered with low odour wastes.

Non-hazardous waste will only be used to achieve revised pre-settlement levels in active or future landfill cells. The site is already permitted to accept non-hazardous waste, this variation does not seek to change the nature of the filling operation however as stated, the operator intends to limit the additional non-hazardous waste deposits to areas that are currently being filled or future void space so as to minimise the impacts of the activity on the environment and surrounding receptors. The operator has demonstrated they have appropriate techniques in place to manage the disposal of non- hazardous waste in these areas therefore the activity can be permitted in line with the requirements of the Environment Permitting Regulations.

#### **What is the benefit of revising pre settlement levels**

The original post settlement profile (landfill height once the waste has settled) was designed to provide a final landfill form which would provide a domed cap to ensure that once the site was finished and restored, water would not be able to enter the waste mass, this would prevent increased leachate generation and adverse impacts on groundwater. The post settlement profile was calculated using a pre-settlement rate of 15% which was thought to be the settlement rate of biodegradable landfills and would achieve the agreed post settlement profiles. The revised settlement modelling highlighted that the waste mass is likely to settle more than previously thought, predicting a settlement rate of 32% which is similar to observed settlement rates at similar non-hazardous biodegradable landfills. As the predicted settlement is double the previously agreed rate it is unlikely the landfill will achieve the previously agreed post settlement profile.

It is important that the post settlement profile is achieved as it is designed to ensure the landfill mass forms a smooth domed profile in line with the requirement of the landfill directive. This is to prevent differential settlement which could damage the cap and land sumps which may result in ponding of water on the landfill cap and landfill infrastructure being damaged.

To ensure the landfill achieves the post settlement profile the operator has revised the- pre-settlement drawings with the intention of achieving an appropriate landfill profile. Please refer to the key issue section of this document for more information of the operator settlement modelling, justification for increasing pre settlement levels and our review of their proposals

Response received from

Public Responses
<b>Brief summary of issues raised</b>
The addition of new waste types Additional odour due to new waste types Health Impacts associated with these wastes and concern regarding safety.
<b>Summary of actions taken or show how this has been covered</b>
<p><u>Addition of new waste types</u></p> <p>The healthcare wastes the operator has applied for are classified as non-hazardous wastes as defined in the European Waste Catalogue, they do not present a significant risk to health or the environment and are not subject to any special handling requirements.</p> <p>The environmental risks posed by these healthcare wastes are similar to those already accepted at the landfill. The waste will be managed in line with the operating techniques the operator has proposed in the application and the waste acceptance criteria set in the permit. For example waste will be compacted to minimise the surface area and covered with lower risk waste to minimise exposure to air.</p> <p><u>Additional odour due to new waste types</u></p> <p>The operator has identified that these waste are a potential odour risk and have stated that they will only represent a small fraction of the waste deposited at the landfill. The risks posed by these healthcare wastes are also similar to those already accepted at the landfill will be managed in the same way using the operating techniques outlined in the key issues section of this document.</p> <p>Based on the information within the application which states how these wastes will be managed and the odour modelling undertaken by the operator which demonstrates that these wastes will not result in any additional odour impacts, we are satisfied that these additional wastes can be accepted at this site.</p> <p><u>Health impacts are these new waste types safe</u></p> <p>The proposed healthcare waste types are classified as non hazardous waste as they are not infectious, do not present a risk to human health and do not require any special handling requirements. They are from health care and veterinary sources where they will be segregated at source to prevent contact with any hazardous health care waste.</p> <p>The operator has appropriately identified the risks associated with non hazardous waste types and has outlined operating techniques for specifically managing the risk.</p> <p>Please refer to the key issues section of this document which outlines the site's emissions management and waste containment techniques.</p> <p>Based on the justification submitted by the operator we are satisfied the waste will be appropriately contained within the landfill and have incorporated the proposed operating techniques into the permit.</p>