

Determination of two Applications to vary an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2010

Decision document recording our decision-making process

The Application Number is: EPR/DP3639LM/V005
The Applicant / Operator is: Whitemoss Landfill Limited
The Installation is located at: Whitemoss Landfill

What this document is about

This is a decision document, which accompanies the variation notice that we have decided to issue.

It explains how we have considered the applications, and why we have included the specific conditions in the variation notice. It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our decision. Unless the document explains otherwise, we have accepted the Applicant's proposals. We have consolidated all variations to this permit into one set of permit conditions and updated the conditions to our most recent permit template as an Agency initiated variation.

We try to explain our decisions as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy. A lot of technical terms and acronyms are inevitable in a document of this nature: we provide a glossary of acronyms near the front of the document, for ease of reference.

Please note that the operator has also submitted an application to transfer the permit to Whitemoss Landfill Holdings Limited. The transfer application is being determined concurrently with this substantial variation application. The current intention is for the transfer of the permit to be completed following determination of this substantial variation application. We will address this decision in a separate document.

Preliminary information and use of terms

We gave the Application the following reference number:

- EPR/DP3639LM/V005 – variation to extend the boundary of the existing landfill site for hazardous waste to the west (known as the

western landfill area) comprising phases A,B,C and D – adjacent to the current landfill.

We refer to the application as “the **Application**” in this document in order to be consistent.

The Application was duly made on 23/09/2014.

The Applicant is Whitemoss Landfill Limited. We refer to Whitemoss Landfill Limited as “the **Applicant**” in this document. Where we are talking about what would happen when the Variation is granted, we use the term “the **Operator**”

Whitemoss Landfill Limited’s facility Whitemoss landfill site is located at Whitemoss Road South, Skelmersdale, Lancashire, WN8 9TH. We refer to this as “the **Installation**” in this document.

How this document is structured

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Annex II Representations received during the consultation on the draft decision.

Glossary of acronyms used in this document

AA	Annual average
AERMOD	<u>A</u> merican Meteorological Society and <u>E</u> nvironmental Protection Agency <u>R</u> egulatory <u>M</u> ODEl
AONB	Area of Outstanding Natural Beauty
ASL	Artificial Sealing Liner
BAT	Best Available Technique(s)
BAP	Biodiversity action plan
BOD	Biochemical Oxygen Demand
CAR	Compliance Assessment Report
CQA	Construction Quality Assurance
CROW	Countryside and Rights of Way Act 2000
DAA	Directly Associated Activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DCO	Development Consent Order
DD	Decision Document
DEFRA	Department of the Environment, Food and Rural Affairs
EA	Environment Agency
EAL	Environmental Assessment Level
EIA	Environmental Impact Assessment
EPR	Environmental Permitting (England and Wales) Regulations 2010 (SI 2010 No. 675) as amended
EQS	Environmental Quality Standard
ESID	Environmental Setting and Installation Design
EU	European Union
FEMP	Fugitive Emissions Management Plan
FML	Flexible Membrane Liner
FP	Financial Provision
FSA	Food Standards Agency
GCL	Geosynthetic Clay Liner
GUP	Gas Utilisation Plant
H1	Horizontal Guidance – Environmental risk assessment for permits
HDPE	High density polyethylene

HPA	Health Protection Agency (now Public Health England)
HRA	Hydrogeological Risk Assessment
IDB	Internal Drainage Board
IED	Industrial Emissions Directive (2010/75/EU)
IPPCD	Integrated Pollution Prevention and Control Directive (2008/1/EC)
LfD	Landfill Directive (1999/31/EC)
LFGRA	Landfill Gas Risk Assessment
LFTGN	Landfill Technical Guidance Note
mAOD	metres Above Ordnance Datum
MAC	Maximum allowable concentration
MDR	Maximum deposition rate
OMP	Odour Management Plan
PC	Process Contribution
PEC	Predicted Environmental Concentration
PHE	Public Health England
PPS	Public Participation Statement
RFI	Request for information
RGS	Regulatory Guidance Series
SAC	Special Area of Conservation
SGN	Sector Guidance Note
SPA(s)	Special Protection Area(s)
SRA	Stability Risk Assessment
SSSI(s)	Site(s) of Special Scientific Interest
SWMA	Specified Waste Management Activity
SWMP	Surface Water Management Plan
TGN	Technical Guidance Note
WAC	Waste acceptance criteria
WFD	Waste Framework Directive (2008/98/EC)

1 Our decision

We have decided to issue the variation to the Applicant. This will allow the Applicant to operate the Installation, subject to the conditions in the Permit as varied.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the permit will ensure that a high level of protection is provided for the environment and human health.

This Application is to vary the conditions of the Permit which allows the operation of an installation which is subject principally to the Landfill Directive (LfD) and the Industrial Emissions Directive (IED) which has superseded the Integrated Pollution Prevention and Control Directive (IPPCD).

The decision is to vary the permit to extend the area of Whitemoss Landfill to include the western landfill area and to update the permit to modern conditions. We have taken the opportunity to change a small number of conditions to the wording in our current template. This does not affect the level of regulatory control or environmental protection. We have consolidated the variation notice EPR/DP3639LM/V005 with the previous variation notice to the Permit and produced a consolidated Permit based on our modern template conditions. The consolidated Permit contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We have varied the Permit to include these conditions by way of a regulator initiated variation. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting (England & Wales) Regulations 2010 (“EPR”) and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Permit, we have considered the Application and accepted the details are sufficient and satisfactory to make the standard condition appropriate.

2 How we reached our decision

2.1 Receipt of Application

The Application was duly made on 23/09/2014. This means we considered the Application was on the correct form and contained sufficient information for us to begin our determination but not that it necessarily contained all the information we would need to complete that determination, see below:

The Applicant claimed that certain information was commercially confidential and should be withheld from the public register. We considered this request and determined that the Financial Provision information is commercially confidential. The expenditure plan could be read and used by any potential or current competitor and/or supplier. This would affect the operator’s legitimate

economic interest. It would allow competitors to work out the operator's costings and undercut them when bidding for contracts and allow potential suppliers to know what the operator is expecting to pay for something. We do not consider that the public interest in knowing the site specific detailed costings outweighs this. A pre-operational condition has been included in the permit which will ensure that adequate Financial Provision is made for the site. Apart from the issues and information just described, we have not received any information in relation to the Application that appears to be confidential in relation to any party.

2.2 Consultation on the Application

We carried out consultation on the Application in accordance with the EPR, our statutory PPS and our own RGS Note 6 for Determinations involving Sites of High Public Interest. We consider that this process satisfies, and frequently goes beyond the requirements of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, which are directly incorporated into the IED, which applies to the Installation and the Application. We have also taken into account our obligations under the Local Democracy, Economic Development and Construction Act 2009 (particularly Section 23). This requires us, where we consider it appropriate, to take such steps as we consider appropriate to secure the involvement of representatives of interested persons in the exercise of our functions, by providing them with information, consulting them or involving them in any other way. In this case, our consultation already satisfies the Act's requirements.

We advertised the Application by a notice placed on our website, which contained all the information required by the IED, including telling people where and when they could see a copy of the Application. We also placed an advertisement in the Skelmersdale Champion on 5th November 2014, 12th November 2014 and 19th December 2014. We advertised the second time to correct an error in the original advert and because additional information had been included on the public register. We advertised the third time to extend the consultation period following feedback, to give people more time to look through the documents included in the consultation.

We made a copy of the Application and all other documents relevant to our determination (see below) available to view on our Public Register. Anyone wishing to see these documents could do so and arrange for copies to be made. The Applicant also provided a number of copies of the Application on CD which were also made accessible from the Public Register. A copy of the CD was also sent to Skelmersdale library and placed on our e-consultation tool to provide further access to the public and consultees.

We sent copies of the Application to the following bodies, which includes those with whom we have "Working Together Agreements":

- *Director of Public Health*
- *West Lancashire District Council – Environmental Protection Section*

- *Food Standards Agency*
- *Health and Safety Executive*
- *Public Health England (Centre for Radiation, Chemical and Environmental Hazards)*
- *Sewerage Undertaker – United Utilities Plc*

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly. Note under our Working Together Agreement with Natural England, we only inform Natural England of the results of our assessment of the impact of the installation on designated Habitats sites.

A summary of consultation comments and our response to the representations we received can be found in Annex I. We have taken all relevant representations into consideration in reaching our determination.

In addition to our consultation of the Application as detailed above, we also consulted with the public and relevant consultees on our draft decision. The consultation took place between 30th March 2016 and 27th April 2016. The draft permit and decision document were made available on line from the GOV.UK website. A summary of consultation comments and our response to the representations we received can be found in Annex II.

2.3 Requests for Further Information

Although we were able to consider the Application duly made, we did in fact need more information in order to determine it, and issued an information notice on 6 March 2015. A copy of the information notice was placed on our public register. The information request was received in instalments, but all of the information was received by 26/10/15.

In addition to our information notice, we received additional information during the determination from the applicant as follows:

Response to request for information (RFI) from Operator in relation to Priority Habitats submitted on 6/05/15;

Letter from Applicant providing second addendum of HRA dated 23/07/15 following a verbal request as this information was requested separately by the Compliance Team in the Environment Agency, and once we became aware of it we requested that this was also submitted by the applicant as part of the application so that it could be considered as part of the determination;

The operator also submitted comments on the public consultation responses we had received which were on the public register this was dated 26/08/15. We have taken this into consideration as appropriate.

We made a copy of this information available to the public in the same way as the response to our information notice;

3 The legal framework

The Variation notice is issued, under Regulation 20 of the EPR (this includes Operator initiated variation and Agency initiated variation elements as detailed in this decision document). The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* for the purposes of the IED;
- a *landfill* as described by the LfD;
- an *operation* covered by the WFD; and
- subject to aspects of other relevant legislation which also have to be addressed.

We address some of the major legal requirements directly where relevant in the body of this document. Other requirements are covered in a section towards the end of this document.

We consider that the varied permit will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

Under Regulation 18 of the EPR, we have consolidated variation EPR/DP3639LM/V005 with all previous variations to the Permit to form one single consolidated Permit reflecting all the variations including EPR/DP3639LM/V005.

4 The Installation

4.1 Description of the installation

The Installation is subject to the EPR because it carries out activities listed in Part 1 of Schedule 1 to the EPR:

- Section 5.2 Part A(1)(a) – the disposal of waste in a landfill –
 - (i) receiving more than 10 tonnes of waste in any day, or
 - (ii) with a total capacity of more than 25,000 tonnes, but excluding disposals in a landfill taking only inert waste.
- Section 5.4 Part A(1)(a)(i) – biological treatment of non-hazardous waste. Treatment of leachate in a facility with a capacity of >50 tonnes/day.

An installation may also include “directly associated activities” which at this Installation include leachate storage, landfill gas flaring, discharges to surface water, discharges to public sewer from leachate treatment and fuel storage.

Together, these listed and directly associated activities comprise the Installation.

4.1.2 The Site

The existing site is centred approximately on National Grid Reference (NGR) SD 47046 05064 and is located to the south of the M58 motorway which separates Whitemoss Landfill from the southern outskirts of Skelmersdale in Lancashire. The current permitted landfill installation comprises of a landfill site for hazardous waste and associated infrastructure as well as a leachate lagoon and treatment plant and a landfill gas flare. The site also contains the Whitemoss Interceptor Waste Treatment Plant installation which has a separate Environmental Permit (EPR/TP3531GY). The Whitemoss Interceptor Waste Treatment Plant installation is not part of this application and is not affected by it and therefore is considered no further in this document. The Whitemoss Interceptor Waste Treatment Plant Installation is a separate activity not part of the landfill installation and therefore has a separate permit, although the operator is also Whitemoss Landfill Limited. We have not received an application to transfer this permit.

This application is for an extension to the west of the existing site known as ‘the western landfill area’. The western landfill area is centred approximately on NGR SD 46822 05242 and covers an area of approximately 12.7 hectares.

The proposed landfill extension is for hazardous waste only and has been defined as a Nationally Significant Infrastructure Project. An application for a Development Consent Order was submitted and this was granted on 21st of May 2015 by the Secretary of State.

The eastern part of the northern boundary of the western landfill area is bordered by 4 residential properties to the south of the M58 motorway (i.e. between the landfill and the motorway) Adjacent to the remaining northern boundary to the north of the M58 motorway are offices and commercial areas and domestic dwellings that form part of the south western outskirts of Skelmersdale. The southern boundary is bordered by land designated as open space, parks and farmland, although there is a biodiversity action plan priority habitat to the south west. The eastern and western boundaries of the installation border biodiversity action plan priority habitats. All of these receptors have been taken into consideration as part of this determination. See section 5.2.12 of this document.

The SABIC Trans – Pennine Ethylene pipeline runs adjacent to the southern boundary of the site. The Rainford drain pipeline, a piped underground surface water drain, currently runs through the proposed western landfill area. Prior to the commencement of operations, the pipeline will be diverted around

the perimeter of the western landfill area to join an existing culvert to the south of the M58 motorway.

There are no European or international designated habitats sites within 2 km of the site. The closest European site is the Martin Mere SPA and Ramsar located approximately 9.5 km to the north west of the site.

The Applicant submitted a plan which we consider is satisfactory, showing the site of the Installation and its extent. A plan is included in Schedule 7 to the Permit, and the Operator is required to carry on the permitted activities within the site boundary.

The site boundary has been extended to include the western landfill area as part of the determination of this application.

Further information on the site is addressed below at 4.2.

4.2 The site and its protection

4.2.1 Site setting, layout and history

The current operational landfill area consists of cells 1, 2 and 3. Landfill cell 3 is subdivided into four areas 3A, 3B, 3C and 3D. Landfill operations are complete in Cell 1 and Cells 3A, 3B, 3C and are substantially complete in Cell 2. Cell 1, part of Cell 2 and Cells 3A, 3B and 3C have been capped with low permeability material and restored to grassland and woodland planting. The current operational phase is in Cell 3D located in the south west of the existing landfill. The western landfill area will consist of Phases A, B, C and D as detailed on the plan in Schedule 7 of the permit.

The western landfill area will be excavated through 9-14 m of superficial deposits, comprising peat, Shirdley Hill Sands and boulder clay, and into the underlying Carboniferous Pennine Lower Coal Measures. The void will be dewatered and a groundwater drainage system installed in the base and sides of the void as necessary. Groundwater will be pumped to the surface water management system. The site will ultimately be a sub-water table landfill once groundwater has rebounded following cessation of groundwater management.

4.2.2 Landfill location

The site will require active long-term site management to prevent long-term groundwater pollution. However, we agree that whilst it will be a below water table the landfill meets the requirements of our landfill location requirements in that:

- It does not lie in a source protection zone;
- It is not on or in a principal aquifer; and
- Given the significant distance to the River Tawd (~1.6km) to the east and Rainford Brook to the west/southwest (1.7km), groundwater in the Coal Measures that flows beneath/around the proposed landfill would

not be regarded as providing a significant contribution to river flow or other sensitive waters.

The Western landfill area will have side slope gradients which are a maximum of 1v:2.5h in both the glacial till and the Coal Measures. To enable the installation of landfill engineering infrastructure in dry conditions a groundwater under-drainage system will be installed in the base and sides of the excavated void as necessary. Groundwater will drain to a sump in each phase and be pumped to the surface water management system.

The landfill will be provided with a geological barrier comprising a minimum 1m thick clay liner with a hydraulic conductivity of 1×10^{-9} m/s, and an artificial sealing layer comprising a 2mm thick HDPE membrane liner. This corresponds to the engineering design for the current landfill. A leachate collection system will be installed across the base of the landfill which will comprise 300mm thick granular layer with leachate collection pipework. Leachate will drain to collection sumps, located at the lowest point in the phase, will be pumped using side risers and treated prior to discharge to sewer. A 1m thick clay cap, with a hydraulic conductivity of 1×10^{-9} m/s, covered with a geocomposite drainage layer underlying ~2.23m of restoration material, will be installed following completion.

For further information see section 5.2.2 below.

5. Variation application

Key issues of the impact of the proposals

5.1 The proposed variation

This application is for an extension to the west of the existing site known as 'the western landfill area' covering an area of approximately 12.7 hectares for the deposit of hazardous waste. The variation also changes the leachate treatment activity from an unlisted activity to a listed activity.

5.2 Key issues of the decision

The key issues arising during this determination were the risks from emissions to groundwater, emissions of landfill gas to air, stability of the landfill, particulate matter emissions to air, impact on habitats from emissions to air and water and the risks from emissions to sewer and to surface water.

5.2.1 Waste Acceptance and annual waste input limits

The variation proposes a slight increase in annual waste input to 150,000 tonnes (currently 149,500 tonnes) but the permitted waste types will not change and comprise principally of treatment residues and contaminated materials including soils and materials containing asbestos. A total of 1,908,145 m³ (3,053,032 tonnes) will be deposited over a 20 year time period. No changes have been made to the waste types in Schedule 2 of the permit.

The wastes accepted at the existing landfill are subject to detailed waste acceptance procedures to minimise the risk of unauthorised wastes being deposited. The waste acceptance procedures will continue to apply to the western landfill area. The operator confirms that the site will be operated in accordance with 'Waste acceptance at landfills – Guidance on waste testing for disposal to landfill' (March 2013) and the current site operating techniques will be updated where applicable based on these.

5.2.2 Landfill Engineering and Infrastructure

New Cell Containment Engineering

In order to construct the western landfill void it will be necessary to extract materials including soils, peat, clay, mudstones and coal. The void will be dewatered and a groundwater drainage system will be installed in the base and sides of the void as necessary. Groundwater will drain to a sump from where it will be pumped to the surface water management system. The landfill will be lined with a 1m thick clay liner and a 2mm thick HDPE flexible membrane liner. A leachate collection system will be installed across the base of the landfill. Leachate extraction wells will be installed in the landfill to facilitate the removal of excess leachate and to control leachate levels. Following completion of filling the landfill will be capped with a 1m thick clay cap covered with a geocomposite drainage layer underlying restoration materials.

The basal and side slope lining system comprising a minimum 1m thickness of clay at a maximum permeability of 1×10^{-9} m/s with a 2mm thick HDPE flexible membrane liner (FML).

The proposed base and sideslope lining system is less than the default standard in the LfD for a landfill for hazardous waste which is that the landfill base and sides shall consist of a mineral layer which satisfies permeability requirements with a combined effect in terms of protection of soil, groundwater and surface water at least equivalent to a permeability of 1×10^{-9} m/s with a thickness of ≥ 5 m, together with an artificial sealing liner.

However the LfD Annex 1 section 3.4, states that, if on the basis of an assessment of the environmental risks ...the competent authority has decided in accordance with section 2 (water control and leachate management) that...it has been established that the landfill poses no potential hazard to soil, groundwater or surface water the above requirements may be reduced.

The applicant submitted a quantitative HRA which comprised of a cumulative assessment of the potential impacts on groundwater and surface water from the current landfill site for hazardous waste and the western landfill area. Based on this risk assessment we agree that the thickness of the base and sidewall liner can be reduced to a thickness of 1 metre with a permeability of 1×10^{-9} m/s based on the risk assessments submitted with the application. The applicant proposed that the western landfill area is developed in a manner similar to the current landfill site. Therefore the site has been

designed on the basis of hydraulic containment. During the operational phase, covering 20 years, the groundwater in the surrounding coal measures will be controlled to a level below the base of the western landfill area by a groundwater drainage system. When the level of waste in the landfill is sufficient to counter the upward pressure exerted by the confined groundwater in the Coal Measures, groundwater controls will cease and groundwater will be allowed to rise to rest levels. The leachate level will be maintained at the compliance limit and at a level below the level of the surrounding groundwater – hence the landfill will be hydraulically contained. Leachate will be maintained at a maximum level of 1m above the base of the cell.

To ensure that during the period of hydraulic containment of the landfill when the HDPE geomembrane has degraded, the inward advective flow through the 1m thick mineral geological barrier needs to be sufficient to counter the outward diffusive flux of contaminants from the landfill. Therefore the geological barrier hydraulic conductivity must be constrained to within a particular range as included in the range of parameters modelled in the HRA. These particular range limits being $1e-9$ m/s to $1e-10$ m/s. Construction of the geological barrier to the required specification is therefore important, and this will be detailed in the CQA Plan, and the CQA Validation Report. To ensure that the constructed mineral geological barrier meets the required specification the operator must demonstrate this in the CQA Validation Report before any further construction takes place. To update the hydraulic containment model predictions based on the actual as-built geological barrier data, the Operator is required to present a written report to the Agency for prior approval, detailing updated hydraulic containment model predictions. It will be based on re-running of the hydraulic spreadsheet model, using data in the CQA validation report of the geological barrier, leachate source term data for chloride, and site specific parameters' values, to update the model with the site specific data and confirm the as-built geological barrier provides the necessary protection of groundwater. This requirement has been incorporated into the permit through a pre operational condition for future development, condition 3 in table S1.4 of the permit. The Operator will be unable to commence disposal operations in the western landfill area until the submission has been approved by the Environment Agency. The condition reads as follows:

Prior to placement of the HDPE FML, the Operator shall present a written report to the Environment Agency for approval to update the hydraulic containment model with site specific data confirming the actual as-built specification of the geological barrier and derive hydraulic containment model predictions for chloride based on the as-built data provided in the CQA Validation Report and site specific conditions. It shall also include details that confirm whether the as-built specification is sufficient to provide the necessary protection of groundwater in the long term when the landfill is in hydraulic containment. Placement of the HDPE FML shall not commence until written approval is provided by the Environment Agency.

A leachate collection system will be installed across the base of the landfill which will comprise 300mm thick granular layer with leachate collection

pipework. The LfD specifies a drainage layer of 500mm, however this can be reduced to 300mm on the basis of an assessment of environmental risk. We consider on this basis 300mm is suitable as the drainage layer also contains pipework. Leachate will drain to collection sumps, located at the lowest point in the phase and will be pumped using side risers and treated prior to discharge to sewer.

Dividing bunds comprising low permeability material placed on the base of the landfill will be provided to delineate the boundary of each hydraulically separate phase and prevent the movement of water from non-operational parts of the landfill to the waste and prevent the movement of leachate from the waste to non-operational areas.

The western boundary of the current hazardous waste landfill site will be separated from the western landfill area by unexcavated strata with a low permeability engineered liner placed on each side. Following completion of filling the landfill will be capped with a 1m thick clay cap covered with a geocomposite drainage layer underlying restoration materials.

We are satisfied with the above proposals.

5.2.3 Stability and settlement

The Application is supported by a Stability Risk Assessment (SRA) which provides a summary of previous assessments, the proposed design for the western landfill area, a comparison of the conceptual stability site models for the proposed western landfill area and the existing landfill site, and risk screening to identify further assessment requirements. A number of areas have been identified where the conceptual models for the proposed western landfill area are not consistent with the conceptual models for the existing site as the design has been revised or new geotechnical data are available. Elements of the design have therefore been subject to further qualitative or quantitative assessment.

We assessed the SRA. This resulted in 2 questions or points of clarification for the Operator in the form of a Schedule 5 Notice issued on 6th March 2015.

The first question related to the long term integrity of side slope lining system. The Operator was required to demonstrate by quantitative modelling that there will be no unacceptable deformations in terms of compressional, shear and/or tensional strains in the side slope lining system once groundwater is allowed to rebound to normal levels in the surrounding ground. The analysis was also required to include the effects of any anticipated post closure settlement of the waste however small this may be.

This is because it is conceivable that due to the differences in unit weights between the different side slope lining materials and the natural strata, and the 15m+ inward head that will eventually develop under the lining system and the waste, that there will be additional strains imposed, particularly on the

geomembrane. We were looking to ensure that any deformations in the side slope lining system will not lead to an unacceptable impact on the performance of the containment system.

The second question related to the long term integrity of the side slope lining system when heterogeneous strata are encountered, particularly in the Coal Measures. The Operator was required to provide a description and explanation of the proposed methods and approach to addressing the stability and integrity issues that could arise where strata other than mudstone (as modelled) are encountered in the sub-grade.

The reason is because the modelling has considered the Coal Measures to consist of uniform mudstone, which may not represent the true range of strata that may be encountered during cell preparation ground works. Therefore we need to know what methods and approaches the applicant proposes to adopt to analyse the stability and integrity of the side slopes when this scenario arises.

We have assessed the Schedule 5 Notice responses and we are satisfied that they have adequately addressed the issues. In relation to question 1 the Operator has confirmed that the groundwater will be controlled until restoration is completed and/or the Operator demonstrates to the satisfaction of the Environment Agency that there is sufficient mass in the landfill to counteract any groundwater rebound that may be planned.

Settlement is expected to be similar to that identified and assessed for the existing phase for which it was demonstrated to be of no detriment to the lining system, and capping. As explained in the SRA 4.7.2, it is considered that settlement and consolidation of the waste will have completed predominantly prior to capping and restoration of the site given that it will be placed and compacted in layers and will comprise predominantly fine grained, non-biodegradable nature of the hazardous wastes to be deposited at the site. We agree with this position.

Demonstration of the integrity of the lining system due to any planned groundwater rebound and any settlement that has been measured will be dealt with through the CQA process as required by section 2.6 of the permit.

If there are any variations in the basal geology, this matter will be dealt with through the CQA process as required by the section 2.6 of the variation notice.

5.2.4 Closure, aftercare and decommissioning

The operator is required to maintain a closure and aftercare management plan in accordance with condition 2.9 of the permit. There is already a closure and aftercare management plan for the existing landfill and this will be updated upon issue of any permit for the western landfill area, so that any new permit conditions can be taken into consideration to meet the requirements of Article 13 of the LfD. The permit will remain in force until it is

surrendered. A permit cannot be surrendered unless and until we are satisfied that the necessary measures have been taken to avoid any pollution risk and to return the site to a satisfactory state.

5.2.5 Site report

The site report is provided in section 4 of the Environmental Setting and Installation Design (ESID) report. The applicant also completed the Site Condition Report (SCR) template in accordance with our H5 guidance entitled, 'Environmental Permitting Regulations: Site condition report – guidance and template', April 2013.

We have reviewed the documents and consider they adequately describe the condition of the soil and groundwater prior to the start of operations.

The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the installation and at cessation of activities at the installation.

The information provided in section 4 of the ESID and in the SCR template is acceptable.

Part D – Emissions and monitoring

5.2.6 Sewers and Surface Water

5.2.6.1 Emissions to sewer and monitoring

H1 discharge to sewer from Leachate treatment plant

The discharge from the leachate treatment facility will increase from 50m³/day to 150m³/day due to the western landfill area. This increase means that the leachate treatment facility is now a listed activity in Table S1.1 and the operator was asked to provide a H1 risk assessment in accordance with Annex E for surface water discharges (complex) for the increase in the discharge to sewer.

We are satisfied that an increase of this nature won't have an environmental impact and will provide flexibility above the current permit so that the extended site can cope with the leachate from the current site and the increased leachate from the western landfill area due to infiltration through the waste and in the event of adverse weather conditions (see results of H1 risk assessment).

Skelmersdale waste water treatment works (WWTW) is the receiving sewage treatment works and the water discharges to the River Douglas at approximately NGR SD 4817 1202. As the application does not change the waste materials accepted at the site it was assumed in the H1 assessment

that the quality of the leachate discharged from the site will remain consistent with the current leachate quality. We accept this assumption.

The H1 risk assessment methodology is based on a series of tests as follows:

Test 1 – does the concentration of the substance in the discharge exceed 10% of the EQS?

Test 2 – Does the Process Contribution (PC) exceed 4% of the EQS?

The PC is the concentration of discharged substances in the receiving water after dilution.

If the PC exceeds 4% of the EQS it is potentially significant and should be carried forward to test 3. If it does not, the substance is insignificant and it screens out, i.e. it is not liable to cause pollution and requires no control.

Note: A substance must pass both tests 3 and 4 to be screened out.

Test 3. Does the difference between upstream quality and Predicted Environmental Concentration (PEC) exceed 10% of the EQS.

The PEC is the predicted concentration in the receiving water downstream of the discharge. The PEC is a combination of the PC and background concentration.

Previously the allowed difference between upstream quality and the PEC could be up to 70% of the EQS, which may have allowed substantial deterioration in a clean watercourse. This test is therefore much tighter but will ensure compliance with the no deterioration requirements of the Water Framework Directive.

If the difference between the upstream quality and the PEC is greater than 10% of the EQS, the substance is potentially significant and needs to be assessed – usually by detailed modelling.

Test 4: Does the PEC exceed the EQS in the receiving water downstream of the discharge?

This test assesses whether the discharge, when combined with the existing upstream water quality, will contribute to an EQS failure in the receiving waters. It therefore takes account of in-combination effects with existing discharges. If the PEC exceeds the EQS, the substance is potentially significant and needs to be assessed in Phase 2 modelling. If it is not exceeded, the substance is insignificant and is screened out i.e. it is not liable to cause pollution and requires no control. This test must be carried out for both the Annual Average (AA) and Maximum Allowable Concentration (MAC) (or 95 percentile) EQS.

The applicant's H1 risk assessment concluded that the PCs were > 1% of the long term EALs for Cadmium (1.45%), Lead (1.42%) and Mercury (1.13%) and >1% of the short term EAL for Mercury (2.50%). For all other substances these were <1% of the EAL (Ammonia 0.293%, BOD 0.0641%), Pentachlorophenol 0.0533% and Trifluralin 0.0460% and the only other two substances with short term EALs were below 1% at 0.506% for Cadmium and 0.0674% for Pentachlorophenol). For the PECs (where PCs are added to background levels) the applicant's risk assessment concluded that all parameters are <70% of the relevant long term EALs and <20% of the short term EALs, therefore no further detailed modelling of emissions of leachate to the River Douglas was considered necessary.

The operator submitted their application before our guidance was updated. The thresholds in our latest guidance (as detailed above) are that the PCs have to be <4% of the EQS for AA and MAC and <10% of the PEC (taking into account background / upstream quality). We carried out our own risk assessment and it was found that for all of the parameters – Mercury (1.12%), Cadmium (1.45%), Lead (1.42%), Pentachlorophenol (0.05%) and Trifluralin (0.05%) (Ammoniacal Nitrogen and BOD were not assessed as not included in the new database), the PC was <4% of the AA EQS concentrations and all (with MAC's are Cadmium 1.15%, Pentachlorophenol 0.0817% and Mercury) only were <4% of the MAC EQS with the exception of Mercury (4.34%). However Mercury did not exceed the 10% of the PEC (at 1.1% for the AA EQS) and the MAC EQS is not exceeded.

Therefore whilst we did not agree exactly (minor differences in the PC for Mercury) with the numerical values detailed in the applicant's H1 assessment as detailed above, we agree that the conclusions are valid. Therefore no limits are required to be included in Table S3.6 with the exception of flow where the limit is now 150m³/day. However the operator has proposed limits for Cadmium of 8µg/l and Mercury of 1.6µg/l which are as per the current permit therefore these are retained in the variation notice.

5.2.6.2 Emissions to surface water and monitoring

The ESID outlines the proposed scheme of groundwater management which is essentially a continuation of the current scheme whereby during the construction and parts of the operational period of the landfill, groundwater from the groundwater drainage system beneath the site is abstracted and discharged off site via the surface water management system. With the exception of ammoniacal nitrogen (see below), the proposal does not seek to amend the existing compliance limits relating to the combined discharge of groundwater and surface water from the surface water management system (the current permit is also a combined discharge).

The Rainford drain which runs along the western edge of the current landfill will be diverted around the western boundary of the western landfill area in accordance with requirement 15 of the Development Consent Order (DCO). Once the landfill activity is completed, the proposal is to provide ditches/storage areas for the groundwater and surface water along the base

of the restored landfill slopes and route it towards four discharge points which will be restricted to the Greenfield runoff rate of 58l/s. During the operational phase of the landfill the combined groundwater and surface water discharge will be managed in accordance with the proposed surface water management scheme and the permit. The combined groundwater and surface water discharge will be discharged to the River Tawd (1.6km to the east of the site) via the sites surface water management system and the highways drainage network. There is no change to the discharge point to the River Tawd, however this is not specified as a compliance or monitoring point in the permit. The 4 outfalls from the surface water management system (S1, S2, S3 and S4) are compliance points and all count towards the single discharge to the River Tawd. The combined groundwater and surface water will be treated if necessary in a settlement lagoon prior to discharge.

The emission limits and monitoring requirements for discharges of groundwater from cell 3 to surface water drainage are no longer required as they are no longer pumping groundwater from under this cell and so these have been removed from the permit.

Full details of the groundwater and surface water management schemes will be provided, and approved by us, prior to construction of any infrastructure, in accordance with standard landfill engineering permit requirements. All infrastructures will be subject to CQA. We accept the proposals in principle. We do not need the full details of the design now as we are satisfied in principle, however we do need the details before they begin construction and this will be approved by us in accordance with the engineering condition 2.6 in the permit. There are also measures in place in the permit to monitor the discharge as well as emission limits to comply with. The groundwater and surface water management scheme in the current permit is satisfactory and the Application for the western landfill area proposes a continuation of the existing scheme. There are also contingency measures in place if a breach of an emission limit in the permit is identified.

H1 Discharge of groundwater to surface water

The Operator also submitted a H1 risk assessment for the discharge of groundwater to surface water from the site as a result of groundwater dewatering which is necessary for the construction and operation of the western landfill area. Based on pumping calculations in the HRA it is calculated that the maximum discharge rate will be 424m³/day(0.0049m³/s). The permit in table S3.3 limits the combined discharge of groundwater and surface water to an annual average of 2.73l/s or 236m³/day or a maximum of 424m³/day. The flow rate needs to be limited in the permit so this links to what has been assessed in the H1 and to keep the flow rate the same as the existing permit to ensure there is no increase to flood risk downstream. There will be storage to allow them to restrict the discharge if necessary.

The H1 assessment assesses the impact of the discharge of groundwater on the River Tawd. In order to assess the impact, source term data has been used for the site's groundwater in the H1. However the limits in the permit are

included for the combined groundwater and surface water discharge and this is acceptable.

Groundwater quality data recorded in the coal measures in the vicinity of the site is reviewed in sections 3.59 to 3.61 of the ESID where the priority substances benzene, cadmium and mercury are recorded above their detection limits on a limited number of occasions and lead and nickel are recorded above their respective drinking water standards on a limited number of occasions. For the purpose of the assessment the priority substances discussed in the ESID are assessed together with ammoniacal nitrogen.

The Operator's H1 assessment demonstrates that all determinands have a PC >1% of their respective EALs and were not screened out at the initial H1 assessment stage. (Although we now use a threshold of 4%).

In the Operator's H1 assessment the background concentration is used together with the PC to calculate the total PEC. The Operator's assessment states that in accordance with the Environment Agency's guidance if the long term PEC is <70% of the relevant EAL no further detailed modelling of emissions to water is necessary. The long term PEC concentrations calculated in the H1 assessment are <70% of the relevant EAL's with the exception of mercury, hence no further detailed modelling for the priority substances (with the exception of mercury is necessary). The PEC for mercury is 71.2% of the EAL which is greater than 70% of the EAL.

We carried out our own checks of the assessment as our guidance has now been updated. Our assessment showed that mercury was above the 10% of the PEC in the River Tawd. Therefore we required that the operator carry out modelling for ammoniacal nitrogen and mercury in accordance with Appendix D2 of the H1 guidance.

We also required the Operator to carry out modelling for sanitary determinands (ammoniacal nitrogen, BOD and suspended solids). However the Applicant explained that in August 2009, continuous groundwater dewatering ceased and since then any abstracted groundwater has been used onsite. There is currently no discharge of groundwater. There has been no monitoring data for concentrations of suspended solids since August 2009 and data from before then may no longer be representative, therefore there is no appropriate input data for suspended solids on which to base the H1 assessment. The operator also considered that significantly elevated concentrations of suspended solids in the discharge is unlikely.

We accept the above explanations by the Operator and do not consider that elevated levels of suspended solids are likely in the discharge. However we still require the concentration of suspended solids to be assessed to make sure that the Operator's assumptions are correct. Therefore we have included an improvement condition in the permit (see table below) which requires the Operator to assess suspended solids in the groundwater to confirm whether this parameter is likely to be discharged in significant quantities and whether the emission limit in the permit of 40mg/l continues to be acceptable. In the

unlikely event that suspended solids are discharged in significant quantities we will require action to be taken to reduce the level.

Also no monitoring of BOD is specified in groundwater or in the discharge to surface water in the current permit - therefore there is no monitoring data available to include in the risk assessment. The Operator also stated that as this site will only dispose of hazardous wastes, significantly elevated concentrations of BOD in the discharge is unlikely. This is because leachate from hazardous waste is unlikely to contain elevated concentrations of BOD. However we still require the concentration of BOD to be assessed by H1 risk assessment to make sure that the Operator's assumptions are correct. Therefore we have included an improvement condition in the permit (Table S1.3 in the variation notice) which requires the operator to assess BOD in the groundwater to confirm whether this parameter is likely to be discharged in significant quantities and whether an emission limit is required. This improvement condition has been combined with that for suspended solids.

Therefore after further consideration in relation to the sanitary determinands we agreed that only modelling of ammoniacal nitrogen was necessary.

Modelling of mercury

Mercury is the parameter which has a PEC >70% of the EQS in the H1 risk assessment. Therefore further modelling of the discharge of mercury from the groundwater drainage system to the River Tawd was required in accordance with our H1 guidance, Annex D2. The AA and MAC EQSs comprise 50ng/l and 70ng/l respectively. Mercury has been recorded above the analytical detection limit in the groundwater quality monitoring from the groundwater drainage system on four of the thirty three monitoring occasions. The effect of the discharge with respect to mercury concentrations in the River Tawd has been modelled.

The results of the modelling show that the modelled mean and 95th percentile concentrations downstream of the discharge of groundwater to the River Tawd do not exceed the AA or MAC EQS values. The results of the modelling show that the difference between the modelled mean in respect of the mercury concentration in the River Tawd downstream of the discharge compared with the mean upstream concentration is less than 10% of the AA EQS. Therefore it is considered that mercury concentrations in the discharge from the groundwater drainage system to the River Tawd are not liable to cause pollution hence it is not necessary to set an emission limit for mercury.

Ammoniacal nitrogen

Further modelling of the discharge of ammoniacal nitrogen as a sanitary determinand from the groundwater drainage system to the River Tawd has been undertaken in accordance with H1 Annex D2 guidance document.

The results of the modelling show that there will be no deterioration of the ammoniacal nitrogen concentration in the River Tawd downstream of the

discharge provided that the proposed discharge limit of 2900µg/l or 2.9mg/l from the combined groundwater and surface water discharge is maintained. It is considered that the site will be able to achieve this discharge limit based on the ammoniacal nitrogen concentrations recorded in the groundwater drainage system at the site. We are satisfied with the Operator's assessment. Therefore the limit of 2.9mg/l for ammoniacal nitrogen will be included in the variation notice in table S3.3 for the combined discharge of groundwater and surface water to surface water from the western extension area. If the operator cannot meet this limit then they will have to include further mitigation methods, vary the permit or we may take enforcement action.

Limits for pH and visible oil have also been included in the permit for this discharge as specified in the application.

Improvement conditions relating to discharges of groundwater to surface water have been included in table S1.3 of the permit.

Improvement programme requirements	
Reference	Requirement
1	The operator shall submit to the Environment Agency in writing for approval, a H1 risk assessment and report for suspended solids and BOD for the discharge of groundwater to surface water from pumping from the western landfill area and surface water runoff. The H1 risk assessment and report shall be based on 12 months of consecutive monthly monitoring data. The operator shall also propose emission limits for suspended solids and BOD if appropriate. Timescale – 15 months from the date of issue of the variation notice.
Justification	This risk assessment is required for suspended solids and BOD as these parameters were not included in the previous H1 risk assessment for the reasons detailed above. If the emission limit is required to be revised for suspended solids or an emission limit is required to be added for BOD, the operator will be required to submit another variation application to incorporate these into the permit.
2	The operator shall submit to the Environment Agency in writing for approval, a report which reviews the emission limits to surface water (with the exception of flow) from the discharge of groundwater from pumping from the western landfill area and surface water runoff. The report shall include proposals for control limits and also emission limits if appropriate. The operator shall review actual data against the limits and if practicable propose revised limits. The report shall be based on 12 months of consecutive

Improvement programme requirements	
Reference	Requirement
	<p>monthly monitoring data.</p> <p>Timescale - 3 months from the date of issue of the variation notice.</p>
Justification	<p>The existing limits are acceptable and protective of the environment. However this improvement condition is required to ensure that the emission limits are revised if appropriate based on actual monitoring data within an agreed timescale. It is considered that the clearest and most transparent way of ensuring these changes which are proposed as part of the H1 risk assessment are incorporated into the permit – is to include them as improvement conditions as there may be scope for reducing the limits further based on actual data.</p> <p>As the operator has stated that there are already 12 months of monitoring data available (obtained since the submission of the application) - then the timescale has been set at 3 months from the date of issue of the permit.</p> <p>If amendments to emission limits are required then a variation will be required to include the new limits in the permit.</p>
3	<p>The operator shall submit to the Environment Agency in writing for approval, a report which reviews the emission limit on flow to surface water from the combined discharge of groundwater from pumping from Phases A, B, C and D and surface water – following the completion of Phase Ai. The report shall include proposals for a revised emission limit for flow as appropriate.</p> <p>Timescale – 3 months from the date of completion of phase Ai.</p>
Justification	<p>This improvement condition is required to ensure that the emission limit for flow is revised if appropriate based on actual monitoring data following completion of Phase Ai within an agreed timescale. It is considered that the clearest and most transparent way of ensuring these changes which are proposed as part of the H1 risk assessment are incorporated into the permit – is to include them as improvement conditions as there may be scope for reducing the limits further based on actual data.</p>

5.2.7 Groundwater

This section relates to the risk of contamination of groundwater from the landfill, as opposed to the previous section which related to the risk of contamination of surface water from the combined discharge of groundwater and surface water during the dewatering stage.

Contaminants modelled in the HRA comprise ammoniacal nitrogen, arsenic, benzene, cadmium, chloride, lead, mercury, phenols, sulphate, toluene, xylene and zinc. Leachate concentrations are based on the maximum recorded leachate concentration +10%, in the current hazardous landfill cells, except for ammoniacal nitrogen and chloride which are based on current observed range in leachate quality. This is because representing the source term with a single concentration, equal to the maximum recorded concentration plus 10%, for ammoniacal nitrogen and chloride was considered overly conservative for these substances. So, instead, for these substances the source term has been defined as a range of concentrations based on observed concentrations in the current site. This is standard method for defining leachate source term concentrations in quantitative risk assessments.

Ammoniacal nitrogen and chloride concentrations have been based on actual site data because these contaminants are generally the main pollution indicators and they tend to be present in very much higher and variable concentrations in the leachate than other contaminants such as metals. To represent the source term on the basis of the maximum observed concentrations for these contaminants in the leachate would be unrealistic and could potentially lead to theoretical concentrations at the compliance points which exceeded the EAL.

To assess the impact of leachate concentrations from wastes with up to 3 x hazardous WAC – as permitted in the current permit, the source term has been modelled with a concentration of 3 x the hazardous WAC concentration. The substances modelled have been selected on the basis of the observed leachate quality in the existing hazardous landfill.

Groundwater compliance and control limits for the new groundwater monitoring boreholes in table S3.4 of the permit have been proposed for arsenic, benzene, cadmium, ammoniacal nitrogen, chloride, phenols and zinc and are based on observed groundwater quality around the western landfill area. The limits are to be reviewed and revised if appropriate, prior to landfill activity taking place in the western landfill area, based on more recent water quality monitoring data and data from a number of replacement boreholes.

Existing groundwater quality monitoring boreholes 26, 28, 29 and 45 are required to be decommissioned as they form potential contaminant migration pathways directly into the groundwater.

Whilst we would have preferred monitoring of these boreholes to continue for as long as possible we note that the ESID states that Phase A will be operational for only 3.83 years, and it is stated that restoration and capping

will be completed within 12 months of completion of landfilling in each phase. Furthermore, the review of monitoring boreholes included in the HRA, concluded that the affected boreholes are not fit for purpose. Given the short timescale of operation of Phase A and the ongoing monitoring of the groundwater drainage, a requirement to replace these boreholes could not be justified as they would only be available for a short period of time prior to decommissioning.

We assessed the HRA. This resulted in a number of questions or points of clarification for the operator in the form of a Schedule 5 Notice issued on 6th March 2015.

On 23rd July 2015 we received a second addendum (the first addendum was provided as part of the Application) to the HRA submitted by the applicant as part of the application. The original HRA and the addendums were all considered as part of the determination.

The second addendum of the HRA reviewed the leachate source term in the light of discrepancies between the data obtained from the laboratory and that provided by Whitemoss Limited. Where the data shows that the actual source term concentrations are higher than those modelled initially, the Landsim and Hydraulic Containment spreadsheet models have been updated and re-run by the Applicant.

The results show that these small changes to the source term concentrations do not affect the conclusions of the HRA that was submitted as part of the permit variation Application, although there are some minor changes to the proposed groundwater compliance limits in table S3.4 of the permit.

The revised Landsim model has also been checked and the mismatch between the cell areas in the model (which should be the same throughout the Landsim model) has been addressed.

The model has been re-run and the outputs confirm that there will be no unacceptable discharge to groundwater during the period of groundwater control.

We are satisfied with the information provided in the HRA to allow us to issue the variation and set protective limits now. However there is additional monitoring information which we require from monitoring data collected when the new monitoring points are installed and prior to tipping in the western landfill area. This will allow the applicant to review the interim compliance limits based on more up to date monitoring data collected to see whether any limits need to be updated. We also require the operator to install additional or replacement monitoring boreholes as proposed in their risk assessment. The additional information and the reasons for it have been included in the following pre-operational measures (Table S1.4 of the permit) which are required before tipping can begin in the western landfill area:

Table S1.4 Pre-operational measures	
Reference	Pre-operational Measures
1	<p>Prior to landfill activities commencing in the western landfill area, the operator shall submit a report to the Environment Agency in writing which reviews and revises if appropriate the interim groundwater compliance and control levels which are to be applied to the down hydraulic gradient groundwater monitoring points in table S3.4. The report shall be based on the most up to date monitoring data. The operator shall have obtained the Environment Agency's written approval to the report.</p>
Justification	<p>Interim groundwater compliance limits have been proposed for down hydraulic groundwater monitoring points. The ESID proposes that these interim levels are revised and updated using more recent water quality monitoring data prior to landfill activities commencing in the western landfill area. We are satisfied that the proposed interim compliance limits are appropriate but we want these to be checked using the latest data before landfilling actually begins.</p> <p>If amendments to emission limits are required then a variation will be required to include the new limits in the permit.</p>
2a	<p>Prior to the commencement of waste operations in the western landfill area, the operator shall install boreholes _to replace existing boreholes E62 and E60 (formerly borehole references 36 and 38 respectively), with response zones which target the Coal Measures strata. Once installed, the operator shall undertake routine monitoring in accordance with table S3.9.</p>
2b	<p>Prior to the commencement of waste operations in the western landfill area, the operator shall install groundwater monitoring boreholes E59A and E60A, at locations agreed with the Environment Agency, around the leachate treatment plant and lagoon to target the superficial drift aquifer.</p> <p>Following installation, the operator shall undertake routine groundwater monitoring in accordance with table S3.4</p>
2c	<p>Prior to commencement of waste operations in the western landfill area, the operator shall submit a report to the Environment Agency in writing which proposes groundwater compliance limits for arsenic, benzene, cadmium, ammoniacal nitrogen, chloride, phenols and zinc to be applied to the groundwater boreholes in pre-operational condition 2a above, which are down hydraulic gradient of the leachate treatment plant and lagoon. The report shall be based on the most up to date monitoring data. The operator shall have obtained the Environment Agency's written approval to the report.</p>

Table S1.4 Pre-operational measures	
Reference	Pre-operational Measures
2d	<p>The following details regarding the monitoring boreholes detailed in pre-operational conditions 2a and 2b above shall be provided to the Environment Agency within 3 months of installation:</p> <ul style="list-style-type: none"> • casings/linings (length, diameter, material, type of grout or filter media and whether • slotted or plain); • depths and diameters of unlined sections; • standing groundwater levels; • details of strata encountered during drilling; • reference levels in metres above ordnance datum; • national grid references of the boreholes in the form AB 12345 67890; <p>Any other information obtained from the boreholes relevant to the interpretation of water sample analysis.</p>
Justification	<p>(a) Some of the existing groundwater boreholes which have been used to characterise the Coal Measures groundwater (boreholes 36 and 38) are constructed such that the screened interval straddles both the Coal Measures aquifer and the overlying superficial drift aquifer. To enable acquisition of groundwater quality data that is unequivocally attributable to the Coal Measures replacement boreholes are required, and have been proposed, with screened intervals which target the Coal Measures strata only.</p> <p>(b) The application proposes the installation of 2 additional groundwater monitoring boreholes around the Leachate Treatment Plant and lagoon. These will be designed and constructed to target groundwater in the superficial drift aquifer and will be for the purposes of detecting any unacceptable impact on the groundwater in the Shirdley Hill Sands. The operator will be required to submit another permit variation application to get the new boreholes incorporated into the permit.</p> <p>(c) Following installation of additional boreholes in (b) above, groundwater compliance limits must be proposed and agreed for the borehole(s) that are down hydraulic gradient of the leachate treatment plant and lagoon, on the basis of one year's groundwater quality data. Compliance limits must be derived in accordance with Horizontal Guidance Note H1 – Environmental Risk Assessment for permits, Annex J3, version 2.1, Dec 2011, or other guidance which supersedes this document as agreed with the Environment Agency. The operator will be required to submit another</p>

Table S1.4 Pre-operational measures	
Reference	Pre-operational Measures
	<p>permit variation application to get the new limits incorporated into the permit.</p> <p>(d) The operator has to comply with condition 2.6 in the permit to ensure that we have confirmed that we are satisfied with the infrastructure of the monitoring boreholes which are to be installed, prior to their construction and installation. Following installation of additional boreholes in (a) and (b) above, details of the borehole installations need to be provided.</p>

5.2.8 Leachate

Leachate is generated as a result of infiltrating rainfall. After completion of the placement of the waste in each cell the landfill cell will be capped. This will reduce infiltration and will minimise the generation of leachate. A leachate management system is included in the design of the landfill. The objective of the leachate management system is to maintain leachate at a level not exceeding 1m above the top of the basal liner. The leachate management system includes the provision for the extraction of excess volumes of leachate.

Leachate levels and monitoring

The leachate level monitoring requirements are in table S3.1 of the permit.

The leachate quality monitoring requirements are in table S3.11 and are standard for landfills for hazardous waste.

5.2.9 Landfill Gas

5.2.9.1 Emissions of landfill gas and monitoring

As the western landfill area will only accept hazardous waste – there is no significant gassing potential from the waste and therefore there will be no need for gas management. Therefore the landfill gas risk assessment (LFGRA) submitted as part of this variation application is qualitative. For the purpose of assessing landfill gas generation potential the hazardous wastes are therefore treated as comprising inert materials and asbestos wastes which have no significant gas generation potential.

5.2.9.2 Point source emissions and monitoring

The waste accepted at the existing landfill site is subject to detailed waste acceptance procedures to minimise the risk that unauthorised wastes are

deposited. These same waste acceptance procedures will continue to apply to the western landfill area.

Currently landfill gas generated in part of the existing landfill for hazardous waste is managed. The site is producing landfill gas because it accepted non-hazardous waste between 2003 and 2004 from a nearby civic amenity facility and this was deposited in cells 3A, 3B and 3C. Therefore the existing landfill gas flare will continue to operate to manage landfill gas from cells 3A, 3B and 3C. This point source emission is monitored in accordance with table S3.2 – there is no change from the existing permit.

The LFGRA for the western landfill area concludes that no landfill gas management systems, including gas collection or gas treatment, are necessary in the western landfill extension area. Therefore there will be no point source emissions of landfill gas from the western landfill area.

We are satisfied with the conclusions of the Operator’s risk assessment based on studies we have carried out on the monitoring at landfills for hazardous waste.

5.2.9.3 In-waste and External landfill gas monitoring

The existing permit requires in-waste landfill gas monitoring from one in-waste gas borehole per cell and the leachate wells in each cell, however to date no in-waste monitoring has been installed. Asbestos waste has been deposited in Cell 3D in a separate cell for asbestos but in Cells 1 and 2 asbestos waste was deposited with other hazardous wastes. The applicant proposes that except for the asbestos cells, the in-waste gas monitoring wells will be drilled as soon as practicable after completion of the cell. The applicant also proposes that to minimise disturbance and hence exposure of asbestos that the in-waste gas monitoring points comprise of pin wells in the asbestos cells in Cell 3D and Cells 1 and 2. The issue over installing landfill gas monitoring points in asbestos cells is the risk of disturbing the waste and releasing asbestos fibres. Pin wells should be suitable as these do not give rise to any drilling spoil as they are essentially holes made by pushing a 6m steel pin into the waste. We are satisfied with these proposals. The requirements for in-waste landfill gas monitoring are detailed in Table S3.10 of the variation notice. We also require in waste landfill gas monitoring for the western landfill area from one in-waste gas borehole per cell and leachate wells.

External landfill gas monitoring currently takes place around the cells in the existing landfill site which accepted non-hazardous waste (Cells 3A, 3B and 3C). The Application proposes:

- the continuation of perimeter landfill gas monitoring around cells 3A, 3B and 3C of the current site, due to the generation of small quantities of landfill gas from the civic amenity waste;
- the decommissioning of those boreholes present alongside the western boundary once the western landfill area is developed.
- no perimeter landfill gas monitoring around the western landfill area or the current cells (1, 2 and 3D) where only hazardous waste has been

deposited. The continuation of landfill gas surface monitoring in cells 3A, 3B and 3C, which contain some gassing non-hazardous wastes and gas management infrastructure. However, for cells which comprise hazardous wastes only, surface gas monitoring is not required.

We assessed the LFGRA. This resulted in a number of questions or points of clarification for the operator in the form of a Schedule 5 Notice issued on 6th March 2015. We were satisfied with the LFGRA.

We generally do not consider that external landfill gas monitoring is required around landfills, or landfill cells which have only accepted hazardous waste, due the limited gassing potential. This is in accordance with a study we have carried out on monitoring data at hazardous waste landfill sites. However as detailed above the Applicant confirmed that there are no in-waste boreholes in cell 1, cell 2 (north, west and east quadrants) and cell 3D, which have taken hazardous waste only, and there is no in-waste gas data. This is despite the current permit including a requirement for in-waste gas monitoring in table S3.10. The absence of gas data relating to the hazardous waste cells means that there is no confirmatory evidence to support the contention that the hazardous wastes are of low gassing potential and can be regarded as inert from a gas generation perspective and that perimeter gas monitoring is therefore not required.

Furthermore we asked whether there is a pathway for gas generated in cells 3A, 3B and 3C, where civic amenity waste has been deposited, to migrate into adjacent cells 3D and 2 and therefore whether perimeter gas monitoring should extend around these adjacent cells. The applicant confirmed that a pathway does exist; however, they argue that the active gas extraction scheme in cells 3A, 3B and 3C creates a negative pressure gradient away from the site boundaries and away from adjacent cells. Additionally, perimeter gas monitoring currently undertaken has not recorded methane or carbon dioxide concentrations above limits specified in the permit, confirming the efficacy of the gas extraction scheme. They also argue that on the basis of the landfill gas risk assessment (low gassing potential hazardous wastes) it is considered unnecessary to continue gas monitoring at the perimeter boreholes adjacent to cells 2 and 3D.

Whilst there is some merit to the arguments provided by the Operator, the lack of confirmatory in-waste gas data relating to the hazardous waste cells means that, until such time as in-waste gas data has been obtained and it confirms the low gassing potential of the hazardous wastes, perimeter gas monitoring around the existing site must continue.

Therefore the variation notice retains the current Table S3.5 'Landfill gas in external monitoring boreholes – limits and monitoring requirements', for the monitoring points around the existing cells 1, 2 and 3.

However no external gas monitoring is required around the western landfill area as this area of the site will only accept hazardous waste.

The permit also contains table S3.8 for monitoring landfill gas emissions from capped surfaces for cells that have accepted non-hazardous biodegradable waste. This is a standard table for all landfills for hazardous waste. However we have clarified for this site in the table title that it should only be relevant for cells 3A, 3B and 3C.

5.2.9.4 Other landfill gas emissions and monitoring

As well as the requirements for in waste monitoring, the other landfill gas monitoring requirements are detailed in table S3.10 of the permit and include the requirements for monitoring of the gas collection system, the output to the flare and the temperature of the emissions from the flare stack itself.

5.2.10 Amenity issues

The Operator submitted a risk assessment in accordance with H1 Annex A – Amenity and accident risk from installations and waste activities.

5.2.10.1 Odour

Hazardous waste is not considered to be a significant source of odour. All of the residual risks in Table A1 (entitled Odour risk assessment and management plan which forms part of the H1 risk assessment) have been assessed as low by the Operator after risk management measures have been put in place.

Risk management measures include the following:

- Pre-treatment (offsite) of the wastes to reduce the potential for significant volatile components which could be a potential source of odour;
- Waste acceptance procedures will identify any malodorous loads for which additional measures are necessary to reduce the risk of significant odour emissions;
- The Weighbridge Operator will advise the Site Manager of the expected receipt of potentially malodorous waste. The Site Manager will advise the Landfill Operatives accordingly so that masking agents are available to spray on the load after it is deposited. Malodorous wastes will only be delivered in enclosed vehicles. Any malodorous waste will be deposited at the foot of the working face and covered immediately. The working face where malodourous wastes are deposited will be kept as small as is reasonably practicable;
- Odour may also be generated from the landfill gas flare and the leachate management system. The landfill gas flare is operational due to the biodegradable waste which was deposited in the current landfill Phase 3, therefore the western landfill area will not add to this flaring requirement and therefore the odour potential from flaring. The leachate treatment plant is increasing its throughput due to the western landfill area, however the leachate treatment lagoon is enclosed and it is provided with an air extraction system with carbon filters. The lagoon

surface is covered with a HDPE ball blanket that provides a 90%+ seal of the surface area of the leachate. Despite the increase in throughput the leachate storage and treatment infrastructure will not be altered as a result of the variation, therefore there is not expected to be an increase in odour from the leachate treatment facility. The residual risk from these activities is low or very low.

We are satisfied with the Applicant's risk assessment and the odour management measures. Furthermore there have been no substantiated odour complaints since 2006.

We are satisfied the measures proposed will be appropriate measures and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health. Operations at the current site support this and that if historically there have been any issues these have now been addressed.

5.2.10.2 Noise - Table A2 – Noise risk assessment and management plan

The residual risk in the Operator's risk assessment due to noise is low or very low due to the risk management measures which are available, which include the following:

- The construction of a 5m high temporary noise bund as part of the development;
- All site plant and vehicles are fitted with appropriate silencers and are subject to a routine maintenance programme;
- Plant and vehicles are fitted with strobe lighting visual warnings instead of audible reversing alarms, where appropriate;
- The internal haul roads and access road will be inspected on a regular basis and maintained so that potholes are identified and repaired as soon as is reasonably practicable;
- Leachate and landfill gas management infrastructure will follow a maintenance regime and will be fitted with silencers where necessary. The leachate and gas management infrastructure will not be altered as a result of this variation.

We are satisfied with the Operator's risk assessment and the noise management measures proposed and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health. Furthermore there are currently no compliance issue on site in relation to noise.

5.2.10.3 Fugitive emissions - Table A3 – Fugitive emissions risk assessment and management plan

5.2.10.3.1 Particulates from access routes, restored surfaces, waste delivery and waste deposit

The residual risk in the Operator's risk assessment due to particulate matter is low due to the risk management measures which are available, which include the following:

- All waste deliveries are in closed containers or by enclosed or sheeted vehicles;
- Particularly dry or dusty wastes will be dampened;
- All asbestos wastes will be double bagged or double wrapped as appropriate;
- Asbestos wastes will be deposited at the site with the minimum practicable mechanical or manual handling;
- All asbestos wastes will be covered immediately after deposition with cover materials that will not generate dust;
- Cover materials will be placed over the surface of all deposited waste throughout the day and at the end of the working day;
- There will be a restriction in the movement of mobile plant and site traffic to internal haul road and speed limits will be enforced;
- Wheel cleaning facilities by all waste delivery and collection vehicles when necessary before leaving the site;
- The sweeping of internal haul roads, the site access road and Whitemoss Road South between the site and Moss Lane with a road sweeper as necessary;
- Damping of haul roads and access roads and the spraying of soil, clay and general fill stockpiles together with areas of waste deposition as necessary during dry weather conditions.

We are satisfied with the Applicant's risk assessment and the particulate and asbestos management measures proposed and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health. The Operator also submitted an updated Particulate matter and asbestos management, monitoring and action plan for the western landfill area and specific monitoring requirements have been included in the permit in Table S3.7. See also the human health risk assessment below for particulate matter and the conclusion that there will be no harm to human health.

5.2.10.3.2 Litter arising from waste deposit and waste surface

The Operator's risk assessment states that the western landfill area will not generate significant quantities of litter, therefore the residual risk is very low. Waste types such as paper, plastic and cardboard will not be accepted at this site. The site personnel undertake regular inspections of the site boundary. If any litter does escape beyond the site boundary, this will be collected as soon as reasonably practicable.

We are satisfied with the Operator's risk assessment and the litter management measures proposed.

5.2.10.3.3 Mud and debris on public highway

The Operator's risk assessment states that the residual risk is low. The general risk management measures at the site include:

- Wheel wash installed on the landfill haul road which will be maintained throughout the operational life of the landfill;
- In the event that the wheel wash is not operational the vehicles will be cleaned using a stand-by jet wash;
- The internal haul roads and access road will be inspected regularly so that mud or debris can be removed as soon as is reasonably practicable;
- Cleaning of hard surfaced haul roads and access roads with a road sweeper as necessary;
- If mud or other debris is carried onto the public highway warning signs will be erected on the highway to inform users of the potential hazard.

We are satisfied with the Operator's risk assessment and the mud and debris management measures proposed.

5.2.10.3.4 Birds, vermin and insects

The Operator's risk assessment assesses the risk of the site attracting birds, vermin and insects as very low. The landfill does not and will not accept wastes that are attractive to birds, vermin and insects.

We are satisfied with the Operator's risk assessment.

5.2.10.4 Table A4 – Accident risk assessment and management plan

From the Operator's risk assessment covers the following hazards and the risk has been assessed as low or very low residual risk due to the risk management measures which are in place:

- Acceptance of inappropriate waste types;
- The deposited wastes are physically unstable;
- Deposited wastes are chemically incompatible;
- Accidental release of fuel or oil;
- Fire and explosion;
- Unauthorised access.

We are satisfied with the Operator's risk assessment and the risk management measures which are proposed or in place.

Summary

The permit contains standard conditions for emissions of substances not controlled by emission limits, odour, noise and vibration and pests. The conditions state that the specific emissions shall not cause pollution. If the Environment Agency notify the operator that emissions are giving rise to

pollution (outside of the site in the case of odour, noise and vibration and pests), then the operator will be required to submit a management plan to us for approval within the specified period which identifies and minimises the risks of pollution from the relevant emission. They will then be required to operate in accordance with the approved plan.

For all of the above amenity issues we are satisfied the measures proposed will be appropriate measures and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health. Operations at the current site support this and if historically there have been any issues these have now been addressed.

5.2.11 Human health risk assessment - Particulate matter management and monitoring

Particulate matter and asbestos monitoring is carried out onsite to monitor the effectiveness of the measures in place to minimise emissions of particulates. Particulate matter and asbestos monitoring is carried out at the current landfill site in accordance with table S3.7 which also contains compliance limits.

Particulates will continue to be monitored around the boundary of the active landfilling cell. As the development of the western landfill area proceeds the current particulate monitoring locations will be replaced with suitable monitoring locations around the active landfilling areas of the site following written approval by the Environment Agency.

As part of the Schedule 5 Notice dated 6th March 2015 we requested:

- a quantitative modelling impact assessment to provide further information on the impact on the environment and human health (question 8 of Landfill operations section of S5 Notice). The quantitative modelling impact assessment is required to provide further information on the impact on the environment and human health;
- an updated particulate and asbestos management, monitoring and action plan which takes into account the western landfill area and the closer proximity of landfill operations to the sensitive receptors. The risk assessment currently states that the dust monitoring plan will be updated to take into account the proposed new operational area and once agreed this will be implemented to confirm the effectiveness of mitigation measures. However the risk assessment needs to be updated as part of the determination of this application to take into account the health and environmental impacts at sensitive receptors; and
- a particulate monitoring programme for the categories of particulate matter identified in M17 (e.g. the suspended fraction and deposited speciated fractions). The current particulates monitoring plan requires updating to meet the requirements of the latest guidance.

Quantitative modelling impact assessment.

We assessed the Operator's impact assessment of air emissions for human health and deposition to soil.

Following a review of the completeness of the submission, the Operator submitted additional information pertaining to the air quality assessment in response to a Schedule 5 notice follow up request and then in response to a request for information about the areas of each of the phases.

The air quality assessment report concludes the proposals will:

- Be below the available maximum deposition rate (MDR) on agricultural land;
- Be below the appropriate EQS where an MDR is not available;
- Not result in an exceedence of any relevant EQS.

We have audited the assessments. The main observation is that the emission rates used by the applicant cannot be fully validated.

Pollutant Predictions

Application of Environment Agency H1 Guidance. We have carried out our own check modelling and we are satisfied with the results of the Operator's assessment.

The H1 methodology uses a concept of "process contribution (PC)", which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest. The guidance provides a simple method of calculating PC primarily for screening purposes and for estimating process contributions where environmental consequences are relatively low. It is based on using dispersion factors and so the process contributions calculated are likely to be an overestimate of the actual maximum concentrations.

Once short-term and long-term PCs have been calculated in this way, they are compared with EQSs referred to as "benchmarks" in the H1 Guidance.

Where an EU EQS exists, the relevant standard is the EU EQS. Where an EU EQS does not exist, our guidance sets out a National EQS (also referred to as Environmental Assessment Level - EAL) which has been derived to provide a similar level of protection to Human Health and the Environment as the EU EQS levels. In a very small number of cases, e.g. for emissions of Lead, the National EQS is more stringent than the EU EQS. In such cases, we use the National EQS standard for our assessment.

National EQSs do not have the same legal status as EU EQSs, and there is no explicit requirement to impose stricter conditions in order to comply with a national EQS. However, national EQSs are a standard for harm and any significant contribution to a breach is likely to be unacceptable.

PCs are considered **Insignificant** if:

- the **long-term** PC is less than **1%** of the relevant EQS; and
- the **short-term** PC is less than **10%** of the relevant EQS.

The **long term** 1% PC insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality;
- The threshold provides a substantial safety margin to protect health and the environment.

The **short term** 10% PC insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions;
- the threshold provides a substantial safety margin to protect health and the environment.

Where an emission is screened out in this way, we would normally consider that the impact of the emission is already insignificant, it follows that any further reduction in this emission will also be insignificant.

However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedances of the relevant EQS are likely. This is done through detailed audit and review of the Operator's air dispersion modelling taking background concentrations and modelling uncertainties into account.

The "predicted environmental contribution" (PEC) is the PC plus background and this is compared to the EQS referred to as "benchmarks" in the H1 Guidance (see above).

For those pollutants which do not screen out as insignificant, we determine whether exceedances of the relevant EQS are likely. This is done through detailed audit and review of the Operator's air dispersion modelling taking background concentrations and modelling uncertainties into account. Where an exceedance of an EU EQS is identified, we may require the Operator to go beyond what would normally be considered appropriate in our guidance for the Installation or we may refuse the application if the applicant is unable to provide suitable proposals. Whether or not exceedances are considered likely, the application is subject to the requirement to operate in accordance with BAT.

If, as a result of reviewing of the risk assessment and taking account of any additional techniques that could be applied to limit emissions, we consider

that emissions **would cause significant pollution**, we would refuse the application.

The Operator presents their predictions at worst case human health receptors for each phase of the western landfill area, in report entitled, 'An air dispersion modelling assessment of fugitive particulate matter emissions from the proposed western landfill area at Whitemoss Landfill site, Lancashire (re: WL/WL/AW/5504/01/MOD June 2015), section 4.

The Operator predicts that the 24-hour mean PM10 impacts screen out as insignificant (<10% short-term) as a PC at all receptors for all phases with the exception of Phase B. The annual mean PC's of PM10 do not screen out as insignificant (<1% long-term) for Phases A, B and D. When taking background concentrations into account, the Operator's calculated PEC for long-term or short-term PM10 would not result in an exceedance of the EQS'.

The Operator predicts that PCs would screen out as insignificant with respect to the PM2.5 annual mean EQS.

We have checked the background pollution data used by the Operator for those pollutants which were relevant in the assessment, i.e. where the pollutant does not screen out as insignificant. Obtaining data from Defra's background maps as the applicant did is appropriate; however we noted slightly higher concentrations of PM10 when checking concentrations in surrounding grid squares. We have taken these variations into account in our check modelling.

With regard to their assessment of deposition of metals on agricultural land, the operator predicts that all metals assessed (arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc) have a PC below the MDR.

For manganese and vanadium, which do not have an MDR, the operator has calculated PCs based on PM10 concentrations. They predict these metals screen out as insignificant with respect to the long term EALs. Whilst this approach follows guidance set out in Annex F of H1 we would expect a more conservative approach would be carrying out the assessment based on total particulate matter (TPM) concentrations (rather than PM10 only). The applicant has not assessed impacts of antimony as they do not have data for this metal.

Our check modelling

In order to check the validity of the Operator's predictions, we have undertaken our own detailed check modelling. We carried out detailed check dispersion modelling using ADMS Version 5.1 using meteorological data observed at Crosby (2007-2011), located approximately 18 km west of the application site.

- We have carried out the following sensitivity analysis and checks:

- Using different surface roughness parameters;
- Checks on potential emission rates using a range of assumptions;
- Carrying out sensitivity analysis on a range of possible particle size distributions;
- Considering higher background concentrations than those used by the operator for the pollutants which do not screen out as insignificant.

As a result of our checks, we are satisfied that the Operator's assessment of air quality impacts to human health are reasonably representative. We do not agree with the absolute numerical values given in their reports, but can agree that any differences are not likely to affect the likelihood of harm to human health. We do not consider that the facility will contribute to exceedances of an air quality EQS at human health receptors or to the Maximum Deposition Rates (MDR) for agricultural land.

Particulate matter and asbestos management, monitoring and action plan for the western landfill area at Whitemoss Landfill Site, Lancashire (WL/WL/AW/5504/01/DMP June 2015)

Regarding the updated particulate and asbestos management, monitoring and action plan - the plan states that the operational controls employed currently at the existing site will continue to be employed for the western landfill area, including the following:

- Sheeting of all vehicles using the site;
- Use of wheel cleaning facilities to prevent mud on the road which may lead to dust;
- Vehicles will be restricted to haul roads, which will be maintained;
- Vehicle speed limits will be imposed to prevent dust;
- Use of a water bowser on haul roads in dry conditions to prevent dust;
- Waste covered progressively throughout the day;
- Operations will cease during high winds;
- Visual monitoring of emissions of particulate matter and quantitative monitoring of suspended particulate matter and deposited dust.

Visual monitoring

Visual monitoring for emissions of particulate matter will be undertaken by suitably trained site personnel during site operations. Any problems observed will be reported to the site manager who will be responsible for investigating the cause and implementing any necessary remedial action.

Quantitative monitoring – deposited dust

Deposited dust has the potential to cause nuisance by deposition on properties, vehicles, windows etc. Five Frisbee dust deposition gauges are to be installed at locations around the western landfill area to monitor for deposited dust. The Frisbee monitoring locations will remain under review based on meteorological data recorded at the site as landfilling proceeds from

phases A to D. There is also an existing suspended particulate matter monitor (ref C1). The monitoring requirements are detailed in table S3.7 of the variation notice.

Quantitative monitoring – suspended solids

The operator proposed that two additional continuous suspended particulate matter monitors are installed at locations at the perimeter of the western landfill area. This is in addition to the existing monitor C1.

Asbestos monitoring

The monitoring requirements are standard for all sites which accept asbestos and are detailed in Table S3.7 of the variation notice. The monitoring location has been clarified in the variation notice to state, 'Site boundary downwind of asbestos disposal area' rather than disposal 'cell', as the intention is for the monitoring requirement to be required for all areas that accept asbestos rather than just separate cells for the disposal of asbestos.

Quantitative monitoring – Chemical speciation of deposited dust

The other effect of deposited dust is related to the potential impact on human health based on any potentially toxic components of the dust. See quantitative modelling impact assessment detailed above. As the results are not significant and are not likely to cause pollution of the environment or harm to human health there is no need to require the monitoring of the speciated metals to meet compliance limits in table S3.7 of the permit. However the operator shall continue to monitor the speciated metals on a quarterly basis as detailed in the 'Particulate matter and asbestos management, monitoring and action plan for the western landfill area at Whitemoss Landfill Site, Lancashire (ref: WL/WL/AW/5504/01/DMP, June 2015)'. Following review of the results the number of monitoring locations and the frequency may be reduced depending on the outcome of the review. The management plan will be linked into the permit by table S1.2 – 'Operating techniques' table.

We are satisfied with the Operator's updated particulate matter and asbestos management, monitoring and action plan and the continuation of the existing management measures for particulates and asbestos. We are satisfied the measures proposed will be appropriate measures and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health. Operations at the current site support this and if historically there have been any issues these have now been addressed. Furthermore the monitoring requirements are covered by the standard emissions and monitoring condition in the permit where the limits in table S3.7 shall not be exceeded.

5.2.12 Impact on Habitats sites, SSSIs, non-statutory conservation sites etc.

Sites Considered

There are no Habitats (i.e. Special Areas of Conservation, Special Protection Areas and Ramsar) sites within 2km of the proposed Installation.

There are no Sites of Special Scientific Interest within 2km of the proposed Installation.

There are no non-statutory local wildlife and conservation sites within 2km of the proposed Installation.

There are three protected habitats within 200m of the installation – these are Deciduous Woodland, Fens, and Lowland Raised Bog.

The deciduous woodland (broadleaved) is 190m to the SW of the southern installation boundary.

For the Lowland raised bogs and fens – the western landfill area will be built on the lowland raised bogs and fens – meaning that the habitat will be removed. There will be a small area remaining to the west of the western installation boundary and a larger amount remaining to the east of the eastern installation boundary as shown on drawing ESID2, following development of the western landfill area.

The site and immediate surrounding area are UK Biodiversity Action Plan (BAP) priority habitats comprising Fens and Lowland Raised Bog. There is an area of Deciduous Woodland UK BAP priority habitat between White Moss Road South and the M58 to the north of the existing site and a second area approximately 170 metres to the south west of the site.

The Operator was asked to provide additional information (on 15/04/15) in relation to the protection, conservation, recovery and mitigation of the Fens and Lowland raised bog as a habitat of principal importance in accordance with Section 41 of the NERC Act 2006 – for conservation sites under the UK Biodiversity Action Plans (BAP) . Also information on the protection, conservation, recovery and mitigation of the Deciduous Woodland UK BAP priority habitat between White Moss Road South and the M58 to the north of the existing site and a second area approximately 170 metres to the south west of the site.

In their response the Applicant had reviewed the DEFRA Magic website with respect to habitats at and in the vicinity of the site. However the Magic website is not up to date - as the current landfill area (which is almost complete) is currently referred to as Lowland Raised Bog which is a priority habitat. The operator states that detailed ecological surveys were carried out as part of the Environmental Impact Assessment (EIA) which were presented in the Environmental Statement which was submitted as part of the DCO application. No Lowland Raised Bogs or Lowland Fens were identified at the site during the ecological survey work, therefore it is not necessary to provide as part of the development any protection, conservation, recovery or mitigation in respect of these habitats in the area of the site.

However significant peat deposits were identified as part of the soil resources and agricultural land assessment carried out during the Environmental Impact Assessment process. Based on the presence of peat deposits a detailed soil handling and management scheme was agreed with Lancashire County Council and Natural England during the examination stage of the DCO process.

Regarding the impacts of adjacent priority habitats including Lowland Raised Bog to the east and west of the proposed western extension area, the Deciduous Woodland to the north and to the south west - the Operator states that suitable mitigation was included in a wide range of design and operational measures which have been presented in the Environmental Statement and on which the design of the landfill in the Environmental Permit application was based, and on which the operational techniques at the site will be based. The Environmental Impact Assessment concludes that the proposed development will not have an unacceptable impact on the environment which includes the adjacent habitats.

From our consideration of the potential emissions which may have an impact on the priority habitats, these include particulate matter emissions to air and emissions to surface water or discharges of leachate.

Deciduous Woodland to the north.

From the 'Particulate matter and asbestos management, monitoring and action plan (WL/WL/AW/5504/01/DMP, June 2015', based on the meteorological data recorded between January 2005 and May 2014 at the weather station on the weighbridge near the site entrance - the prevailing wind direction is from the west, west-north west and north west. Individual wind roses for the years 2008, 2009, 2010, 2011, 2012 and 2013 prepared using the data from the weather station using macros provided by the Environment Agency confirm the prevailing wind direction and show also that there is a significant component of wind from the south to south-south east.

Therefore it is unlikely that this site would be affected by particulate matter emissions due to the prevailing wind directions.

Deciduous Woodland 170m to the south west

This woodland area is unlikely to be affected by particulate matter emissions due to wind blowing from the west, west-north west and north-west or south to south east.

The Operator has also proposed mitigation measures for dust and particulates which will also to protect these sites in the event of unfavourable wind direction.

Specific measures are in place to prevent the release of fibres and particulates from accepted wastes and monitoring requirements and emission limits are included in the permit. The appropriate measures will be enforced

by incorporating the appropriate measures into the permit through the operating techniques condition.

All waste deliveries are in closed containers or by enclosed or sheeted vehicles. Particularly dry or dusty wastes will be dampened. Cover materials will be placed over the surface of all deposited waste throughout the day and at the end of each working day.

The general risk management measures employed at the site include:

- Restriction of the movement of mobile plant and site traffic to internal hard surfaced haul roads.
- Site speed limits to be enforced.
- The use of wheel cleaning facilities by all waste delivery and collection vehicles when necessary before leaving the site.
- The sweeping of the internal haul roads, the site access road and White Moss Road South between the site and Moss Lane with a road sweeper as necessary.
- Dampening of haul roads and access roads and the spraying of soil, clay and general fill stockpiles together with areas of waste deposition as necessary during dry weather conditions.

Priority habitats (Lowland raised bogs) to the west and east. No lowland raised bogs were identified in the ecological survey (carried out as part of the Environmental Impact Assessment). Therefore no further consideration of potential impacts on these habitats is necessary. The scope of the ecological assessment was agreed with Natural England. From section 10 on ecology in the Environmental Statement and the Ecological Impact Assessment (submitted as part of the DCO application), it states that the site principally comprises poor semi improved grassland together with marsh / marshy grassland dominated by soft rush and compact rush. Patches of scrub, plantation woodland and small areas of bare ground, swamp, tall ruderal and ephemeral vegetation are also present. Botanically the habitats are poor and of limited ecological value. They are common and widespread within the local area and are assessed to be of site level value or negligible value only. It is considered that there will be a cumulative benefit to habitat creation and biodiversity resulting from the proposed development. Benefits will include the transfer of agricultural land to specific wetland, species diverse meadow and scrub vegetation. Any adverse impacts during the development stages should be outweighed by any beneficial impacts within the restoration and aftercare phases resulting in an overall beneficial scheme.

We do not consider that the deciduous woodland sites, including the area adjacent to the north boundary will be affected by run off from leachate - as the landfill will be engineered in accordance with the LfD to protect the groundwater and surface water and land.

The site will be restored progressively to a raised landform supporting a diversity of habitats including species rich grassland, broadleaved woodland, scrub, species rich hedgerows and peripheral ponds and ditches surrounded

by marshy grassland. The construction of the screening bunds around the perimeter of the proposed western landfill area will create additional rough grassland and scrub habitat and reduce noise disturbance to species using the surrounding land.

Following restoration of the proposed development the site will be restored to increase biodiversity and will be of benefit to a range of species including breeding birds, reptiles and bats.

Natural England submitted a letter agreeing with the proposals in the DCO application (see Natural England letter dated 14.10.14, Ref: 6422/134077). The letter states that Whitemoss Landfill Limited and Natural England submitted a Statement of Common Ground in June 2014 (Report reference: WL/WL/SPS/1616/01 SOCGNE June 2014) setting out areas of agreement including the details in the Soils Handling and Management Scheme and the Landscaping, Restoration, Habitat Management and Aftercare Scheme. Whitemoss Landfill Limited and Natural England submitted a further Statement of Common Ground on 7 October 2014 (report ref WL/WLSPS/1616/01 SOCGNE2) with respect to the updated Landscaping, Restoration, Habitat Management and Aftercare Scheme and the updated Soil Handling and Management Scheme.

We agree with the requirements laid out by Natural England and the Secretary of State. An outline of the requirements are as follows:

To restore the land and retain its potential as best and most versatile land (Grade 2). The soils will be stripped, stored and managed in accordance with the soils handling and management scheme, which is agreed, and that there will be no unacceptable adverse impact on soil resources.

Restoration and aftercare

1) Following certification in writing by the county planning authority of the completion of restoration in any phase on the application land, aftercare of that phase must be carried out for a period of 20 years in accordance with the Landscaping, restoration, habitat management and aftercare scheme.

(2) By the end of October in each year until the end of the aftercare period in the final phase on the application land, a report must be submitted to the county planning authority recording in detail—

- The operations carried out on the land during the previous 12 months in respect of landfilling;
- The measures taken to implement the restoration and aftercare provisions;
- The intended operations for the next 12 months which will be implemented on the application land; and
- The report must contain the topographical survey specified under requirement 24 to this Order.

Japanese Knotweed

Prior to the commencement of the activities in Phase B of the authorised project (as shown on the works plan) a scheme for the eradication of any Japanese Knotweed identified in Phase B must be submitted for approval by the county planning authority. The extent of the Japanese Knotweed in Phase B must be confirmed and detailed as part of the preparation of the scheme. The approved scheme must be implemented prior to the commencement of the activities of Phase B and thereafter.

Ecology

No removal of trees or hedgerows may take place between 1st March and 31st August inclusive in any year unless otherwise agreed with the county planning authority.

European protected species

1) Prior to the commencement of the operations in each of Phases B, C and D of the application land, further survey work must be undertaken to establish whether any European protected species or Common Toad are present on any of the application land, in any land affected, or likely to be affected, by the authorised project, in any of the trees to be lopped or felled, or in any buildings to be demolished, during that phase of the authorised project. The scope of the further survey work must be agreed with, and the result of the survey work submitted to, the county planning authority.

(2) "European protected species" has the same meaning as in regulations 40 and 44 of the Conservation of Habitats and Species Regulations 2010(a).

(3) If European protected species or Common Toad are identified during the further survey work, no works within that phase may commence until a mitigation scheme has been approved by the county planning authority. The mitigation measures contained in the approved scheme must be undertaken prior to the commencement of development in that phase.

Although we will not include specific permit conditions in relation to the planning requirements above, the conditions in any permit which may be issued will not conflict with the requirements. The applicant will be required to meet all of the requirements of both planning and the environmental permit.

5.3 Landfill operations

5.3.1 Treated leachate discharge pipework

The pipelines will be included in the installation boundary up to the point that they leave land under the control of the Operator. This is to provide regulatory control in the event of a pollution incident. When the pipelines leave the site boundary they will be covered by the general regulatory requirements relating to waste.

The applicant confirmed that inspection and maintenance of leachate pipework are the subject of operating procedures as part of the site management system.

6. Other Legal Requirements

In this section we explain how we have addressed other relevant legal requirements, to the extent that we have not addressed them elsewhere in this document.

6.1 EPR 2010 and related Directives

The EPR delivers the requirements of a number of European and national laws.

6.1.1 Schedules 1 and 7 to the EPR 2010 – IED

The requirements of the IED, have been addressed in the permit. The LFD provides many of the technical requirements for landfill. For energy efficiency, raw materials and wastes produced by the installation – conditions 1.3, 1.4 and 1.5 in the permit deliver these requirements.

There is one requirement not addressed above, which is that contained in Article 5(3) IED. Article 5(3) requires that “In the case of a new installation or a substantial change where Article 4 of Directive 85/337/EC (the EIA Directive) applies, any relevant information obtained or conclusion arrived at pursuant to articles 5, 6 and 7 of that Directive shall be examined and used for the purposes of granting the permit.”

- Article 5 of EIA Directive relates to the obligation on developers to supply the information set out in Annex IV of the Directive when making an application for development consent.
- Article 6(1) requires Member States to ensure that the authorities likely to be concerned by a development by reason of their specific environmental responsibilities are consulted on the Environmental Statement and the request for development consent.
- Article 6(2)-6(6) makes provision for public consultation on applications for development consent.
- Article 7 relates to projects with transboundary effects and consequential obligations to consult with affected Member States.

The grant or refusal of development consent is a matter for the relevant local planning authority. The Environment Agency’s obligation is therefore to examine and use any relevant information obtained or conclusion arrived at by the local planning authorities pursuant to those EIA Directive articles.

In determining the Application we have considered the following documents: -

- The Environmental Statement submitted with the planning application (which also formed part of the Environmental Permit Application).

- The decision of the Secretary of State to grant planning permission on 19 May 2015 coming into force on 9 June 2015.
- The report and decision notice of the Secretary of State accompanying the grant of planning permission.
- The response of the Environment Agency to the local planning authority in its role as consultee to the planning process.

From consideration of all the documents above, the Environment Agency considers that no additional or different conditions are necessary.

The Environment Agency has also carried out its own consultation on the Environmental Permitting Application which includes the Environmental Statement submitted to the local planning authority. The results of our consultation are described elsewhere in this decision document.

6.1.2 Schedule 9 to the EPR 2010 – Waste Framework Directive

As the Installation involves the disposal of waste, it is carrying out a *waste operation* for the purposes of the EPR 2010, and the requirements of Schedule 9 therefore apply. This means that we must exercise our functions so as to ensure implementation of certain articles of the WFD.

We must exercise our relevant functions for the purposes of ensuring that the waste hierarchy referred to in Article 4 of the WFD is applied to the generation of waste and that any waste generated is treated in accordance with Article 4 of the WFD.

The conditions of the permit ensure that waste generation from the facility is minimised. Where the production of waste cannot be prevented it will be recovered wherever possible or otherwise disposed of in a manner that minimises its impact on the environment. This is in accordance with Article 4.

We must also exercise our relevant functions for the purposes of implementing Article 13 of the WFD; ensuring that the requirements in the second paragraph of Article 23(1) of the WFD are met; and ensuring compliance with Articles 18(2)(b), 18(2)(c), and 35(1) of the WFD.

Article 13 relates to the protection of human health and the environment. These objectives are addressed elsewhere in this document.

Article 23(1) requires the permit to specify:

- the types and quantities of waste that may be treated;
- for each type of operation permitted, the technical and any other requirements relevant to the site concerned;
- the safety and precautionary measures to be taken;
- the method to be used for each type of operation;
- such monitoring and control operations as may be necessary;
- such closure and after-care provisions as may be necessary.

These are all covered by permit conditions.

The permit does not allow the mixing of hazardous waste so Article 18(2) is not relevant.

If hazardous wastes can be mixed e.g. in reception hall or wherever we need something to the effect that the provisions of Article 13 are still complied with and the adverse impact of the waste management on human health and the environment is not increased; and the mixing operation conforms to best available techniques

Article 35(1) relates to record keeping and its requirements are delivered through permit conditions.

6.1.3 Schedule 10 to the EPR 2010 – Landfill Directive

All the requirements of the LfD will have been addressed during the determination of this application. See section 5.

We address the main issues covered by the LfD such as engineering and stability in the body of this document above. The LfD represents best available techniques (BAT) for landfills. We are satisfied the proposals are compliant with the requirements of the LfD.

6.1.4 Schedule 16 to the EPR 2010 – Asbestos Directive

We have addressed the requirements of this Directive in section 5.2.11 above and the requirements to ensure appropriate handling of asbestos during deposit and monitoring for asbestos fibres are delivered through the Permit conditions.

6.1.5 Schedule 22 to the EPR 2010 – Groundwater, Water Framework and Groundwater Daughter Directives

To the extent that it might lead to a discharge of pollutants to groundwater (a “groundwater activity” under the EPR 2010), the Permit is subject to the requirements of Schedule 22, which delivers the requirements of EU Directives relating to pollution of groundwater. The Permit requires the taking of all necessary measures to prevent the input of any hazardous substances to groundwater, and to limit the input of non-hazardous pollutants into groundwater so as to ensure such pollutants do not cause pollution, and satisfies the requirements of Schedule 22.

We have addressed the effects of the proposals on groundwater in section 5.2.7 above.

6.1.6 Directive 2003/35/EC – The Public Participation Directive

Regulation 59 of the EPR 2010 requires the Environment Agency to prepare and publish a statement of its policies for complying with its public participation duties. We have published our public participation statement.

These Applications were consulted upon in line with this statement. This satisfies the requirements of the Public Participation Directive. In addition we also advertised our draft decision.

Our decisions in these cases have been reached following consideration of representations from the public. A summary of the representations made and the responses received to our consultations and our consideration of them is set out in Annex I & II.

6.2 National primary legislation

6.2.1 **Environment Act 1995**

(i) Section 4 (Pursuit of Sustainable Development)

We are required to contribute towards achieving sustainable development, as considered appropriate by Ministers and set out in guidance issued to us. The Secretary of State for Environment, Food and Rural Affairs has issued *The Environment Agency's Objectives and Contribution to Sustainable Development: Statutory Guidance (December 2002)*. This document:

“provides guidance to the Agency on such matters as the formulation of approaches that the Agency should take to its work, decisions about priorities for the Agency and the allocation of resources. It is not directly applicable to individual regulatory decisions of the Agency”.

In respect of regulation of industrial pollution through the EPR, the Guidance refers in particular to the objective of setting permit conditions “*in a consistent and proportionate fashion based on Best Available Techniques and taking into account all relevant matters...*”. The Environment Agency considers that it has pursued the objectives set out in the Government's guidance, where relevant, and that there are no additional conditions that should be included in this Permit to take account of the Section 4 duty.

(ii) Section 7 (Pursuit of Conservation Objectives)

We considered whether we should impose any additional or different requirements in terms of our duty to have regard to the various conservation objectives but concluded that we should not.

We have considered the impact of the installation on local wildlife sites within 2 km which are not designated as either European Sites or SSSIs. We are satisfied that no additional conditions are required.

6.2.2 **Human Rights Act 1998**

We have considered potential interference with rights addressed by the European Convention on Human Rights in reaching our decision and consider

that our decision is compatible with our duties under the Human Rights Act 1998. In particular, we have considered the right to life (Article 2), the right to a fair trial (Article 6), the right to respect for private and family life (Article 8) and the right to protection of property (Article 1, First Protocol). We do not believe that Convention rights are engaged in relation to this determination.

6.2.3 Countryside and Rights of Way Act 2000 (CROW 2000)

Section 85 of this Act imposes a duty on Environment Agency to have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty (AONB). There is no AONB which could be affected by the Installation.

6.2.4 Wildlife and Countryside Act 1981

Under section 28G of the Wildlife and Countryside Act 1981 the Environment Agency has a duty to take reasonable steps to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which a site is of special scientific interest. Under section 28I the Environment Agency has a duty to consult Natural England in relation to any permit that is likely to damage SSSIs. There are no SSSIs within the relevant screening distance.

6.2.5 Natural Environment and Rural Communities Act 2006

Section 40 of this Act requires us to have regard, so far as is consistent with the proper exercise of our functions, to the purpose of conserving biodiversity. We have done so and consider that no different or additional conditions in the Permit are required.

6.3 National secondary legislation

6.3.1 The Conservation of Natural Habitats and Species Regulations 2010

We have assessed the Application in accordance with guidance agreed jointly with Natural England and concluded that there are no relevant Habitats sites within the relevant screening distance.

6.3.2 Water Framework Directive Regulations 2003

Consideration has been given to whether any additional requirements should be imposed in terms of the Environment Agency's duty under regulation 3 to secure the requirements of the Water Framework Directive through (inter alia) EP permits, but it is felt that existing conditions are sufficient in this regard and no other appropriate requirements have been identified.

6.4 Other relevant legal requirements

6.4.1 Duty to Involve

S.23 of the Local Democracy, Economic Development and Construction Act 2009 require us where we consider it appropriate to take such steps as we consider appropriate to secure the involvement of interested persons in the exercise of our functions by providing them with information, consulting them or involving them in any other way. S.24 requires us to have regard to any Secretary of State guidance as to how we should do that.

The way in which the Environment Agency has consulted with the public and other interested parties is set out in section 2 of this document. The way in which we have taken account of the representations we have received is set out in Annex I & II. Our public consultation duties are also set out in the EP Regulations, and our statutory Public Participation Statement, which implement the requirements of the Public Participation Directive.

ANNEX I: Consultation on the Application

The Application has been advertised and consulted upon in accordance with the Environment Agency's Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our decision is summarised in this Annex. Copies of all consultation responses have been placed on the Environment Agency public register.

The Application was advertised in the newspaper, 'The Skelmersdale Gazette' on 5th, 12th and 19th of November 2014.

The Application was advertised on the Environment Agency website from 5th November 2014 to 2nd January 2015. Copies of the Application were placed in the Environment Agency Public Register at our office, Lutra House, Dodd Way, Off Seedlee Road, Preston, PR5 8BX and also a copy was made available at Skelmersdale Library, Southway, Skelmersdale, WN8 6NL.

1) Consultation Responses from Statutory and Non-Statutory Bodies

The following statutory and non-statutory bodies were consulted:

- United Utilities;
- Public Health England;
- Health and Safety Executive;
- Food Standards Agency;
- Environmental Protection Section, West Lancashire District Council;
- Director of Public Health.

Responses were received from the following:

Public Health England

Issues raised:	Summary of action taken / how this has been covered
The former Health Protection Agency (HPA) became part of Public Health England (PHE) in April 2013. In 2011, the HPA published a review of the 'Impact on Health of Emissions from Landfill Sites'. This review included landfills for hazardous waste. The review considered research from the Environment Agency, peer reviewed epidemiological studies and statements from the independent expert committee, the Committee on Toxicity of Chemicals in Food, Consumer products and the Environment. The review concluded that there has been no new evidence to change	No action required.

<p>the previous advice that living close to a well-managed modern landfill site does not pose a significant risk to human health. As noted in the review, detailed site-specific risk assessment should remain an important part of the permitting and management process.</p> <p>Following a review of the submitted documentation, we recommend that any Environmental Permit issued for this site should contain conditions to ensure that the following potential emissions do not impact upon public health:</p> <ul style="list-style-type: none"> <input type="checkbox"/> fugitive emissions from the raw wastes during delivery in vehicles, <input type="checkbox"/> fugitive emissions from vehicles driving along the site haul roads, <input type="checkbox"/> fugitive emissions from landfilling operations from hazardous materials being deposited at the site. <input type="checkbox"/> leachate discharge into any surface waters or groundwater. <p>We understand that the operator proposes a number of mitigation measures including, but not limited to, using a bowser to dampen down haul roads, covering any inherently dusty material as soon as possible following tipping and ensuring that all lorries coming to site remain sheeted until the moment of tipping which should help to mitigate any impact on the above. In addition PHE note that the operator also proposes to undertake monitoring in accordance with their existing permit DP3639LM dated 18th September 2008, which contains permit conditions for particulate matter in ambient air based on the submitted particulates monitoring plan submitted on 12 January 2005.</p> <p>PHE have received a number of concerns from members of the public in recent months regarding unsubstantiated fugitive releases from the site. Concerns of local residents are understandable given the close proximity of the nearest receptors to the tipping face of phases A and B of the landfill extension.</p> <p>Concerns were similarly raised by local residents to PHE following our response to the planning consultation to extend Whitemoss Landfill site. PHE has spoken to the Environment Agency on this matter and they have confirmed that the operator of Whitemoss Landfill is compliant with their current permit. This provides reassurance that provided the current duty of care is maintained by the operator, that the</p>	<p>Any variation notice issued will contain conditions in relation to fugitive emissions which are known as 'emissions of substances not controlled by emission limits' in the permit. This will cover emissions to air and water. See section 5.2.10.3.</p> <p>The operator has submitted an updated particulate and asbestos management, monitoring and action plan which takes into account the western landfill area and the closer proximity of landfill operations to sensitive receptors. The particulate matter monitoring requirements and limits in the permit have been updated to take into account this updated plan. This updated plan will be incorporated into the draft variation notice in table S1.2 for operating techniques, therefore the Applicant will be required to comply with this updated plan.</p>
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<p>extension should not cause any wider health concerns.</p> <p>Public Health England understands that a 5m bund is to be constructed for the proposed extension which will reduce the visual impact, and reduce the potential for any unforeseen dusty material to leave the site. We also understand that all asbestos waste brought to site will be wrapped in plastic or enclosed in bags; this waste is then to be immediately covered to prevent any release. From reviewing the submitted information within the variation application, we understand that the applicant is confident that there will not be a significant risk to health from the works proposed.</p> <p>The existing permit requires the applicant to monitor asbestos fibres at four locations around the boundary of the site on a quarterly basis and not to exceed 0.002 fibres/ml measured over a 4 hour period. Given that this is a substantial variation to the existing permit, the close proximity of phases A and B of the landfill extension to receptors in Peel Farm, Nos 64, 66 and 68a White Moss Road South, we would recommend that a thorough review is made of all monitoring plans prior to permit issue. This may include a more frequent monitoring period at sensitive receptors for asbestos fibres in air when the cells nearest to the residential receptors are active, with sensitivity down to 0.001f/ml (WHO Air Quality Guideline 2000). Public Health England would be happy to comment on a monitoring plan and to provide advice on the significance of the results captured by this work.</p> <p>Additionally, dust and particulate monitoring (deposited and in air) as well as landfill gas and leachate monitoring will also take place as described in the permit application documentation. Monitoring data should be reported to the Environment Agency on a regular basis. Should elevated levels of particulates, asbestos, landfill gas or leachate be observed, results should be discussed with PHE regarding potential risks to public health. Mitigation measures should be implemented if identified to be a concern once operational.</p> <p>Based on the information contained in the application documentation, and providing that the applicant takes all appropriate measures to prevent or control pollution in accordance with the relevant sector technical</p>	<p>A 5m high temporary bund will surround the northern, western and eastern boundaries of the western landfill area and also within the site as well to provide noise, dust and visual screening.</p> <p>All asbestos wastes will be double bagged or double wrapped as appropriate at the place of production of the waste and will be covered immediately after deposition with cover materials so as not to allow the release of asbestos fibres.</p> <p>The updated particulate and asbestos monitoring plan has been reviewed and we are satisfied with this. The asbestos monitoring requirements in the revised draft permit will be the same. However we can review that based on some real monitoring data and increase monitoring rates (and amend operational practices) if the data shows there is a need to. The monitoring plans have been assessed as part of the determination of this application and have been found to be satisfactory. See sections 5.2.10.3.1 and 5.2.11 in relation to particulate matter and asbestos management and monitoring.</p> <p>If elevated monitoring results for particulates, asbestos, landfill gas and leachate are observed, the action plans and mitigation measures detailed in the application will be implemented and if it is considered appropriate at the time then we may raise any issues with PHE. However monitoring results which are submitted by the operator will be placed on the public register.</p> <p>We have assessed all of the relevant documentation for the extension area and we consider that the Applicant is taking all appropriate measures in accordance with the guidance and industry best practice and has</p>
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<p>guidance or industry best practice, and that a thorough review is made of all monitoring plans prior to permit issue, PHE has no significant concerns regarding the potential risk to health of the local population from this proposed activity.</p> <p>Any additional information obtained by the Environment Agency in relation to these comments should be sent to PHE for consideration. Such information could affect the comments made in this response. We would be grateful to receive a copy of the final permit documentation, which we assume will include the detail of the monitoring requirements during operations.</p>	<p>made a thorough review of all monitoring plans - which we are satisfied with.</p> <p>PHE will be consulted on this draft decision this explains in section 2 above what additional information was received from the Applicant.</p>
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2) Consultation Responses from Members of the Public and Community Organisations

The consultation responses received were wide ranging and a number of the issues raised were outside the Environment Agency's remit in reaching its permitting decisions. Specifically questions were raised which fall within the jurisdiction of the planning system, both on the development of planning policy and the grant of planning permission.

Guidance on the interaction between planning and pollution control is given in the National Planning Policy Framework. It says that the planning and pollution control systems are separate but complementary. We are only able to take into account those issues, which fall within the scope of the Environmental Permitting Regulations.

Comments:

Some of the comments received referred to the DCO planning application and contained issues that are outside the Environment Agency's remit as described above.

These issues raised are

- location of the site - decisions over land use are primarily matters for the planning system. The location of the installation is a relevant consideration for Environmental Permitting, but only in so far as its potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and has been reported upon in the main body of this document;
- proposal undermines government policy in relation to the waste hierarchy;

- negative economic consequences;
- effect on property values;
- there are alternative disposal options for hazardous waste;
- increase in traffic;
- unfair public hearing for DCO;
- inadequate consultation of residents in relation to the DCO;
- encroachment of the current landfill onto council land beyond the southern boundary;
- concerns about compulsory purchase of plots 15 – 17.

a) Representations from Councillors and Parish Councils

Representations were received from the following:

Latham South Parish Council

Summary of Issues Raised	Response
<p>Given the size of the extension compared to the original area queried whether an entirely new permit should have been sought.</p>	<p>As the installation already has a permit – the operator can apply to vary to extend the permit. The standard of environmental protection would be exactly the same in any case.</p>
<p>There is no evidence to show that a hazardous waste landfill site situated directly above mine workings and an aquifer, food producing crops and housing - can be made safe using the proposed methods. Plastic liners fail over much shorter timescales than that for which the landfill would remain hazardous and the proposed liner does not meet the correct specification. An outer layer of clay could be eroded by being either too wet or too dry at various times during the active lifetime of landfilled hazardous materials.</p>	<p>The engineering solutions in relation to filling in and making the mine shafts safe has been used before. As part of the engineering the former Mossfield colliery shafts will need to be stabilised and sealed to eliminate the potential for their collapse or settlement. The remaining engineering proposals are in accordance with the LfD.</p> <p>We are not aware of any other hazardous landfill constructed above mine workings, including shafts, but we are aware of other landfill sites, that are constructed above mine workings. However, subject to appropriate technical precautions as required by the permit there is no reason in principle why development of a hazardous landfill should not take place.</p> <p>The basal and side slope lining system comprising a minimum 1m thickness of clay at a maximum permeability of 1e-9 m/s with a 2mm thick HDPE flexible membrane liner together with a 1m thick clay cap at a maximum permeability of 1e-9 m/s laid on an inert subgrade at a gradient of 1V:8H have been demonstrated in the quantitative risk assessments to be adequate for protecting groundwater and controlling emissions of gas in the operational and post-operational stages. The landfill pollution control systems have been adequately designed for both the situations when it will be non-hydraulically contained when the groundwater drainage system will be operating and when it will be hydraulically contained when the groundwater control system can be reduced or turned off. In the long term (several hundred years) the FML will deteriorate but the effect of this will be counterbalanced by hydraulic containment being achieved when the groundwater dewatering system is turned off and leachate is kept below the level of the groundwater. This means that there will be an inward hydraulic gradient, and leachate heads will be controlled by the leachate management system. The basal and side slope lining system will be constructed to the specifications established in the quantitative risk assessments and under strict CQA procedures, which would have to be agreed with the EA Area team prior to construction commencing.</p> <p>The cap will be constructed to the minimum specification according to the specification established in the quantitative risk assessments and under strict CQA procedures, which would have to be agreed with the EA Area team prior to construction commencing. Regarding long term cap integrity the cap will have to be maintained by the permit holder as long as the landfill has a permit in place. This means that any deterioration of the cap</p>

Summary of Issues Raised	Response
	<p>by erosion or cracking (e.g. by being too wet or too dry) will have to be rectified by the permit holder until the time when the permit is surrendered. The permit holder will have to apply to the EA to surrender the permit before the permit can be surrendered.</p> <p>The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or human health at which time the operator may apply to surrender the permit.</p>
<p>It was suggested that the site is unlikely to reach the 150,000 tonne per year limit for hazardous waste inputs and the company's proposed remedy is to reduce the depth of the excavation in the later stages and use inert material to make up the remaining shortfall. Reducing excavation depths could create engineering problems.</p>	<p>The conditions in the engineering section in the draft permit state that no construction of any new cell of the landfill shall commence until the operator has submitted construction proposals and the Environment Agency is satisfied with the construction proposals and no disposal of waste shall take place in a new cell until the operator has submitted a CQA validation report and we have confirmed that we are satisfied with the CQA validation report. The purpose of these conditions is to ensure that the engineering requirements meet the correct standards to ensure protection of the environment and prevent harm to human health.</p> <p>There is no evidence to support this assertion. If the depth of the excavation is reduced this would improve the stability of side slopes, lining systems and temporary waste slopes, because the reduced height increases the factor of safety against slippage or failure. Changes to engineering proposals and design will require our approval and if the site was never to reach its currently intended size it could still be engineered satisfactorily</p>
<p>It is suggested there is a severe risk of contaminated water escaping from the proposed site into groundwater and surface water. It seems that no plans have been made for extreme weather conditions which may occur during the operational phase and beyond closure of the site.</p> <p>Concerns raised about the uncontrolled release of water abstracted from the groundwater under-drainage as the applicant has not demonstrated that the surface water system has sufficient capacity</p>	<p>There are limits on the amount of groundwater discharged to the surface water management scheme. Settlement ponds are also proposed for the treatment of the groundwater prior to discharge to surface water – therefore adding the ability to retain any excess water and manage the discharge to surface water.</p> <p>All surface water flows greater than green field runoff rates will be attenuated on site within the proposed and existing ditch systems and storage areas. The ditches will be lined to prevent ground infiltration. The ditch system and balancing ponds which make up the surface water management system will be designed to provide sufficient storage to retain water from storm events up to and including the 1 in 100 year plus climate change (additional 30%). Pumped groundwater will also enter this system once it has been treated through a filtering system to remove suspended solids. The groundwater pumping will only be completed during normal weather conditions and will cease during extreme or storm events. The landfill operator will regularly monitor water quality and will temporarily cease discharge if the water quality or volume is seen to be adversely affecting the ditch system.</p> <p>If the surface water or the groundwater is found to be too contaminated to discharge then it will have to be taken offsite for disposal at an appropriately authorised facility.</p> <p>Any surface water or groundwater caught within the active phase of the landfill will be classed as leachate and dealt with by the leachate management infrastructure in place.</p>

Summary of Issues Raised	Response

Lancashire Branch of 'Campaign to Protect Rural England' (except for those relating to planning).

Summary of Issues Raised	Response
Concerns raised about whether groundwater will be contaminated or dust from the landfill will be blown onto the surrounding farmland and population.	The proposals to extend the landfill site are in accordance with the requirements of the LfD. The particulate matter modelling carried out by the operator concludes that emissions of dust and particulates from the site will be below the MDR for agricultural land and we agree with this. For more information see section 5.2.11. We have assessed the risks to groundwater and the HRA and we consider that there is no unacceptable risk. For more information, see section 5.2.7.
Concerns raised that no examples exist for precedents for hazardous waste land filling above mineshafts, sealed /capped or otherwise.	<p>However there is experience of other landfill sites being built in areas of mine workings which include mineshafts.</p> <p>Methods and techniques for identifying and stabilising shafts and shallow mineworkings prior to new developments being built are well known and practised, according to codes of practice, viz: Code of Practice for Site Investigations BS5930; Code of practice for strengthened/reinforced soils and other fills BS 8006-1:2010; Environmental code of practice Stabilising mine workings with pfa grout, BRE 488, 2008; CIRIA Special Publication 32 Construction over abandoned mineworkings 1984.</p> <p>The operator will be required to identify and stabilise any shafts and shallow mineworkings as part of the CQA Plan.</p> <p>Deeper abandoned mineworkings in the area have been identified and assessed in the stability risk assessment and mineworkings assessment to be of no significant risk of causing subsidence, since the movement of strata above the workings will have ceased long ago – this is confirmed by the Coal Authority Report.</p> <p>It is considered that compliance with the strategy for investigating and remediating mine shafts contained in the SRA including Mine Workings Risk Assessment and a Mine Shaft Hazard assessment report by Wardell Armstrong dated February 2014, reproduced in Appendix SRA5 of the application, coupled with the CQA Plan will ensure that the abandoned mineworkings within the site boundary that could pose a risk to the stability and integrity of the lining systems, are identified and stabilised. The SRA is incorporated into the permit in table S1.2 for 'Operating techniques'.</p>
Reference was made to the Department of Communities and Local Government technical consultation on "The role of planning in preventing major-	<p>This guidance is relevant to the planning authority in relation to land use decisions.</p> <p>Location is relevant for environmental permitting but only so far as location can affect the impact from the facility on sensitive</p>

Summary of Issues Raised	Response
<p>accident hazards involving hazardous substances”, (20 October 2014) and that the site does not benefit from a recommended 2km standoff distance, as proposed in recent Government consultation on the location of hazardous installations, and with dense populations living at closer distance we remain concerned at the likely impacts</p>	<p>receptors. As explained in the main body of this document we are satisfied that there will be no significant pollution of the environment or harm to human health from an installation in this location.</p>
<p>Concerns raised over the Waste Management Industry Training Advisory Board certification of technical competence and the CQA processes.</p>	<p>The site has the appropriate WAMITAB certificates for the landfilling of hazardous waste.</p> <p>It will be a condition of any permit issued that no construction of any new cell of the landfill shall commence until the operator has submitted construction proposals and the Environment Agency has confirmed that it is satisfied with the construction proposals. Also no disposal of waste shall take place in a new cell until the operator has submitted a CQA Validation Report and the Environment Agency has confirmed that it is satisfied with the CQA Validation Report.</p>
<p>It is known that two old mineshafts exist within the site along with a disused waste tip. Concerns raised that there has been historic tipping at the site and the nature of the old waste is unknown and that it is possible that further mineshafts exist.</p>	<p>A mine shaft hazard assessment was carried out as part of Appendix SRA5 of the SRA – for the Area around Whitemoss Landfill.</p> <p>There is a colliery spoil heap in the centre of the western landfill area and a raised area to the north west of the site comprises spoil deposited during works on the M58 motorway. Excavated materials that are not suitable for engineering (i.e. engineering clay) will be used on site as daily cover or restoration material above the cap. Excavated material will be stockpiled on site prior to use or removal from the site. A former railway cutting was filled with inert waste. Boreholes drilled in the north of the western landfill area and in the centre of the eastern edge of the western landfill area are located in the position of the infilled railway cutting and 1.5m and 1m respectively of made ground was proved in the boreholes. Where described in borehole logs the made ground comprises stones, ash and sandstone cobbles.</p> <p>It is considered that compliance with the strategy for investigating and remediating mine shafts contained in the SRA including Mine Workings Risk Assessment and a Mine Shaft Hazard assessment report by Wardell Armstrong dated February 2014, reproduced in Appendix SRA5 of the application, coupled with the CQA Plan will ensure that the abandoned mineworkings within the site boundary that could pose a risk to the stability and integrity of the lining systems are identified and stabilised. The SRA is incorporated into the permit in table S1.2 for ‘Operating techniques’.</p>
<p>Concerns raised re Hydrology of the area and stability because of subsidence beyond the site boundary and reference made to documents submitted to the planning inquiry – we require that ARROW documents 5,6,8,10,11,14</p>	<p>We have reported the claimed subsidence to the Highways Authority and they are currently looking into it to try and identify the cause. There is nothing to suggest site stability would be affected. We have also reviewed the documents referred to. It is considered that compliance with the strategy for investigating and remediating mine shafts contained in the Stability Risk Assessment including Mine Workings Risk</p>

Summary of Issues Raised	Response
<p>and 17 are taken into consideration.</p>	<p>Assessment and a Mine Shaft Hazard assessment report by Wardell Armstrong dated February 2014, reproduced in Appendix SRA5 of the application, coupled with the CQA Plan and procedures will ensure that the abandoned mineworkings within the site boundary and posing a risk to the stability and integrity of the lining systems are identified and stabilised.</p> <p>We have assessed the information provided in the application in relation to the site hydrology (SWMP and the HRA) and we are satisfied that the environment will be protected. We have to determine the application made to us and we are satisfied we had sufficient information to do so.</p> <p>We consider that the Arrow documents as detailed have been considered.</p>
<p>Impact of Groundwater Removal on Moss land and Farm land.</p> <p>Shrinkage of the ground generally and particularly beneath the adjacent Ethylene Pipeline might destabilise the foundations that support the pipeline.</p> <p>No consideration has been given to impacts of the long term reduction of the water table outside the site during its operation.</p>	<p>Any groundwater pumped out as part of the construction of the western landfill area is discharged back into the surface water management system which eventually is discharged into the River Tawd (via the Rainford Brook) which is what it would naturally have fed.</p> <p>There is a Water Resources Act exemption from licensing for dewatering activities. These issues are outside the scope of the permitting process which focuses on pollution prevention and protection of groundwater and surface water quality from the landfilling itself.</p>
<p>The application is vague on the pumping of water from the hole as it is dug. Ground water will flow into the hole until completion of the final phase of the containment system</p>	<p>The groundwater drainage system will be installed in the base and sides of the void as necessary. Groundwater will drain to a sump in each phase from where groundwater will be pumped to the surface water management system. When the level of waste in the landfill is sufficient to counter the upward pressure exerted by the groundwater – the groundwater controls will cease and groundwater will be allowed to rise to rest levels. Groundwater filling the void during construction of each phase will also be pumped out to the surface water drainage system.</p>
<p>None of the plans show the connecting surface pipe work to the groundwater extraction system which will be in place throughout the greater part of life of the landfill .</p>	<p>The pipe work which forms the groundwater extraction system is not detailed in the SWMP, however the groundwater discharge points to surface water are shown. The detail of the groundwater drainage system will be agreed with the Agency as part of the CQA plan produced post permit issue and prior to engineering. Accordingly, we would not expect to see this level of detail as part of the permit application. See section 5.2.6.2.</p>
<p>Concerns regarding the stability and the increasing load on the existing perimeter bund wall by filling the area between the existing and proposed extension area.</p>	<p>The proposals for the bund wall between the existing landfill and the western landfill area (sideslope formation and lining system) have been assessed with regards to stability by the Environment Agency and we are satisfied that there is no unacceptable risk of instability.</p>
<p>Concerns raised regarding PHE's approach to risk assessment (Source – Pathway – Receptor)</p>	<p>It is not for us to comment on PHE's approach. We have considered their advice and we are satisfied that there will be no significant impact on human health.</p>

Summary of Issues Raised	Response
<p>Dust - the likelihood of strong winds in our increasingly more severe weather patterns does not appear to have been fully considered.</p>	<p>In accordance with the updated particulate and asbestos management, monitoring and action plan, the risk management measures include ceasing operations in high winds. See section 5.2.11 for further information.</p>
<p>Concerns raised that the current site is reaching a “critical phase” for dust and that the use of temporary covers should be a requirement, should the Environment Agency choose to issue a permit.</p>	<p>The current site will be regulated in accordance with its existing permit. For the new area waste will be covered progressively throughout the working day to help to prevent emissions of dust. Asbestos waste will be double bagged and also covered immediately. We are satisfied with these proposals. From the risk assessments for the new area we do not think the use of temporary covers (e.g. plastic sheeting or matting) is necessary as a mitigation measure to prevent dust. Such temporary covers are not used for the current site. However the adequacy of the mitigation measures will be kept under review as part of our compliance work and additional measures would be required if necessary which could include temporary covers.</p>
<p>Should the Environment Agency choose to issue a permit, we seek limits on tipping when the wind is blowing, that the efficiency of dust monitoring equipment should be checked regularly and their positions be changed as the phases of the extension are developed. There should be an array of monitors at various heights and their positions be determined by modelling airflow over the mound as it is created.</p> <p>Similarly we ask for whole body</p>	<p>Waste deposition will cease in high winds. The site will also not accept very dusty wastes.</p> <p>Dust monitoring will take place in accordance with the standards in our Technical Guidance Note M17 – Monitoring particulate matter in ambient air around waste facilities’.</p> <p>Particulates will continue to be monitored around the boundary of the active landfilling cell. As the development of the western landfill area proceeds the current particulate monitoring locations will be replaced with suitable monitoring locations around the active landfilling areas of the site following written approval by the Environment Agency. The monitoring locations will also remain under review based on the meteorological data recorded at the site as landfilling progresses from Phase A to Phases B, C and D.</p> <p>Particulate matter monitoring will also be carried out in accordance with M17 as specified in table S3.7. This guidance provides information on the correct use of equipment.</p> <p>A variety of monitoring equipment will be used for quantitative monitoring of deposited dust in 5 Frisbee gauges at differing locations around the site. Also 2 (C2 and C3) additional continuous suspended particulate matter monitors will be installed at the perimeter of the western landfill area. Existing monitor C1 is currently located to the south of the off-site receptors on Whitemoss Road South which are closest to the site.</p> <p>Regarding asbestos monitoring, samples are collected in accordance with the requirements of table S3.7 of the permit, comprising of pumped samples collected on a membrane filter in locations upwind and downwind of the area disposing of asbestos and at the boundary downwind of the area disposing of asbestos.</p> <p>For more info see section 5.2.11.</p> <p>Wheel cleaning facilities will be used for vehicles leaving the</p>

Summary of Issues Raised	Response
<p>washing of trucks so that hazardous dust is not carried from the site and contaminate any non-hazardous materials that may subsequently be transported.</p> <p>Hazardous waste rather than be transported in sheeted trucks should be transported in sealed containers or bags. This would reduce risk from exposure to the public when material is transported and in the event a truck is involved in a road traffic accident.</p>	<p>site. This is a measure that is primarily to prevent mud leaving the site. We do not consider that there will be any significant quantity of hazardous dust on the body of trucks. Condition 3.2 will require the operator to take appropriate measures to prevent trucks leaving the site in a state that could of itself give rise to pollution outside the site. We are currently satisfied with the measures proposed. However the adequacy of the mitigation measures will be kept under review as part of our compliance work and additional measures would be required if necessary which could include whole body washing of vehicles.</p> <p>The permit cannot place conditions on waste carriers using the public highway that is covered by other legislation. However asbestos waste is required to be double –bagged or double – wrapped at the place of production before the waste is delivered to the site</p>
<p>Concerns raised that the failure to provide protection from the rain of the waste materials means that more leachate is produced than would be the case if the waste were protected from rain by temporary covers. Concerns were also raised that that the limits for the composition of the discharge to sewer may be too high and may be reduced at a future date.</p>	<p>The placement of waste at this site meets the requirements of our guidance. Each cell or phase will be restored within 12 months of completion to minimise the production of leachate. Given the need for access to the tipping area for machinery and vehicles for depositing the waste we consider that the operator has taken the practical measures to prevent water entering the waste. There would also be difficulty in using temporary covers to prevent water ingress into the waste as water would then need to be diverted out of the cell away from the waste, otherwise it will automatically be treated as leachate anyway.</p> <p>A risk assessment in accordance with our H1 guidance has been undertaken for the discharge of leachate to sewer, there was found to be no significant risk from this emission and therefore no need to set limits. However the limits included in Table S3.6 have been transferred across from the current permit and a limit has been included on quantity to make sure that the site does not exceed the quantity which formed the basis of the risk assessment. See section 5.2.6.1 for further information.</p> <p>We are currently satisfied with the limits which are included in the draft permit. However we cannot speculate on what may happen in the future, however if the limits are changed then the operator will need to comply with the revised limits.</p>
<p>We have concerns that failure of the public sewer may cause the contaminated water to enter the soil in an agricultural area.</p>	<p>The operator has inspection and maintenance procedures (part of the operating procedures which are part of the site management system) in place for the pipework from the installation boundary up to the point where the pipeline joins the public sewer to prevent failure.</p> <p>Failure of the public sewer would be a matter for United Utilities – sewerage disposal undertakers, although if a failure occurred there is likely to be dilution of any contamination within the sewer.</p>
<p>We have concerns that the applicant's intention to cover the hazardous waste with daily cover</p>	<p>Waste should be covered as soon as practicable. Any cover material will be inert waste and so is suitable for disposal at a landfill site for hazardous waste – the applicant will have taken</p>

Summary of Issues Raised	Response
<p>will result in both a reduction of capacity for hazardous waste and the contamination of the “daily cover material”.</p>	<p>into account the amount of inert waste for cover necessary when calculating the amount of hazardous waste capacity at the site. If the cover material becomes contaminated with hazardous waste this would not be an issue as the cover material would not be removed from the landfill and there will be measures in place to prevent emissions of dust and particulates and the cover itself is part of these.</p>
<p>Concerns about the longevity of the containment system and referred to in ARROW 12. The Arrow 12 document relates to the reduction in the basal lining and capping engineering properties from the requirements detailed in the Landfill Directive.</p>	<p>Paragraph 3.4 of Annex 1 of the LFD provides for the reduction of the requirements in paragraphs 3.2, on the basis of an assessment of environmental risks where it has been established that the landfill poses no potential hazard to soil, groundwater or surface water. ‘No potential hazard’ means that the environmental risk assessment has to demonstrate that the reduction in requirement will result in an acceptable risk to soil and water. The application includes a quantitative HRA to justify the landfill design.</p> <p>The basal and side slope lining system comprising a minimum 1m thickness of clay at a maximum permeability of 1e-9 m/s with a 2mm thick HDPE flexible membrane liner together with a 1m thick clay cap at a maximum permeability of 1e-9 m/s laid on an inert subgrade at a gradient of 1V:8H have been demonstrated in the quantitative risk assessments to be adequate for protecting groundwater and controlling emissions of gas in the operational and post-operational stages. The landfill pollution control systems have been adequately designed for both the situations when it will be non-hydraulically contained when the groundwater drainage system will be operating and when it will be hydraulically contained when the groundwater control system can be reduced or turned off. In the long term (several hundred years) the flexible membrane liner will deteriorate but the effect of this will be counterbalanced by hydraulic containment being achieved when the groundwater dewatering system is turned off and leachate is kept below the level of the groundwater. This means that there will be an inward hydraulic gradient, and leachate heads controlled by the leachate management system.</p> <p>We are satisfied with the longevity of the containment system. The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or human health at which time the operator may apply to surrender the permit.</p>
<p>Concerns were raised about the proposals for the monitoring of leachate, groundwater and surface water in the HRA. The proposed response time for the applicant to report exceeding compliance limits should be 24 hours (not 1 month) and for implementing corrective action if risks are unacceptable 1 week (not 12 months).</p> <p>The HRA confirms to us that the risks of harm to the environment are recognised by the applicant.</p>	<p>The requirements for leachate, groundwater and surface water quality monitoring are standard across the landfill sector for landfills for hazardous waste such as Whitemoss Landfill, based on a study of landfill monitoring results. There is nothing particular to Whitemoss that justifies a different approach.</p> <p>The HRA has been updated twice as part of the determination of this application – the most recent updates are in the HRA second addendum.</p> <p>The substances which have groundwater compliance limits in Table S3.4 of the permit are those which may be a risk to the environment based on the leachate source term which we already have information on due to the operation of the current</p>

Summary of Issues Raised	Response
<p>The existence of such risks ought not to be acceptable to the Environment Agency.</p>	<p>landfill site (cells 1 – 3). The parameters with compliance limits are monitored quarterly and already contain benzene and some other hazardous substances. The limits in Tables S3.3 and S3.4 will be reviewed based on actual monitoring data as per the improvement conditions and pre-operational conditions in tables S1.3 and S1.4 of the draft permit. For further information see sections 5.2.7 and 5.2.8.</p> <p>In Schedule 5 of any permit to be issued, the operator must report the breach of a limit within 24 hours. We are satisfied with the remainder of the contingency action plan. Before corrective action is required to be undertaken, there usually needs to be an investigation into the reason for the breach and an assessment of the risks. If we consider it justified we can take enforcement action to require corrective action to be taken sooner.</p> <p>We have assessed the HRA and we are satisfied that there is no significant risk to the environment or harm to human health.</p>
<p>There is concern regarding the fact that hazardous substances deposited in the landfill may later be found to be more of a health risk than first thought, and that acceptable threshold levels may change</p>	<p>The Environment Agency follows the most up to date guidance. Landfill permits are reviewed periodically to take into account of changes in guidance and legislation.</p>
<p>The information provided by Whitemoss Ltd does not demonstrate that proposed control measures are sufficient to make the risks and potential impacts acceptable.</p>	<p>We are satisfied with the applicant's proposals and that the conditions in any permit including pre-operational and improvement conditions will protect the environment and human health.</p>

Dalton Parish Council

Summary of Issues Raised	Response
<p>The site is too close to people's homes. Material of this nature, if it must be landfilled, it ought to be deposited in sites away from towns and villages.</p>	<p>Location is relevant for environmental permitting but only so far as location can affect the impact from the facility on sensitive receptors. As explained in the main body of this document we are satisfied that there will be no significant pollution of the environment or harm to human health from an installation in this location</p>

Rosie Cooper MP

Summary of Issues Raised	Response
<p>The systems are not fit for purpose</p>	<p>We are satisfied that the application meets the requirements of</p>

Summary of Issues Raised	Response
<p>creating significant risk and there does not appear to be robust enough monitoring in place.</p> <p>Concern that the containment system may be breached effecting the ability of the sites systems to detect adverse impacts; Groundwater drainage effluent may exceed discharge limits; The current proposals provide insufficient environmental protection with respect to landfill gas;</p> <p>Current monitoring proposals are not sufficiently protective of controlled water;</p> <p>Lack of assessment of the long term performance of the landfill assumptions regarding FP.</p>	<p>the LfD. We are also satisfied with the management and monitoring proposals and the operating techniques (unless these have been updated by the draft permit), therefore we are satisfied that there will not be any significant risk to the environment or harm to human health.</p> <p>The operator will need to comply with the limits in any permit The permit will require the installation and monitoring of in-waste gas boreholes. The applicant has proposed methane and carbon dioxide Action Limits to be applied to the in-waste boreholes. Should the Action Limits be exceeded the Action Plan sets out the contingency actions to be taken, ultimately leading to corrective measures and/or additional monitoring</p> <p>We are satisfied the monitoring proposals are adequate and comply with LFD requirements and our guidance.</p> <p>We have included a pre-operational condition in the permit regarding the financial provision (FP). We are satisfied that adequate FP will be provided if we use this pre-operational condition.</p>

Facebook Group ‘Say No To More Hazardous Waste in Skelmersdale’,

Summary of Issues Raised	Response
<p>We need strong reassurances that the risk assessments regarding this application are thorough and convincing.</p>	<p>We are satisfied with the risk assessments submitted as part of the determination of this application.</p>
<p>The evidence presented at the hearings of the Planning Inspectorate have if anything increased our fears with the operator providing vague and inaccurate responses to our requests.</p>	<p>The operator is currently a band B performer in accordance with our Opra for EPR: Operational risk appraisal system. This means they are operating in accordance with their existing permit and we consider they will continue to do so. Any variation issued will protect both the environment and human health.</p>
<p>Concerns about the perception of harm from the site.</p>	<p>Whilst possibly relevant in the planning context in the context of Environmental Permitting we are concerned with the actual and not perceived impacts of emissions.</p>

Summary of Issues Raised	Response
	In so far as emissions from the landfill are concerned, the Environment Agency is satisfied that human health and the environment is protected.
The history of Whitemoss landfill indicates that prosecution and enforcement notices have been issued in the past as a result of infringements of their permit. This does not incline us to trust their claims about the impacts of the proposals or that they will undertake closure and restoration of the land.	We take relevant convictions of an Applicant into account and any previous history of operating permitted sites. In this instance and in accordance with the legislation and our guidance, any relevant convictions held by this applicant are considered to be spent, having passed the appropriate timescale, and therefore are no longer 'relevant' for the purposes of this permit application. The operator is currently a band B performer in accordance with our Opra for EPR: Operational risk appraisal system. This means they are operating in accordance with their existing permit and we consider they will continue to do so. Any variation issued will protect both the environment and human health. The operator would have to employ staff who are trained and experienced in the management and disposal of hazardous waste by landfill to operate this site in accordance with the requirements of the permit. We are satisfied with the quality of information submitted to us as part of the application and we are satisfied that the operator will comply with any varied permit. This in turn will protect the environment and human health.
The consultation process for the planning was inadequate	This is not relevant to the Environmental Permitting process.

b) Representations from Individual Members of the Public and local businesses

A total of 54 responses were received from members of the public. Please note that we are not repeating points previously raised. The following issues were raised:

Summary of Issues Raised	Response
Health Concerns about health risks including children with asthma.	In so far as emissions from the landfill are concerned, the Environment Agency is satisfied that human health and the environment is protected. For further information see section 5.2.11.
Concerns about the cumulative effects on human health (from increased traffic, air pollution, dust, odour, polluting water and noise).	The risk assessments for particulate matter and emissions to sewer and surface water and the HRA take into account the background conditions. There is not considered to be a significant impact from any emissions. We do not consider emissions from traffic off site as this is outside our remit. A nuisance risk assessment in relation to noise was also submitted as part of the application and

Summary of Issues Raised	Response
	<p>we are satisfied that noise will not be an issue.</p> <p>A quantitative noise assessment was produced as part of the DCO application and this concluded that there would be no significant impacts associated with the operation of the western landfill area – this assessment will have also taken account of background conditions.</p>
<p>Concern about the deposition of pollutants on farm land used for growing human food and the possible contamination of locally produced honey.</p>	<p>The applicant carried out an impact assessment of air emissions for human health and deposition to soil. The deposition to soil part of the report concludes that any deposition to soil will:</p> <ul style="list-style-type: none"> • Be below the available MDR on agricultural land; • Be below the appropriate EQS where an MDR is not available; • Not result in an exceedance of any relevant EQS. <p>We do not consider that the facility will contribute to exceedances of air quality EQS at human health receptors or to the MDR for agricultural land.</p> <p>We do not consider there will be any impact on locally produced food.-</p>
<p>Local farmers irrigate crops using water abstractions within 3km of the western landfill. The risk of crop contamination is too great for this application to be allowed.</p>	<p>The conditions in the draft permit will protect the groundwater quality, therefore it is not considered that there will be an impact on these groundwater abstractions.</p> <p>The quantitative HRA has shown that the technical precautions in place will ensure that there will be no entry of hazardous substances into groundwater and no pollution by non-hazardous pollutants in groundwater.</p>
<p>Concern about health impacts associated with exposure to PM10's and fine particulates (PM 2.5) – associated with emissions from landfills, according to HPA report 'Impact on Health of Emissions from Landfill Sites' Health Protection Agency –July 2011</p>	<p>Regarding PM10 and PM2.5 emissions - when taking background concentrations into account, the applicants calculated PEC for long-term or short-term PM10 would not result in an exceedance of the EQS'.</p> <p>The applicant predicts that PCs would screen out as insignificant with respect to the PM2.5 annual mean EQS.</p> <p>We carried out our own check modelling and as a result of our checks, we are satisfied that the operators assessment of air quality impacts to human health are reasonably representative. We do not agree with the absolute numerical values given in their reports, but can agree that any differences are not likely to affect the likelihood of</p>

Summary of Issues Raised	Response
	pollution.
Concerns were raised about the validity and relevance of the report titled "Impact on health of emissions from landfill sites" published in July 2011 as it did not relate to modern hazardous waste landfill sites and has not been the subject of a peer review.	<p>We consult PHE (formerly the HPA) as part of the determination of this application (see response above) who are the experts on human health and they refer to the 2011 guidance document which is still relevant. The impact from modern well run sites should be even less than for older sites.</p> <p>There is no evidence to say that the report was not peer reviewed we would expect this to have happened as a normal part of its production.</p>
Incidences of diseases in Skelmersdale far exceeds the national average risk, whereas to the south of the site the figures are below average. These include lung, skin, bladder and liver cancer, mesothelioma, heart disease, CPD and kidney disease	The predominant wind direction in this area is from WNW to ESE which is blowing away from Skelmersdale. We cannot verify this claim none of the statutory consultees raised concerns.
<p>No dust, noise and health risk assessments have been submitted to the EA for all the relevant receptors.</p> <p>Impacts on health are not described in terms of their significance, nor have descriptors or impacts in terms of magnitude, extent and duration been included. This is good practice which the applicant has not followed.</p>	<p>A fugitive emissions risk assessment and management plan which incorporates particulate matter has been submitted as part of the application. Also a noise risk assessment and management plan was also submitted as part of the Application in table A2 of the Nuisance Risk Assessment. We are satisfied that the risk assessments are in accordance with our guidance.</p> <p>A health risk assessment is not required as part of a landfill permit application. As long as we are satisfied that the operator will minimise emissions beyond the site boundary, there is no reason to consider there will be an impact on human health. Furthermore we are satisfied with the particulate matter modelling risk assessment and accept that the site will not have an impact on human health.</p>

Summary of Issues Raised	Response	
<p>A review of the risks to public health from Whitemoss Landfill by Public Interest Consultants on behalf of ARROW (Action to Reduce and Recycle Our Waste) – 2 Jan 2015 was submitted this raised concerns that the applicant’s claims about no impact on health are not well founded and are not supported by either a robust analysis or by the academic literature. The Health Protection Agency (HPA; now Public Health England, PHE) concluded in its 2011 review of the literature that “Detailed site-specific risk assessment should remain an important part of the permitting and management process”. The Environmental Permit applicant has failed to define an “acceptable” level of risk and impact and has also failed to provide evidence that no unacceptable impact will occur. Also concerns that there is an increasing body of evidence indicating that contaminants in hazardous waste landfill sites cannot be adequately controlled to protect human health.</p> <p>They also referred to Article 13 of the Waste Framework Directive which requires that: “Member States shall take the necessary measures to ensure that waste management is carried out without endangering human health, without harming the environment...”</p>	<p>The Arrow report contains a lot of detail about the location of the landfill, particularly given a high concentration of other sites in the area. That is not our decision. If the planning authority has agreed that this is the right location for the site (by granting PP), we must consider whether the site can operate satisfactorily in this location. If we are not satisfied that the site cannot operate without causing significant pollution of the environment or harm to human health we should refuse the application.</p> <p>We have assessed the information and risk assessments submitted as part of the application and we are satisfied that there will be no significant impact on human health.</p> <p>We consult Public Health England (PHE) formerly the HPA as part of the determination of this application (see response above) who are the experts on human health and they refer to the 2011 guidance document which is still relevant. PHE will keep up to date with the latest literature. They are also being consulted on the draft decision and the Arrow review has specifically been drawn to their attention. The impact from modern well run sites should be even less than for older sites.</p> <p>We are satisfied that the proposals in the application are based on detailed site specific risk assessment. The risks assessments submitted with the application include the HRA, SRA, LFGRA, NRA, Particulate matter RA, H1 risk assessment for discharges to sewer and surface water.</p> <p>We have addressed Article 13 in section 5 above. We would not normally assess potential health impacts to the level of detail advocated by the report and we do not consider it necessary to do so for this application either as we are satisfied with the proposals to minimise emissions or that the landfilling of hazardous waste is considered environmentally accepted practice at the European level.</p>	
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Summary of Issues Raised	Response
<p>The residents of Skelmersdale have had to endure the cumulative impacts of many landfill sites, together with the operation of the Whitemoss site for much longer than was originally promised.</p> <p>The application must take account of the precautionary principle as detailed in the Waste Framework Directive.</p>	<p>In relation to the location of the landfill - decisions over land use are matters for the planning system. The location of the installation is a relevant consideration for Environmental Permitting, but only in so far as it's potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and we consider that there is no significant impact on human health or the environment. See the main body of this document.</p> <p>Precautionary Principle: The United Kingdom Interdepartmental Liaison Group on Risk Assessment (UK-ILGRA) state in their paper "The Precautionary Principle: Policy and Application" that the precautionary principle should be invoked when there is good reason to believe that harmful effects may occur and the level of scientific uncertainty about the consequences or likelihood of the risk is such that the best available scientific advice cannot assess the risk with sufficient confidence to inform decision making. We are satisfied that all relevant risks can and have been assessed.</p>
<p>Stress and anxiety caused by the perception of potential health risks</p> <p>The health anxiety is a potential breach of interested parties' rights under Article 8 of the Human Rights Act 1998 to respect for family life, home and privacy.</p>	<p>Whilst possibly relevant in the planning context in the context of Environmental Permitting we are concerned with the actual and not perceived impacts of emissions.</p> <p>In so far as emissions from the landfill are concerned, the Environment Agency is satisfied that human health and the environment is protected.</p> <p>See section 5.2.11 of this document.</p>
<p>Nuisance and Health Risk Assessment and detrimental impact on amenity</p> <p>Concerns about releases of dust, odour and potential leachate escape.</p> <p>Concerns were raised about the risk of unacceptable odour making reference to past odour problems. It was also suggested that not all incidents would be reported. The concerns related to residential areas, a nursing home and sports pitches.</p>	<p>We are satisfied that there is no significant risk to the environment or human health (see section 5.2.10).</p> <p>The surface water and groundwater monitoring systems will monitor the potential for any leachate migration.</p> <p>We are satisfied with the proposals for preventing releases of dust, odour and leachate.</p> <p>Odour complaints were received between 2004 and 2006 when domestic waste was deposited at the site. The EA have not received any substantiated complaints relating to odour from the existing landfill site since 27 November 2006. Additional sources of odour, such as land spreading of sewage sludge in the vicinity of the landfill site, may contribute to the concerns</p>

Summary of Issues Raised	Response
<p>Concerns about odour impacts.</p> <p>We are not aware of any evidence that supports the applicant's assertions that hazardous waste does not produce significant odorous emissions. We are also not aware of any other potential sources of odour within the vicinity of the site.</p> <p>Concerns were also raised about the impact of dust on local residents.</p> <p>Also dust may affect schools and nurseries depending on the wind direction. Also it is claimed that winds from the S and SW have blown hazardous particles across the surrounding area and beyond – spreading into</p>	<p>identified by the local community and incorrectly linked to the landfill site.</p> <p>The operator has measures which they will put in place to mitigate against odour which we are satisfied with including for those receptors identified. Furthermore conditions in any permit issued will require that - if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour – the operator must submit an odour management plan to the Environment Agency for approval which identifies and minimises the risks of pollution from odour</p> <p>Odour is only a key issue for landfills for biodegradable waste. Odour is typically associated with trace components in landfill gas, the handling and unsuitable emplacement of odorous wastes and inadequate covering of biodegradable wastes. Therefore this will not be relevant for Whitemoss landfill as it will not accept biodegradable waste and the site will not produce significant quantities of landfill gas.</p> <p>Other potential sources of odour in the vicinity may be landspreading of sewage sludge.</p> <p>The operator has measures which they will put in place to mitigate against dust – which we are satisfied with. Limits will also be included in the permit in relation to dust. See section 5.2.11.</p> <p>There are no schools or nurseries within 500m of the site. There looks to be a school or college >750m to the NE of the site. Wind direction is to the NE <10% of the time – therefore due to this and the distance from the site it is not considered there will be any impact</p> <p>There have been no dust complaints within a 2km radius of the site over the last 2 years.</p> <p>Monitoring for particulate matter PM10 is carried out at the site continuously. For other monitoring frequencies see table S3.7 of the draft permit.</p> <p>Waste management operations that involve mechanical generation of particulate matter rather than combustion, such as Whitemoss landfill are likely to release predominantly coarse particles – i.e. PM10. Therefore continuous monitoring is only required for PM10, however the operator states that the continuous monitors will be set up to monitor PM2.5 and the results will be compared to the Ambient Air Directive statutory limit which is an annual mean of 25µg/m³ for PM2.5.</p>

Summary of Issues Raised	Response
<p>80% of Skelmersdale.</p> <p>We do not know when the dust monitoring is carried out. Concern about the reliability of the results and that the monitoring could take place at convenient times for the operator. Records show only PM10 results – why not PM2.5.</p> <p>Accidental release of fuel or oil into water courses.</p> <p>Concern that large areas of arable farmland surrounding the site which is used by dog walkers and farmers should be considered at risk from noise and vibration. -</p> <p>Concerns raised regarding the Nuisance and Health Risk Assessments and the methodology used.</p>	<p>Satisfactory measures will be in place to prevent the accidental release of fuel or oil and to take action in the unlikely event of an incident.</p> <p>The public footpaths or bridleways are already considered for the dog walkers and are assessed as being low risk. The risk for farmers and dog walkers on arable farmland is considered to be low risk due to their transient use – i.e. they wouldn't be used by these people all of the time.</p> <p>We are satisfied with the Nuisance and Health Risk Assessments and that all the relevant receptors have been considered and that appropriate methodologies have been used.</p>
<p>Concerns that the wheel cleaning facilities on site are inadequate and that excess groundwater is being used for wheel washing purposes which is inadequate for the existing site and the new site.</p>	<p>We are satisfied that there will be appropriate measures in place. As well as the wheel wash, there will be other risk management measures in place to prevent mud on the road, this includes monitoring the wheel wash so that it is used effectively, using a standby jet plant if the wheel wash is not operational and cleaning the haul roads and access roads with a road sweeper as necessary.</p> <p>Groundwater has occasionally been used to top up the wheelwash when it is running low (once a year or less) – we are satisfied with this practice.</p>
<p>Engineering</p> <p>Concerns raised that no assessment has been provided of the structural condition or hydraulic conductivity of the two mine shafts. The applicant has not conducted any controlled tests to ascertain how much dewatering would be necessary to secure the proposed mineral extraction and what the effects of this dewatering would be. Also the risks associated with groundwater inflow from the mineshafts are not considered to have been adequately addressed.</p>	<p>We are satisfied they will be able to effectively dewater to ensure integrity of engineering and minimise ingress of groundwater. The impact of dewatering was part of DCO. Dewatering relates to the ongoing removal of groundwater seepages that derive from the strata encountered by the excavation and the potential large scale dewatering of the mine shafts and connected mine voids. However, the method of filling and sealing of the shafts to a level below the base of the intended mineral excavation void, prior to excavation of the void itself, will ensure that large-scale dewatering of mine workings is not necessary. We are satisfied they will be able to effectively dewater to ensure integrity of</p>

Summary of Issues Raised	Response
<p>It is proposed to commence the landfill extension prior to treating the mine shafts at the site.</p> <p>We are concerned that the pumping of ground water, possibly for the greater part of 20 years or longer, from this very large phased excavation will reduce the water table of the surrounding land with adverse consequences and permanent damage to the sensitive moss land habitat.</p> <p>The treatment and management of groundwater may be inadequate, creating potential for flooding and pollution, and it is not certain that hydraulic containment can be achieved.</p> <p>Concerns were raised that the existing landfill is responsible for 'spikes' in groundwater data showing benzene, cadmium and mercury above the limit of detection and lead and nickel above the drinking water standards</p> <p>No real research has been carried out to identify the risks posed of the mine shafts already being flooded with contaminated water.</p>	<p>engineering and minimise ingress of groundwater.</p> <p>Landfilling will commence in Phase A and then proceed to phases B, C and D. The mine shafts will be filled and sealed prior to excavation of the void itself as detailed above.</p> <p>Regarding the risk to the watertable and the disused mine workings – the landfill will be engineered in accordance with the Landfill Directive to protect the surrounding soil and groundwater. The 2 disused mineshafts which have been identified will be sealed as part of the engineering works. If the operator comes across anymore disused mine workings the engineering requirements will need to be agreed in accordance with the engineering conditions in the permit (section 2.6) which will also need to be validated by CQA.</p> <p>See section 5.2.12 in relation to the sensitive moss habitat which is no longer considered to exist.</p> <p>We are satisfied with the proposals for groundwater management and do not consider that there is a significant risk to the environment Hydraulic containment is an accepted technique and we are satisfied it can be achieved. We are also satisfied that the groundwater management system will not lead to flooding. There are storage and settlement lagoons and measures to prevent too much of the pumped groundwater being emitted to the surface water management system.</p> <p>These parameters were recorded above their respective detection limits on a limited number of occasions. There have been no breaches of emission limits to groundwater as part of compliance with the permit for the existing site. Therefore as far as we are aware there has been no impact on groundwater quality from the existing site. So the measurements may just reflect background quality.</p> <p>The detail of the treatment of the mine shafts and the issue of impact of groundwater dewatering has been considered as part of the DCO and has involved input by the Environment Agency.</p> <p>Any contaminated water pumped as part of the dewatering scheme will have to meet the requirements of the permit before it can be discharged. If this cannot be done the operator will need to find an alternative method of disposal.</p>
The applicant cannot guarantee the proper	The landfill will be fully restored within 1 year after

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restoration of the land within a definitive time period.	completion.
<p data-bbox="302 342 849 457">Concern about the cap degrading over time (which will in turn lead to more leachate production and the possibility of the basal liner failing)</p> <p data-bbox="302 485 849 541">Concerns were raised about the effectiveness of the clay liners.</p> <p data-bbox="302 1255 849 1455">Concerns about the escape of leachate which contains a range of hazardous and non-hazardous substances. The combination of waste materials, the leachate produced and movement of materials in the tip will accelerate the degradation of the linings and eventually the leachate will escape.</p> <p data-bbox="302 1486 849 1570">Concerns about control measures proposed and the long-term nature of the need for leachate pumping</p> <p data-bbox="302 1602 849 1633">Concerns that all landfill sites leak</p>	<p data-bbox="865 342 1433 1192">The quantitative modelling included in the Hydrogeological Risk Assessment is based on a combination of site specific input parameters and conservative theoretical parameters and incorporates the impact of theoretical degradation of the various lining and capping components. The outputs of the risk assessment models demonstrate that the proposed landfill extension will not have an unacceptable impact on the receiving groundwater in terms of discharge of hazardous substances and non-hazardous pollutants. Throughout the life of the landfill routine environmental monitoring will be required as part of the permit which is designed to demonstrate that assumptions made in the risk assessments are valid and that the landfill has no unacceptable impact on groundwater quality. The permit will require the quantitative hydrogeological risk assessment to be reviewed every 6 years so that any necessary changes in site management can be made to ensure that the landfill remains compliant with the 'prevent and limit' objective of the Groundwater Daughter Directive i.e. there is no discharge of hazardous substances to groundwater and no pollution by non-hazardous pollutants. The permit will remain in place until the landfill operator can demonstrate that the site no longer poses a risk to groundwater, at which point the permit holder may apply to surrender his permit.</p> <p data-bbox="865 1255 1433 1455">The leachate will contain a range of hazardous and non-hazardous substances. We are ensuring that the activity does not lead to entry of hazardous substances to groundwater and does not cause pollution by non-hazardous substances; we judge pollution by comparison with Drinking Water Standards (DWS).</p> <p data-bbox="865 1486 1433 1570">We are satisfied with the proposals for the long term pumping of leachate which will be treated in the leachate treatment plant.</p> <p data-bbox="865 1602 1433 1906">The basal and side slope lining system comprising a minimum 1m thickness of clay at a maximum permeability of 1e-9 m/s with a 2mm thick high density polyethylene flexible membrane liner together with a 1m thick clay cap at a maximum permeability of 1e-9 m/s laid on an inert subgrade at a gradient of 1V:8H have been demonstrated in the quantitative risk assessments to be adequate for protecting groundwater and controlling emissions of gas in the operational and post-operational stages. The landfill pollution control</p>

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	<p>systems have been adequately designed for both the situations when it will be non-hydraulically contained when the groundwater drainage system will be operating and when it will be hydraulically contained when the groundwater control system can be reduced or turned off. In the long term (several hundred years) the flexible membrane liner (FML) will deteriorate but the effect of this will be counterbalanced by hydraulic containment being achieved when the groundwater dewatering system is turned off and leachate is kept below the level of the groundwater. This means that there will be an inward hydraulic gradient, and leachate heads controlled by the leachate management system.</p> <p>The lining system design therefore is in accordance with the Landfill Directive.</p> <p>The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or communities at which time the operator may apply to surrender the permit.</p>
<p>Concerns raised about the availability of sufficient hazardous waste and whether they would need to import inert waste either as fill or for engineering</p> <p>Proposed engineering concerns about the land-raising elements of the submitted plans and the belief that this carries more risk than void-filling in relation to stability.</p>	<p>The operator does not have to fill the landfill up to the annual limit every year. There is a limit on the amount of inert waste which can be deposited at the site every year for cover.</p> <p>The material to be used for engineering is a matter to be agreed as part of the construction proposals in section 2.4 of the draft permit.</p> <p>If the operator wants to increase the amount of waste they can accept for cover or they want to change the waste types that are accepted at the site – then they will have to apply to vary the permit.</p> <p>We are satisfied with the information submitted that there will be no stability risks.</p>
<p>The current proposals rely on waste having a minimum density, in order to control basal heave, and also rely on the waste being of a nature that will not generate landfill gas. Waste acceptance protocols are critical to environmental performance and safety of the site, and cannot be evaluated on the basis of the info provided.</p> <p>Concerns that at lower waste densities and higher groundwater elevations there could be a significant risk of basal heave and rupture of the landfill liner.</p>	<p>The operator does not need to supply the waste acceptance protocols. As part of the application the operator confirms that the site will be operated in accordance with 'Waste acceptance at landfills – Guidance on waste acceptance procedures and criteria' (V1 Nov 2010), and 'Waste sampling and testing for disposal to landfill' (March 2013). We are satisfied with the wastes which are proposed to be accepted in the western landfill area. These are the same as accepted at the current landfill. The Operator will have to satisfy the Environment Agency that they can allow groundwater to rebound once they have sufficient waste in place. The information presented to support this will need to include waste tonnages,</p>

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	<p>thicknesses, and their average density.</p> <p>The groundwater management system will be operated until such time the Operator can demonstrate that the pumping system can be turned off. When it is operating coupled with groundwater monitoring this will provide an effective control on groundwater levels and ensure the lining system is not subjected to unexpected groundwater pressures and uplift.</p> <p>The concerns about the rupture of the lining system appear to be around the groundwater under drainage system to be constructed which they consider would not be adequate to control heads at times of high rainfall, and coincident with pump failure and insufficient waste mass in the cell. Environment Agency consider that there would be adequate controls in place to prevent basal heave because the conceptual design presented in the permit variation application is based on the existing system in place which has been adequate in controlling basal heave. Further the conceptual design will have to be designed in detail as part of the Construction Quality Assurance Plan which will be presented to the Environment Agency for prior approval. Also the Operator will have to get agreement of the Environment Agency before being able to stop dewatering.</p> <p>At that future time, the Operator will have to demonstrate by a detailed quantitative assessment that dewatering is no longer necessary, which will have to include the quantities and physical properties of the wastes deposited in the cells. The Operator's Operational Management Procedures must ensure that there are contingencies in place to have replacement pumps readily available in the event of pump failure.</p>
<p>Concerns that the 1m thick liner is inconsistent with the requirements of the LFD which, in Annex 1 paragraph 3.2, states that a landfill for hazardous waste should have a mineral layer 5m thick with a hydraulic conductivity of 1.0 x 10⁻⁹ m/s.</p>	<p>Paragraph 3.4 of Annex 1 of the LFD provides for the reduction of the requirements in paragraphs 3.2, on the basis of an assessment of environmental risks where it has been established that the landfill poses no potential hazard to soil, groundwater or surface water. 'No potential hazard' means that the environmental risk assessment has to demonstrate that the reduction in requirement will result in an acceptable risk to soil and water. The application includes a quantitative hydrogeological risk assessment to justify the landfill design which we are satisfied with.</p>
<p>Contamination of River Tawd and Rainford Brook</p>	<p>It is not considered that there will be any significant impact on any watercourses. Limits</p>

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<p>-Contamination of River Tawd and the effects on wildlife and fauna;</p> <p>-The landfill poses a long-term risk to ground water in Skelmersdale and water courses crossing West Lancashire via the River Tawd to the River Douglas and then to sea</p> <p>Concern raised about Inadequate run-off provision</p>	<p>have been included in the permit in table S3.3 which also includes limits on the amount of groundwater discharged to the surface water management scheme which discharges to the River Tawd. The limits in the permit will protect the River Tawd from contamination.</p> <p>Clean uncontaminated surface water will also be discharged via the surface water drainage system which will eventually flow to the River Tawd.</p> <p>As explained in the main body of this document we are satisfied that the landfill will pose no unacceptable risk to groundwater.</p> <p>The SWMP which deals with runoff is considered to be satisfactory and contains sufficient capacity for a 1 in 100 year storm event plus 30% for climate change.</p>
<p>Concern that validation reports were mentioned but not provided and that these revealed issues with how the site was operated.</p> <p>Claims that cell 3 dug deeper than it was designed for.</p>	<p>These comments relates to CQA validation reports for the existing landfill, therefore these are not required to be submitted as part of this application. The operator is considered to be technically competent to operate the landfill and is currently a band B performer in accordance with our Opra for EPR: Operational risk appraisal system – see our responses above to the facebook group. Therefore we are satisfied that the site will be operated in the appropriate manner.</p> <p>As above.</p>
<p>It was stated that there were problems with drainage and pumping activities on the existing site and also beyond the applicant's boundary on public land. Also concerns in relation to discharges of groundwater to surface water at Brookdale Farm.</p>	<p>We are not aware of any problems with drainage or pumping activities on the existing site or beyond the applicant's boundary. The operator has not been discharging pumped groundwater at the site since August 2009. We are not aware of any compliance issues relating to drainage beyond the site boundary, other than those discussed as part of these consultation responses. Monitoring requirements and compliance limits are included in the current permit for the pumped groundwater and are included in the draft variation notice for the western extension area (see table S3.3). Limits are also included for the amount of groundwater discharged to the surface water management system. We are satisfied with the proposals for groundwater management as part of the application.</p> <p>There is a Water Resources Act exemption from licensing for dewatering activities. These issues are outside the scope of the permitting process</p>

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<p>Concerns about the ditch that runs along the current boundary to the SW of the site – the ditch appears to stop approximately halfway along the boundary line. Concern that this existing ditch is not adequate to allow the flow of GW away from the site. Concerns raised that this has been a contributory factor for excess groundwater to form both inside and outside the boundary line; subsidence and flooding.</p>	<p>which focuses on pollution prevention and protection of groundwater and surface water quality from the landfilling itself.</p> <p>We are satisfied with the groundwater pumping regime and the SWMP for the proposed extension area. As detailed previously there has been no discharge of pumped groundwater at the existing site since August 2009.</p>
<p>Concern raised about the potential for volume/concentration limits applicable to the groundwater under-drain discharge to be exceeded and the capacity of the facility to manage surface water and groundwater discharge at times of high rainfall, and resulting in a risk of uncontrolled releases to controlled waters and inundation of the site.</p>	<p>The draft permit will include monitoring requirements and will set volumetric and concentration limits on the discharge of groundwater under-drain water to the surface water network. Any exceedences will be a compliance issue. There are also measures in place to treat and retain the groundwater in lagoons as part of the surface water management scheme prior to discharge – which will enable the Applicant to comply with the permit. The outfalls shall also be fitted with guile protection and shut off valves to protect against debris and allow flow control. The Applicant has also provided an action plan in the event that there is a breach of a compliance limit. I</p> <p>The SWMP is designed to for a 1 in 100 year storm event plus 30% for climate change.</p>
<p>Concerns were raised about whether the Environment Agency would regulate the site effectively.</p>	<p>We take compliance seriously we will regulate the site in accordance with our enforcement and sanctions statement. We will respond to complaints and also carry out both announced and unannounced inspections.</p> <p>An operation may be checked by the Environment Agency in any of the following ways:</p> <ul style="list-style-type: none"> • an assessment - a desk-based check of whether they are complying with their permit, e.g. checking the operator is sending in required information • an inspection - where an officer visits the site • sampling of the permitted discharge <p>Inspections are usually planned, but can be unannounced. Environment Agency staff will look around the site and ask questions about the operations. They may ask to see documents or talk to staff.</p>

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Concern that the EA's approach to determining the application is a tick in the box exercise	<p>The Environment Agency have undertaken a thorough assessment of the application as part of the determination of this application.</p> <p>In so far as emissions from the landfill are concerned, the Environment Agency is satisfied that human health and the environment is protected</p>
What is classified as a significant risk or significant harm?	<p>Significant is anything that is not insignificant. For some things it is a value judgement for others where there are numeric EALs it is easier to assess. In terms of our H1 guidance significance is discussed in terms of the thresholds which form part of the screening process. However even if something does not screen out as 'not significant' during the screening process, it does not necessarily mean that an emission is significant. Usually if an emission does not screen out as 'not significant' then we will include numeric limits in any permit to ensure that emissions will not lead to pollution of the environment or harm to human health.</p>
It was queried whether the Environment Agency should be looking for alternative methods of dealing with hazardous waste.	<p>The landfilling of hazardous waste is allowed by both European and domestic law. We may restrict those waste types if we know there is a readily available alternative treatment technology. However, the onus is on the producer of the waste to recycle/ reuse before they consider disposal under the EPR 2010 (as amended).</p> <p>A number of wastes were removed from the permit as part of the permit review (issued on 13/10/14) because there was a readily available alternative treatment technology or because they could be recycled in accordance with the waste hierarchy</p>
Concern that the community has been let down by the process and especially deadlines around the holiday period.	<p>The consultees have had the opportunity to respond to the initial adverts and will now have a further opportunity to comment on the draft documents. We are satisfied that we have given people adequate opportunities to participate in our decision making.</p>
<p>Lack of confidence in the operator Claims that the operator is not a fit and proper person; Alleging severe bad practice at the site; Alleged non-compliance with the environmental permit in the past; No trust between the applicant and the local community.</p>	<p>We are satisfied that the operator is a fit and proper person. There are no relevant convictions associated with Whitemoss Landfill Limited or any 'relevant person' such as a director.</p> <p>The operator performance and compliance history will affect the OPRA scores which has an effect on charging and subsistence.</p> <p>We take relevant convictions of an Applicant into account and any previous history of operating permitted sites. In this instance and in accordance with the legislation and our guidance, any relevant convictions held by this applicant are considered</p>

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	<p>to be spent, having passed the appropriate timescale, and therefore are no longer 'relevant' for the purposes of this permit application. The Operator does manage a waste management site and is operating under the terms of the permit. We have taken previous operating history into account. We are aware of past issues but consider this to be a well run site now.</p> <p>Based on our Operational Risk Appraisal (Opra) system, the Whitemoss operator is currently Band B. This is our second highest rating and identifies the operator as a good performer. This is reviewed on at least an annual basis.</p>
<p>Alleged issues of poor practice at the site, breaches of safety procedure etc</p>	<p>Health and Safety is regulated by the Health and Safety Executive (HSE). The HSE were consulted on this variation application – but did not respond.</p>
<p>Water bubbling out of the ground that had odour of landfill gas</p>	<p>It is understood that the water referred to as bubbling up was likely to be water from the local sustainable urban drainage system created for the business park. However we have been unable to substantiate the complaint.</p>
<p>There is a problem with the movement of water on Whitemoss.</p>	<p>The standing water in ditches is likely to be due to the seasonal variation in groundwater / surface water depths. We do not consider that there is an issue.</p>
<p>Problem with Whitemoss Road south undulating, subsistence and cracking.</p>	<p>There is no evidence to say that the undulations in the road are caused by subsistence or by the landfill. As stated previously - we have reported the claimed subsidence to the Highways Authority and they are currently looking into it to try and identify the cause.</p>
<p>Concern raised about the risks arising from subsidence, due to dewatering of the superficial peat deposits and that Whitemoss Road South is also affected by subsistence.</p>	<p>There is a Water Resources Act exemption from licensing for dewatering activities. These issues are outside the scope of the permitting process which focuses on pollution prevention and protection of groundwater and surface water quality from the landfilling itself.</p>
<p>Concerns regarding the deposit of asbestos – where bags split and asbestos exposed to atmosphere</p>	<p>The asbestos acceptance procedure requires it to be double bagged, deposited at the base of the tip face and covered immediately</p>
<p>It was stated that the operator has appropriated land belonging to WLBC through adverse possession that they have been draining from the site into a highway drain for years without anyone knowing about it.</p>	<p>Even if the Operator had obtained land by adverse possession that is not unlawful and is not relevant to this determination.</p> <p>The highways drain is part of the surface water management system which we are satisfied with</p>
<p>Hydrogeological risk assessment addendum report</p> <p>Concerns were raised about what would happen if determinands exceeded the range that had</p>	<p>The operator is required to remain within the leachate levels specified in the permit, unless and until the permit is varied based on a revised HRA.</p>

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<p>been modelled.</p> <p>If the levels of substances such as Arsenic and Mercury start to rise in the leachate the Applicant has 3 months to "Undertake investigation work to indentify the cause of the rise in concentrations" and "If the risks are unacceptable" has 12 months to "implement corrective measures". Concerns were raised regarding the timescales.</p>	<p>The timescales are considered to be appropriate. A contingency action plan being in place does not prevent us from taking enforcement action which may require the operator to undertake remedial action in accordance with a different timeframe.</p>
<p>Concerns were raised about groundwater quality data around the current landfill and suggests that there is evidence of a breach of containment.</p>	<p>The operator is currently in compliance with their existing permit. We have no reason to believe that there is or has been a breach in containment.</p>
<p>Concern was raised about whether the currently available data is sufficiently robust to set appropriate Environmental Assessment Levels, compliance limits or control levels.</p>	<p>The groundwater compliance limits will be defined in the permit and will be reviewed following collection of additional monitoring data from boreholes located around the western landfill area. These limits will also be regularly reviewed as part of the routine 6 yearly HRA review to ensure that they remain appropriate and fit for purpose. The new boreholes around the proposed western landfill area are sited at considerable distance from the current area of waste deposit and there is no reason to believe that groundwater quality data from these will not be representative of background conditions.</p>
<p>Concern was raised that post operational risks arising from leachate rebound have not been assessed</p>	<p>Should the operator wish to cease leachate management, so as to allow leachate to fully rebound, they will have to apply to vary the permit and support it with an updated HRA which demonstrates that it will not lead to the entry of hazardous substances to groundwater or pollution by non-hazardous pollutants.</p>
<p>Issues are raised with respect to the determinand suites for groundwater and surface water</p>	<p>The permit will specify determinand suites and frequencies which we consider are appropriate and protective.</p>
<p>It is considered the derivation of surface water compliance limits, using 12 months of data collected in the future, is inappropriate as data may be influenced by poorer quality water discharged from the groundwater under-drain.</p>	<p>Any surface water compliance limits based on future monitoring data will be based on the quality of the upstream samples and so will not be influenced by potential impact of discharges further downstream.</p>
<p>Concern was raised that during the period of groundwater control groundwater compliance limits will only be applied to the groundwater under-drainage effluent which is inappropriate given the lack of certainty in the conceptual model and likely changes in the groundwater regime as the site progresses and the mine shafts are treated.</p>	<p>Yes this is the case as during the period of groundwater control there will be no downstream monitoring points. We are satisfied with this approach. We agree that the groundwater regime around the site will be dynamic and the locations of down-hydraulic gradient compliance points are likely to change over time. Throughout the life of the site the permit will require the operator to undertake regular HRA reviews on a minimum 6 yearly cycle, which will include an assessment of the groundwater monitoring scheme to ensure that it remains fit for purpose, that the appropriate points are being monitored and that compliance</p>

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	limits are applied to the appropriate monitoring locations.
Concerns were raised about the derivation of Environmental Assessment Levels based on groundwater quality data.	Background levels will be based on the quality of the groundwater at the time – so these will be accurate. Condition 4.2.2 (a) in the draft permit requires a review of the results of monitoring and assessment carried out in accordance with the permit against the relevant assumptions, parameters and results in the risk assessments to be reported on an annual basis.
The use of groundwater discharge for dust suppression is not considered protective of groundwater quality in the Shirdley Hill aquifer and peat.	The use of groundwater for dust suppression relates to the current site – which does not form part of the determination of this application for the western landfill area. However we are satisfied with this practice.
The assumption that leachate will rebound and leachate quality will deteriorate as the waste mass becomes saturated is wholly unsupported and not protective of the environment. Without assessment of the long term performance of the landfills - assumptions regarding Financial Provision are also unsupported.	Hydraulic containment is a well established engineering route for landfill and the hydrogeological risk assessment model submitted as part of the application reflects this situation. We are satisfied that adequate Financial Provision will be made for the site in accordance with the pre-operational condition which is included in the draft permit.
Leachate monitoring systems are not regulated sufficiently. There are insufficient leachate management systems in place. The site does not hold any records of movement liquids into or out of the site. The leachate is pumped off site through a private sewer- there is no continuous monitoring of this pipework that goes off site and on public land. What records are there to show there is sufficient leak detection for the leachate lagoon and associated monitoring areas. Are the levels checked daily or weekly and reconciliation information kept at site?	The proposed leachate management systems are satisfactory and are in accordance with the Landfill Directive requirements. We are also satisfied with the proposed leachate level monitoring proposals. The leachate quality monitoring requirements are standard and are detailed in the draft permit. The site is already required to report on the amount of leachate disposed of off site and disposed of to any onsite effluent treatment plant. The site is not permitted to accept leachate from offsite. The operator has confirmed that procedures are in place for the maintenance and monitoring of the leachate pipework on a regular basis - see table S1.2. Regarding the leachate lagoon, it does not have leak detection. The levels in the lagoon are checked visually on a daily basis. The LTP and lagoon are the subject of operating procedures as part of the site management system. The amount of leachate discharged from the lagoon is monitored continuously. There are also other monitoring requirements and emission limits in the draft permit in table S3.6.
Concerns were raised that flooding of the site could give rise to pollution	The site is not located on a flood plain. The surface water drains and the balancing points which form part of the SWMP cover inclement rainfall.
Concerns in relation to flooding in cellars in houses near the landfill and surface water flooding due to poor surface water management at the landfill which may have led to surface water collecting on the M58.	We are not aware that the current landfill has poor surface water management. We are satisfied with the SWMP proposed for the site as part of the western extension area application.

Summary of Issues Raised	Response
Flood risk	<p>The Environment Agency provides advice and guidance to the local planning authority on flood risk in our consultation response to the local planning authority. Our advice on these matters is normally accepted by both Applicant and Planning Authority.</p> <p>The site is located in Flood Zone 1 having less than 1 in 1000 annual probability of flooding from rivers. There is no historical records of flooding from rivers at or in the vicinity of the site. The areas of land closest to the site in higher flood risk zones are more than 1km from the site and comprise the floodplains of the River Tawd and the Rainford Brook.</p>
Concern about wildlife and ecosystems and out of season blackening of leaves on shrubs and trees.	The impact on habitats sites, SSSI's, non-statutory sites and conservation sites have been assessed and there was considered to be no significant impact – See section 5.2.12.
Over the last 12 years it was stated that changes occurred – higher groundwater levels and localised inundations of surrounding areas some 500m from the landfill.	Groundwater level around the current landfill is routinely monitored as a requirement of the current permit. However, groundwater monitoring does not extend to distances of 500m from the permit boundary and therefore we cannot comment on any observed increases in groundwater level at such distance from the permit boundary. We don't regulate groundwater dewatering, but there is no reason to consider that any increase would be caused by the landfill.
Concerns were raised about gas management proposals	As the western landfill area will only accept hazardous waste – there is no significant gassing potential from the waste and therefore there will be no need for gas management. This will be confirmed by routine in-waste gas monitoring undertaken in compliance with the permit. See section 5.2.9 for further information.
Concerns raised that landfill gas will give rise to adverse impacts and complaints	The permit will require the installation and monitoring of in-waste gas boreholes. The applicant has proposed methane and carbon dioxide action limits to be applied to the in-waste boreholes. Should the Action Limits be exceeded, which is not considered likely but is precautionary-the Action Plan sets out the contingency actions to be taken, ultimately leading to corrective measures and/or additional monitoring.
Concerns raised about the effect of greenhouse emissions and whether the proposals would meet Government objectives to minimise greenhouse gases and maximise opportunities for climate change adaption and resilience	The operator is required to take appropriate measures to collect and utilise landfill gas – therefore this would meet Government objectives and minimise greenhouse gases. Given the nature of the waste to be deposited in the western extension area we do not expect it will have significant gassing potential. We will require the operator to monitor the situation and where appropriate will require them to utilise or flare any landfill gas produced

Summary of Issues Raised	Response
<p>If the landfill is allowed to expand then a flare will be used to incinerate the gases resulting in furans and dioxins emissions to be once again blown over the local community.</p>	<p>The flare will continue to be used as part of the existing site due to the non-hazardous waste which was deposited for a period of time. However the waste which will be deposited in the western landfill area is not expected to have significant gassing potential and therefore will not be disposed of by flaring. Therefore the amount of gas burned in the flare will not increase as a result of this application.</p>
<p>Concerns about site security, no warnings about the site.</p>	<p>Site security is part of the sites management systems which is required and regulated by the conditions in section 1.1 of the permit. The site will be adequately secured as required by the LFD.</p>
<p>Concern regarding no provision in the FP for the cost of future pollution incidents</p>	<p>This will be covered by the Financial Provision which the operator has to make in accordance with the pre-operational condition included in the permit.</p>
<p>Concerns were raised about the filling of a ditch and land ownership issues and it was queried why the existing ditch on the eastern boundary was being extended.</p>	<p>Landownership is not of itself relevant to the determination of the variation application. We are satisfied that the operator will have the rights they need to to comply with the permit. We are satisfied with the SWMP which includes extending the ditches around the whole of the site boundary. The ditch on the eastern boundary is to be extended to the south to suit the restoration plans. The watercourse is part of the SWMP which will be designed to contain a 1 in 100 year storm event with 30% for climate change on site.</p>
<p>Concerns were raised about the adequacy, reliability and accuracy of past monitoring and by implication of any future monitoring.</p>	<p>Monitoring in the permit should be carried out in accordance with the latest guidance detailed in the draft permit.</p> <p>Consistent with the deposited dust monitoring currently undertaken at the site, the monitoring will be carried out by a third party contractor specialising in site based monitoring of particulate matter. The collected samples are analysed at a UKAS accredited laboratory.</p> <p>We are satisfied with the monitoring proposals included in the application for the western landfill area and we are satisfied with the remaining monitoring requirements for the existing site. Where monitoring points need to be installed – we have included a pre-operational condition in the draft variation notice.</p> <p>On 23 Dec 2014 we identified some concerns regarding the monitoring of dust based on data submitted to us in accordance with the requirements of the permit. The data revealed that some PM10 dust emissions sent to us between 2008 and 2013 were reported inaccurately. We reassessed all of the dust data and dust reports for this time period. Following this we are satisfied that the activities at the landfill have not caused an exceedence of any Statutory Air Quality</p>

Summary of Issues Raised	Response
	Standard for PM10 at any sensitive receptor. The data also indicates the dust levels (total deposited dust) are low. We are also satisfied that the reason for the inaccurate reporting has also been addressed and that the submissions are now accurate.
Concerns were raised about possible impacts on nearby water abstractions.	We are satisfied there will be no significant pollution to ground or surface water and so no impact on any existing abstractions due to emissions from the landfill.
Concerns were raised that leachate management will be ineffective long term either due to cost or there will be a problem due to human error.	The costs of leachate management long term and accidental releases of leachate and other pollution incidents will be covered by the financial provision for the site.
Concern raised that leachate has been found in a public drain and watercourses.	We have no reports of leachate being found in public drains or watercourses.
Concern raised that the permit will be surrendered inappropriately early whilst the site still contains polluting leachate and concern that there will be a legacy of contaminated land.	The operator will have to apply to surrender the permit and must demonstrate that the surrender criteria have been met. A surrender will not be accepted if the site poses a pollution risk.

Annex II: Advertising and Consultation on the Draft Decision

This section reports on the outcome of the public consultation on our draft decision carried out between 30th March 2016 and 27th April 2016.

In some cases the issues raised in the consultation were the same as those raised previously and already reported in section A of this Annex. Where this is the case, the Environment Agency response has not been repeated and reference should be made to section A for an explanation of the particular concerns or issues.

Also some of the consultation responses received were on matters which are outside the scope of the Environment Agency's powers under the Environmental Permitting Regulations. Our position on these matters is as described previously.

a) Consultation Responses from Statutory and Non-Statutory Bodies

Further representations were received from Public Health England, who raised the following issues:-

Summary of Issues Raised	Response
Section 2.6.1 – we would recommend that construction proposals include Construction Quality Assurance (CQA) proposals; the draft permit references CQA validation only.	The engineering conditions set in the permit are standard conditions that are applied across the entire landfill sector. We are satisfied that these conditions are appropriate for this site. The

Summary of Issues Raised	Response
	Operator is required to submit construction proposals to the Environment Agency for approval, no construction can take place until the proposals have been approved. Then following construction the Operator is required to submit a CQA validation report for approval.
Section 2.7 and tables S2.3 and S3.8 – the permitted waste types for restoration include biodegradable waste and a number of other non-hazardous wastes with the potential for gas production; annual surface monitoring for methane is proposed. Given that there is also the potential for odour generation from biodegradable wastes we would recommend that both the odour management plan and the restoration plan give due consideration to this and recommend mitigation measures, as necessary.	Condition 3.3 in the permit controls odour. As discussed in section 5.2.10.1 of this document we are satisfied with the Operator's risk assessment and odour management measures, These includes the management of malodorous wastes on site. We are therefore satisfied that condition 3.3 and existing procedures for the acceptance and control of restoration wastes are sufficient to minimise the risk of odour from the waste types accepted.
Tables S3.5 and S3.10 – we understand that one in-waste landfill gas monitoring well will be installed in each cell (as required by the current permit) of the proposed western extension area and that no boundary landfill gas monitoring is proposed. However, noting that the operator has not met the in-waste monitoring requirement for the current fill area and your comments in the draft decision document, relating to the lack of confirmatory in-waste gas data in the existing hazardous waste cells (section 5.2.9.3), we suggest that it would also be advisable to apply this logic to the western extension through the installation of boundary monitoring points. Although we acknowledge that hazardous waste will generally have low potential for gas production, boundary monitoring would provide site specific confirmation and reassurance to local residents located within close proximity of the site.	We are satisfied that the current requirement in the permit for in waste landfill gas monitoring in each cell in the western extension is appropriate for this site. The reasons for this are discussed in section 5.2.9.3. External gas monitoring boreholes could be installed in the future if the monitoring from the in waste boreholes shows the waste mass is generating landfill gas, this however is not anticipated due to the nature of the waste to be deposited in this area.
Table S3.7 - the draft decision document states that the continuous monitors will be set up to monitor PM2.5 and the results compared to 25µg/m3. However, this is not reflected in table S3.7, which refers to PM10.	Following our assessment of the Operator's proposals we have set appropriate monitoring for asbestos and particulates. Waste management operations that involve mechanical generation of particulate matter rather than combustion, such as Whitemoss landfill are likely to release predominantly coarse particles – i.e. PM10. Therefore, with regards to monitoring requirements in the permit continuous monitoring is only required for PM10. In addition to this the Operator has proposed continuous PM2.5 monitoring, this is written into the Particulate Matter and Asbestos Monitoring Management, Monitoring and Action Plan for the Western Landfill. Reference to this report has been included in the Operating techniques for this permit (table S1.2). Therefore PM2.5 will be carried out in addition to the monitoring set in table S3.7 of the permit.
Table S3.7 – we are pleased to note that the asbestos fibre limit of detection is proposed in the draft permit as 0.001fibres/ml (WHO air quality	The asbestos monitoring requirements set in the permit reflect the standard requirement for landfills for the deposit of asbestos. We are

Summary of Issues Raised	Response
guideline, 2000). It is proposed in the draft permit that asbestos monitoring be undertaken at a minimum frequency of twice yearly. Due to the proximity of residential properties and the local concern relating to the potential for uncontrolled emissions from the site, we would suggest that an increased frequency of asbestos monitoring be required at the beginning of the operation; with the potential for reduced frequency when the EA is satisfied.	satisfied the frequency of monitoring is appropriate. The frequency is determined by the amount of waste deposited, which is 'twice per year or every 5000 tonnes asbestos deposited, whichever is greater'. Operator's proposed techniques for the acceptance and deposit of asbestos have been assessed and we are satisfied that they are appropriate and fugitive emissions of asbestos fibres will be minimised therefore increasing the frequency of monitoring above the standard requirement is not considered necessary.

We also asked 2 specific questions to PHE when we consulted with them. The question relate to concerns raised by ARROW during the public consultation on the application. The questions and responses are as follows:

Q1: *Please can you let me know if you are aware of the literature detailed in the attached report (referring to ARROW's report)*

PHE response: *yes, PHE are aware of the literature detailed in the Arrow report.*

Q2: *Does your latest position as referred to in your consultation response dated 18 December 2014 relating to the 2011 HPA report (see paragraph below) take account of this literature.*

PHE response: *the HPA report is carefully considered advice and was not intended to be a systematic review of all the peer reviewed literature. However, the Arrow report does not reference any primary research that was not considered in the HPA report. The conclusions of the 2011 HPA report remain valid: living close to a well-managed modern landfill site does not pose a significant risk to human health. Detailed site-specific risk assessment should remain an important part of the permitting and management process.*

b) Representations from Local MP, Councillors and Parish / Town / Community Councils

Representations were received from West Lancashire Borough Council who raised the following issues:-

Rosie Cooper MP

Summary of Issues Raised	Response
There is no need for an extension to the Whitemoor Landfill. There is already a massive over provision of hazardous landfill capacity in the North West.	In relation to the location of the landfill and the need for the landfill extension – these are matters for the planning system. The location of the installation is a relevant consideration for Environmental Permitting, but only in so far as it's potential to have an adverse environmental impact on communities or sensitive

Summary of Issues Raised	Response
	environmental receptors. The environmental impact has been assessed as part of the determination process and we consider that there is no significant impact on human health or the environment. See the main body of this document.
Concern raised about proximity of residents to the landfill site and their loss of amenity due to site operations and potential effects to their health from odours and airborne particulates.	The environmental impact is assessed as part of the determination process and we consider that there is no significant impact on human health or the environment. See the main body of this document for details of our assessment of odour and particulates.
Concern raised about the longevity of the containment system and potential for pollution of the surrounding air, soil and water.	We are satisfied with the longevity of the containment system. The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or human health at which time the operator may apply to surrender the permit.
Concern raised that not enough money has been set aside to cover the long term maintenance of the site. Including insufficient funds for cap maintenance or replacement pumps.	We have included a pre-operational condition in the permit regarding the financial provision (FP). The Operator will only be allowed to deposit waste in the western extension until we are satisfied that appropriate FP is in place.

West Lancashire Borough Council

Summary of Issues Raised	Response
Concern has been raised about the filling in of a section of watercourse. This issue was highlighted on page 86 of the consultation document along with several others, but it is not addressed by the EA in the response. Lancashire County Council (LCC) has been asked to look into the issue and establish if it is a matter for enforcement/prosecution under relevant legislation. WLBC considers that this issue should be fully resolved prior to the issue of any permit, as the outcome of the investigation may be influential in the decision making process.	As previously stated we have investigated this issue and we have seen evidence in the form of aerial photographs from the operator from the 1990s and we have been to inspect this area of the site. We concluded that this watercourse has never run the full length of the boundary and so therefore has not been filled in. Whilst we appreciate that the LCC may want to investigate this issue further, based on our experience of this Operator we are satisfied they will comply with the varied permit. We therefore see no reason to delay the issue the issue of the variations as the requirements of EPR and the Landfill Directive have been met.
LCC are looking into whether the current height of the mound may be a breach of planning conditions and there is concern that conditions have been breached in respect of the depth of the cell. WLBC considers that this issue should be fully resolved prior to the issue of any permit, as the outcome of	The potential breach of a planning condition is a matter for the planning authority. Whilst it is the Environment Agency's view that the Operator should comply with the conditions of the planning consent, we are satisfied that there has been no breach of the Environmental permit with

Summary of Issues Raised	Response
the investigation may be influential in the decision making process.	respect to the issue of the height of the mound or the depth of the cell. Based on our experience of this Operator we are satisfied they will comply with the varied permit. We therefore see no reason to delay the issue of the variation as the requirements of EPR and the Landfill Directive have been met.
Residents have raised concerns about 'Rainford drain' which must be diverted around the western boundary of the western landfill area in accordance with requirement 15 of the Development Consent Order (DCO) in order for the site to become operational. The response in the consultation document indicates that the EA is satisfied that the Operator will have the rights they need to comply with the permit but provides no commentary to support this statement. The WLBC believe this should be made public.	The diversion of the drain does form part of their proposals for surface water management therefore should their proposals change significantly the Operator will need to apply for a variation to the permit, and we will assess the proposed changes. However, we have no reason to believe the Operator's existing surface water management proposals will not be implemented.

Representation from Councillors Nicola Pryce Roberts and Donna West – West Lancashire Borough Council.

Summary of Issues Raised	Response
Concern raised about the impacts from noise, odour and dust from the site.	The environmental impact is assessed as part of the determination process and we consider that there is no significant impact on human health or the environment. See the main body of this document for details of our assessment of odour, noise and particulates.
Concern raised about the health effects on the nearby community	In so far as emissions from the landfill are concerned, the Environment Agency is satisfied that human health and the environment is protected. For further information see section 5.2.11.
Concern raised that there is adequate disposal capacity within the County area for hazardous waste and therefore this extension is not required.	In relation to the location of the landfill and the need for the landfill extension – these are matters for the planning system. The location of the installation is a relevant consideration for Environmental Permitting, but only in so far as it's potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and we consider that there is no significant impact on human health or the environment. See the main body of this document.
Lack of confidence in the Environment Agency's ability to monitor or take action when permit levels are exceeded.	We take compliance seriously we will regulate the site in accordance with our enforcement and sanctions statement. Conditions in the permit require the Operator to report to us when compliance limits are breached. Breaches will be investigated and appropriate action will be

Summary of Issues Raised	Response
	taken.
Concern raised that insufficient funds will be set aside to deal with the long-term maintenance, clean up and restoration of the site.	We have included a pre-operational condition in the permit regarding the financial provision (FP). The Operator will only be allowed to deposit waste in the western extension when we are satisfied that appropriate FP is in place.

Representations were received from Councillor Paul Cotterill who raised the following issues:-

Summary of Issues Raised	Response
Consultee wants to know what consideration has been given to the filled in watercourse discovered by the WLBC during the Planning Inspectorate visit in 2014.	Regarding enforcement action in relation to the filled in watercourse, the Environment Agency is only the drainage authority for main rivers so we are not responsible for this. However, we have seen evidence in the form of aerial photographs from the operator from the 1990s and we have been to inspect this area of the site. We have concluded that this watercourse has never run the full length of the boundary and so therefore has not been filled in.
Concerns that the EA claim that based on aerial photos from 1990's that the watercourse has never run the full length of the boundary and has not therefore been filled in. This is untrue as detailed on OS maps prior to 1990 and confirmed by WLBC Engineering Dept. If the ditch has been filled in that an offence has been committed (under the Land Drainage regulations Act 1991). If the applicant has been party to an offence it will bring in to doubt the draft decision by the EA to issue a permit or at least necessitate further consideration of conditions.	We appreciate that LCC may want to investigate this issue further. However, the Environment Agency is only the drainage authority for main rivers so we are not responsible for enforcement action in relation to the filled in watercourse. Based on our experience of this Operator we are satisfied they will comply with the conditions in the varied permit. If the relevant authority (now Lancashire County Council) had taken enforcement action this would not affect our decision to issue the variation notice. It would not be a relevant conviction for environmental permitting nor would it have been sufficient to affect our assessment of whether or not the Operator will comply with the varied permit
Request for consideration of the rationale set out by the Operator for a change in the legal organisation holding the prospective permit from Whitemoss Landfill Ltd to Whitemoss Holdings.	We have a duty to determine any application to transfer a permit that is made to us. Any such application has to be determined in accordance with the statutory provisions.

Representations were received from Latham South Parish Council who raised the following issues:-

Summary of Issues Raised	Response
<p>Objections on grounds of health problems caused by air pollution.</p> <p>Concerns that >50% of residents in close proximity to this site are over pensionable age and these people are less likely to be able to deal with health issues.</p> <p>Concerns that 2002 Eurohazen (thought to mean Eurohazcon) study states that living closer to waste sites leads to more health risks.</p> <p>Local doctors in area signed a letter explaining their experiences of ill health associated with waste tips.</p> <p>Spoiling the residents leisure time – due to smells and concerns about air pollution.</p>	<p>A human health risk assessment was submitted in relation to particulate matter emissions see Section 5.2.11. We are satisfied with the Operator's updated particulate matter and asbestos management, monitoring and action plan and the continuation of the existing management measures for particulates and asbestos. We are satisfied the measures proposed will be appropriate measures and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health.</p> <p>The impact on human health was also the concern of a number of representations made in the previous consultation.</p> <p>As long as we are satisfied that the Operator will minimise emissions beyond the site boundary, there is no reason to consider there will be an impact on human health.</p> <p>We consulted Public Health England (PHE) formerly the HPA as part of the determination of this application who are the experts on human health and they refer to the 2011 guidance document which is still relevant. The 2011 document reviews the 'Impact on Health of Emissions from Landfill Sites' and concluded that living close to a well-managed modern landfill site does not pose a significant risk to human. The impact from modern well run sites should be even less than for older sites. See PHE comments in Annex I & II.</p>
<p>Concerns about vegetables grown in their gardens.</p>	<p>The human health risk assessment also includes a quantitative modelling impact assessment which also assesses deposition to soil. We do not consider that the facility will contribute to exceedances of an air quality EQS at human health receptors or to the Maximum Deposition Rates (MDR) for agricultural land.</p> <p>Therefore we do not consider there will be an impact on crops or vegetables grown on land surrounding the site. The landfill will operate in an engineered containment system. There is management system for leachate produced onsite which will be directed to the onsite leachate treatment plant, therefore there will be no discharge of leachate to arable land.</p>
<p>An odour known as 'Pennyland pong' has been regularly experienced.</p>	<p>As discussed in Section 5.2.10.1 - we are satisfied with the Operator's risk assessment and the odour management measures. Furthermore there have been no substantiated</p>

Summary of Issues Raised	Response
	odour complaints since 2006.
The consultee states that it appears that noxious fumes are vented late at night when residents are in bed so that it dissipates as residents sleep and evades complaints.	Some waste is covered immediately and all waste is covered at the end of the working day – so it is unlikely that fumes are vented late at night. No evidence has been provided to substantiate this claim.
Many residents have reported the problem to the EA and all report a failure to record calls or address the problem.	We take compliance seriously and have procedures in place to log and respond to calls from the public. We are satisfied that these have been followed in the past will be in the future.
Lack of confidence in EA for dealing with pollution incidents – does nothing to allay the fears of residents especially in these times of resource shortages and benefit cuts.	<p>We take compliance seriously we will regulate the site in accordance with our enforcement and sanctions statement. We will respond to complaints and also carry out both announced and unannounced inspections.</p> <p>An operation may be checked by the Environment Agency in any of the following ways:</p> <ul style="list-style-type: none"> • an assessment - a desk-based check of whether they are complying with their permit, e.g. checking the operator is sending in required information • an inspection - where an officer visits the site • sampling of the permitted discharge <p>Inspections are usually planned, but can be unannounced. Environment Agency staff will look around the site and ask questions about the operations. They may ask to see documents or talk to staff.</p>
They state that they have the most polluted river in the NW and despite a council member reporting over 20 incidents of pollution- it remains as polluted as ever.	Our assessment of the risk to surface water is detailed in section 5.2.6 of this document.
Past record of breaches of planning conditions.	This is a matter for the planning authority.

Representations were received from Bickerstaffe Parish Council who raised the following issues:-

Summary of Issues Raised	Response
Concern raised about the risk of pollution of the environment and harm to human health due to emission from site. In particular from leachate and burn off gases, also from carriage of toxic waste to and from site. Residential and recreational areas are located very close to the site.	The environmental impact is assessed as part of the determination process and we consider that there is no significant impact on human health or the environment. See the main body of this document for details of our assessment.

Summary of Issues Raised	Response
<p>Concern raised that if a permit is granted the lifespan of the site would be much shorter than the decomposition time of the toxic waste. Therefore pollutants will be emitted long after the permit expires and who will manage the site in the long term. Will the tax payer pick up the financial burden?</p>	<p>We are satisfied with the longevity of the containment system. The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or human health at which time the operator may apply to surrender the permit. Financial provision to meet the obligations of the permit will be in place until the permit is surrendered.</p>

c) Representations from Community and Other Organisations

Representations were received from the following organisations who raised the following issues.

Alan Watson on behalf of ARROW (Action to reduce and Recycle our Waste)

Summary of Issues Raised	Response
<p>Concern raised about the Environment Agency's interpretation of annex 1 to the landfill directive. The concern is that the Applicant has proposed landfill engineering that is below the standards set in the Landfill Directive and it is considered that there is no justification for reducing the engineering standards.</p>	<p>Section 5.2.2 of this document discusses the cell containment engineering. We are satisfied that the proposals in the application satisfy the requirements of the Landfill Directive. As discussed in section 5.2.2 a reduction of the requirements set out in paragraph 3.2 and 3.3 of Annex 1 of the Directive is acceptable provided it is demonstrated through an environmental risk assessment submitted to the Environment Agency. A risk assessment has been submitted and we are satisfied a reduction in the requirements is acceptable.</p>
<p>The definition of 'no potential hazard' for the purposes of paragraph 3.4 has been disputed.</p>	<p>With regards to the interpretation of 'no potential hazard', as discussed in section 5.2.2 this is defined, in relation to the Paragraph 3.4 of the Directive, in section 4.149 of the Defra Environment Permitting guidance: Landfill Directive; as:</p> <p><i>4.149 'No potential hazard' in this context means that the environmental risk assessment has to demonstrate that the reduction in a requirement in paragraphs 3.2 and 3.3 of Annex I will result in an acceptable risk to soil and water.</i></p> <p>We have assessed this based on the information provide in the application and we</p>

Summary of Issues Raised	Response
	<p>are satisfied that it has been established that the landfill poses no potential hazard to soil, groundwater or surface water.</p> <p>Also in the Defra Environment Permitting guidance: Landfill Directive, in the context of water control and leachate management, paragraph 4.144, 'no potential hazard' in this context is defined as:</p> <p><i>4.144 'No potential hazard' in this context means there is no likelihood of an unacceptable discharge over the entire lifecycle of the site. The Environment Agency is only likely to decide that the collection of leachate is unnecessary, and therefore that there is no need for an artificial sealing liner (see paragraph 4.162), if the quantity or quality of any leachate produced by the waste is insignificant or if there is no identified pathway or receptor for contamination.</i></p> <p>The permit requires the collection of leachate and an artificial sealing liner. It is considered that these definitions are appropriate. They accord with the purpose of the relevant provisions in the Landfill Directive and have been applied in this case.</p>
<p>Concern raised that there has been no consideration of the long-term management controls to protect the groundwater; and concern raised that the natural geological barrier would be ineffective in the short term and in the long term the site engineering will inevitably fail allowing leakage from the site and causing serious contamination</p>	<p>Risk to groundwater is discussed in section 5.2.7. The permit also contains monitoring requirements and compliance limits for groundwater (see table S3.4). The Landsim model, and the hydraulic containment model, submitted by the applicant models variations in the performance of lining systems over the entire lifetime of a landfill and considers changes in the integrity of engineering and other active management control measures throughout the period (centuries) that landfills have the potential to pollute.</p> <p>The basal and side slope lining system comprising a minimum 1m thickness of clay at a maximum permeability of 1×10^{-9} m/s with a 2mm thick high density polyethylene flexible membrane liner together with a 1m thick clay cap at a maximum permeability of 1×10^{-9} m/s laid on an inert subgrade at a gradient of 1V:8H have been demonstrated in the quantitative risk assessments to be adequate for protecting groundwater and controlling emissions of gas in the operational and post-operational stages. The landfill pollution control systems have been adequately designed for both the situations when it will be non-hydraulically contained when the groundwater drainage system will be operating, and when it</p>

Summary of Issues Raised	Response
	<p>will be hydraulically contained when the groundwater control system can be reduced or turned off. In the long term (several hundred years) the flexible membrane liner will deteriorate but the effect of this will be counterbalanced by hydraulic containment being achieved when the groundwater dewatering system is turned off and leachate is kept below the level of the groundwater. This means that there will be an inward hydraulic gradient, and leachate heads controlled by the leachate management system.</p> <p>Therefore the geological barrier hydraulic conductivity must be constrained to within a particular range as included in the range of parameters modelled in the HRA. The particular range limits being 1e-9 m/s to 1e-10 m/s. Construction of the geological barrier to the required specification is therefore important, and this will be detailed in the CQA Plan, and the CQA Validation Report which will be submitted to the Environment Agency as required by the permit. To ensure that the constructed mineral geological barrier meets the required specification the operator must demonstrate this in the CQA Validation Report before any further construction takes place. In addition to this, we have also decided to require the Operator to update the hydraulic containment model predictions based on the actual as-built geological barrier data, the Operator is required to present a written report to the Environment Agency for prior approval, detailing updated hydraulic containment model predictions. It will be based on re-running of the hydraulic spreadsheet model, using data in the CQA validation report of the geological barrier, leachate source term data for chloride, and site specific parameters' values, to update the model with the site specific data and confirm the as-built geological barrier provides the necessary protection of groundwater. This requirement has been incorporated into the permit through a pre operational condition for future development, condition 3 in table S1.4 of the permit. The Operator will be unable to commence disposal operations in the western landfill area until the submission has been approved by the Environment Agency. Section 5.2.2 of this document has been updated to reflect this new requirement.</p> <p>Overall we are satisfied with the longevity of the proposed containment system. The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the</p>

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	environment or human health at which time the operator may apply to surrender the permit.
<p>Concern raised that for the cap the applicant is not proposing an artificial sealing liner and is only proposing a clay cap It is argued that this does not comply with the requirements set out in paragraph 3.3 of the Landfill Directive; and due to the long timescale for which the site would pose a hazard an artificial liner is considered essential.</p>	<p>We have assessed the Applicant's engineering proposals for the cap and we are satisfied that proposals are appropriate for this site. The HRA has demonstrated that the mineral clay cap will be sufficient to control any risk of pollution of groundwater by formation of leachate. This is in line with Annex 1 Section 3.3, We acknowledge that Section 3.3 does recommend an artificial sealing layer however following assessment of the risks we do not consider this is necessary for this site as allowed under Section 3.4 of Annex 1.</p> <p>The cap will be constructed to the specification established in the quantitative risk assessments and under strict CQA procedures, which would have to be agreed with the EA prior to construction commencing. Regarding long term cap integrity the cap will have to be maintained by the permit holder as long as the landfill has a permit in place. This means that any deterioration of the cap by erosion or cracking due to future climatic conditions will have to be rectified by the permit holder until the time when the permit is surrendered.</p> <p>The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or human health at which time the operator may apply to surrender the permit.</p>
<p>It has been raised that the elevated WAC limits included in the draft permit now includes chloride but does not include copper as in previous permit variations.</p>	<p>Copper was intentionally removed and replaced by chloride when the permit was reviewed in 2014. The derogation of 3xWAC for copper is no longer allowed.</p>
<p>Concern has been raised that there are no other similar sites that has a 3 x WAC exemption for copper.</p>	<p>The derogation for copper was removed from the permit when the permit was reviewed in 2014. And all other hazardous waste landfill sites with 3xWAC derogations were also varied to include the same parameters.</p>
<p>Concern has been raised that the omission of lead from the HRA models is a serious omission as there is good evidence that elevated levels of these metals are instrumental in accelerating geomembrane degradation.</p>	<p>Evidence of the effects of leachate on the degradation rate of geomembranes has been reviewed by Rowe and Sangam¹. The degradation of geomembranes (HDPE in this case) is accounted for in the Landsim 2.5 model by increasing the number of defects in the lining over time. When the geomembrane starts to degrade the landfill will be in hydraulic containment due to groundwater inflow and leachate management.</p> <p>¹- Review Article Durability of HDPE geomembranes, R.Kerry Rowe , Henri P Sangam , doi:10.1016/S0266-</p>

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	<p>1144(02)00005-5, Geotextiles and Geomembranes, Volume 20, Issue 2, April 2002, Pages 77–95; http://www.sciencedirect.com/science/article/pii/S0266114402000055</p>
<p>Concern has been raised about the Environment Agency's policy with regards to 3 WAC derogations, and questions why the draft notice retains the derogation.</p>	<p>An increase in waste acceptance criteria limits up to 3 times for hazardous wastes (3x WAC) is allowed by the Landfill Council Decision annex (33/2003/EC).</p> <p>Defra published its strategy for the long term management of hazardous wastes in 2010. That included a section on phasing out the use of 3x WAC in England. Since 2010, the Environment Agency has varied permits for hazardous waste landfills to reduce the reliance on 3x WAC. Defra is still to set a date on the complete phasing out of the remaining 3x WAC derogations.</p> <p>The Operator still wants to retain the derogation for certain waste types and as it stands there is no reason why this would not be allowed.</p>
<p>Concern raised that if higher concentrations of chloride in the waste are permitted by the permit this will extend the period over which leachate from the site remains a hazard, particularly as that period includes hundreds of years when the site engineering systems will not be maintained.</p>	<p>This variation does not allow an increase to chloride levels in the waste above that already permitted. In any case our assessment of the risk to groundwater is discussed in section 5.2.7 of this document. Contaminants including chloride have been modelled in the HRA. The permit will require the operator to maintain the pollution control systems until they can demonstrate that the landfill no longer poses a significant risk to the environment or human health - at which time the operator may apply to surrender the permit.</p>
<p>Concern has been raised that previous WAC exemptions for the site appear to have contributed to very high levels of contamination on the existing site</p>	<p>The permit requires the periodic monitoring of leachate quality. Due to the nature of the waste deposited the leachate will contain a range of hazardous and non-hazardous substances at varying concentrations. The quality of the leachate is taken in to consideration in our assessment of containment proposals. We need to be satisfied, and for this application we are, that the activity does not lead to entry of hazardous substances to groundwater and does not cause pollution by non-hazardous substances; we judge pollution by comparison with Drinking Water Standards (DWS).</p> <p>We are satisfied with the proposals for the long term pumping of leachate which will be treated in the leachate treatment plant.</p>
<p>Concern raised that the proposals for the treatment and management of groundwater discharge may be entirely inadequate creating a potential for flooding and pollution and it is not certain that hydraulic</p>	<p>We are satisfied with the proposals for groundwater management and do not consider that there is a significant risk to the environment. Hydraulic containment is an</p>

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containment can be achieved in this complex hydrogeological setting.	accepted technique and we are satisfied it can be achieved. We are also satisfied that the groundwater management system will not lead to flooding. There are storage and settlement lagoons and measures to prevent too much of the pumped groundwater being emitted to the surface water management system.
Concern raised that the applicant has failed to assess the entire lifecycle of the landfill. Specifically the timescales for the late and post operational phases.	<p>We are satisfied with the Operator's proposals for the management of the site post operations. We are also satisfied with the proposals for the long term pumping of leachate which will be treated in the leachate treatment plant.</p> <p>We are satisfied with proposed containment engineering. The landfill pollution control systems have been adequately designed for both the situations when it will be non-hydraulically contained when the groundwater drainage system will be operating and when it will be hydraulically contained when the groundwater control system can be reduced or turned off. In the long term (several hundred years) the flexible membrane liner (FML) will deteriorate but the effect of this will be counterbalanced by hydraulic containment being achieved when the groundwater dewatering system is turned off and leachate is kept below the level of the groundwater. This means that there will be an inward hydraulic gradient, and leachate heads controlled by the leachate management system.</p> <p>The permit will require the operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or communities at which time the operator may apply to surrender the permit.</p>
Concern has been raised about the time it will take to bring the landfill site to a stable non polluting state. This will take hundreds of years and the applicant has not assessed the timescales necessary to achieve the completion state at which leachate pumping can be stopped and groundwater allowed to restore to natural levels. There is fear that the requirement for leachate management far exceeds any reasonable assumption about the future commitment from the Operator to the landfill site.	As discussed for the previous comment above we are satisfied with Operator's proposals for the management of the site post operations. With regards to the Operator's commitment to the site, the permit will require the Operator to maintain the pollution control systems until it demonstrates that the landfill no longer poses a risk to the environment or communities at which time the Operator may apply to surrender the permit.
Concern has been raised that the financial provision is inadequate and the period of 60 years is not long enough. The applicant has failed to provide any evidence or estimates of the likely timescale site must be maintained and contaminated leachate pumped, removed and treated.	We have included a pre-operational condition in the permit regarding the financial provision (FP). We are satisfied that adequate financial provision (FP) will be provided. Long term maintenance of the site including replacement pump failure will be covered by the Financial Provision.
Concern raised about the provision for replacement pumps use for leachate management.	

Summary of Issues Raised	Response
	The 60 year aftercare period is considered a reasonable timescale but in any event the final 60 th year figure is required to remain in place until such time as the permit can be surrendered. This will only be when it meets the criteria set out in EA guidance. Therefore provision may well be required for a number of additional years.
Concern raised that no provision has been made for landfill gas management.	Provision for landfill gas monitoring and maintenance of infrastructure will be included in the FP.
Concern raised that no provision has been made for planning matters such as landscaping.	Planning provisions are covered within the planning requirements and they are not required to be double counted as well within the financial provision. Nor are they matters controlled by the Environmental Permit.
Concern raised that this site would be the only landfill in UK to be constructed over old mineshafts. The draft decision document states that the EA are not aware of any hazardous waste sites constructed over old mine shafts but indicates there are other landfill sites constructed above mine workings a request is made for named examples of these landfills.	There are many landfills constructed over old mine workings, and details of these are available on the public register system, for any member of the public to search for the permitted landfill sites that lie in Coal Measures strata in the coalfields of Great Britain. An example of one such site is Poplars Landfill in Cannock Staffordshire.
The response included a Hydrogeological Risk Assessment Report of Whitemoss Landfill carried out by an independent consultant. The assessment included a review of the Operator's risk assessments and supporting information.	This report was also submitted in the public consultation of the Application (received Jan 2015). We have reviewed the information presented in the report and have taken it into account in our assessment of the application. However the report does not alter our decision to issue the variation.
A request was made for the Environment Agency's best estimate of the likely timescale over which it will be necessary to pump and treat leachate from the landfill site along with any associated calculations.	It will be necessary to pump and treat leachate in the post operational period, which is normal procedure for hazardous and non-hazardous landfill sites. The application variation includes the MJCA HRA report (Appendix F, ref. WL/WL/JRC/2773//01/EPHRA May 2014) (EDRM document ref 8377881) and in the following sections the periods relating to the various stages of the landfill lifecycle have been modelled. These are in section 2.7, and more specifically in the modelling files contained in Appendix HRA 1 for the operational phase saying the Landsim models were run for the time slices of 3/10/30/100 years; Appendix HRA 2 f for the late operational and post operational period when in hydraulic containment saying the models were run for the time slices of 1 to 20,000 years; Appendix HRA 3 presents sensitivity analyses for late operational and post operational periods saying the models were run for the time slices of 1 to 20,000 years. These models will be reviewed in the HRA review every 6 years required by the permit and updated using monitoring data of leachate and groundwater. Leachate pumping and treatment will continue until the HRA review

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	shows there is no unacceptable impact by leachate on groundwater.
A request was made for the Environment Agency's best estimate of the likely timescale for the landfill to achieve completion along with any associated calculations.	It will be known when Completion has been achieved at a future time determined by the results of the 6 yearly HRA reviews required by the permit.
A request was made for the Environment Agency's best estimate of the expected life of the landfill cap. Is it considered likely that this will need to be replaced before the site reaches completion? If so, then how many times?	<p>The cap will be maintained by the permit holder for as long as it is required to control ingress of water and emissions from the landfilled waste. The HRA document section 2.4 (iv) says</p> <p>"The cap will be placed to an agreed specification in accordance with agreed CQA procedures with a maximum hydraulic conductivity of 1×10^{-9} m/s. The low permeability of the cap will contribute to the control on the amount of leachate generated during the post operational phase of the landfill. A geocomposite drainage layer will be placed over the engineered clay cap to provide a pathway for drainage of the overlying restoration soils. Restoration soils will be placed over the geocomposite drainage layer and engineered cap. The geocomposite drainage layer and restoration soils will reduce further infiltration to the waste and provide a protective layer for the geocomposite drainage layer and engineered cap."</p> <p>There will be little settlement of the waste mass and desiccation will be limited by the drainage layer and soil cover, thereby reducing the amount of cracking of the clay mineral cap. Most settlement will occur before the end of institutional / operational control, and as part of the operation of the site the cap will be maintained at its design infiltration. Following the end of institutional control /operational control any remaining settlement of the waste will not be of sufficient magnitude to compromise the integrity of the cap, enabling a clay cap to maintain its design infiltration indefinitely.</p>

Lancashire Branch of 'Campaign to Protect Rural England'

Summary of Issues Raised	Response
<p>Inconsistencies between the DCO and the Environmental Permit have been highlighted including: those related to waste throughput limits, restrictions on waste types and reporting.</p>	<p>We accept that there are inconsistencies however the Environmental permitting process and the planning process are controlled by different legislation. The Environmental permit delivers the requirements of the Environmental Permitting (England and Wales) Regulations 2010 (as amended). The Operator must comply with both regulatory regime, however requirements in the Environmental permit do not obviate the need for the Operator to comply with their planning permission.</p> <p>The conditions and limits imposed in the Environmental Permit have been set based on our assessment of the environmental impacts which is what we regulate. We cannot simply impose a limit or condition a permit to match a limit or condition imposed under another regime to achieve other objectives.</p> <p>We are satisfied the conditions and limits imposed in the permit are appropriate for this site.</p>
<p>Concern has been raised about the site plan included in Schedule 7 of the draft variation notice. The plan is not consistent with the drawings in the DCO.</p>	<p>We accept that the site plans are different. The site plan included in the permit reflects the plan submitted in support of the Environmental Permit application. The plan in the permit shows the area over which we need to impose conditions/ regulate activities.</p>
<p>Request that the meanings of terms phase and cell are defined in Schedule 6 of the permit.</p>	<p>The meanings of cell of phase and cell is common terminology and are well understood including by both the Operator and Environment Agency. Therefore a definition is not required in the permit.</p>
<p>Request for the addition of a conditions to the Notification Clause 4.3.1. 'that the circumstances and causes of death or extended absences from work of any employees during and immediately after their deaths or extended absences to be reported to the Agency'.</p>	<p>We are satisfied that the existing condition 4.3.1 is appropriate, and we do not consider that this proposed condition is necessary for our purposes. We accept that the health and well-being of employees on site is important, however their protection at work is covered by the requirements of Health and Safety at Work Act for which the HSE are the competent authority.</p>
<p>Concern has been raised about footnote to table S3.7 – which allows '35 results in excess of 50 mg/cu metres per year without the air quality objective being exceeded – this makes a nonsense of having a limit of 50for PM10 Particulates and below the deposited particulate matter limit of 200mg/m2 measured over 24 hours. Is the base period a calendar year or an arbitrary 12 month period selected by the operator? If the latter this would allow a run of excessive readings to be shared across 2 base time periods.</p>	<p>The monitoring requirements in the permit are consistent with requirements set out in our technical guidance note M17 monitoring particulate matter in ambient air around waste facilities. The limits reflect the EC Air quality standards currently in force through EU law.</p> <p>Air Quality Standards such as the 24-hour PM10 UK Limit Value are set by the EC in Air Quality Directives (Ambient Air Directive - 2008/50/EC). The UK air quality strategy states "Standards, as the benchmarks for</p>

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	<p>setting objectives, are set purely with regard to scientific and medical evidence on the effects of the particular pollutant on health, or, in the appropriate context, on the wider environment, as minimum or zero risk levels. In the area of the effects on human health this is the approach adopted by the World Health Organisation (WHO) in the formulation of their air quality guidelines published in 1987 and their subsequent revision in 1994/95 (published in 2000 and 2005), and by Expert Panel on Air Quality Standards (EPAQS)....” (The quote is an extract from Page 13 of Vol 1 of the AQS2007).</p> <p>With regards to the reporting period, a year means a 12 month period from date of first waste deposit in cell.</p>
<p>Concern raised that the reporting frequency for dust and other emissions monitoring of 6 months is modest and monthly reporting is more appropriate. Also the nature of the meteorological data to be reported should be detailed in the table.</p>	<p>We consider 6 monthly reporting is appropriate. Condition 4.3.1 requires the Operator to inform the Environment Agency immediately of any breach of a permit condition, this includes a breach of a limit in the permit.</p> <p>The meteorological data referred to in this conditions refers to the requirements set out in the Landfill Directive Annex III, therefore a detailed description is not required in the permit.</p>
<p>Request that there are many wind monitoring locations across the site.</p>	<p>We are satisfied with the Operator’s proposals for monitoring wind.</p>
<p>We do not have confidence that modelling can accommodate the extremes of wind and rain that might occur during the life of the site and note that the wind modelling assumes a flat horizontal surface and doubt that allows for turbulence. It does not consider the changing airflow patterns which must occur as the various phases of excavation, bund formation and removal, and land raising takes place. It is when tipping occurs at the top of the mound, as land raising reaches its maximum height, that gives us most concern.</p> <p>The location of the onsite weather station, by the weigh bridge, is a sheltered position and the wind speed acting on the waste deposits, particularly during land raising, will be higher than those historically recorded.</p>	<p>We have detailed how we have audited the Operator’s modelling in section 5.2.11 of this document. As discussed in this section we have carried out our own check modelling using representative meteorological data that takes account of a range of weather conditions. Also appropriate surface roughness and terrain parameters were used to account for turbulence at ground level.</p> <p>The presence of large structures (such as buildings, or excavation heaps) and complex terrain has the potential to effect localised airflows and introduce turbulence. Both building downwash effects and the impact of terrain can be modelled in the commonly used Gaussian plume dispersion models ADMS and AERMOD. The terrain models are designed to take into account the effect of wider-scale terrain features in the landscape of the model domain which could introduce turbulence. This is generally on a reasonably coarse resolution of several hundreds of meters. It is not advisable to run the terrain module where gradients are reasonably flat (< 1:10) or in very</p>

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	<p>steep areas (>1:3). This does not apply to the broader landscape in this case.</p> <p>Smaller scale structures (such as the excavation bunds referred to) may introduce turbulence and could potentially be modelled. These effects would only be noticed within the wake region of the structure, and beyond this region, the effect of such structures would not have a significant impact. The model user guides provide advice on when buildings (or large structures) should be modelled, and when they would be beyond the influence of any downwash effects. In this case, the receptor locations of concern are beyond any distance where it is likely that large structures would introduce turbulence and significantly affect modelled predictions.</p>
<p>Concern raised that there is no condition in the permit saying 'Operations will cease during high winds', and it does not specify in the application an appropriate wind speed or where the wind speed will be measured.</p>	<p>We are satisfied the Operator's proposals with regards to ceasing tipping during high winds. The inclusion of a condition in the permit is not required, as condition 2.3 requires the operator to carry out activities on site in accordance with the operating techniques listed in table S1.2. The Operator has stated in their application that operations will cease in high winds.</p> <p>The Operator will decide in line with their written procedures when the weather conditions are sufficiently severe as to require the suspension of tipping. Condition 3.2 in the permit controls fugitive emissions from site and the Operator will be required to comply with this condition at all times as well as the particulate emission limits included in the permit.</p> <p>We are therefore satisfied that there are sufficient controls in the permit to address this.</p>
<p>Concern raised about the Operator loose tipping waste in the landfill. The EA should require that all hazardous waste to be contained within sealed bags or a suitable container to reduce the risk of dust clouds.</p>	<p>We are satisfied that the loose tipping of hazardous waste is acceptable provided appropriate management techniques are employed. For this application the Operator has described their operating techniques for controlling fugitive emissions, including particulates, and we are satisfied that they are appropriate.</p>
<p>Which Government Agency or Department is responsible for ensuring public safety when hazardous waste is carried on the public highway?</p>	<p>Any business that creates, moves or disposes of dangerous waste must comply with the Carriage of Dangerous Goods Regulations (CDG) requirements. The CDG Regulations are enforced by the Health and Safety Executive. However, the police are well versed in CDG requirements and carry out spot checks.</p>
<p>Concern raised about some of the control measures for dust. In particular with reference to dampening wastes</p>	<p>Initially it is for the Operator in line with their written procedures, to decide when to decide when it is appropriate for them to dampen the</p>

Summary of Issues Raised	Response
<p>The decision as to when waste is 'particularly dry or dusty' is very subjective.</p> <p>Deciding when there are dry conditions necessitating damping of haul roads and spraying soils, clay and general fill materials is also subjective.</p>	<p>waste. Condition 3.2 in the permit controls fugitive emissions from site and the operator will be required to comply with this condition at all times as well as the particulate emission limits included in the permit. If we were not satisfied with the Operator's actions we would take appropriate enforcement action.</p>
<p>Concern raised about the tipping of hot waste, request made to apply a maximum temperature limit for waste is included in the permit.</p>	<p>We have reviewed the Operator's waste acceptance procedures and we are satisfied that these are appropriate. In addition the permit has conditions specifically relating to waste acceptance. We do not consider that a limit on waste temperature is required in the permit.</p>
<p>Concern raised that is unclear whether or not the site operational controls and monitoring plans form part of the permit or not. The current draft does not include operational requirements.</p>	<p>Condition 2.3.1 of the permit requires that 'the activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency'. – All the relevant operating techniques described in the application have been referenced in table S1.2.</p>
<p>Concern raised that PHE do not appear to have been aware of the Operator's breaches of the Environment Permitting Regulations when their reply to this consultation was written. Concern was also raised about a permit being issued given the warning letter sent in respect of these breaches</p>	<p>This refers to a warning letter we sent following the discovery of some monitoring anomalies in the particulate emission results and how it was presented. It became apparent that the company relied on one person to check all the external monitoring and transcribe the results. What they did not realise was this person was seriously ill, and has since died. On discovery of this the company arranged a complete review of the period in question and determined what, if any, environmental damage had occurred because of this misreporting. We believe the misreporting was not intentional and did not follow any pattern in the misreporting. Having gone through the review, we agreed with its finding in that no environmental damage had occurred due to the misreporting. As a consequence to this review we required the company to update its procedures to ensure misreporting does not occur in the future and that all transcribed figures are checked by a senior manager before being forwarded to the Environment Agency.</p> <p>We are satisfied that the Operator will comply with their permit and are satisfied that the PHE comments remain appropriate.</p>
<p>Concern raised about the Environment Agency's reliance on the Operator's QA procedures as a method of protecting the health of people and the countryside. Past experience leads us to conclude it has failed.</p>	<p>We are satisfied with the controls in the permit and consider that the operator will comply with them.</p>

<p>Concern about the monitoring methodology used to compile 2 reports on particulate monitoring submitted to the Environment Agency by Whitemoss Landfill Limited and the Environment Agency EPR Compliance Assessment report dated 08/06/2015.</p>	<p>These reports relate to monitoring of the existing site and these have been assessed as part of the ongoing regulation of the site. Our assessment of the reports is detailed in the EPR compliance Assessment Report referred to in the consultation response. We are satisfied with the monitoring methodology used.</p> <p>The permit variation sets monitoring requirements for asbestos, dust and PM10. This includes setting a requirement to follow relevant monitoring standards as detailed in Environment Agency guidance.</p> <p>Overall we are satisfied that the Operator is competent and can comply with the conditions set out in the varied permit including those relating to particulate matter, dust and asbestos.</p>
<p>Concern raised that variation V004 table S3.7 requires the chemical composition of collected particulates to be analysed for Arsenic, Cadmium, Chromium, Nickel Fluoride, Calcium Hydroxide and sodium hydroxide, however these substances are not specified in the equivalent table in the draft notice. Why has this requirement been removed?</p>	<p>This requirement has been removed from the permit because the quantitative modelling impact assessment (as detailed in 5.2.11) showed the impact from particulates are unlikely to be significant and are not likely to cause pollution of the environment or harm to human health. Due to this it has been decided that there is no longer the need to set a limit or monitoring requirement in table S3.7. However the operator will continue to monitor the speciated metals on a quarterly basis as detailed in the 'Particulate matter and asbestos management, monitoring and action plan for the western landfill area at Whitemoss Landfill Site, Lancashire (ref: WL/WL/AW/5504/01/DMP, June 2015)'. This quarterly monitoring will enable the Operator to confirm that going forward the metals concentrations used in the modelling remain valid.</p>
<p>Concern that the list of waste detailed in Schedule 2 of the draft is extensive, and is it possible that not all harmful substances are being detected. Can the list of wastes be reduced to improve confidence that harmful emissions are identified?</p>	<p>We are satisfied that the list of waste is appropriate for disposal at this site. The Operator is required to follow the waste acceptance requirements in the permit and their own waste acceptance procedures as referenced in table S1.2 of the permit.</p>
<p>Concern raised that there are no records of the cumulative effects of dust deposits within the site, on adjoining agricultural land and foot paths or moss land. Request that soil samples are taken to provide a baseline for future results.</p>	<p>We do not consider that soil samples are required. The proposals to extend the landfill site are in accordance with the requirements of the Landfill Directive. The particulate matter modelling carried out by the operator concludes that emissions of dust and particulates from the site will be below the Maximum Deposition Rates (MDR) for agricultural land and we agree with this. For more information see section 5.2.11. We have assessed the risks to groundwater and the hydrogeological risk assessment (HRA) and we consider that there is no unacceptable risk.</p>
<p>Concern that farm produce could be grown in soil that has become contaminated.</p>	

	For more information, see section 5.2.7.
Concern raised that members of the group consider it is likely that browning of vegetation in the western extension in the summer of 2014 was due to bitumen dust being blown from the road scrapings used for temporary haul roads.	We have no record of this being reported to the Environment Agency.
Concern that there has been false assurances given by the Operator that the site would close at the expiry of planning permission. The life of the site has been repeatedly extended.	This is not a relevant consideration for the Environmental Permit.
Concern that asbestos is treated with greater care, as it is required to be bagged while being handled and tipped whilst other waste are loose tipped.	We are satisfied that the loose tipping of hazardous waste (which is not asbestos) is acceptable provided appropriate management techniques are employed. For this application the Operator has described their operating techniques for controlling fugitive emissions, including particulates, and we are satisfied that they are appropriate.
Concern has been raised that in their consultation response the PHE cited an outdated report published by the former Health Protection Agency (HPA)	We have consulted with the PHE again on the draft permit. In their response which is detailed above they stated: The conclusions of the 2011 HPA report remain valid: living close to a well-managed modern landfill site does not pose a significant risk to human health. Detailed site-specific risk assessment should remain an important part of the permitting and management process.
Concern has been raised about the Waste Management Industry Training Advisory Board (WAMITAB) certification of technical competence and the CQA process. Concerns that award of a WAMITAB certificate does not guarantee compliance with permit conditions and WAMITAB does not audit ongoing competence. Also the need for the Operator to acquire public land by adverse possession to operate the existing landfill throws doubt on the dimensional control of the process of the CQA.	We have no reason to believe that the Operator is not competent and will not comply with conditions of their permit. The certificate of technical competence held by the Operator is appropriate. WAMITAB currently have a continuing competence scheme place that requires existing WAMITAB certificate holders to pass a test periodically to ensure they are maintaining their competence. The requirements for CQA are set in the permit. The Operator is required to comply with these conditions. We have no reason to believe that the Operator is not competent and cannot comply with the conditions of their permit.

d) Representations from Individual Members of the Public

A number responses were received from individual members of the public. Many of the issues raised were the same as those considered above. Only those issues additional to those already considered are listed below:

Summary of Issues Raised	Response
Concerns about the impact from Odour	As discussed in Section 5.2.10.1 - we are satisfied with the Applicant's risk assessment and the odour management measures. Furthermore there have been no substantiated odour complaints since 2006.
Concerns about the long term risk to environment	As detailed throughout the document there is considered to be no significant risk to the environment. Hydraulic containment is a well-established engineering route for landfill and the hydrogeological risk assessment model submitted as part of the application reflects this situation.
Concerns regarding health and long term risk to health	A human health risk assessment was submitted in relation to particulate matter emissions in Section 5.2.11. This concluded that we are satisfied with the Operator's updated particulate matter and asbestos management, monitoring and action plan and the continuation of the existing management measures for particulates and asbestos. We are satisfied the measures proposed will be appropriate measures and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health.
Not enough money set aside to cover long term maintenance of site; insufficient funds to replace cap, pump failure.	Long term maintenance of the site including replacement of the cap and pump failure will be covered by the Financial Provision. We are satisfied that adequate Financial Provision will be made for the site in accordance with the pre-operational condition which is included in the permit. Financial provision will be required until the permit is surrendered.
Concerns regarding dust emissions Concerns about dust and particles from depositing waste and from vehicles transporting the waste and how far particles will travel.	Our assessment of the risk from dust emissions is discussed in section 5.2.10.3.1 of this document. We can only consider emissions that arise from on the site. We are satisfied with the Operator's risk assessment and the particulate and asbestos management measures proposed and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health, in making this assessment we have considered the potential distance particulates can travel. The Operator's assessment which contains details of the predicted emission rates and dispersion predictions is available to view on

	<p>public register. The 'Human health risk assessment – Particulate matter and monitoring' is covered by section 5.2.11. This section concludes that we do not consider that the facility will contribute to exceedances of an air quality EQS at human health receptors or to the Maximum Deposition Rates (MDR) for agricultural land.</p>
<p>Concern has been raised about the Environment Agency's failure to prosecute the Operator for digging a cell deeper than it was allowed to under the permit.</p>	<p>With regards to the Operator digging a cell deeper, this relates to part of the base of Cell 3 which was over excavated in order to allow the removal of a heavily fractured layer of sandstone and a layer of coal. It was over excavated by up to 5m but was then backfilled using compacted mudstone with an under drainage blanket being installed to the upper 1m of this layer.</p> <p>So although the base of the cell was initially over excavated as described above, the permitted level of the base didn't alter as the base was effectively re-engineered to the correct level. Therefore this was not considered a compliance issue and did not result in a prosecution</p> <p>In any case These comments relates to CQA validation reports for the existing landfill, therefore these are not required to be submitted as part of this application. The operator is considered to be technically competent to operate the landfill and is currently a band B performer in accordance with our Opra for EPR: Operational risk appraisal system. Therefore we are satisfied that the site will be operated in the appropriate manner.</p>
<p>Concern about the height of mound on site. It is believed that the mound encroaches on European Rights Law.</p>	<p>This is a matter for the planning authority.</p>
<p>Concern has been raised about the time taken for previous breaches of the permit to lapse and not impact of OPRA banding.</p>	<p>The OPRA score is reviewed annually, using the methodology as set out in OPRA EPR for Installations Annex A, Ver 3.9 dated June 2014</p>
<p>Concern has been raised that the Operator continues to breach the permit and planning regulations and that the change to the name it to avoid being prosecuted each time the permit is issued. They are opposed to the transfer because of this.</p>	<p>The Operator should meet their planning conditions, however this is a matter for the local planning authority to enforce.</p> <p>With regards to breaches of the Environmental permit The operator is currently in compliance with their existing permit. We have no reason to believe that will not continue in the future. Prior to the permit being transferred in the future the technical competence of the new Operator will be assessed in accordance with our procedures. The transfer to a new Operator will not prevent the previous permit holder being prosecuted if they have committed an offence.</p>
<p>Concern from residents 500m downwind of the extension – they have endured constant odours and large quantities of dust from the landfill over</p>	<p>Our assessment of emissions from odour and dust are discussed in sections 5.2.10 of this document. There have been no substantiated</p>

the last 10 years. Unable to open windows or sit in garden due to emissions. Dust on furniture in morning and then again in evening. Feel like prisoners in own home.	odour complaints since 2006.
Concerns regarding dust – photo's in previous consultation were provided of dust from deliveries being allowed to migrate offsite. Enquiries found that deliveries that day included incinerator ash.	There have been no dust complaints within a 2km radius of the site over the last 2 years. We are satisfied with the risk management measures which are proposed for the site – see section 5.2.10.3.1. Furthermore there are limits in table S3.7 for dust and particulate matter. The particulate PM10 monitoring is also a continuous monitoring requirement.
Concerns regarding Operator's previous prosecution and enforcement notices – therefore unfit to run the site and keep operating especially due to close proximity of residential properties and agricultural land.	We are satisfied that the operator is a fit and proper person. There are no relevant convictions associated with Whitemoss Landfill Limited or any 'relevant person' such as a director. We take relevant convictions of an Operator into account and any previous history of operating permitted sites. In this instance and in accordance with the legislation and our guidance, any relevant convictions held by this applicant are considered to be spent, having passed the appropriate timescale, and therefore are no longer 'relevant' for the purposes of this permit application.
Operator may be a band B – perhaps they have moved to a band B recently.	The operator was previously a band B performer or above for a significant period.
Concerns that the applicant has committed an offence by filling in a ditch – it was stated this is against the law and they should have been prosecuted – therefore it would be illegal to issue a permit.	Please refer to our response to Councillor Paul Cotterill's comments earlier in this Annex.
Dissatisfaction with site management	We are satisfied that the Operator is a fit and proper person. Based on our Operational Risk Appraisal (Opra) system, the Whitemoss operator is currently Band B. This is our second highest rating and identifies the operator as a good performer.
Dissatisfaction with EA and that EA is largely ineffective in dealing with problems. The site is impossible to regulate 24 hours a day, 7 days a week.	We take compliance seriously we will regulate the site in accordance with our enforcement and sanctions statement. We will respond to complaints and also carry out both announced and unannounced inspections.
The previous company was prosecuted some years ago for failing to run the site properly. Some of the individuals concerned appear to have regrouped and continue to run the site under a different company name. Should the fit and proper persons test prevent this?	We are satisfied that the operator is a fit and proper person. There are no relevant convictions associated with Whitemoss Landfill Limited or any 'relevant person' such as a director. We take relevant convictions of an Applicant into account and any previous history of operating permitted sites. Regarding the company transferring to another company whilst retaining relevant people (e.g. Directors) in the new company. It is legitimate to do this and checks for relevant convictions are carried out on the new company and relevant

	people.
The site mainly takes material which can be processed using more sustainable methods and concerns that landfilling is an outdated technique for disposing of waste, alternatives are available.	<p>The landfilling of hazardous waste is allowed by both European and domestic law. We may restrict those waste types if we know there is a readily available alternative treatment technology. However, the onus is on the producer of the waste to recycle/ reuse before they consider disposal under the EPA 2010 (as amended). Condition 2.7.1 (j) of the permit also requires the waste to be treated (except where treatment would not reduce its quantity or the hazards which it poses to human health or the environment.</p> <p>A number of wastes were removed from the permit as part of the permit review (issued on 13/10/14) because there was a readily available alternative treatment technology or because they could be recycled in accordance with the waste hierarchy.</p>
There should be increased options for recycling by product design and system enforcement.	This is not a matter for consideration as part of the determination of the variation application.
The site is not needed due to the over-provision of hazardous waste disposal in the NW. Skelmersdale already has many sites for waste disposal.	Decisions over land use are primarily matters for the planning system. The location of the installation is a relevant consideration for Environmental Permitting, but only in so far as it's potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and has been reported upon in the main body of this document.
Concern was raised that people are not likely to know how to make a submission to this consultation	We tried to make the consultation process as easy as possible – consultees could either reply on the online consultation tool, email or write to us. If people were not able to view the documents online they could have either made an appointment to visit the public register at our office in Preston or viewed a copy of the documents at Skelmersdale library. The way which we have consulted is discussed in section 2.2 of this document.
Concern about the location of the site close to residents.	The location of the installation is a relevant consideration for Environmental Permitting, but only in so far as it's potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and has been reported upon in the main body of this document.
Concern re reduction in market value of properties	This is outside the Environment Agency's remit.
Concern that hazardous waste can be deposited over land containing mineshafts and the potential for leakage of leachate into watercourses and the watertable.	The engineering solutions in relation to filling in and making the mine shafts safe has been used before. As part of the engineering the former Mossfield colliery shafts will need to be stabilised and sealed to eliminate the potential for their

	<p>collapse or settlement. The remaining engineering proposals are in accordance with the Landfill Directive.</p> <p>The potential for leakage of leachate into the watercourses and water table is not considered significant as the shafts will be stabilised and sealed and the landfill will have an engineered containment system which includes a leachate management system. Leachate is diverted to an onsite leachate treatment plant prior to discharge offsite.</p>
"I live on Whitemoss Road South - no noise, no smell, no dust. They offer a valuable service to the community".	No further action required.
Concerns regarding self-monitoring by the operator.	<p>The Environment Agency carry out periodic inspections of the site. The Operator is responsible for monitoring. They collect their own samples and operate their own monitoring equipment in accordance with the requirements in the permit and then submit the data to us. This gives them a greater awareness of their performance and the environmental impact of their operations. We check that they are doing what they are supposed to by carrying out audits using the Operator Monitoring Assessment (OMA) procedures.</p> <p>It must be noted that the Environment Agency can take their own samples and undertake check monitoring if deemed necessary; however this is not routinely carried out</p>
Concerns over current issues with wheel washing.	<p>We are satisfied that there will be appropriate measures in place. As well as the wheel wash, there will be other risk management measures in place to prevent mud on the road, this includes monitoring the wheel wash so that it is used effectively, using a standby jet plant if the wheel wash is not operational and cleaning the haul roads and access roads with a road sweeper as necessary.</p> <p>Groundwater has occasionally been used to top up the wheel wash when it is running low (once a year or less) – we are satisfied with this practice</p>
Concerns that if the variation is issued contamination could spread a lot further.	We are satisfied that the determination of this extension area will not cause significant pollution of the environment or harm to human health.
Concerns regarding location of site in respect to local residents, nursing home, and football pitch.	Location is relevant for environmental permitting but only so far as location can affect the impact from the facility on sensitive receptors. As explained in the main body of this document we are satisfied that there will be no significant pollution of the environment or harm to human health from an installation in this location.
Consideration should be given to the reasons	We have considered all of the consultation

against the landfill included in the original consultation rather than people having to repeat it all.	responses from consultation on the application-see Annex I above.
Concerns that waste from the site cannot be contained completely and the health of the population outweighs the financial gain the operator makes.	All aspects of the application have been considered and there is not considered to be a significant risk to the environment or human health.
Condition 2.7.1 (j) in the draft permit – does not exclude poisonous and toxic substances.	The waste types permitted are suitable for this landfill type. As explained in the main body of this document we are satisfied that there will be no significant pollution of the environment or harm to human health from this installation.
Concerned about the close proximity of the site to residents including children.	Location is relevant for environmental permitting but only so far as location can affect the impact from the facility on sensitive receptors. As explained in the main body of this document we are satisfied that there will be no significant pollution of the environment or harm to human health from an installation in this location.
Concerns that the EA should have an obligation to protect the community of Skelmersdale and that the social background of its residents may affect the determination.	The Environment Agency in carrying out its duties with respect to permitting are required to implement the requirements of the Environmental Permitting Regulations. As explained in the main body of this document we are satisfied that we have done this and there will be no significant pollution of the environment or harm to human health from this installation.
Concern over risk of pollution of water in culverts that run directly from the landfill site to homes.	Our assessment of emissions to surface water is discussed in section 5.2.6.2 of this document. The culverts have been identified in the Operator's surface water management plan. The discharges from the site are controlled by the permit under table S3.3. An assessment of these discharges has been undertaken and we are satisfied, subject to compliance with the conditions and limits in the permit, that there will be no significant pollution or harm, to human health.
Concern that no funds set aside to cope with inevitable problems that will occur long after the site closes in 2035.	We have included a pre-operational condition in the permit regarding the financial provision (FP). We are satisfied that adequate FP will be provided and it will be required to be maintained until the permit is surrendered.
Concern has been raised over the failure of the Operator to consult with Knowlsey Estate about the diversion of the Rainford Drain.	The Environment Agency is not responsible for who the Operator consults or about what. We have undertaken appropriate consultation in respect of this variation application.-
Concern has been raised about the meaning of some of the phrases used in the decision document, including: <ul style="list-style-type: none"> • 'reasonably representative' • 'not likely to affect the likelihood of harm to human health' 	These are not statutorily defined nor do they carry any particular meaning in relation to either landfills or environmental permits. They carry their ordinary meaning.
Concern has been raised that in the draft decision	We are not saying that the data is 'made up'.

<p>document the Environment Agency has stated in relation to Operator's impact assessment of air emissions for human health and deposition to soil, that:</p> <p><i>We have audited the assessment. The main observation is that the emission rates used by the applicant cannot be fully validated</i></p> <p>Concerned raised that the Application data could have been 'made up'.</p>	<p>Following our audit and check modelling it was our conclusion that although we did not agree with the absolute numerical values given in Operator's reports, we did agree that any differences are not likely to affect the likelihood of pollution. Furthermore we also agreed with Operator's conclusion that the facility is unlikely to contribute to exceedances of air quality EQS at human health receptors or to the Maximum Deposition Rates (MDR) for agricultural land.</p>
<p>Concern has been raised that the Health and Safety Executive did not respond to the consultation. A full HSE assessment should be demanded by the Environment Agency before any permit can be considered.</p>	<p>The Environment Agency have consulted with HSE and have not received a response. Further correspondence was sent to the HSE (via email) on 17th May 2016, we have still to receive a response. The Environment Agency cannot demand a response, it is at the discretion of the HSE to decide if a response is required. It is logical to assume that had the HSE any serious concerns about the application they would have made those known.</p>
<p>Concern has been raised about the following statement in the decision document:</p> <p>'The public footpaths or bridleways are already considered for the dog walkers and are assessed as being low. The risk for farmers and dog walkers on arable farmland is considered to be low risk due to their transient use – i.e. they wouldn't be used by these people all of the time'.</p> <p>The interpretation of this statement is that if a human resident was present all the time the risk would move from low to high. This means the risk for those living very close by must also be high as they are living there all the time.</p> <p>Concern has also been raised for the crops that will be present in one location for long periods and could be contaminated by dust and leachate</p>	<p>The meaning of this has been misinterpreted. Even if the arable farmland was used by dog walkers all of the time the risk would still not be considered to be high due to the risk management measures which are in place to prevent or minimise emissions of dust. This also applies to residents living close to the facility For risk management measures see section 5.2.10.3.1.</p> <p>The human health risk assessment also includes a quantitative modelling impact assessment which also assesses deposition to soil. The risk assessment concludes that we do not consider that the facility will contribute to exceedances of an air quality EQS at human health receptors or to the Maximum Deposition Rates (MDR) for agricultural land.</p> <p>With regards to the risk of contamination from leachate the landfill will operate in an engineered containment system. There is management system for leachate produced onsite which will be directed to the onsite leachate treatment plant, therefore will be no discharge of leachate to arable land.</p>
<p>Concern has been raised as to whether sufficient money has been set aside to cover the long term maintenance of the existing site and to replace the cap to the landfill. If protection fails there will be leachate into the water table and the River Tawd.</p>	<p>We have included a pre-operational condition in the permit regarding the financial provision (FP). We are satisfied that adequate financial provision (FP) will be provided. The Operator will be unable to deposit waste into the Western Extension until this is agreed.</p>
<p>Concern has been raised about the risk of flooding. A NFU scientist said that water pumps</p>	<p>We are satisfied that there is no significant risk of flooding. The site is located in Flood Zone 1</p>

<p>were due to be switched off thus resulting in the land around west lincs and in particular the land surrounding White Moss Road south being at a greater risk of flooding. The land on which the landfill is situated use to be marshland.</p>	<p>having less than 1 in 1000 annual probability of flooding from rivers. There is no historical records of flooding from rivers at or in the vicinity of the site. The areas of land closest to the site in higher flood risk zones are more than 1km from the site and comprise the floodplains of the River Tawd and the Rainford Brook.</p> <p>We are also satisfied that the groundwater management system will not lead to flooding. There are storage and settlement lagoons and measures to prevent too much of the pumped groundwater being emitted to the surface water management system.</p> <p>The Environment Agency provides advice and guidance to the local planning authority on flood risk in our consultation response to the local planning authority. Our advice on these matters is normally accepted by both Applicant and Planning Authority.</p>
<p>Concern has been raised about the risk to human health through cancer that is linked to environmental effects. In particular a local resident that has nose cancer which doctors have told them is a consequence of the environment.</p>	<p>See above in relation to Public Health England comments. Public Health England or the Director of Public Health have raised no objection and we are satisfied that the activities we are permitting will not give rise to any significant pollution or any emissions that will cause harm to human health. We have nothing to verify what anecdotal evidence is nor is it clear what a consequence of the environment means.</p>
<p>Concern has been raised that local gardens have been tested positive for asbestos.</p>	<p>We have consulted with the West Lancashire District Council Environmental Protection Section and the Director of Public Health neither have raised this issue. The local Environment Agency compliance team for the site are also unaware of this.</p> <p>As discussed in this document a human health risk assessment was submitted in relation to particulate matter emissions in Section 5.2.11. This concluded that we are satisfied with the Applicant's updated particulate matter and asbestos management, monitoring and action plan and the continuation of the existing management measures for particulates and asbestos. We are satisfied the measures proposed will be appropriate measures and that emissions will be prevented and where that is not possible minimised and there will be no significant pollution of the environment or harm to human health.</p>
<p>Concern raised about the risk of dioxins that will be released to air from the flare.</p>	<p>The flare will continue to be used as part of the existing site due to the non-hazardous waste which was deposited for a period of time. However the waste which will be deposited in the western landfill area is not expected to have significant gassing potential and therefore will not be disposed of by flaring. Therefore the amount of gas burned in the flare will not increase as a result</p>

	<p>of this application.</p> <p>With regards to dioxin formation, providing a flare is enclosed, high temp design and meets indicative performance standard of 1000 C and 0.3s residence time then dioxin formation is unlikely assuming the flare is operating correctly. We have no reason to believe this is not the case for this site.</p>
<p>Concern about Department of Health figures on the incidence of a variety of diseases in the areas around the existing landfill. As they are in most cases way above the national average.</p>	<p>See above in relation to Public Health England comments. Public Health England have raised no objection and we are satisfied that the activities we are permitting will not give rise to any significant pollution or any emissions that will cause harm to human health.</p>
<p>Concern has been raised that the proposals infringes upon the basic human rights of nearby residents.</p>	<p>We have considered potential interference with rights addressed by the European Convention on Human Rights in reaching our decision and consider that our decision is compatible with our duties under the Human Rights Act 1998. In particular, we have considered the right to life (Article 2), the right to a fair trial (Article 6), the right to respect for private and family life (Article 8) and the right to protection of property (Article 1, First Protocol). We do not believe that Convention rights are engaged in relation to this determination.</p>
<p>Concern has been raised about the possibility that the Operator could go bankrupt, and that would mean there would be no one to maintain the site.</p>	<p>The financial provision that will be in place will provide for the operator's insolvency</p>
<p>Concern has been raised about the frequency of monitoring. In particular leachate monitoring should be daily.</p>	<p>Monitoring frequency are set based on risk. We consider the monitoring frequency are proportionate and are in line with our published guidance.</p>
<p>It has been raised that the Operator should be made to contact the Environment Agency if there is an incident on site and that the local residents, local landowners and other interested parties should be notified as well. How will this be communicated?</p>	<p>There are conditions in the permit that requires the Environment Agency to be notified in the event of 'an incident or accident which significantly affects or may significantly affect the environment' (condition 4.3.1). Depending on the severity of an incident the Environment Agency would work with other authorities/emergency services, local residents could be informed if deemed appropriate. Whether the Operator also informs local residents, local landowners and other interested parties is matter for them to decide.</p>
<p>Concern has been raised about the aftercare and management of site.</p>	<p>The Operator is required to maintain a closure and aftercare management plan in accordance with condition 2.9 of the permit. There is already a closure and aftercare management plan for the existing landfill and this will be updated upon issue of any variation for the western landfill area so that any new permit conditions can be taken into consideration - to meet the requirements of Article 13 of the Landfill Directive. The permit will remain in force until it is surrendered. A permit cannot be surrendered unless and until we are</p>

	satisfied that the surrender criteria set out in EA guidance has been met.
Concern has been raised that insufficient surveys have been completed on the affects the landfill has had and will have on local wildlife.	Our assessment of the potential Impact on Habitats sites, SSSIs, non-statutory conservation sites etc. is discussed in section 5.2.12 of this document.
Concern has been raised that there is nothing about the health and safety of the road leading to the site and how dangerous it is.	This is not a consideration for the Environmental Permitting process. Road use outside the installation is a matter for the planning authority.
Concern raised that subsidence is common at the proposed extension location and surrounding area due to mine shafts.	<p>Methods and techniques for identifying and stabilising shafts and shallow mine workings prior to new developments being built are well known and practised, according to codes of practice, viz: Code of Practice for Site Investigations BS5930; Code of practice for strengthened/reinforced soils and other fills BS 8006-1:2010; Environmental code of practice Stabilising mine workings with pfa grout, BRE 488, 2008; CIRIA Special Publication 32 Construction over abandoned mine workings 1984.</p> <p>The operator will be required to identify and stabilise any shafts and shallow mine workings as part of the Construction Quality Assurance Plan.</p> <p>Deeper abandoned mine workings in the area have been identified and assessed in the stability risk assessment and mine workings assessment to be of no significant risk of causing subsidence, since the movement of strata above the workings will have ceased long ago – this is confirmed by the Coal Authority Report.</p> <p>It is considered that compliance with the strategy for investigating and remediating mine shafts contained in the Stability Risk Assessment (SRA) including Mine Workings Risk Assessment and a Mine Shaft Hazard assessment report by Wardell Armstrong dated February 2014, reproduced in Appendix SRA5 of the application, coupled with the CQA Plan will ensure that the abandoned mineworkings within the site boundary that could pose a risk to the stability and integrity of the lining systems, are identified and stabilised. The SRA is incorporated into the permit in table S1.2 for 'Operating techniques'.</p>
Question raised of who will carry out the long term monitoring of the site.	<p>The Operator is responsible for long term monitoring.</p> <p>The Environment Agency can take their own samples and undertake check monitoring if deemed necessary.</p>
Concern raised that the Environment Agency has not considered the socio economic impact of the proposals	Section 7 of the Environment Act places a duty on us, when considering any proposal relating to our functions, to have regard amongst other things to any effect which the proposals would have on sites of archaeological, architectural, or historic interest; the economic and social well-being of

	<p>local communities in rural areas; and to take into account any effect which the proposals would have on the beauty or amenity of any rural area.</p> <p>We considered whether we should impose any additional or different requirements in terms of our duty to have regard to the various objectives set out in Section 7, but concluded that we should not.</p>
Concern raised that local rivers will become polluted, which will put the local residents at risk.	Section 5.2.6.2 discusses our assessment of emissions to surface water.
Concern raised that West Lancashire Council was not informed that the consultation was taking place. There was no newspaper advert put in a newspaper received in Bickerstaffe. Many residents who may have wished to comment have been denied the opportunity.	As discussed in section 2.2 of this document we consider the consultation carried out for this determination satisfies the requirements for public participation.
Concern has been raised about the Environment Agency's lack of action following evidence supplied of the Operator breaching permit conditions. Evidence includes tipping methods for IBA (dust cloud), Unwashed vehicles contaminated with IBA leaving the site, the Operator's staff working on public land and accessing a pipeline.	The Environment Agency have investigated the relevant allegations and none were substantiated.
Concern that language used in the decision document suggest that the EA favour the Operator's proposals even though they know it will damage health.	The Environment Agency has no bias towards the Operator. It is our duty to determine permit applications in line with the relevant legislation. We explained in the section of the decision document entitled 'what this document is about' why it is written in the way it is.
Concern raised that the Environment Agency are complicit in the Operator changing their name to avoid prosecution.	We have a duty to determine any application to transfer a permit that is made to us. Any such application has to be determined in accordance with the statutory provisions.
Concern raised that the permit is no guarantee of safety.	There is no guarantee of safety, however the conditions of the permit have been set to ensure that the environment and human health are protected. The Operator is required by the Environmental Permitting Regulations to comply with the conditions of the permit. Our compliance team will regulate the Operator against the conditions in the permit.
Concern raised that the Environment Agency is not the competent authority to understand health issues.	The Environment Agency have an obligation to protect the environment and human health. We do this using the expertise within the EA and consulting with other bodies who are experts in health issues namely Public Health England and local Directors of Public Health, which we have done for this application.. We take account of their comments and advice in our decision making process. This document includes details of how this has been done for this application.
Concern raised that the Operator is passing on false information to the Environment Agency,	It is an offence under the Environmental Permitting Regulations for the Applicant to

following the public enquiry where the Operator stated that lead discussed at the enquiry was from a paper mill, but evidence collected from the EA reveals it was IBA containing dangerous substances.	knowingly supply information in support of their application that is false. There is no evidence that for this application false information has been supplied.
Concern raised that apart from lead there are no ambient air standards for metals so no monitoring will be carried out.	Our assessment of the risk from particulates is discussed in section 5.2.11 of this document. The relevant environmental standards were considered in the assessment and we have set appropriate monitoring conditions in the permit.
Concern raised that dust monitoring previously carried out by the Environment Agency was a sham.	We are satisfied with the dust monitoring exercise that was carried out by the Environment Agency in 2015. This was undertaken to MCERTS standards. The result of this monitoring showed the site were in compliance.
Concern raised about the potential range of contaminants that may be in the wastes accepted particularly IBA, whether there will be sufficient information about their contents and the effect on health.	Whitemoss landfill is permitted to accept hazardous waste, including incinerator bottom ash. The site has waste acceptance procedures that ensure only waste suitable for disposal in this landfill will be accepted on site. We are satisfied based on the information supplied in the Application that site will not cause significant pollution of the environment or harm to human health.
Concern raised about the potential health risk particularly to the elderly from fly ash and particulates.	Our assessment of the risk from particulates is discussed in section 5.2.10.3.1 of this document.
Concern raised about the acceptance of waste under code 97 as this could include unknown synergens and future chemicals.	We are unsure what code is referred to. In any case we are satisfied that the waste codes included in the permit are appropriate for disposals at this site.
Concern raised that 24hr average sampling will miss large release events and as there are no emissions at night this will bring average results down.	The monitoring methodology is in line with Environment Agency Guidance M17 and is recognised as the standard method for the monitoring of particulates. We are satisfied that this monitoring method is appropriate for this site.
Concern raised that as the permit says no tipping on windy days, this shows ash can become airborne and it impossible to regulate when it is not windy.	As discussed in section 5.2.10.3.1 of this document this is just one of several control measures proposed for particulates. We are satisfied that these control measures are appropriate and will be effective.
Concern raised about the ambiguity of the use of the phrase 'significant harm'.	Significant is anything that is not insignificant. For some things it is a value judgement for others where there are numeric EALs it is easier to assess. In terms of our H1 guidance significance is discussed in terms of the thresholds which form part of the screening process. However even if something does not screen out as 'insignificant' during the screening process, it does not necessarily mean that an emission is significant. If an emission does not screen out as 'insignificant' then we may, if deemed appropriate, include numeric limits in any permit to ensure that emissions will not lead to pollution of the

	environment or harm to human health.
Concern raised about impact on health from pollution from diesel lorries.	We do not consider emissions from traffic off site as this is outside our remit. With regards to lorries operating within the installation boundary we do not consider that there is a significant risk to human health from emissions from exhaust fumes from the lorries.
Concern raised about existing health statistics for the area around the site and this could be due to impacts from the existing site.	Our assessment of emissions and the risk to human health are discussed in this document. We have also consulted with Public Health England and the local Director of Public Health. Neither have raised concerns about existing health statistics.
Concern raised that this application contravenes the Stockholm Convention – commits countries to reducing persistent organic pollutants.	The Stockholm Convention concerns the production of POPs, both unintentionally and intentionally. The landfill will not be a producer of POPs however it may be the case that POPs could be disposed of in the landfill if the waste met the Waste acceptance criteria for hazardous landfill.- Article 6 of the regulation requires that stockpiles and wastes consisting of, containing or contaminated with POPs are managed safely and in an environmentally sound manner. We are satisfied that disposal at an engineered hazardous landfill such as at Whitemoss meets this requirement.
Vitrification should be used as treatment for ash and fly ash or underground storage should be used as an alternative to disposal in the landfill.	<p>The landfilling of hazardous waste is allowed by both European and domestic law. We may restrict those waste types if we know there is a readily available alternative treatment technology. As it stands suitable hazardous ash treatment technologies are not readily available. The onus is on the producer of the waste to recycle/ reuse before they consider disposal.</p> <p>A number of wastes were removed from the permit as part of the permit review (issued on 13/10/14) because there was a readily available alternative treatment technology or because they could be recycled in accordance with the waste hierarchy.</p> <p>Both landfilling of hazardous waste and underground storage are both considered acceptable methods of disposal for hazardous ash.</p>
Concern raised that bottom ash should not be classified as inert and the Environment Agency should state this publicly. Also the end of waste position statement for incineration bottom ash should be finished before further permitting can be deemed to be lawful.	<p>The classification of incinerator bottom ash would depend on the composition. Whitemoss landfill is permitted for acceptance of hazardous incineration bottom ash. We are satisfied that based on the application the site can accept and dispose of hazardous waste including hazardous incinerator bottom ash without causing significant pollution or harm to human health.</p> <p>With regards to whether further permitting should be deemed lawful, the landfilling of hazardous waste is allowed by both European</p>

	<p>and domestic law. We may restrict those waste types if we know there is a readily available alternative treatment technology. However, the onus is on the producer of the waste to recycle/ reuse before they consider disposal. Condition 2.7.1 (j) of the permit also requires the waste to be treated (except where treatment would not reduce its quantity or the hazards which it poses to human health or the environment. The end of waste position statement sets out advice for our staff and customers on how we regulate wastes whilst they are under consideration for an end of waste Quality Protocol. We do consider that the existence of this statement precludes the landfilling of hazardous incinerator bottom ash as allowed by this permit</p>
<p>Concern raised that PM2.5s have not been considered.</p>	<p>PM2.5 have been considered in our assessment. See section 5.2.11 of this document. The applicant concluded that PCs would screen out as insignificant with respect to the PM2.5 annual mean EQS and we agree their conclusion.</p>
<p>Concern raised that that EU commission have stated that that leaching from landfills may be one of the most important sources of dioxins in the future and heavy metals have high leachability.</p>	<p>We accept that Landfill leachate will contain hazardous substances, however as set out in this document we are satisfied that the containment measures proposed for this site are in accordance with the requirements of the LfD. We have assessed the risks to groundwater and the HRA and we consider that there is no unacceptable risk. For more information, see section 5.2.7 of this document.</p>
<p>Concern raised that the USEPA have stated that all landfills eventually leach through their liners and as most of these pollutants are persistent, probably lasting for centuries, they will sooner or later threaten the water table and aquifers where their removal will be near impossible.</p>	<p>The quantitative modelling included in the HRA is based on a combination of site specific input parameters and conservative theoretical parameters and incorporates the impact of theoretical degradation of the various lining and capping components. The outputs of the risk assessment models demonstrate that the proposed landfill extension will not have an unacceptable impact on the receiving groundwater in terms of discharge of hazardous substances and non-hazardous pollutants. Throughout the life of the landfill routine environmental monitoring will be required as part of the permit which is designed to demonstrate that assumptions made in the risk assessments are valid and that the landfill has no unacceptable impact on groundwater quality. The permit will require the quantitative HRA to be reviewed every 6 years so that any necessary changes in site management can be made to ensure that the landfill remains compliant with the 'prevent and limit' objective of the Groundwater Daughter Directive i.e. there is no discharge of hazardous substances to groundwater and no pollution by non-hazardous pollutants. The permit will remain</p>

	<p>in place until the landfill operator can demonstrate that the site can meet the surrender criteria set out in EA guidance, at which point the permit holder may apply to surrender his permit.</p>
<p>Concern has been raised about the integrity of the clay liner, grouting and capping of mine shafts. Fears that the clay liner will be breached in less than 40 years, based on published scientific reports. A table has been included taken from the literature that shows how the liner will degrade.</p>	<p>The table presented in the public response refers to time vs distance travelled through a 1 m thick layer. However it does not specify the driving head, which influences the speed of travel nor does it equate to the proposed design of the lining system at Whitemoss landfill, which will be a combination of a geological barrier clay and an artificial sealing liner of HDPE. The Landsim modelling presented in the HRA submitted with the permit application simulates the transport through the lining system during the period until groundwater will be allowed to rebound, and the results show no unacceptable impact on groundwater. During the period of hydraulic containment, the HDPE degrades and is assumed to be not present in the Hydraulic Containment modelling; it shows that there is no unacceptable impact on groundwater.</p> <p>The reference to a 1989 paper by Johnson, Perry and Pankow, is not directly applicable to the situation at Whitemoss landfill. This is because it does not say whether the clay investigated at the landfill site in Ontario in the 1980's was subjected to CQA during construction – it is highly likely that there was no CQA process in place at that time - , does not specify the leachate source term components which are important in influencing both diffusion and advective flow, and that the proposed lining system at Whitemoss landfill is different, being a combination of a geological barrier clay and an artificial sealing liner of HDPE. Modern landfills are constructed subject to a detailed process of Construction Quality Assurance, which involves the EA approving a CQA Plan which contains the detailed design and supporting calculations prior to commencement of any operation at each cell. Once the CQA Plan is approved by the EA, rigorous monitoring and testing of each component of the design is performed as it is constructed and the results recorded in a CQA Validation Report. As part of the CQA process, prior investigation will identify the exact locations and conditions of mine shafts, which will then be in filled and capped to form a stable sub-grade before the landfill lining system is constructed. Performance of the sub-grade will be confirmed as part of the CQA process by for example, if necessary, consolidation tests, and the results recorded in the CQA Validation Report that is submitted to the EA for approval.</p> <p>Therefore the sub-grade will not deform to the extent that the integrity of the landfill lining system will be affected. Methods and techniques of locating and treating mine shafts are well known, as practised for many years by reputable ground</p>

	<p>investigation and ground treatment consultants and contractors.</p> <p>The engineered clay lining system will be subjected to vertical loading inducing compressive strain, and resulting in a decrease in its permeability due to the consolidation. Any tensional strains that may be induced by flexing of the clay above any areas of the sub-grade that undergo very small amounts of settlement would not be sufficient to cause a rupture of the clay lining because of its elastic-plastic properties, and swelling behaviour in the presence of water. In the long term when there is hydraulic containment, and the geomembrane has started to degrade, the clay will be permanently saturated, and subject to the precise mineralogy of the clay used, may undergo further swelling, and there will be an inward advective flow of groundwater which will counter any diffusive flux of contaminants out of the landfill.</p> <p>Therefore we are satisfied that the clay will provide a suitable geological barrier, will not lose its integrity, and that there will be no unacceptable impact on groundwater over the entire period until the permit can be surrendered.</p>
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Consultation response from the Operator – Whitemoss Landfill Limited

Summary of Issues Raised	Response
<p>Various typographical issues and minor points of clarification, consistency or to update references were raised.</p>	<p>In responses we have made a number of amendments to the notice, specifically:</p> <ol style="list-style-type: none"> 1. Status log amended to correct typographical error. 2. Conditions 1.2.3, 1.2.4 and Table 1.2 have been amended to refer to western Landfill Area, rather than the western extension area to be consistent with the DCO. 3. Condition 3.1.6 has been amended to clarify this by referring to activity A2 only. 4. The specific parts of the Environmental permit Application have been included in Table S1.2. 5. Reference to Phases A, B, C and D in Table 1.3 Ref:2 has been amended to 'western landfill area'. 6. Table S1.4 Pre operational measure 2a has been amended to "to replace existing boreholes E62 and E60 (formerly borehole references 36 and 38

	<p>respectively”.</p> <ol style="list-style-type: none"> 7. Table S1.4 Pre-operational measure 2b has been amended from “59A” and “60A” to “E59A” and “E60A”, respectively, consistent with Figure HRA 3 (THIRD REVISION) [drawing reference WL/WL/04-14/17734revC]. 8. Table S1.4 Pre-operational measure 2d has been amended to correct two typographical errors. 9. Table S3.1 has been amended so WLSA2 is corrected to WLSA3 so that the references reads Cell 2, Cell 3, WLSA1, WLSA3, WLSB6, WLSB8, WLSC10, and WLSA12. Also for clarity, the drawing is referred to “as shown on Figure HRA 3 (THIRD REVISION) [drawing reference WL/WL/04-14/17734revC]” for operational cells or phases and for non-operational cells or phases. 10. Table S3.3 has been amended so reference to SW1, SW2, SW3 and SW4 are amended to S1, S2, S3 and S4. Also “as shown on Figure HRA 3 (THIRD REVISION) [drawing reference WL/WL/04-14/17734revC]” is added to the end so it is consistent with the most recent figure which shows the emission points. Also reference to the MCERTS guidance has been removed and reference to the ‘M18 guidance (v4, Nov 2014)’ has been included instead. This document also includes reference to the MCERTS guidance. The ‘Source’ in this table has also been amended to, ‘Discharge of groundwater from pumping from the western landfill area (Phases A, B, C and D) and surface water runoff’. 11. Table S3.4 has been amended so references to “on drawing ref: HRA 3” are replaced by “as shown on Figure HRA 3 (THIRD REVISION) [drawing reference WL/WL/04-14/17734revC]” consistent with the most recent figure which shows the proposed groundwater monitoring locations. Also monitoring point references in the second line of the table are amended from “59A” and “60A” to “E59A” and “E60A”, respectively, consistent with Figure HRA 3 (THIRD REVISION) [drawing reference WL/WL/04-14/17734revC]. Also the Monitoring Standard or Method column is updated to reflect that the H1 overview document and supporting risk assessment annexes (except Annex D2) were withdrawn on 1 February 2016. 12. Table S3.5 has been amended so “no limit” is specified in respect of carbon dioxide for boreholes 25 and 35 instead of
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	<p>0.0%.</p> <p>13. Borehole 35 is replaced in Table S3.5 by borehole E63 which, further to the amendment by Whitemoss in the borehole numbering scheme (see above), has replaced borehole 35.</p> <p>14. Table S3.6 has been amended so reference to S1 it now refers to 'Discharge to sewer'. Also Reference to the MCERTS guidance has been removed and reference to the 'M18 guidance (v4, Nov 2014)' has been included instead. This document also includes reference to the MCERTS guidance.</p> <p>15. Table S3.7 Particulate matter in ambient air: The concentration specified in Note 2 of the table is amended from 50mg/m³ to 50µg/m³ be consistent with the UK air quality objective and the text "in respect of particulate matter (PM₁₀)" is added after the text "air quality objective".</p> <p>16. Table S3.10 Landfill gas is amended so that the text "<i>Calibrated handheld monitoring instrument</i>" is entered into the first row of the monitoring standard or method column relevant to monthly monitoring for methane, carbon dioxide, oxygen at in-waste monitoring points and in the seventh row of the monitoring standard or method box relevant to the input to the flare. Also Table S3.10 is amended to correct a typographical error. In the fourth row of the Other specifications column in respect of the gas collection system, the word "undertake" is replaced with "undertaken</p>
<p>Request that Activity reference A3 is removed from Table S1.1 in the draft permit. As groundwater discharged from the installation is not waste the activity "D8 Physico-chemical treatment of waste" is not relevant.</p>	<p>Yes activity A3 has been removed, this was left in the draft permit by error - the correct activities are as detailed in the decision document.</p>
<p>Table S1.3 Improvement programme requirement reference 1: As an emissions limit for suspended solids of 40mg/l is set in Table S3.3, the suspended solids in the discharge will be controlled below this limit. Hazardous waste does not comprise a potential source of elevated BOD in groundwater and surface watercourses. Waste acceptance procedures are implemented at the site to minimise the risk of wastes other than hazardous wastes being deposited at the site. Further assessment of the discharge with respect to BOD is unnecessary. On the basis of the above we request that the improvement condition is removed from the draft permit.</p>	<p>The improvement condition is included to require baseline monitoring of suspended solids and BOD, followed by risk assessment to ascertain if the assumptions made by the operator in the application are correct. If the assumptions are correct then it may be possible to reduce the emission limit for suspended solids in the permit which is better for the environment and it may not be necessary to include an emission limit for BOD – however this needs to be confirmed. Therefore improvement condition 1 shall remain in the permit. It is also a requirement of the permit (condition 4.2.2(a)) annually to review the results of monitoring and assessment carried out in accordance with the permit and the relevant assumptions, parameters and results in the risk assessments submitted in relation to the</p>

	<p>installation.</p> <p>Improvement condition 1 will be amended as per improvement condition 2 below to replace Phases A, B, C, and D with 'western landfill area' for clarity.</p>
<p>The interim compliance limits in respect of suspended solids, pH, ammoniacal nitrogen and oil or grease will be reviewed, control levels will be set and the results of the review will be provided shortly to the Environment Agency as there are 12 consecutive months of surface water quality data points available. It is understood that the submission of this review will be sufficient to discharge the Improvement programme requirement.</p>	<p>The submission of the review should be sufficient, however this was not provided during the determination of the variation application, and therefore improvement condition 2 has been included in the permit.</p>
<p>Table S2.1 List of permitted wastes: On page 14 of the draft decision document it is stated that "<i>No changes have been made to the waste types in Schedule 2 of the permit</i>". On page 78 of the draft decision document it is stated that "<i>We are satisfied with the wastes which are proposed to be accepted in the western landfill area. These are the same as accepted at the current landfill.</i>" The following three waste types which are included in the current permit are excluded from the draft permit: 13 05 01* solids from grit chambers and oil/water separators 13 05 02* sludges from oil/water separators 13 05 03* interceptor sludges. As the site is authorised to accept sludges we request that the three waste types are included in the draft permit consistent with the current permit and the comments in the draft decision document in respect of the wastes that are to be accepted in the western landfill area.</p>	<p>For these wastes the TOC is likely to be > 6%. However they may be acceptable provided they can meet the TOC 6% WAC limit. Therefore these wastes have been included in the permit again.</p>
<p>Table S3.5 Landfill gas in external monitoring boreholes: We request that the following footnote is added to Table S3.5 to reflect the reduction in the perimeter borehole monitoring requirements following installation of in waste gas monitoring infrastructure in Cells 1, 2 and 3D. This approach is consistent with the discussion presented in 5.2.9.3 of the draft decision document and consistent with the proposals presented in the Landfill Gas Risk Assessment (LFGRA) report (Report reference: WL/WL/MAS/5415/01/ LFGRA) dated May 2015 that was submitted with the application to vary the permit.</p> <p><i>"Following installation and commencement of landfill gas monitoring at in-waste monitoring points in Cell 1 and Cell 2 of the site as specified in Table S3.10 it will no longer be necessary to undertake landfill gas monitoring in external monitoring boreholes 18, 19, 20, 21, 22, 23, 24, 25, 27, 37 and 38 [to be renumbered as E60]. Following installation and commencement of landfill gas monitoring at in waste monitoring</i></p>	<p>As stated in section 5.2.9.3 of the Decision Document - Until such time as in-waste gas data has been obtained and it confirms the low gassing potential of the hazardous wastes, perimeter gas monitoring around the existing site must continue. Therefore perimeter gas monitoring cannot stop as soon as the in-waste monitoring requirements are installed and gas monitoring has commenced. Therefore the operator will need to apply for a variation to remove the perimeter landfill gas monitoring requirements when they have enough data to confirm that this is appropriate.</p>

<p><i>points in Cell 3D of the site as specified in Table S3.10 it will no longer be necessary to undertake landfill gas monitoring in external monitoring boreholes 28, 29, 31, 32 and 45.”</i></p> <p>Consistent with the proposals in the LFGRA gas monitoring in boreholes 33, 34 and 36 will continue following installation of in waste monitoring points in Cells 1, 2 and 3D. We draw to your attention that boreholes 33, 34 and 36 are to be renumbered as boreholes E64, E63 and E62, respectively, as shown on Figure ESID 8B (REVISION) (Drawing ref. WL/WL/05-14/17816revA) a copy which is attached to this email for reference.</p>	<p>These amendments to renumber 33 and 36 in table S3.5 boreholes have been made. There is no borehole 34 in table S3.5 – from the comment below and checking the previous Figure ESID8B this should be borehole 35 and so this has been amended to the new borehole reference. The drawing reference has also been amended in table S3.5.</p>
<p>With reference Table S3.6 Point source emissions, Table S3.9 Groundwater, Table S3.11 Leachate and Table S3.12 Surface water. A request was made that the Monitoring Standard or Method is amended to reflect that the H1 overview document and supporting risk assessment annexes (except Annex D2) were withdrawn on 1 February 2016.</p>	<p>This amendment has been made. The method is now replaced by the following: <i>As specified in Environment Agency Guidance TGN02 ‘Monitoring of Landfill Leachate, Groundwater and Surface Water’ (February 2003), risk assessments for your environmental permit (www.gov.uk), or such other subsequent guidance as may be agreed in writing with the Environment Agency”.</i></p>
<p>With reference to Table S3.7 Particulate matter in ambient air: The asbestos fibre limit of detection (LOD) of 0.001 fibres/ml is inconsistent with the limit of detection of 0.01 fibres/ml achievable for the preferred method for asbestos monitoring at waste facilities specified in TGN M17. We request that the Monitoring Standard or Method column for the limit of detection is amended accordingly.</p>	<p>The monitoring requirements for asbestos in table S3.7 are standard for all landfills which accept asbestos and the requirements of the M17 guidance for landfills.</p>
<p>With reference to Table S3.9 Groundwater: the Operator is unclear why barium, molybdenum, antimony, selenium, fluoride and dissolved organic carbon (DOC) are specified in respect of the annual suite as they are not specified in Table HRA 10 (REVISED). They request that these determinands are removed from Table S3.9.</p>	<p>This is a standard monitoring table and the parameters detailed above are standard for landfills which accept hazardous waste and therefore will not be removed. These parameters are also included in the current permit.</p>
<p>With regards to table S3.10 the Operator has drawn to our attention that in rows five and six of the Monitoring Point Ref/Description column, the reference should be to the “input” to the flare rather than to the “output” to the flare. They request that the wording is amended accordingly.</p>	<p>The word “output” is correct. This has been amended in the permit template for all landfills which have a flare or a LFG Utilisation Compound. This is to cover sites where landfill gas is pre-treated, utilised or disposed at a separately permitted site – to ensure that landfill gas is monitored before leaving the site.</p>
<p>With regards to Table S3.10 Landfill gas: the Operator requested that the monitoring frequency is respect of methane, carbon dioxide, oxygen, gas flow rate, suction and % balance gas at the input to the flare is amended from weekly to monthly further to discussions with the Environment Agency locally which identified that weekly monitoring is considered to be unnecessary. It is requested that for consistency with the monitoring frequency specified for the gas collection system, in changing the frequency to monthly the words “or at such other frequency</p>	<p>‘Weekly is the standard monitoring frequency for all landfills with a flare and therefore will not be amended.</p>

<p><i>as may be agreed in writing with the Environment Agency” are included.</i></p>	
<p>With regards to Table S3.11 Leachate: the Operator is unclear why barium, molybdenum, antimony, selenium, fluoride and DOC are specified in respect of the annual suite as they are not specified in Table HRA 10 (REVISED). They request that these determinands are removed from Table S3.11.</p>	<p>This is a standard monitoring table and the parameters detailed above are standard for landfills which accept hazardous waste and therefore will not be removed. These parameters are also included in the current permit.</p>
<p>With regards to Schedule 6 Interpretation: the Operator has commented with respect to the definition of “Hazardous substances” reference is made to annex J to the H1 risk assessment guidance which has been withdrawn and replaced with web-based guidance on the GOV.UK website. They requested that this reference is removed.</p>	<p>The interpretation has been amended as follows: “Hazardous substances” with reference to groundwater are as defined by the Environmental Permitting (England and Wales) Regulations 2010, SI 2010 No.675, schedule 22 and risk assessments for your environmental permit guidance (www.gov.uk).</p>