

Consultation on our decision document recording our decision-making process

This is a change

The Permit Number is:	EPR/DP3734DC
The Variation Number is:	EPR/DP3734DC/V002
The Operator is:	Red Industries RM Ltd
The Installation is located at:	Walleys Quarry Landfill Site Cemetery Road Silverdale Newcastle under Lyme Staffordshire ST5 6DH
Application consultation commenced on:	24/05/2019
Application consultation ended on:	21/08/2019
Draft decision consultation commenced on:	19/08/2020
Draft decision consultation ended on:	16/09/2020

Environment Agency permitting decisions

What this document is about

This is a decision document, which accompanies a variation and consolidation notice.

It explains how we have considered the Operator's application, and why we have included the specific conditions in the variation and consolidation notice we are proposing to grant. It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position. Unless the document explains otherwise, we have accepted the Operator's proposals.

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

Preliminary information and use of terms

We gave the application the reference number EA/EPR/DP3734DC/V002. We refer to the application as “the **Application**” in this document in order to be consistent.

The Application was duly made on 25 March 2019.

The Operator is Red Industries RM Ltd. We refer to Red Industries RM Ltd as “the **Operator**” in this document.

The facility is located at Cemetery Road, Silverdale, Newcastle under Lyme, Staffordshire, ST5 6DH. We refer to this as “the **Installation**” in this document.

Purpose of this document

This decision document:

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

Unless the decision document specifies otherwise we have accepted the Operator’s proposals.

Structure of this document

Glossary of acronyms

1. Our proposed decision and legal framework
2. How we reached our draft decision
3. The Installation
4. Key issues
 - 4.1 Ecological receptors
 - 4.2 Odour
 - 4.3 Noise
 - 4.4 Dust
 - 4.5 Pests
 - 4.6 Landfill Gas
 - 4.7 Landfill Hydrogeological Risk Assessment
 - 4.8 Landfill Leachate Generation
 - 4.9 Landfill Stability
 - 4.10 Landfill Monitoring

Annex I: Consultation process

Annex II: Consultation on the Minded to Decision

Glossary of acronyms used in this document

(Please note that this glossary is standard for our decision documents and therefore not all these acronyms are necessarily used in this document.)

AAD	Ambient Air Directive (2008/50/EC)
APC	Air Pollution Control
AQS	Air Quality Strategy
BAT	Best Available Technique(s)
BAT-AEL	BAT Associated Emission Level
BREF	BAT Reference Note
CEM	Continuous emissions monitor
CFD	Computerised fluid dynamics
CHP	Combined heat and power
COMEAP	Committee on the Medical Effects of Air Pollutants
CROW	Countryside and rights of way Act 2000
CV	Calorific value
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DD	Decision document
DSEAR	The Dangerous Substances and Explosive Atmospheres Regulations 2002
EAL	Environmental assessment level
ELV	Emission limit value
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154) as amended
ES	Environmental standard
EWC	European waste catalogue
FSA	Food Standards Agency
GWP	Global Warming Potential
HAZOP	Hazard and Operability Study
HHRAP	Human Health Risk Assessment Protocol
HPA	Health Protection Agency (now PHE – Public Health England)
IED	Industrial Emissions Directive (2010/75/EU)
I-TEF	Toxic Equivalent Factors set out in Annex VI Part 2 of IED
I-TEQ	Toxic Equivalent Quotient calculated using I-TEF
LOI	Loss on Ignition

MSW	Municipal Solid Waste
MWI	Municipal waste incinerator
NO _x	Oxides of nitrogen (NO plus NO ₂ expressed as NO ₂)
PAH	Polycyclic aromatic hydrocarbons
PC	Process Contribution
PCB	Polychlorinated biphenyls
PEC	Predicted Environmental Concentration
PHE	Public Health England
POP(s)	Persistent organic pollutant(s)
PPS	Public participation statement
PXDD	Poly-halogenated di-benzo-p-dioxins
PXB	Poly-halogenated biphenyls
PXDF	Poly-halogenated di-benzo furans
RGS	Regulatory Guidance Series
SAC	Special Area of Conservation
SCR	Selective catalytic reduction
SNCR	Selective non-catalytic reduction
SPA(s)	Special Protection Area(s)
SSSI(s)	Site(s) of Special Scientific Interest
SWMA	Specified waste management activity
TDI	Tolerable daily intake
TEF	Toxic Equivalent Factors
TGN	Technical guidance note
TOC	Total Organic Carbon
UN-ECE	United Nations Environmental Commission for Europe
US EPA	United States Environmental Protection Agency
WFD	Waste Framework Directive (2008/98/EC)
WHO	World Health Organisation
WID	Waste Incineration Directive (2000/76/EC) – now superseded by IED

1. Our proposed decision & legal framework

We have decided to grant the variation to the Operator. This will allow the Operator to increase the annual waste input to the Site from 250,000 tonnes to 400,000 tonnes, subject to the conditions in the consolidated Permit.

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

The variation will be granted, under Regulation 20 of the Environmental Permitting (England & Wales) Regulations 2016. A variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit (schedule 5, part 1, paragraph 19). The Permitting Regulations deliver most of the relevant legal requirements for activities falling within its scope and implement relevant EU law. The Permit implements the requirements of IED in respect of the Installation.

It is also subject to aspects of other relevant legislation, beyond the Permitting Regulations, which also have to be addressed.

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

The Permit contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Permitting Regulations 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 received on 12 December 2018; however we required further information from the Operator in order for us to consider the Application duly made. This information was requested on 11 March 2019. The Operator submitted additional information in response to the request on 25 March 2019. The additional information was deemed sufficient to enable us to duly make the Application. This means we considered it was in 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.

Although we were able to consider the Application duly made, we did in fact need more information in order to determine it, therefore we issued requests for further information. A full list of all the information requested (including prior to duly making the Application) is set out in Table 1 'Summary of the requests for further information' below.

Table 1 Summary of requests for further information		
Description	Date	Comments
Not Duly Made Request for Further Information sent 11/03/2019	Information received 25/03/2019	Responses received relating to site layout, non-technical description, landfill gas management, including receipt of the following documents: Site Layout and Waste Plan EEL.7268.D02.001(-) dated 20/03/2019 Revised Non-Technical Summary dated March 2019 Revised Landfill Gas Management Plan dated March 2019 Version 1.0 revised date 20/03/2019
Schedule 5 Notice No. 1 requesting further information issued 05/06/2019	Information received 05/07/2019	Additional information received relating to the noise impact assessment, noise management plan, dust management plan, leachate management plan, landfill gas risk assessment, landfill gas management plan, odour assessment and receipt of the following documents: Cover Letter 7268/Var01/DAW225-19 June 2019 Revised Landfill Gas Risk Assessment EEL.7268.R03.001 June 2019 Rev. 1.0 revision date 25/06/2019 Revised Landfill Gas Management Plan EEL.7268.R03.002 June 2019 Rev. 1.0 revision date 28/06/2019 Odour Management Plan Review EEL.7268.R03.003 June 2019 Rev. 2.1 revised 28/06/2019 Noise Impact Review R19.10249/2/AP Gas Infrastructure Survey Plan – Gas Collection System CLP3573, Drawing No 2 dated 12/06/19 Revised Leachate Management Plan 5883/WAL/LMP/3.1 April 2019 Rev. 3.1 revised 16/04/2019
Schedule 5 Notice No.2 requesting further information issued 24/07/2019	Information received 21/08/2019	Additional information received regarding assessment of gas generation, correction to the revised gas management plan, clarification on intermediate cover and receipt of the following documents: Cover Letter 7268/Var01/DAW230-19 dated 21/08/2019 Revised Landfill Gas Management Plan (Final) EEL.7268.R03.002 Rev. 2.0 June 2019 revised 19/08/2019 Revised Landfill Gas Risk Assessment June 2019 Rev. 2.0 revised 19/08/2019
Additional information	Information received 31/10/2019 22/12/2019	Further information in support of the application in relation to the noise impact assessment and receipt of the following document: Revised Noise Impact Assessment (Final) report reference R19.10514/2/AP dated 29 October 2019. Revised Odour Management Plan (Final) report reference EEL.7268.R03.003 dated October 2019. Noise Management Plan (Final) reference R19.10511/NMP/3/AP dated 18/12/2019
Additional information	Information received 22/06/2020	Revised Landfill Gas Risk Assessment (Final) EEL.7268.R03.001 dated February 2020 and revised 22/06/2020.

Copies of the above requests and responses have been placed on our public register.

Amendment to Application after submission

The original application made was to increase the annual waste input at Walleys Quarry Landfill Site from 250,000 tonnes to 300,000 tonnes, as submitted on the 12 December 2018. The application was subsequently amended to increase the annual waste input to the site from 250,000 tonnes to 400,000 tonnes on the 13 May 2019. We accepted the proposed change since the application was already a substantial variation; it was requested prior to consultation; and because any additional information needed in support of this change could be requested through a Schedule 5 Notice.

2.2 Consultation on the Application

We carried out consultation on the Application in accordance with the Permitting Regulations, our statutory Public Participation Statement (PPS) and our own Regulatory Guidance Note (RGN) 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. These requirements are directly incorporated into the IED, which applies to the Installation. 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 from 24/05/2019 – 20/08/2019, which contained all the information required by the PPS, including telling people where and when they could see a copy of the Application. We also placed an advertisement in the Stoke Sentinel newspaper on 24 May 2019. We also published this Application on our webpages on GOV.UK (Citizens Space) and made available electronic copies of the Application on that webpage.

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

- Newcastle Under Lyme (Environmental Health)
- Public Health England (PHE)
- Director of Public Health, Staffordshire
- Health and Safety Executive (HSE, Newcastle Under Lyme)
- Sewage Authority (Severn Trent) Food Standards Authority
- Natural England
- Silverdale Parish Council
- Local Planning Authority (Staffordshire)

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly.

Under our Working Together Agreement with Natural England, we only inform Natural England of the results of our assessment of the impact from the Installation on designated habitats sites. Please see section 4.1 for further details of our assessment, which discusses the potential impacts from the Installation on designated habitats sites.

Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 1 of this document. We have taken all relevant representations into consideration in reaching our determination.

3 The Installation – description and related issues

3.1 The permitted activities

The Installation is subject to the Permitting Regulations because it carries out activities listed in Part 2 of Schedule 1 of those regulations, namely:

- Section 5.2 Part A(1) (a), the disposal of waste in a landfill for non-hazardous waste.
- Section 5.2 Part A(1) (a), the disposal of waste in a landfill for hazardous waste as a separate cell for gypsum and asbestos as part of the landfill for non-hazardous 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.

The Operator receives more than 10 tonnes of waste per day and treats more than 50 tonnes of leachate per day at the Installation, so falls within the activities mentioned above.

An installation may also comprise “directly associated activities” or DAA’s which at this Installation include;-

- Pre-treatment and utilisation of landfill gas for energy recovery in an appliance with a rated thermal input < 50MW
- Flaring of landfill gas for disposal in an appliance.
- Discharging of surface water run-off and pumped groundwater to Silverdale Brook.
- Storage of fuel for operation of plant and equipment.
- Recovery of waste for restoration.

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

3.2 The site location and surroundings

Walleys Quarry Landfill Site (hereafter referred to as the ‘Site’) is located in Silverdale, Newcastle under Lyme, Staffordshire, approximately centred at National Grid Reference SJ 831460.

The Operator does not seek to increase the footprint of its landfilling waste activity at the site, nor wishes to increase the total landfill void capacity. Therefore, there is no need to revise the site plan for this permit variation application. The site plan is included in Schedule 7 to the Permit, and the Operator is required to carry out the permitted activities within the Installation boundary.

We have undertaken screening to identify potentially sensitive receptors in the area surrounding the Installation. This identified the following.

- there are more than 20 commercial and residential properties within 500m of the Installation boundary; and
- there are two RAMSAR Sites within 10km of the Installation boundary; and
- there are eleven other nature conservation sites within 2km, one is an Ancient Woodland and the others are all Local Wildlife Sites (LWS).

As explained below, we have taken into consideration the potential environmental impact of the activity on all sensitive receptors, including residential, commercial and nature conservation sites.

3.3 What the Installation does and site design

The Operator own and operate Walleys Quarry landfill site. The company was issued an Environmental Permit (reference EPR/DP3734DC) to operate the landfill in November 2016. The landfill site has been accepting waste since 2007 and the permit was transferred to Red Industries RM Ltd on the 3 November 2016.

The Installation is permitted to accept a variety of non-hazardous wastes, such as Materials Recycling Facility (MRF) residual waste, commercial, industrial and inert waste materials. The Operator is also permitted to accept stable non-reactive hazardous waste in the form of asbestos containing material and gypsum, however no such hazardous waste is currently accepted at the Installation as there is no engineered separate cell required to deposit this type of waste.

The site is a former clay quarry and covers an area of approximately 23.5 hectares. The site is divided into four distinct areas called cells which are engineered to contain the waste infill. Engineering work for landfill operations commenced in 2006 and waste was first accepted in Cell 1 in January 2007. Since then the waste disposal operations have continued progressively in Cells 1, 2 and 3 with Cell 4 becoming operational in 2011. To date waste placement has taken place in all cells to varying depths (drawing No. 7268.D02.001). All cells are currently operational and accepting waste. Cell 1 has had an area covered in temporary cap (engineered containment) since 2013.

The engineered lining system in the basal sections of Cells 1 to 4 comprise of 3m of engineered clay with a hydraulic continuity of 1×10^{-10} m/s to 8.9×10^{-11} m/s based on CQA reports for Cells 1 to 4. Each cell has a leachate collection and extraction system comprising of a 300mm gravel drainage blanket together with collection pipework, a leachate collection facility, a remote leachate monitoring point and a concrete target pad to facilitate the installation (if required) of retro installed leachate infrastructure. The sidewall construction of each cell comprises 1m engineered clay liner with a maximum permeability of 1×10^{-9} m/s. The proposed strategy for the site is to temporary cap approximately half of the site (majority of Cells 2, 3 and 4) by the end of 2020. Infilling of cell 1 will continue until reaching the 'top of waste' levels. At this stage Cell 1 will be permanently capped and Cells 3, 4 & 2, in that order, will then be infilled to 'top of waste' levels, after progressive removal of the temporary cap, and then permanently capped. The temporary cap will comprise of 1mm LLDPE (linear low density polyethylene) geomembrane or compacted clay. The permanent cap will be a minimum of 1m of engineered clay with a max permeability of 1×10^{-9} m/s, compacted to a specification or an equivalent geosynthetic capping system, overlain by 1m of restoration soils. The landfilling base is around 85mAOD and the final site restoration height will be approximately 145mAOD, this is approximately 20m above existing ground level. As of October 2019 approximately 1,868,167 m³ of the initial 3,803,400 m³ waste void remains unfilled.

By making this permit variation application the Operator proposes to increase the annual waste inputs at this site from 250,000 tonnes to 400,000 tonnes but the proposal will not require an increase in the overall landfill void capacity or the site footprint. There will be no change in the waste types which are already permitted for disposal at the Installation.

3.4 Benefit of variation

If the increase to the annual waste input at Walleys Quarry Landfill Site from 250,000 tonnes to 400,000 tonnes is realised then this will fill the available void at the facility at a faster rate. By increasing the annual waste inputs to the site the company will be able to complete relevant engineering works, including capping works on a faster time-scale than that undertaken to date, reducing leachate generation, improving landfill gas management and minimising potential effects of amenity related issues such as odour, noise and dust.

4. Key issues of the decision

The key issues arising during this determination was the impact of the increase in waste annual input on;

- 4.1 Sensitive local ecological receptors
- 4.2 Odour
- 4.3 Noise
- 4.4 Dust
- 4.5 Pests
- 4.6 Landfill Gas Generation
- 4.7 Landfill Hydrogeological Risk Assessment;
- 4.8 Landfill Leachate Generation
- 4.9 Landfill Stability
- 4.10 Landfill Monitoring.

We therefore describe how we determined these issues in some detail in this document below.

4.1 Emissions – Ecological Receptors

The application is within the relevant distance criteria of a site of conservation and protected species or habitat as detailed below in Table 1 – Screening results.

We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.

We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.

We have assessed the application in accordance with guidance agreed jointly with Natural England and concluded that there will be no likely significant effect on Midland Meres & Mosses Phase 1 or Phase 2 RAMSAR. We have consulted Natural England on our Habitats Regulation assessments for information only.

The decision was taken in accordance with our guidance.

Table 1 – Screening Results

Screening Results for EPR Discharges to Air		
Ecological Site	Details	Within (m)
Ramsar Phase 1	Midland Meres & Mosses Phase 1	8078
Ramsar Phase 2	Midland Meres & Mosses Phase 2	9082
Local Nature Reserves	Pool Dam Marshes (LNR)	454
Local Wildlife Sites	Redheath Plantation	1961
	The Void, Silverdale Country Park	1580
	Bogs Wood	1273
	Apedale Disused Tips	2137
	Lymedale Business Park (south of)	1253
	Silverdale (south-east of)	329
	Springpool Wood	1489
	Barker's Wood, Hands Wood and Pie Rough	884
	Butt's Walk Fields	729
	Rosemary Wood	575
	Rosemary Hill Wood (LWS)	612
Ancient Woodland	The Butts and Hands Wood	940
Screening Results for EPR Discharges to Water		
Protected Species	Water Vole <i>Arvicola amphibius</i>	258
Local Nature Reserve	Pool Dam Marshes	401

The proposed increase to the waste inputs will not require any additional landfill void capacity or increase the site footprint. The site will be completed and restored to the original restoration levels which were agreed with the Local Planning Authority. There will also be no changes in the waste types which are already permitted for disposal at the Site.

The operator has reviewed the site management plans and risk assessment to demonstrate the proposed increase in waste input will not compromise the design of the landfill and the 'assumptions' that underline the design and that the existing infrastructure for leachate and gas management remain sufficient to manage the increase in throughput.

Written procedures are in place for waste acceptance, tipping and compaction and for dealing with non-conformances. Waste is received in covered or enclosed vehicles. All waste deliveries are deposited either onto an unloading pad within the landfill and then reloaded onto dump trucks and transported to the current tipping area or deposited directly into the landfill working area which is covered with soil and/or other suitable cover materials at the end of the day. Dusty loads are sprayed with water to minimise dust re-suspension. The vehicles unloading of inherently dusty wastes and ground materials are instructed to reduce drop heights as far as practicable. Site roads and working areas are swept clean when necessary to avoid a build-up of dust. The on-site water bowser is used to minimise dust generation from operational areas and haul roads. There is an ongoing monitoring programme for deposited dust at the site boundary and visual inspection of dust conditions throughout the working day are undertaken by the site manager. The principal access road at the site is tarmacked. Internal haul roads are constructed using hardcore. All roads are inspected daily and maintained to prevent a built up of mud and debris. All roads and tracks are swept as necessary. A vehicle wash facility operates for waste vehicles leaving the site.

The Site has a designed water management system comprising 2-stage sedimentation and aeration lagoons for surface water drainage and groundwater pumped out from beneath the site. After pre-treatment both the on-site collected surface water and the pumped-out groundwater are discharged to the Silverdale Brook. The discharge to surface water is regulated by the Permit. The quality of discharge from SW1 is monitored. Trigger levels for surface water quality and discharge flow to Silverdale Brook are set in the site permit. Groundwater quality is monitored in the perimeter groundwater boreholes and at the abstraction point GW1, as part of the site permit compliance.

Waste acceptance procedures are in place to control pest infestation, including compaction of waste, application of daily cover, progressive capping of working areas and low organic/food content of waste. Weekly Inspections are carried out at the landfill for signs of vermin and pests with the use of pesticide as necessary. Control of scavenging birds is carried out by the use of rockets, bird distress calls and birds of prey.

Waste is received in covered or enclosed vehicles. All waste deliveries are deposited directly into the landfill working area where waste is compacted and daily cover is applied at the end of the day. Any windblown litter will be identified and removed as part of the weekly site inspections. The site is fenced off and has a vegetation screen along the site boundary.

A noise risk assessment has been provided. The assessment demonstrates that potential noise emissions from the site are expected to remain within the relevant noise control limits. Furthermore, the potential increase in noise associated with the proposed permit variation application is considered to be negligible.

A dust management and noise management plan has been provided with the application.

There are 2 other permitted sites within 2 km of the site. Hamptons Metal Merchants EA/WML/BB3103TU and Newcastle Under Lyme BC EA/EPR/UP3391FQ, neither of which in combination with Walleys Quarry would add to any significant effect.

Given the distance to the habitat receptors and the levels of emissions detailed in Table 1 - Screening results above any effect either alone or in combination would be insignificant.

4.2 Odour

4.2.1 Risk Assessment

Odour is a key issue, particularly for biodegradable waste landfills. Odour is typically associated with:

- trace components in landfill gas
- handling of odorous wastes
- covering of biodegradable wastes.

As a fugitive emission, preventative measures relating to the above are key. This is recognised in our 'How to Comply with your Environmental Permit Additional Guidance for Landfill' EPR 5.02 guidance.

The Environment Agency's overarching approach for all installations is to ensure adequate controls are in place for sites with the potential to cause odour pollution beyond the Installation boundary. This is achieved via the requirement for the operator to have and comply with an approved odour management plan (OMP). This OMP must be approved by the Environment Agency in line with odour condition 3.3 (see below). The OMP covers both point source and fugitive potential odorous emissions from an installation and is based on the foundation of a bespoke risk assessment as discussed below.

Condition 3.3 of the Permit reads as follows:

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

Under section 3.3 of the EPR 5.02 guidance, an OMP must be approved as part of the permitting process if sensitive receptors (in this instance excluding properties associated with the Installation) are within 500m of the installation boundary. In this case there are more than 20 sensitive receptor locations within 500 metres of the Installation boundary, therefore an OMP has been submitted, and further details are provided in section 4.3.2 below.

The Operator's H1 Amenity and Accident Risk Assessment provided with the Application lists key potential risks and likelihood of odour pollution beyond the Installation boundary, along with the measures taken to manage the risk and any additional risk as a result of the increase in throughput. The activities, or foreseeable problems with activities, that have been identified as having the potential to generate odour are as follows:

- Odour from waste materials;
- Odour from landfill gas, and
- Odour from leachate.

4.3.2 Odour Management Plan

The Installation is located within 500m of more than 20 sensitive receptor locations, with the closest listed below (please note, distances stated are only an approximation from the Installation boundary to the assumed boundary of the properties):

	Odour Receptor	No of Properties	Min Distance (m)	Max. Distance (m)	Direction
1	Silverdale Residential Dwellings 1	98	300	870	North
2	Knutton Residential Dwellings along B5044	124	110	380	North
3	Garner's Garden Centre	None	20	100	North
4	Knutton St Mary's Primary School	14	260	400	North, NE

	Odour Receptor	No of Properties	Min Distance (m)	Max. Distance (m)	Direction
5	Warehouse/Depot	12	300	530	NE
6	Newcastle under Lyme residential areas	334	230	1100	South, SE
7	Consented Residential Development	?	30	310	SE
8	Thistleberry Parkway	214	190	950	SE
9	Cemetery Road Caravan Park	14	40	210	South
10	Rosemary Wood Cottage	1	300	400	South
11	Recreational Grounds	None	250	540	SW
12	Silverdale Residential Dwellings 2	503	260	850	West
13	Allotments	None	80	370	West, SW
14	Cemetery	None	60	230	West
15	Silverdale Business Park	None	60	230	West
16	Silverdale Housing Estate	89	90	460	East
17	Keele Road & Orme Road Housing Estate	781	270	1360	East
18	Industrial Area	None	220	1010	NW
19	Silverdale Residential Area	195	400	830	North
20	Ironbridge Residential Area	75	450	740	NE

The Operator has provided a revised OMP (reference EEL.7268.R03.003, dated October 2019 and received on the 31/10/19) in response to the Schedule 5 request for further information dated 24/07/19. This revised OMP has been assessed against the requirements of 'How to Comply with your Environmental Permit Additional Guidance for Landfill' EPR 5.02 guidance. We consider that the OMP is acceptable because it complies with the above guidance and the plan incorporates the relevant management provisions for landfill gas, leachate and waste relevant to odour and reflects the industry best practice detailed in the following guidelines:

- IPPC H4: Horizontal Guidance for Odour
- LFTGN 03: Guidance on the management of landfill gas
- LFTGN 04: Guidance for monitoring of trace components of landfill gas
- LFTGN 07: Guidance for monitoring landfill gas surface emissions
- Environment Agency. Guidance for the Landfill Sector S5.02
- Best Practice for odour monitoring and community engagement at landfill sites. Sniffer Research Project ER31, January 2013.

The Operator has included measures that will ensure compliance. The Operator is required to manage activities at the Installation in accordance with condition 3.3.1 of the Permit and their OMP. The OMP includes odour control measures, in particular, procedural controls such as for:

1. Waste Material - Landfill of non-hazardous and hazardous wastes;
 - a. Waste Acceptance - Pre-acceptance assessment procedures are followed to assess whether a waste material is suitable to be approved for receipt at the site. The procedure includes checks on the potential odour of the waste and any breakdown products that may arise from the waste to cause an odour when landfilled. Inherently malodorous wastes are not accepted for receipt at the facility. The Operator will liaise with waste producers at the enquiry stage to assess acceptability of the waste at the site. Procedures are in place to ensure that the waste is conforming on receipt. This involves verification of the characteristics of the load, including its odour potential, both at the weighbridge, the tipping pad and the tipping face. Should the delivered waste be found to be in breach with the pre-acceptance criteria, then there is also a non-conformances

- procedure in place that includes the rejection of the load, contacting the client for more information to address the non-conformance.
- b. Plant and Equipment - The Site Manager will ensure that sufficient plant and equipment are available at the tipping area to promptly and adequately place, bury, compact and cover all delivered waste.
 - c. Compaction of Waste - Suitable plant and equipment is used to cover and compact all waste delivered to the active tip area. The area size reflects operational requirements and is kept to the minimum to reduce the pathway for odorous emissions and minimise ingress of surface water into the waste prior to application of final capping.
 - d. Application of Daily and Intermediate Cover - The working area and the flanks will be covered with a layer of cover material (typically soils) by the end of each working day. The daily cover is considered to be effective in controlling odour emissions from the fill. It is used to reduce the exposure of the waste to the elements, improve the stability of waste, minimise the risk of wind-blown litter and discourage vermin. The working area will continue to be covered with the next layer of waste the following working day or after a short period of time, only. Where the site operations require that a working area will not be accepting waste for extended periods an intermediate cover will be applied. The Site Manager will also ensure that there are adequate supplies of daily cover material available at the site.
 - e. Progressive Landfill Capping - Completed areas of the landfill site will be capped with an engineered cap to achieve full waste containment, prevent gas emissions and rainwater infiltration in the medium to long term. Areas of the site that have been completed to final waste height will be permanently capped within 6 months of completion of waste placement.
 - f. Avoiding Disturbance to Previously Deposited Waste - Wherever possible, measures will be taken to ensure that previously emplaced waste is not disturbed, exposed or moved. Where such activities are necessary, e.g. during the installation of environmental management infrastructure, the excavated boreholes, trenches and areas will be covered as soon as practicable or waste will be removed and buried at the earliest opportunity.
2. Landfill Gas - Landfill gas treatment by extraction, flaring or utilisation for energy recovery;
- a. Landfill Gas Management - Landfill gas odour is typically associated with trace components in the gas, such as sulphides and mercaptans. Collection and treatment of the gas is the primary means of destroying trace gases and thus controlling the odour. The gas extraction system at the site comprises an extensive abstraction network connected to the gas utilisation plant (combustion engines and back up gas flare). Gas abstraction infrastructure is progressively extended across the active tip areas and in accordance with the site's Gas Management Plan.
 - b. Monitoring of Landfill Gas and Gas Management Infrastructure - Landfill gas quality (bulk and trace gases) are monitored within the in-waste gas and leachate these include routine monitoring of concentrations of hydrogen sulphide in raw landfill gas and the annual monitoring of trace gases. The results are assessed in terms of permit compliance and to inform if further odour action measures are required. To minimise any fugitive emissions of landfill gas (thus odour) from the gas extraction and leachate management infrastructure, the integrity and efficiency of the infrastructure is monitored on a regular basis in accordance with the site Landfill Gas Management Plan. To ensure that the gas utilisation system works efficiently weekly operational performance checks are undertaken on the gas plant.
 - c. Monitoring of Gas Engines and Flare - Emissions of total volatile organic carbons (VOCs) and non-methane VOCs in the combustion gas are monitored to ensure a complete combustion of landfill gas and thus low potential for odour emissions.
 - d. Annual Methane Emission Survey - Methane concentrations are measured across all permanently and temporarily capped areas, and the uncapped areas of the site. Where

- the surveys show that surface emissions are elevated remedial measures are carried out. Re-testing of the affected area is undertaken following the remediation measures.
- e. Monitoring of Meteorological Conditions - Current and forecasted weather conditions are assessed as part of the daily checks, and site management will use this information to proactively manage site operations so as to minimise risk of odour emissions on site.
3. Landfill Leachate - Monitoring of Leachate and Leachate Management Infrastructure -
 - a. All leachate storage tanks, abstraction and monitoring infrastructure will be adequately sealed and will be connected to the gas abstraction system where necessary to prevent any potential for fugitive odour release. Regular checks will be undertaken by the site management to ensure that the leachate wells remain sealed and under adequate extraction from the gas collection system.
 4. Preparedness for odour events –
 - a. The main odour control measures minimises risks of odour events from operational activities and unforeseen events on site. The site also proactively prepares for potential odour events by carrying out meteorological monitoring - certain weather conditions such as high atmospheric pressure, calm and/or foggy conditions, temperature inversion or warm/hot weather spells can exacerbate or prolong odour. The prevailing meteorological conditions will be assessed ahead of the works and appropriate mitigation applied. If the predicted weather conditions are unfavourable for odour dispersion, these activities will be rescheduled and/or additional mitigation measures applied. Extra daily cover will be used if deemed necessary. A windsock will be erected on site to understand wind direction at a glance for dust and odour management. Odour surveys will be carried out more frequently if there is a likelihood of an odour event on site and during the event. The survey will help inform whether the odour control measures are sufficient and/or there is a need to apply additional mitigation measures.
 5. Odour Action Plan –
 - a. The site has an Odour Action Plan and will be actioned in the event of an odour event at the site such as receipt of an odour complaint, in response to routine odour checks and surveys when significant landfill odour is detected, receipt of odorous waste loads, engineering works on site which have a potential to generate fugitive emissions of odour, abnormal conditions, such as power failure, damage to or failure of the environmental management infrastructure, or accidents or incidents which have a potential to lead to an odour event.
 6. Odour Complaint Investigation Procedures –
 - a. Any complaints received will be logged/recorded. Details of the odour complaint (intensity, location, date and time, the name, address and telephone number of the caller (if available) are logged. The Site Manager will initially undertake a review of the waste operations on site prior to and at the time of the complaint aimed at determining the potential odour source. The Site Manager will review the environmental control systems (landfill gas and leachate) operational prior to and at the time of the complaint and a review the meteorological conditions (wind speed/direction/rainfall data) prior to and at the time of the complaint, to establish whether a pathway can be established between the site and the complainant and review the previous history of complaints from that location.
 - b. The Site Manager will use Sniff Test method when undertaking odour complaint investigations. If a complaint is substantiated then remedial action(s) will be identified and the results of the odour investigation to the Environment Agency.

The OMP also provides a suitable procedure in the event that complaints are made to the Operator, and includes a complaints form template. The OMP is required to be reviewed at least every 4 years and/or after the Environment Agency has notified the Operator that it has substantiated a complaint received.

The OMP also provides a section on odour monitoring and inspection is part of the daily site management. Odour checks are carried out as part of waste acceptance procedures and implemented by the site operatives under the coordination of the Site Manager. Odour issues associated with certain waste streams are ascertained before the waste is delivered on site.

The Environment Agency has reviewed the OMP (Odour Management Plan report reference EEL.7268.R03.003 dated October 2019) and considers it complies with the requirements of our odour management guidance note. The Operator's compliance with the Permit and its OMP will prevent and where that is not practicable minimise the emission of odour. A high level of landfill operational control will continue to be achieved through implementation of risk based environmental management plans, staff training and adherence to the written management system. Operational management procedures are part of the Site Operator's Integrated Management System (IMS). The IMS is externally certified to ISO 9001, ISO 4001 and OHSAS 18001.

In summary we consider the risk of odour will not increase as a result of the changes authorised within this variation application. The benefit of this proposal is that the Operator will be able to accelerate the progressive capping of the site thereby reducing future leachate generation and improving landfill gas management.

4.3.3 Conclusion

We have included our standard odour condition 3.3.1 in the Permit, which requires that emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the Operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan (which is captured through Section 2.4 and Table S1.2 of the Permit), to prevent or where that is not practicable to minimise the odour.

The Operator will be required to operate the Installation in line with the operating techniques set out in the Application supporting documents (as listed in permit table S1.2), and the OMP. There is a requirement to review and record (as soon as practicable after a substantiated complaint) whether changes to the OMP should be made and make any appropriate changes to the OMP identified by the review.

We are satisfied that the manner in which operations are carried out at the site will minimise the risk of odour pollution, and that we have sufficient controls within the permit conditions to enable further measures to be implemented should these be required.

4.3 Noise

4.4.1 Risk Assessment

The Applicant has submitted a site-specific noise and vibration risk assessment and noise management plan. The analysis presented within this noise impact review seeks to quantify the additional noise levels associated with the proposed permit variation. However the noise assessment was assessed by BS 5228 instead of BS 4142 (the British Standard used to assess the impact of industrial and commercial sound). The Operator was required to provide an additional noise assessment assessed using BS4142 and this document is referenced R19.10514/2/AP dated 29/10/2019. The revised Noise Management Plan is referenced R19.10511/NMP/3/AP dated 18/12/2019. We have assessed these plans as suitable and they form part of the Permit under Schedule 1 Table 1.2 Operating Techniques under which the Applicant will have to operate the Installation to minimise the risk of noise pollution.

Noise is recognised in our 'How to Comply with your Environmental Permit Additional Guidance for Landfill' EPR 5.02 guidance. Condition 3.4 of the Permit reads as follows:

Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan, to prevent or where that is not practicable to minimise the noise and vibration.

Noise emissions from the site are currently monitored on a regular basis and assessed for compliance against the noise limits outlined in Planning Condition 27 (Application ref. N.12/09/216 MW). The noise limits were set following a detailed assessment of the noise impacts associated with the operation of the landfill site (Vibroch Report ref: R12.7460/1/GS dated 31 October 2012). Tables 9.5 and 9.6 of this report show calculated site noise emissions and compares them against proposed noise limits which were defined with reference to relevant guidance and ultimately formalised under Condition 27 of the site planning permission. However, enforcement of planning conditions is the remit of the Local Planning Authority and not the Environment Agency. In all cases the Operator assessed the likelihood of noise pollution beyond the Installation boundary as unlikely and the overall risk as not significant. The assessment results demonstrate that potential noise emissions from the site are expected to remain within the relevant noise control limits.

We have assessed the NMP and the H1 risk assessment for noise and conclude that the Operator has followed the risk identification and mitigation guidance and we are satisfied that all sources and receptors have been identified, and that the proposed mitigation measures will prevent or where that is not practicable minimise the risk of noise pollution / nuisance.

4.4.2 Noise Management Plan

An NMP should contain appropriate measures to prevent, or where that is not practicable to minimise the risk of pollution from noise emissions. Noise pollution from the site is also one of the concerns for some members of the public as we have received 8 responses from the public with regard to noise nuisance. It should be noted over the last year we have received 14 complaints regarding noise from this site mainly associated with engineering works on site.

Operations with the most potential to cause noise nuisance have been assessed and control measures put in place, as described in the revised Noise Management Plan reference R19.10511/NMP/3/AP dated 18/12/19.

The increased waste input will not require longer operating hours or any additional mobile plant to be operated at the site. However, the proposals will increase the number of HGVs delivering waste to the site. It should be noted that the site will continue to operate in accordance with its current planning permission (Condition 12) which restricts the number of HGVs visiting the site to 440 per week. However, enforcement of planning conditions is the remit of the Local Planning Authority and not the Environment Agency.

The Operator has only considered vehicle movements accessing the site and within the Installation boundary, which is consistent with our information requirements. Noise emitted from vehicles travelling on the local road network is outside our remit.

The NMP also contains a commitment to recording and investigation of any noise complaints received in direct relation to the installation. Complaints received directly from the public will be notified to the Environment Agency.

The NMP will be reviewed at least every 4 years and/or after an Environment Agency substantiated complaint is received.

4.4.3 Conclusions

We have included our standard noise and vibration condition 3.4.1 in the Permit, which requires that emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the Installation, as perceived by an authorised officer of the Environment Agency, unless the Operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan (which is captured through Section 3.3 and Table S1.2 of the Permit), to prevent or where that is not practicable to minimise the noise and vibration.

The Operator will be required to operate the Installation in line with the operating techniques set out in the Application supporting documents and the NMP. There is a requirement to review the NMP either following an Environment Agency substantiated complaint, or every 4 years, whichever is sooner. The review will record whether changes to the NMP should be made and make any appropriate changes to the NMP identified by the review.

We are satisfied that, the specific operational and mitigation measures included in the Noise Management Plan and incorporated into the permit as Operational Techniques, will prevent, or where that is not practicable minimise, pollution from noise and vibration.

4.4 Dust

The Operator's H1 Amenity and Accident Risk Assessment provided with the Application and the Dust Management Plan (DMP), Report ref. 5569 Dust Management and Monitoring Plan dated August 2018, lists key potential risks and likelihood of dust beyond the Installation boundary, along with the measures taken to manage the risk. The activities, or foreseeable problems with activities, that have been identified as having the potential to generate dust are as follows:

- a. Waste haulage and site traffic;
- b. Tipping of wastes from vehicles, especially fine particulate type wastes;
- c. Handling of wastes and the application of site cover;
- d. Site engineering works;
- e. Restoration operations, and
- f. Wind erosion of operational surfaces, stockpiles and haul roads.

The operator has provided a dust management plan (DMP) with the application (Report ref. 5569 dated August 2018). The use of good practice will ensure minimisation of emissions. There are measures included within the Permit (the 'Fugitive Emissions' conditions) to provide protection. Condition 3.2.1 'Emissions of substances not controlled by an emission limit' is included in the Permit. This is used in conjunction with condition 3.2.2 which states that in the event of fugitive emissions causing pollution the Operator is required to undertake a review of site activities, provide an emissions management plan and to undertake any mitigation recommended as part of that report, once agreed in writing with the Environment Agency.

In addition conditions 1.1.1 and 2.4 within the Permit provide additional protection. Condition 1.1.1 is a general management condition stating that the operator shall manage operate the activities in accordance with a written management system that identifies and minimises risks of pollution, so far as is reasonably practicable, including those risks arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and using sufficient competent persons and resources. Condition 2.4 'Operating Techniques' states that

'activities shall, subject to the conditions of the permit, be operated using the techniques and in a manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing...', and this ties the Operator specifically to the specific details submitted in support of the Application.

The DMP identifies more than 20 sensitive receptor locations within 500m of the installation boundary. Particulate concentrations fall off rapidly with distance from the emitting source. This fact, together with the proposed good management of the site such as keeping haul roads clean from build-up of dust, and other measures in place to reduce dust and risk of spillages all reduce the potential for emissions impacting the nearest receptors. Due to the nature of the wastes accepted at the site the generated dust will comprise general particulate matter and the generation of bio-aerosols is unlikely. Similarly, no asbestos fibres will be released at the site. Bonded asbestos (a stable non-reactive hazardous waste material) is permitted to be accepted at the site in a separate cell. However there is no separately engineered cell, therefore no asbestos waste has been deposited at the site to date and there are no plans to do so. Should the operator decide to take asbestos waste or gypsum waste in the future strict operational controls are in place to prevent emissions.

Within the DMP the Operator has also detailed a dust monitoring plan and dust will be monitored at locations along the site boundary which are close to nearby receptors during periods of dry weather. The deposited dust gauges will be equipped with directional dust gauges designed to distinguish between the on-site and external sources of dust. Assessment levels are in line with Environment Agency Technical Guidance Document M17 '*Monitoring of particulate matter in ambient air around waste facilities*'.

The DMP also provides a 'Dust Action Plan' to be actioned in the event of any dust related concerns at the site. The Operator has also detailed measures in their DMP to reduce dust. We are satisfied that the measures outlined in the Dust Management Plan, the Dust Action Plan and the application will minimise the potential for dust emissions from the Installation, and that we have sufficient controls within the permit conditions to enable further measures to be implemented should these be required.

4.5 Pests

The Operator's proposed measures to prevent or minimise the presence of pests on site are as follows:

- Waste assessment, storage and handling procedures - effective site management involving prompt emplacement, compaction and covering of wastes in well-defined cells, intermediate capping and prompt capping of completed areas. Ensuring previously employed waste is not disturbed, exposed or moved.
- Trained and informed staff - Training is a key element of the externally accredited combined management system. All relevant staff are trained in the systems and procedures relating to inspection, housekeeping and effective site operation.
- Good housekeeping and inspection practices.
- Regular visits by pest control contractors. Use of approved pest control treatment and deterrent techniques. The selection and performance monitoring of suppliers is within scope of their externally accredited combined management system. Pest control measures include walk with imitation lure, bird distress call, starting pistol, pyrotechnics, such as rope bangers or rockets. Details are recorded in the site diary.

Condition 3.6.1 of the Permit also ensures that pests are adequately dealt with at the Installation. It reads as follows:

3.6.1 The activities shall not give rise to the presence of pests which are likely to cause pollution, hazard or annoyance outside the boundary of the site. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved pests management plan, have been taken to prevent or where that is not practicable, to minimise the presence of pests on the site.

The Operator already has an approved Pest Management Plan, Document Ref. Pest Control Management Plan Version 3 dated 22/08/2020. This plan falls within scope of the company externally accredited management system and this includes regular reviews. The Environment Agency is therefore satisfied that sufficient measures are in place to prevent or minimise the presence of pests on site.

4.6 Landfill Gas Risk Assessment / Management Plan

Landfill gas is generated primarily as a result of microbial action on organic materials within the waste. However, there are also gases released as a result of physical and chemical processes within the waste. Landfill gas is predominantly made up of a mixture of methane and carbon dioxide with small amounts of hydrogen and some nitrogen and oxygen from air that may have been drawn into the landfill. These are typically referred to as bulk gases and there are also a wide variety of trace components that comprise up to 1% of landfill gas.

The Landfill Directive requires that landfill gas is controlled by preventing its migration from a landfill and by collecting and treating or utilising the gas.

The Operator has provided a gas management plan which accords with the guidelines set out in our Technical Guidance (LFTGN 03, 2004) the plan describes on site gas management infrastructure and plant, management and monitoring procedures and includes a landfill gas action plan.

The Operator has submitted a landfill gas risk assessment (LFGRA) prepared in support of the application to increase the annual waste input at the site, Report ref. EEL.7268.R03.001 Landfill Gas Risk Assessment dated June 2020. The LFGRA is in accordance with our assessment methodology that uses the source-pathway-receptor model to determine how much gas is likely to be generated, the potential risks to the environment and human health as a result of landfill gas emissions and the proposed measures to be used in order to prevent or minimise those risks. The effect of increase in annual waste tonnage on gas generation potential was assessed using GasSim to calculate bulk landfill gas generation rates (m^3/h) during the lifetime of a landfill. The model also assessed the environmental risks associated with lateral gas emissions and emissions to air from the gas plant.

Though the proposed variation does not change the composition of wastes deposited at the site, the increase in annual tonnages at the non-hazardous site would have the effect of increasing the peak gas production rate. A revised Landfill Gas Management Plan for the site was requested and addressed this issue. The updated risk assessment based on GasSim model established the peak landfill gas generation is expected in 2024 after filling operations at the site have ended and the site has been capped. The gas generation would reach a peak rates at about 2,700 - 2,900 m^3/h . After that, the gas production would decrease over time and by approximately 2070 there would be not enough landfill gas to sustain either a gas engine or a flare. The site is consented to accept waste up to the end of 2026. However, with the proposed increase to 400,000t/annum the waste void will be exhausted by 2024.

The current gas utilisation plant at the site comprises three modern spark ignition engines – A1, A2 and A4 (1 O67kWe Jenbacher (JGS320 GS-L.L) engines), an enclosed high calorific gas flare A3 (2000 m^3/h flare) and a 200 m^3/h mobile flare. Each gas engine consumes up to 745 m^3/h of gas when run at full capacity. This makes the total cumulative capacity of the gas plant (A1-A4) at the site 4,235 m^3/h , excluding the mobile flare. According to the landfill gas conceptual model the peak landfill gas generation would reach 2,700 – 2,900 m^3/h (50-95th %ile) at the time of the likely completion of waste disposal activity on 2024. CLP Envirogas operate the landfill gas collection system and the gas plant at the site. CLP also have additional gas units available of capacity ranging from 1,000 m^3/hr to 3,500 m^3/hr and can mobilise this capacity to the site when necessary. This approach allows the company to easily adapt to the site's changing gas flow and capacity.

CLP have a permanent presence on site. There are two CLP staff present and an Area Manager in attendance as well for half of the week. The amount of staff present can increase to 5 or 6 if there is infrastructure development works or similar to complete. The gas field is balanced once a week, with the strategic monitoring points of the gas field checked three times per week to assess if any additional balancing, over and above this is required. Collection efficiencies in the last three years have been high and above the target capture efficiency quoted in the Environment Agency guidance document LFTGN 03

(2004) which states; “the annual collection efficiency for methane should be compared against a value of 85%”.

Landfill gas utilisation is currently carried out by continually running two gas engines, with the third on standby when one of the primary engines is off duty/serviced. Currently the gas utilisation plant is grid limited for power export. A larger capacity flare will be required, and/or an additional grid connection, to control the LFG generated from the additional waste planned to be landfilled. The option of additional export capacity is currently being reviewed. Until a new grid connection is available the excess gas collected will be flared. There is current capacity at present using the existing flare, but the flare may require supplementing with a second (or replacing with a larger) flare to manage any additional LFG which is collected. This will be addressed under the ‘Landfill gas management’ Section 2.9 in the permit if the situation does materialise. The proposed increase in annual throughput will only have effect on peak gas generation rate which is expected to be temporal if it does materialise. Should gas generation rate differs in future from the predicted, the Environment Agency can request a revised gas management plan under Section 2.9 of the permit.

Permit Section 2.9 Landfill gas management

2.9.1 The operator shall take appropriate measures, including, but not limited to, those specified in any approved landfill gas management plan, to:

- a) collect landfill gas; and*
- b) control the migration of landfill gas.*

2.9.2 The operator shall use the collected landfill gas to produce energy. If the collected landfill gas cannot be used to produce energy, the operator shall use appropriate measures to flare or treat the gas in accordance with an approved landfill gas management plan.

2.9.3 The operator shall:

- a) if notified by the Environment Agency, submit to the Environment Agency for approval within the period specified, a revised landfill gas management plan;*
- b) implement the revised landfill gas management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.*

GasSim Modelling

GasSim also simulates lateral migration of landfill gas through the cell liner. The results of modelling of lateral migration showed that at the site boundary there is no risk of offsite gas migration. The monitoring data is reported to the Environment Agency on a regular basis as part of permit compliance requirements.

The latest revision of the current landfill gas risk assessment was received in June 2020. This review of the landfill gas risk assessment used the GasSim v2.05.008 software package which is the current version of this modelling tool.

It considers the following factors:

- The source parameters: annual waste input, breakdown of the waste stream, waste moisture content and geometry of the site:
- Infiltration levels based on the amount of rainfall and surface water which enter the fill:
- Engineering properties of the site and materials used for lining and capping of the fill:
- The surrounding geology, its physical properties of ground porosity and moisture content:
- Gas dispersion pathways by air and via site surface and subsurface:
- Receptors to landfill gas – the nature and distance to the receptors within a 500m radius of the landfill.

GasSim requires a substantial amount of data inputs and recognises that certain information may not always be available. It therefore allows for a range of representative values to be entered. It also provides

a number of default value for inputs such as the composition of municipal, industrial, commercial waste streams, it uses typical values from waste industry reference data sources.

The model presents the out puts as a range of possible outcomes values (5-95%iles), these represent different levels of confidence associated with the various results of the modelling exercise. The 95%ile is used to express the worst case scenario, and therefore used exclusively for risk assessment purposes. At the same time, when the assessment is used to advise decision making such as introducing a gas treatment plant or when assessing the likely gas generation rates, then the predicted 50%ile is used.

The gas plant was set up in the model in order of priority of gas extraction and utilisation in the gas engines. The modelled gas generation rates were assessed against the actual landfill gas extraction rates as an indication of the collection efficiency as well as potential gas losses through cap emissions and off-site migration. The typical average collection efficiency of modern landfills in the UK should be 80-85%. The results showed that the predicted gas generation rates accord well with the extraction rates for the last three years and gas collection efficiencies in the last three years were above 85% throughout.

GasSim estimates the quantity of fugitive emissions of bulk and trace gases from the landfill surface. The model shows that in 2019 between 750m³/h (50%ile) and 920m³/h (95%ile) of landfill gas was lost to fugitive emissions. Once the temporary capping system has been installed across a large area of the site emissions are predicted to reduce to about 600m³/h (50%ile) and up to 750m³/h.

With the current adopted approach of temporary and/or permanently capping approximately half of the site until 2024 and coupled with active gas extraction for utilisation, the surface emissions will be controlled and limited to the uncapped areas. The increased rate of waste deposit allows the permanent capping to be completed without delay. Once the site is fully capped (from 2024) there are predicted to be negligible surface emissions of landfill gas.

Tier 1 and Tier 2 Screening

The revised gas risk assessment dated June 2020 undertook both Tier 1 and Tier 2 screening using the latest site monitoring data rather than default values which had been used in the previous assessments for some of the assessed parameters.

The Tier 1 screening uses the calculated Process Contribution (PC), a product of gas emission rate and gas source location and compares it with relevant air quality standards.

Gas Sim Tier 1 emission screening provides an initial assessment of emissions to air at the site boundary and the shortest distance to receptors from the gas plant and operational area. Tier 1 screening is carried out in three parts:

1. Calculation of the contribution from each process (surface emissions, gas utilisation and gas flaring) to the concentration of gas at a receptor (defined as the Process Contribution);
2. Determining whether the process contribution is beneath a certain threshold, and therefore insignificant; and
3. Determining whether the process contribution is above a different threshold, so that more detailed modelling is required.

Therefore Tier 1 screening assesses whether an emission is 'insignificant' or 'not insignificant' and if the emission is 'not insignificant' it determines whether detailed modelling (Tier 2) is required.

Gaseous emissions to air are considered insignificant, and are therefore considered not to require further detailed modelling, if:

- The maximum long-term Process Contribution is below 1% of the long-term Environmental Assessment Level (EAL) or Environmental Quality Standard (EQS); and
- The maximum short-term process contribution is below 10% of the short-term EAL or EQS.

This is reported in GasSim2.5 by the emissions being either 'insignificant' or "not insignificant". Compounds that are deemed to be 'not insignificant' are then screened in order to determine whether further detailed modelling (and hence Tier 2 assessment is required) using the following rules:

Further detailed modelling is required if:

- The long-term Process Contribution + background concentration > 70% of the long-term EAL or EQS; and
- The short-term Process Contribution +0.2 x background concentration >20% of the short-term EAL or EQS.

The Tier 1 screening was carried out for landfill gas compounds and combustion gases. The emission screening was based on the monitoring data for 2019. Background concentrations of nitrogen dioxide (NO₂), nitrogen oxides (NO_x) and particulate matter (PM₁₀) were sourced from the UK Air Information and background levels used represents the most conservative estimate. The results of the Tier 1 assessment screened out the majority of landfill gas compounds and all combustion gases. This includes NO_x that has been previously screened in and requiring further Tier 2 assessment.

Two compounds ethylene dichloride (long and short-term) and arsenic (long-term) were not included in the Tier 2 further assessment and were screened out from further modelling by GasSim in accordance with 3 above. Surface emissions of hydrogen sulphide (H₂S) were screened in as being potentially significant in the short term. Similarly, emissions of landfill gas odorous trace gases from operational areas were screened in as potentially significant. Tier 1 Screening part of the model determines whether further modelling of the emission of a gas is required and these were further assessed in Tier 2 modelling.

GasSim Tier 2 dispersion module allows to assess a significance of emissions to air at the receptor locations. The model applies the AERMOD Gaussian plume dispersion model to assess the gases emitted from the gas utilisation plant and/or the landfill surface to determine the maximum ground level concentrations of individual gases for a given year. The model was applied to H₂S and predicted environmental concentrations (PEC) were calculated at the site boundary. Both the short term and long-term ground level concentrations of H₂S along the site boundary were below the health guidance AQS limits, long-term 140ug/m³ and short-term AQS 150ug/m³. (Air Quality Strategy Objectives are concentrations recorded over a given time period, which are considered to be acceptable in terms of what is scientifically known about the effects of each pollutant on health and on the environment).

GasSim Tier 2 was also used to assess the dispersion of odours. The source term of the model contains an estimate of the quantity of odour units in landfill gas. This is destroyed at 99% efficiency in the gas utilisation plant but is not destroyed through surface emissions. The results showed that both short-term and long-term ground level concentrations of H₂S along the site boundary did not exceed the relevant air quality standards, however the short-term concentrations were above the World Health Organisation (WHO) recommended level for odour (and could potentially lead to odour being detectable at the site boundary at levels at and above the nuisance related assessment benchmark (7µg/m³ as a 30-minute average).

Taking into account these findings the Operator has proposed the following management measures at the site;

1. Review landfill capping strategy for the future operational years aiming to maximise the area of temporary capping ahead of the permanent capping on completion of each cell. Where practicable capping to be carried out twice a year, typically in May and September, for cells that are completed;
2. Landfill gas collection infrastructure to be installed a month after the capping is completed, where practicable, or earlier if a sacrificial system is considered appropriate;
3. Landfill gas collection to be installed in a progressive manner so that landfill gas collection volumes can be increased, to reflect the additional landfill gas generated by the increased filling rates forecast;
4. Investigation of opportunities to increase gas utilisation or increase flare capacity for additional landfill gas generated by the increased filling rate forecast.

The odour management plan will be reviewed on a regular basis to maintain appropriate control measures and operational techniques that minimise emissions.

In terms of impact on odour from a change in actual operation i.e. waste coming onto the site. The odour management plan outlines measures that will be put in place to control the potential impact from odour associated with incoming waste. This includes reducing the input in the event that a substantiated impact from odour were to occur. There will be an overall benefit of bringing the filling and capping forward therefore we do not consider the risk is increased by this variation based on the control measures they have proposed. In respect of point 1 above the increased rate of waste deposit allows the permanent capping to be completed without delay. Once the site is fully capped (from 2024) there are predicted to be negligible surface emissions of landfill gas.

The original permit application and subsequent variations were assessed and issued based on the maximum proposed input the site in terms of total volume (i.e. the footprint of the landfill has not changed). This variation does not change the overall volume of gas that will be produced from the landfill. The risk assessment submitted with the variation did consider potential odour impacts at the site boundary from looking at a worst case scenario which indicates odour levels at the boundary could potentially be elevated, however the 'predicted' rather than worst case scenario indicates significantly lower levels. The operator has confirmed that they are dealing with increasing levels of non-hazardous waste with high levels of non-biodegradable content and inert waste which will therefore have the effect of reducing the peak gas production levels. The site is already permitted to operate a gas utilisation plant with the capacity to combust the maximum volume of gas produced by the site. The Environmental Management System and the gas utilisation odour management plan contain measures to frequently review this element of operation to ensure minimisation of gas egress and minimise this as far as is practicable.

This variation will result in an overall long term improvement by speeding up the filling and capping of the landfill and the Environment Agency consider that this is the best route to minimise overall odour emissions from the site. We agree with this assessment.

4.7 Landfill Hydrogeological Risk Assessment

The Landfill Hydrogeological Risk Assessment (HRA) was reviewed by the Operator, in order to check the conceptual model and the assumptions made therein. The conceptual model, namely sources, pathways and receptors assumed in the 2011 HRA review does not change for the proposed increase in annual throughput of waste.

The long term scenario considered in the HRA was a scenario where the groundwater levels have been allowed to rebound such that hydraulic containment conditions prevail at the site. This means where either the groundwater level or the piezometric head is above the leachate head. As long as this scenario continues to prevail at the site we agree with the conclusion of the operator's assessment that the rate of waste input will not compromise the design of the landfill and the 'assumptions' that underlie the design. The principle of hydraulic containment is independent of the 'rate of waste input'. As a result the increase in annual waste input is unlikely to alter the conclusions of the risk assessment. We agree with this assessment.

4.8 Landfill Leachate Generation

A revised leachate management plan (LMP) Report ref. 5883/WAL/LMP/3.1 Revised Leachate Management Plan dated April 2019 was submitted as a result of the current application. However it is anticipated the proposed change is unlikely to increase the leachate generation at the site or cause adverse impact to the environment. By increasing the annual waste inputs the capping of the landfill is

expected to be accelerated with the resultant reduction in leachate generation and improving gas management. On this basis we do not have further concern regarding the leachate generation.

4.9 Landfill Stability

Where a landfill accepts waste with a biodegradable content, the landfill will settle (reduce in height) as a result of the degradation of the waste. Therefore, waste is deposited in a landfill to the permitted pre-settlement restoration levels so that as the waste degrades the height of the landfill will reduce to the final, post-settlement levels. The Applicant is required to demonstrate that, as the waste degrades, the landfill will settle at a rate that will not affect the stability of the waste mass or the integrity of the capping system.

A revised stability risk assessment (SRA) Report ref. Review of Stability Risk Assessment 5883/WAL/LMP/3.1 dated November 2018 was submitted as a result of the current application. The operator has reviewed the Slope Stability Assessment submitted in support of the original permit application. The review confirmed the conceptual model of a 1 in 3 slope for the liner and the engineered fill comprising the side slopes of the proposed landfill has not changed and is not anticipated to change for future side slope lining at the site. The operator considered that increasing rate of waste deposit will improve the stability of the slopes both in the short term and long term. We agree with this assessment given that the landfill liner is likely to be covered with waste quickly this will provide reinforcement against slippage and reduce the period of unconfined state. Hence the proposed increase is unlikely to compromise the stability of the landfill.

Condition 4.2.2 of the Permit requires the Operator to produce annual reports on the performance of the site against the assumptions in the risk assessments, including the settling behaviour of the landfill. These reports will enable the Operator to show that the landfill is settling in accordance with the assumed rates presented in the stability risk assessment. Should the landfill not settle in accordance with the predicted rates, site stability and capping integrity could be affected. In this circumstance we would require the Operator to provide proposed remedial measures and actions to take depending on site specific conditions at the time.

4.10 Landfill Monitoring

On the basis review detailed in Section 4.0 above it is considered the existing monitoring schedule in the permit is still relevant. No change is necessary at this time.

Improvement condition IC1 has been added to Table S1.3 to install and replace a lost routine groundwater borehole 208 by 31/12/2021.

IC1 - The operator shall:

- *Install a groundwater borehole to replace the lost borehole 208 at a location agreed with the Environment Agency.*
- *Install the borehole in accordance with the Landfill Engineering Condition 2.5.*
- *Commence routine monitoring of the replacement borehole.*
- *Update the site monitoring plan to show the location of the replacement borehole.*
- *Submit a written report to the Environment Agency for approval.*

Annex 1: Consultation, web publicising and newspaper advertising responses

Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with the Environment Agency's Public Participation Statement (PPS). 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.

We placed an advertisement in the local Stoke Sentinel newspaper on 24 May 2019. We also published this Application by a notice placed on our webpages on GOV.UK (Citizens Space) on the 24th May 2019, which contained all the information required by the PPS, including telling people where and when they could see a copy of the Application. The consultation period was subsequently extended and was held open until the 20th August 2019.

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

1. Public Health England (PHE)
2. Newcastle Under Lyme (Environmental Health)
3. Director of Public Health, Staffordshire
4. Health and Safety Executive (HSE, Newcastle Under Lyme)
5. Sewage Authority (Severn Trent)
6. Local Planning Authority (Staffordshire)
7. Food Standards Authority
8. Natural England
9. Silverdale Parish Council

1) Consultation Responses from Statutory and Non-Statutory Bodies

Response received from
Public Health England (PHE) (received 19/06/2019)
Brief summary of issues raised
<p>We request that the Environment Agency takes account of the following concerns when considering appropriate permit conditions:</p> <ol style="list-style-type: none">1. There is inconsistency in distance to receptors from the odour receptors table (90 metres) to those provided in the landfill gas risk assessment table (60 metres), to Silverdale housing estate. We recommend that the minimum distance to receptors is used to estimate potential impacts and be most protective of health.2. The landfill gas risk assessment (noting the point in the text above that it uses a waste input of 300,000 tonnes) does not screen out emissions of benzene (long term), carbon disulphide (short and long term), ethylene dichloride (long term) and hydrogen fluoride (long term), and yet does not include any further assessment of these emissions. We recommend that the Regulator is satisfied that all emissions are adequately risk assessed in order to demonstrate a high level of health protection.3. The landfill gas risk assessment indicates there will be nitrogen dioxide short term exceedance at the boundary. We support approaches which minimise or mitigate public exposure to non-threshold air pollutants and address inequalities (in exposure) and encourage their consideration during site design, operational management, and regulation.4. The Odour Management Plan does not include any history of odour complaints. We are aware from communication with the Local Authority that a number of odour related complaints may have been

received. The absence of substantial odour complaints would support the claim that the process is managed effectively. We recommend that the Regulator takes into account the operator's current ability to manage odour effectively in deciding if an increase in waste throughput can be handled to prevent odours beyond the site boundary. The human nose is very sensitive to odours and often detects odorous chemicals at concentrations in air which pose no risk to health. However, it is acknowledged that chronic environmental odours can be unpleasant and affect wellbeing. Some people may experience symptoms such as nausea, headaches or dizziness, as a reaction to odours even when the substances that cause those smells are themselves not harmful to health.

Summary of actions taken or show how this has been covered

1. The OMP has been updated with additional detail with regard to the number of residencies and locations, both existing and proposed, and the distance with regard to the Silverdale housing estate has been amended.
As discussed in section 4.3 and section 4.4 of this document, the Environment Agency is satisfied following a review of the information provided by the Operator, and the conditions present within the permit, that emissions of odour and fugitive emissions from the Installation will not cause significant pollution to the environment or harm to human health. The OMP provides suitable procedures in the event that complaints are made to the Operator. (Revised Odour Management Plan report reference EEL.7268.R03.003 dated October 2019).
2. The risks associated with these emissions are considered low. The applicant has submitted revisions of the gas risk assessment the latest included Tier 2 modelling. See Section 4.6 and the Revised Landfill Gas Risk Assessment EEL.7268.R03.001 dated February 2020 and revised on the 22/06/2020. We have set emission limit values in the permit for flare and engine emissions. (Table S3.2 Draft Permit)
3. The applicant has submitted several revisions of the landfill gas risk assessment as part of the ongoing determination of this variation and the latest included Tier 2 air dispersion modelling, (Revised Gas Risk Assessment EEL.7268.R03.001 dated February 2020 and revised 22/06/2020). See Section 4.6 above. We are satisfied that all emissions have been adequately risk assessed and we are satisfied that risks from the emissions are insignificant.
4. The OMP has been updated and additional detail included. Odour complaints have been received, only one has been substantiated by the Environment Agency in the last year. A second odour event in 2019 was substantiated by Red themselves which was caused by a power outage to the gas plant. Contingency measures are now in place to minimise the risk of recurrence. The Operator has also added further detail on the preparedness for an odour event' as new Section 4.7 in the OMP. This section addresses the means of proactively preparing for such potential 'odour events' aiming to minimise their impact. Section 5 of OMP details the Odour Action Plan and investigating odour complaints. Including a complaints history in the OMP is not appropriate as the OMP is a working document not a commentary.
The OMP only one has been substantiated in the last year and one odour event was substantiated by Red themselves which was caused by a power outage to the gas plant. Contingency measures are now in place to minimise the risk of recurrence.

Response received from

Newcastle Under Lyme (Environmental Health and Planning), received 24/06/2019, 16/08/2019 and 29/11/2019.

Brief summary of issue raised

1. Newcastle under Lyme Borough Council's Environmental Health and Planning Divisions currently OBJECT to the Environment Agency issuing the permit variation as the application is based on out of date information and the applicant has failed to demonstrate that their proposals will not result in environmental harm.

Summary of actions taken or show how this has been covered

The application was revised to increase the tonnage prior to consultation. We agree that the original documentation did not reflect the amended application and this was addressed. Two Schedule 5 Notices were sent to the Operator requesting that the documents in support of the application were

updated in line with this change. On the 05/07/2019 the Operator provided updated risk assessments which were subsequently uploaded to Citizens Space and included;

- Revised Landfill Gas Risk Assessment EEL.7268.R03.001 June 2019 Rev. 1.0 revision date 25/06/2019
- Revised Landfill Gas Management Plan EEL.7268.R03.002 June 2019 Rev. 1.0 revision date 28/06/2019
- Odour Management Plan Review EEL.7268.R03.003 June 2019 Rev. 2.1 revised 28/06/2019
- Noise Impact Review R19.10249/2/AP
- Gas Infrastructure Survey Plan – Gas Collection System CLP3573, Drawing No 2 dated 12/06/19
- Revised Leachate Management Plan 5883/WAL/LMP/3.1 April 2019 Rev. 3.1 revised 16/04/2019 And on the 21/08/2019;
- Revised Landfill Gas Management Plan EEL.7268.R03.002 Rev. 2.0 June 2019 revised 19/08/2019
- Revised Landfill Gas Risk Assessment June 2019 Rev. 2.0 revised 19/08/2019

In addition the following documents were submitted after consultation closed and these documents have been included as part of this decision consultation;

- Revised Noise Impact Assessment report reference R19.10514/2/AP dated 29 October 2019.
- Revised Odour Management Plan report reference EEL.7268.R03.003 dated October 2019.
- Revised Gas Risk Assessment dated EEL.7268.R03.001 dated February 2020 and revised 22/06/2020.

As discussed in the key issues section of this document, the Environment Agency is satisfied following a review of all the information provided by the Operator that given the conditions present within the permit the emissions from the Installation will not cause significant pollution to the environment or harm to human health.

Brief summary of issue raised

2. It is our understanding based on the application documents that the permit variation seeks to increase waste inputs into site from the current permitted waste inputs from 250,000 tonnes to 400,000 tonnes per annum whilst not increasing the overall total volume of waste deposited into the site. Although there is no planning restriction on tonnage inputs, it would appear that the additional vehicle movements to facilitate this could be accommodated in the overall permitted vehicle movements allowed for in condition 15 of the planning permission for the site N.12/09/216 MW (issued by Staffordshire County Council). <https://apps2.staffordshire.gov.uk/scc/cpland/details.aspx?applicationID=132208>.

Summary of actions taken or show how this has been covered

Noted

Brief summary of issue raised

3. Condition 2 of N.12/09/216 MW requires that the landfilling of non-hazardous waste and stable non-reactive hazardous wastes shall cease no later than 31 December 2026 and thereafter landfilling shall continue only with inert waste, such that the site is restored no later than 21 February 2042. The EA will be aware that the landfill site is located in close proximity to a number of existing sensitive receptors and that there are current extant planning permissions for additional housing in close proximity to the site. One of these sites, Fowlers Garage Cemetery Road has not received planning permission as the applicant did not enter into the required planning obligation, however it remains that the principle that residential development on this site is acceptable should a future application be submitted. These areas have been identified in various documents accompanying the application in particular Dust Management Plan – Potential sensitive receptors table page 2 / Appendix 3 Dust Sensitive receptors annotated aerial plan, Odour Management Plan – (Relevant receptors to odour identified in table Page 2/3 and Appendix 1 Odour Sensitive Receptors). Landfill Gas Risk Assessment – (Relevant receptors identified in Table 1 page 3 and Appendix 1 Local Receptors).

Summary of actions taken or show how this has been covered	
<p>If the increase to the annual waste input at Walleys Quarry Landfill Site from 250,000 tonnes to 400,000 tonnes is realised then this will fill the available void at the facility at a faster rate. By increasing the annual waste inputs to the site the company will be able to complete relevant engineering works, including capping works on a faster time-scale than that undertaken to date, reducing leachate generation, improving landfill gas management and minimising potential effects of amenity related issues such as odour, noise and dust.</p> <p>We are satisfied that all the appropriate receptors have been identified and addressed in the risk assessments.</p>	
Brief summary of issue raised	
4.	<p>Odour Management Plan August 2018 - Egniol Environmental Ltd. Job Number 7052 Version 12</p> <p>a. Why has wind rose data not been drawn from the onsite met station or Shawbury (with account taken of site location at the bottom of Keele Bank.) The Air Monitoring Unit deployed by the EA July 2017 to February 2018 is likely to have subject to local influences due to being positioning in close proximity to an onsite building and this data should not be relied upon as being representative of this location.</p> <p>b. There has been no discussion of complaint information available from EA and NULBC or which have been reported to site and investigated. The winter 2018/19 and spring 2019 periods have seen a spike in reported complaints to all parties.</p> <p>c. There is no discussion of potential odour contributing conditions including changes in atmospheric pressure, temperature inversions, local topography and low lying cloud and identification of times of year when odours may be experienced notwithstanding the required application of BAT to control odours.</p> <p>d. Odour modelling has not been updated / undertaken nor does the report provide details of odour contours. Documents submitted by the Borough Council to the Planning Inspectorate in respect of an appeal against planning permission for housing on the adjoining scrapyard and circus field site at Keele Road (Planning Inspectorate Appeal Ref: APP/P3420/W/15/3138033) show that significant areas of current and permitted residential land use and public open space around the site are located within the C98, 1-hour >50µE/m³ contour (complaints may occur and depending on the sensitivity of the locality and nature of the odour this level may constitute a nuisance).</p>
Summary of actions taken or show how this has been covered	
a)	<p>The wind rose used was chosen from the AMU report because it was considered the best available data at the time and also a representative meteorological station. However, the Operator has updated the OMP using the on-site weather station, the siting of this will also give a true representation of the conditions of the site. The Operator monitors weather and forecasts so that the Operator is ready to take swift action to avoid problems as detailed in their OMP.</p>
b)	<p>Section 5 of OMP details the Odour Action Plan and investigating odour complaints. The Operator has provided a commentary on complaints versus meteorological conditions separately. Including this in the OMP is not appropriate as the OMP is a working document not a commentary. Egniol undertook a review of odour complaints versus meteorological conditions for Walleys LFS in January of 2019, for the previous 12 months. The review was generally inconclusive, with weather conditions at the time of complaints highly variable. Specifically, periods of large high pressure systems which can lead to anticyclonic gloom only accounted for approximately 26% of complaints whilst only 16% of complaints were during windy periods.</p>
c)	<p>(4c and 4d): Tier 2 odour modelling using GasSim has subsequently been carried out. See Section 4.6 above. Whilst we have received a substantial number of odour complaints from the public only one of these have been substantiated by the Environment Agency.</p> <p>There is also a high degree of uncertainty in modelling the likely annoyance as a result of odour from a landfill; in particular because,</p> <ul style="list-style-type: none"> • It is not straightforward to quantify odorous emissions from the mix of odorous substances in a landfill and actual emissions for a particular site will be very sensitive to variables such as the age and condition of waste. • The relationship between odour concentrations and the perception of odour is both complex and subjective.

- There are uncertainties associated with the modelling of fugitive emission sources, such as those found on a landfill site.

Consequently the Environment Agency's approach to managing odour emissions from landfill operations is to focus on the use of appropriate measures to prevent and mitigate odorous emissions. Therefore as part of the permitting process we require the operator to produce an Odour Management Plan to detail the measures they will use to manage and minimise odorous emissions.

The site has an agreed operational OMP and an action plan in place to manage fugitive emissions. The Environment Agency has reviewed the OMP and considers it complies with the requirements of our odour management guidance note. The Operator's compliance with the Permit and its OMP will prevent and where that is not practicable minimise the emission of odour. A high level of landfill operational control will continue to be achieved through implementation of risk based environmental management plans, staff training and adherence to the written management system.

A total of 1202 complaints were received since July 2019 one was substantiated by the Environment Agency, one substantiated by Red Industries. The Air Quality modelling report showed that during time of still, cold conditions complaints more likely. The increase in complaints in February, September, November and December are more likely linked to these conditions.

Brief summary of issue raised

5. Schedule 5 Response - EEL.7268.R03.003 -2.1- Odour Management Plan June 2019
- The OMP does not include details of an updated odour model or reports of complaints. These data sources would be of assistance in understanding the current and potential future impacts of odour on the local community and would help to identify what additional measures might be required to minimise odours and to ensure continued compliance with BAT. The fact that the EA and local authority officers have not to date substantiated a breach of permit conditions or an actionable statutory nuisance should not be taken as fact that the site is currently operating appropriately. It will be seen that in Section 4.5 of the current LGRA identifies short term exceedances of the Environmental Assessment Limit for NO₂ along the south - south east boundary of the site for the existing installed engines.

Summary of actions taken or show how this has been covered

An updated GasSim odour model has now been provided, see Section 4.6 above and point 4c above. The OMP was updated again and the final draft is dated October 2019 and itself is also sufficient and has been accepted and agreed by the Agency. If the site is operating inappropriately officers will be justified in recording a breach of the permit. Until then we also cannot assume the site is operating inappropriately. Section 5 of OMP covers the Odour Action Plan and investigating odour complaints. Including a complaints history in the OMP is not appropriate as the OMP is a working document not a commentary. The Operator is required to keep separate records of all complaints received as detailed in the OMP. A summary of odour complaints for 2019 is also detailed above. One breach has been substantiated in 2020.

Brief summary of issue raised

6. **Landfill Gas Risk Assessment** – December 2018 Version 1.0 Egniol Environmental Ltd. Job Number 7268
- This is based on 300,000 tonnes annual waste input rather than the requested 400,000. LFG modelling should be revisited based on the increased tonnage requested and corresponding results conclusions and recommendations reached reported in an updated document. Relevant information should also feature in an updated Landfill Gas Management Plan.
 - It is not clear if the additional now requested tonnage will result in the need for additional gas engines to be installed as there is the potential for the peak gas generation to be brought forward and increased.
 - If additional engines are likely to be required, an updated air quality impact assessment will be required along with a noise assessment. It will be seen that Section 4.5 of the current LGRA identifies short term exceedances of the Environmental Assessment Limit for NO₂ along the south - south east boundary of the site for the existing installed engines.

Summary of actions taken or show how this has been covered

a.	Response: As detailed in 1) above the application was revised to increase the tonnage prior to consultation. Two Schedule 5 Notices were sent to the Operator requesting that the documents in support of the original application were updated in line with this change. These documents were subsequently provided and placed on Citizens Space.
b.	The Operator updated the information on peak gas generation in their Schedule 5 response dated 21/08/2019. The Operator has demonstrated that the current installed capacity is currently sufficient. However if gas generation rate differs in future from the predicted, EA can request for revised gas management plan under condition 2.9 to deal with the situation. See Key Issues Section 4.6.
c.	No additional engines are required at this time. We have set emission limit values in the permit for flare and engine emissions.
Brief summary of issue raised	
7.	Schedule 5 Response - EEL.7268.R03.001 - Landfill Gas Risk Assessment The EA should satisfy itself that this assessment has been conducted appropriately and has reached appropriate conclusions. It has not been demonstrated that the currently installed GUP and flare have the capability to deal with the modelled increase in peak gas generation caused by taking annual waste inputs from the currently permitted 250,000 tonnes to 400,000 tonnes. Should the GUP not have sufficient capacity this will lead to an increase in the potential for fugitive emissions and resulting increase in odours being detected in the community.
Summary of actions taken or show how this has been covered	
The Landfill Gas Risk Assessment was updated to include a review on capacity and has been reviewed and accepted. No additional engines are required at this time. The capacity of the current engines is sufficient. See Key Issues Section 4.6 for peak gas generation. However if gas generation rate differs in future from the predicted, EA can request for revised gas management plan under condition 2.9 to deal with the situation.	
Brief summary of issue raised	
8.	Schedule 5 Response - Walleys LFG CLP Survey June 2019 – Gas Infrastructure Survey The EA should satisfy itself that this provides appropriate arrangements to deal with landfill gas capture.
Summary of actions taken or show how this has been covered	
The Environment Agency is satisfied that appropriate arrangements are in place and secured by the permit.	
Brief summary of issue raised	
9.	Noise Revised Risk Assessment – Vibrock Report Ref: R18.10249/1/AP Date: 04/12/18
a.	The report is based on an assessment of the likely noise impacts arising out of an increase in annual input tonnage to 300,000 tonnes and corresponding additional vehicle movements onto site per day. This needs revising to show how the noise climate is likely to be impacted upon by increased waste vehicle depositions and plant movements associated with up to 400,000 tonnes per annum.
b.	The report need revising to include new sensitive receptors which have been granted planning permission and which were not included in the planning condition (Hampton's scrapyards and field on Keele Road / Fowlers Garage).
c.	Should the LGRA / LGMP identify the requirement for additional gas engine(s) this will need an assessment of the existing and proposed engines in line with BS4142:2014.
Summary of actions taken or show how this has been covered	
The report was updated in terms of a review when the increase in tonnage to 400,000 was amended. The request to increase the tonnage was accepted given the application had not then gone out to consultation. However, as a result of the additional increase the noise risk assessment and noise management plan was updated. This was in response to a Schedule 5 notice and the updated documents were put onto Citizens Space. The Operator has also provided an updated noise impact assessment to BS: 4242 and an updated Noise Management Plan, final version dated December 2019 and which included the new sensitive receptors. No additional engines are required.	
Brief summary of issue raised	
10.	There is also the potential for future applications for residential development on the strip of land between the landfill and the Keele Road Estate. Based on the current National Planning Policy

<p>Framework and the recent planning appeal decision which has allowed housing development on a parcel of land adjacent to the site (Hampton's Scrapyard and Adjacent Field, Keele Road, Newcastle-under-Lyme, Staffordshire ST5 5AA Planning Inspectorate Appeal Ref: APP/P3420/W/15/3138033) the council would not be in a position to resist development on surrounding land in the vicinity of the site where there is an identifiable conflict in land uses between residential and landfill operations.</p>
<p>Summary of actions taken or show how this has been covered</p>
<p>We are satisfied that there will not be an adverse impact outside the site. We can only assess impacts against known receptors and any impact on future land uses would be an issue for future planning applications.</p>
<p>Brief summary of issue raised</p>
<p>11. Schedule 5 Response - R19.10249-2-AP - Noise Impact review -1.0 The Noise impact assessment has been undertaken in line with BS5228 and considers the additional on-site vehicle movements and associated noise impacts on the existing residential areas surrounding the site. It has been demonstrated that the noise limits imposed in the planning permission issued by Staffordshire County Council in N.12/09/216 MW will be complied with in relation to the increased traffic movements. The assessment should also be undertaken in line with BS4142:2014 and identify what is required to meet BAT for all noise sources on site. The operator will need to continually review operations and activities on site and ensure and demonstrate that appropriate measures are in place to minimise noise disturbance to neighbouring noise sensitive land uses.</p>
<p>Summary of actions taken or show how this has been covered</p>
<p>Agreed. We subsequently requested a noise impact assessment to be undertaken in line with BS: 4142. An updated noise impact assessment undertaken to BS: 4142 was provided along with an updated NMP (V3 dated December 2019) and these were provided to the LAEH. The Operator is required to continually review operations and should there be any changes on site that have the potential to increase noise emissions then a revised noise impact assessment would be required.</p>
<p>Brief summary of issue raised</p>
<p>12. Leachate Management - We are also concerned to see that appropriate arrangements are in place to control leachate and that in times of heavy rainfall, when the leachate plant may be struggling to cope, that excess leachate is tankered off site and is not recirculated or left to vent to atmosphere.</p>
<p>Summary of actions taken or show how this has been covered</p>
<p>Appropriate arrangements are in place. The Leachate Management Plan has been updated (April 2019). Leachate removal is a combination of a discharge to sewer via the leachate treatment plant and by tanker off site. Leachate is not recirculated or left to vent to atmosphere.</p>
<p>Brief summary of issue raised</p>
<p>13. Schedule 5 Response – Walleys Leachate Management Plan April 2019 The EA should satisfy itself that this provides appropriate arrangements to deal with leachate</p>
<p>Summary of actions taken or show how this has been covered</p>
<p>Appropriate arrangements are in place. The Leachate Management Plan has been updated (April 2019). Leachate removal is a combination of a discharge to sewer via the leachate treatment plant and by tanker off site.</p>

<p>Response received from</p>
<p>Staffordshire County Council (received 01/07/2019 and 22/08/2019)</p>
<p>Brief summary of issues raised</p>
<p>The planning permission for Walley's Quarry does not restrict the annual waste inputs in terms of tonnage. There is, however, a restriction on the number of vehicle movement in and out of the quarry. Condition 15 of permission ref. N.12/09/216 MW states that: "The number of HGVs entering or leaving the Site shall not exceed 880 per full working week (440 in and 440 out)." Assuming an average load of 15 tonnes of waste per HGV, would mean that the proposed increased annual input could be achieved within the restriction of weekly lorry movements.</p>

However, I am aware that the operator may consider that the assumption of an average vehicle load of 15 tonnes is over cautious, and that a higher figure can be achieved. This might mean that 400,000 tonnes of waste could reasonably be imported within the existing vehicle movement limit.

Alternatively, the operator may also be considering an application to vary the planning permission to increase the number of vehicle movements permitted each day. Such an application would be considered on its merits, with advice from my Highways Department.

Given the above, we would not seek to oppose an application to vary the site licence to increase the maximum waste input to 400,000 tpa. It is important, though, that the applicant recognises that the limit on vehicle movements imposed by condition 15 of the planning permission (ref. N.12/09/216 MW) continues to apply.

Summary of actions taken or show how this has been covered

The Operator is aware of the number of vehicle restrictions as outlined in their planning permission. The Operator has confirmed that they will not be exceeding this figure.

Response received from

Silverdale Parish Council

Brief summary of issues raised	Summary of actions taken or show how this has been covered
<p>Hold the application decision until the Ambient Air Monitoring report has been published.</p>	<p>The air monitoring report is separate to this variation and will not affect the outcome of any decision made as air emissions are covered by the submissions made in support of this variation and it is these submissions that we must review and make our assessment.</p> <p>The report presented measured levels of particulate (PM10 and PM2.5) hydrogen sulphide (H₂S) and methane (CH₄) and compares these levels with the UK Air Quality Strategy (AQS) objectives and World Health Organisation (WHO) guidelines where applicable.</p> <p>Comparing the collected data from the monitoring at Silverdale with the AQS objectives showed that the monitoring location was subject to concentrations of PM10 and PM2.5 that were likely to meet their respective AQS objectives.</p> <p>The H₂S data was compared with its World Health Organisation (WHO) guidelines and was found to be within the specified health limits.</p> <p>Comparison of the data with the guideline for odour annoyance indicated that the air quality at the monitoring site exceeded this guideline for less than 1% of the monitoring time.</p>
<p>Increase in particulate emissions.</p>	<p>As discussed in Section 4.5 of this document, the Environment Agency is satisfied, following a review of information provided by the Operator, that the proposals for managing and mitigating dust are acceptable. Dust complaints from this site are rare.</p>
<p>Increase in HGV's and air emissions.</p>	<p>The local planning authority is responsible for determining land use through the planning application process, this included transport and therefore has already been considered. There will of course be an increase in traffic on site but this is not considered significant given that the Operator will ensure movements are within the limits set in their planning permission. Condition 15 of permission states that: "The number of HGVs entering or leaving the Site shall not exceed 880 per full working week (440 in and 440 out)."</p> <p>Consideration of increased traffic movements beyond the Installation boundary is outside the scope of our determination of the Application.</p>

<p>Changes to topographic survey.</p>	<p>Condition 3.5.3 covers topographic surveys and these are only required to be conducted annually. The applicant provided a survey dated 28.02.2018 which given the application was received in December 2018 is considered adequate for the purposes of this application. In addition a site layout plan dated March 2019 was also provided which provided cross sections of the landfill at that time and the most recent site layout for Cells 1 to 4. Plan reference EEL.7268.D02.001.</p> <p>The survey is only required to;</p> <ul style="list-style-type: none"> a) calculate the volumetric difference (reported in cubic metres) between the most recent topographical survey and the previous annual topographical survey i.e. the additional volume of the landfill void that is occupied by waste; b) make an assessment of the settlement behaviour of the landfill body based on the difference between the most recent topographical survey and previous annual topographical survey for the areas of the landfill which did not receive waste between the surveys; and c) make a calculation of the remaining capacity (reported in cubic metres) derived from the pre-settlement contours and the most recent topographical survey.
<p>Proximity of housing. Existing and housing developments, Odour Management Plan receptor locations</p>	<p>The Operator has updated the OMP to make this clearer. This clarification does not affect the outcome but your comment is noted. Given the update we consider the receptors identified were adequate.</p>
<p>Malodorous Waste The Waste Acceptance schedule do not deal sufficiently with deposited waste, which is 'inherently malodorous'.</p>	<p>Once deposited and covered odour is typically associated with trace components in landfill gas. Given the fugitive nature of odour emissions, management procedures concentrate on preventative measures relating to landfill gas management. The Operator has provided both a gas management plan and a gas risk assessment which we have accepted. Once waste is deposited it should then not be disturbed by digging. An exception to this would be, as an example, retrofitting a leachate well where the well integrity has been compromised.</p>
<p>Sniff Test. The proposed weekly 'Sniff Test' from the boundary of the site does not properly address concerns.</p>	<p>Sniff testing which gives a judgement of intensity and offensiveness is a routine weekly procedure whether or not complaints are received. If complaints are received then the Operator will carry out additional tests accordingly. This is one procedure among many others detailed in the OMP. A daily site inspection is carried out under the oversight of the Site Manager, which include the general odour situation on site and performance of the odour suppression system. Operational procedures OPS006A Site Inspection and FRM195 Landfill Check List are followed daily. If odour is identified as an issue, then the Site Manager will instigate actions as part of the Odour Action Plan (Section 5.0 of the OMP). The Site Manager and designated staff will also carry out weekly odour inspections of the local area. The Manager will undertake an odour survey more frequently if there is a likelihood of an odour event on site and during the event. The results of such a survey will help inform whether the odour control measures are sufficient and/or there is a need to apply additional mitigation measures.</p> <p>Auditable records of any testing carried out will be retained by the Operator.</p>

No responses were received from the following organisations;

- Director of Public Health, Staffordshire
- Health and Safety Executive (HSE, Newcastle Under Lyme)
- Sewage Authority (Severn Trent)
- Food Standards Authority
- Natural England

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. 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 our regulatory powers.

122 responses were received from individual members of the public and the following associations;

- Knutton Residents Association
- Thistleberry Ward
- Thistleberry Residents Association
- Hampton Court Residents Association
- Western Communities Locality Action Partnership
- Petition with 72 signatures
- Notification received 'Stop the Stink' website petition

Of the 122 public responses received the following amenity areas of concern were cited. The responses raised many of the same issues as previously addressed. Only those issues additional to those already considered are listed below:

Brief summary of issue raised	Summary of actions taken or show how this has been covered
<p><u>Odour</u></p> <p>General concerns relating to odour, in particular in the summer – the time when people living in the vicinity will have their windows open and be enjoying their gardens and nearby outdoor environment.</p>	<p>As discussed in section 4.3 of this document, the Environment Agency is satisfied following a review of the information provided by the Operator, and the conditions present within the Permit, that emissions of odour from the Installation will not cause significant pollution to the environment or harm to human health.</p> <p>Site equipment and infrastructure are monitored and maintained regularly. These measures are stated in the operating techniques in a variety of documents provided by the Operator and captured through condition 2.4 and Table S1.2 of the Permit. In addition, there is a generic odour condition within the permit: Condition 3.3.1. This states '<i>emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used</i></p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
	<p><i>appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour</i>'. The Operator has submitted a risk assessment and an odour management plan, which we accept.</p> <p>In the event that the Operator fails to comply with any Permit condition then we would consider appropriate enforcement action in line with our Enforcement and Sanctions Guidance which can be viewed at https://www.gov.uk/government/publications/environment-agency-enforcement-and-sanctions-policy/environment-agency-enforcement-and-sanctions-policy.</p>
<p>Noise</p> <p>Concern raised about the noise impact from traffic, in particular HGV lorries using the site.</p>	<p>A quantitative noise assessment was provided during permit determination. Based upon the information in the Application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise noise and vibration and to prevent pollution from noise and vibration outside the site and that activities will not give rise to significant pollution or harm to human health. See Section 4.4 of this document for further details of our assessment.</p> <p>Noise from increased traffic outside the site cannot be taken into account during the determination of this variation as this is outside our regulatory remit.</p>
<p><u>Effect on human health from odour pollution and the effect of the activities of the Installation on sufferers with existing health conditions</u></p> <p>Concern raised of the impact on health from odour pollution.</p> <p>Concerns have been raised as to the impact of the Installation from emissions of dust and other pollutants, on people with existing conditions such as asthma, particularly the impact on frail and elderly residents and children. Concern raised about the impact this site could have on the users of the local environment.</p>	<p>As discussed in Section 4.3 of this document, the Environment Agency is satisfied following a review of the information provided by the Operator, and the conditions present within the permit, that emissions of odour from the Installation will not cause significant pollution to the environment or harm to human health.</p> <p>As discussed in Section 4.5 of this document, the Environment Agency is satisfied, following a review of information provided by the Operator, that the proposals for managing and mitigating dust are acceptable.</p> <p>Site equipment and infrastructure are monitored and maintained regularly. These measures are stated in a variety of documents provided by the Operator and captured through condition 2.4 and table S1.2 'Operating Techniques' of the Permit. Furthermore, condition 3.2 of the Permit applies to substances not controlled by emission limits, also</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
	<p>known as fugitive emissions. The Operator will be required to manage their activities so that they shall not cause pollution. In the unlikely event of dust causing pollution the Operator is required to undertake a review of site activities, provide an emissions management plan and undertake any mitigation recommended as part of that report, once approved in writing by the Environment Agency – this is required under condition 3.2.2 of the permit. Good management, should ensure that site will present a low risk to local human receptors. We are satisfied that there will be no significant pollution of the environment or harm to human health from emissions such as dust, odour and noise.</p>
<p><u>Effect on human health from pests</u></p> <p>Concern raised that the surrounding area will become infested with flies and scavenging birds which could become a health issue on the surrounding area.</p>	<p>Based on the information in the Application we are satisfied that appropriate measures will be in place to prevent and/or minimise pests including flies. Section 4.7 of this document records in detail the measures proposed to prevent or minimise the presence of pests on site. Measures are in line with our guidance '<i>How to Comply with your Environmental Permit Additional Guidance for Landfill</i>' EPR 5.02. This should ensure that pests are kept to a minimum.</p> <p>There is also a generic pest condition within the permit: Condition 3.6. This states that the activities shall not give rise to the presence of pests which are likely to cause pollution, hazard or annoyance outside the boundary of the site. The Operator has submitted a risk assessment and already operates to a pest management plan, which we have approved.</p> <p>The site will be inspected to ensure compliance with the Permit. In the event that the Operator fails to comply with any Permit condition then we would consider appropriate enforcement action in line with our Enforcement and Sanctions Guidance which can be viewed at https://www.gov.uk/government/publications/environment-agency-enforcement-and-sanctions-policy/environment-agency-enforcement-and-sanctions-policy</p>
<p><u>Traffic</u></p> <p>Concern has been raised on the increased levels of traffic movement on roads which are</p>	<p>Offsite traffic movements and their impacts are outside of our remit for the determination of the Application.</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
<p>unsuitable or close to schools and that the Operator has underestimated the number of traffic movements</p> <p>Concerns have been raised about noise, odour and dust from traffic associated with the site and how this poses a risk to public safety and health.</p> <p>Concerns have been raised about increased CO₂ and other pollutant emissions from additional traffic.</p>	<p>On-site noise, including that generated by traffic is relevant to our determination and has been considered elsewhere in this document (Key Issues, section 4.4). In summary, the Environment Agency is satisfied, following a review of the information provided by the Operator, and the conditions present within the Permit, that appropriate measures are in place to minimise the risk that noise emissions (including on-site vehicle movements) from the Installation will significantly impact on the surrounding locality or cause disruption to local residents.</p> <p>Further, we have consulted Public Health England (PHE) on the Application in line with our guidance. Public Health England have not raised any concerns regarding noise from traffic.</p> <p>The Environment Agency is satisfied that on-site traffic will not give rise to significant pollution of the environment or harm to human health.</p> <p>The planning permission for Walleys Quarry does restrict the number of vehicle movement in and out of the quarry. If the Operator wished to change this they would need to vary the planning permission to increase the number of vehicle movements permitted each day.</p> <p>The local planning authority is responsible for determining land use through the planning application process, this includes transport. Consideration of increased traffic movements beyond the Installation boundary is outside the scope of our determination of the Application.</p>
<p><u>Mud and Debris</u></p> <p>Concerns raised about mud and debris being tracked out or spilled onto the public roads.</p>	<p>The control measures and working procedures are designed to minimise dust emissions from the site including any tracking out of mud and debris onto the public highway. The site benefits from a wheel and body cleaners to remove mud and debris from vehicles prior to them leaving the site.</p> <p>The principal access road at the site is tarmacked. Internal haul roads are constructed using hardcore. All roads are inspected daily and maintained to prevent a built up of mud and debris. All roads and tracks are swept as necessary.</p>
<p><u>Monitoring</u></p>	<p>An assessment of the Application has been undertaken, including, odour, noise, and dust, the associated odour, noise and dust management plans, submitted in support of the Application.</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
<p>Concerns have been raised as to who will monitor noise, air quality and odour and how is this carried out.</p>	<p>As discussed in sections 4.1 – 4.5 of this document, based on the information in the Application, the odour management plan, noise management plan, dust management plan and the Permit conditions, we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise, odour, noise and vibration, and dust beyond the Installation boundary and that activities are unlikely to give rise to significant pollution. Therefore, although we do have resources to conduct monitoring if required, we do not consider regular monitoring by the Environment Agency to be necessary.</p> <p>The Installation will be inspected by the Environment Agency to ensure compliance. This can include both announced and unannounced visits and the frequency of inspection will be based on what we consider appropriate. The Operator is required to comply with the Permit conditions. Any breach in Permit conditions is an offence and would be subject to appropriate enforcement action in accordance with the Environment Agency's Enforcement and Sanctions Guidance.</p> <p>Compliance Assessment Reports are produced following routine Environment Agency inspections which are put on the public register.</p> <p>All information that the Environment Agency obtains as a result of our own monitoring, information obtained as a result of monitoring required under a permit condition or as a result of a notice served under regulation 61 of the Permitting Regulations in relation to monitoring, must be put on our public register.</p> <p>Section 3.5 of the permit and Schedule 3 covers the monitoring the Operator is required to undertake and how this will be done. The limits set in the permit are the compliance limits which it would be a breach of the Permit to exceed. These limits are set such that they are below the limit pollution occurs. The Operator is required to as submit the results of this monitoring to the Environment Agency as set out in Section 4 Table S4.1 of the permit.</p>
<p><u>Effect on house prices</u></p> <p>Concerns have been raised that the value of existing properties and land would be affected.</p>	<p>Depreciation of property prices and/or land is not an issue under the Environment Agency's remit. The Environment Agency is responsible for ensuring that its legislative obligations are met and that the activities at the installation do not have an unacceptable impact on the environment or human</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
	<p>health. Having said that, as there will be no significant pollution of the environment or harm to human health there should be no reason for property prices to be affected.</p>
<p><u>Compliance of permit conditions</u></p> <p>Concern has been raised as to how the site is policed to check compliance and what will happen if the Permit is breached.</p>	<p>In “<i>Getting the basics right – how to comply with your environmental permit</i>” (GTBR) and ‘<i>How to comply with your environmental permit Additional guidance for: Landfill (EPR 5.02)</i>’ we describe the standards and measures that we expect businesses to take in order to control the risk of pollution. We expect the Operator to use the standards and measures in this note in addition to those in GTBR to meet the objectives in their permit.</p> <p>The Installation will be inspected by the Environment Agency to ensure compliance. This can include both announced and unannounced visits and the frequency of inspection will be based on what we consider appropriate. The Operator is required to comply with the Permit conditions. Any breach in Permit conditions is an offence and would be subject to appropriate enforcement action in accordance with the Environment Agency’s Enforcement and Sanctions Guidance</p> <p>Compliance Assessment Reports are produced following routine Environment Agency inspections which are put on the public register.</p> <p>Section 3.5 in the permit covers the monitoring requirements. Condition 3.5.2 requires the operator to maintain records of all monitoring required by the permit. All monitoring is carried out as required in Schedule 3 – Emissions and monitoring. Section 4 of the permit covers record keeping and Section 4.2 covers the reporting requirements made to the Agency.</p> <p>The Operator must follow all the conditions of their permit. The Environment Agency will check they are complying with their permit and that the Operator is continuing to be a competent operator.</p>
<p><u>Extent of local opposition</u></p> <p>There is a high level of local opposition and this should be taken into account in the determination of the Application.</p>	<p>We have to make our decision based on the environmental and health impacts of any proposal. We carefully considered all representations made on this basis. We can only refuse the application if we consider the environmental impacts are unacceptable. The Permit contains conditions to ensure that the activities at the Installation do not have an unacceptable impact on the local environment or human health.</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
<p><u>The extent of the receptors referenced in OMP should be clearer.</u> The Odour Management Plan did not specify the numbers of potential households affected by odour.</p>	<p>Noted, the odour management plan references locations rather than individual residences. However the Operator has updated the OMP to make this clearer. This clarification does not affect the outcome but your comment is noted. Given the update we consider the receptors identified were adequate.</p>
<p><u>The Air Monitoring Report</u> published in 2018 suggested other sources of emissions including a possible chimney stack north of the measurement point in Silverdale Road. The different sources of air pollution that marked the 2018 Air quality report should be scrutinised further and updated with the 2019 air quality monitoring report.</p>	<p>Between the 6 July 2017 and 14 February 2018 a specific ambient air monitoring study was carried out, the results from this study have been shared with the community. Further monitoring occurred between January and May 2019, The report presented measured levels of particulate (PM10 and PM2.5) hydrogen sulphide (H₂S) and methane (CH₄) and compares these levels with the UK Air Quality Strategy (AQS) objectives and World Health Organisation (WHO) guidelines where applicable.</p> <p>Comparing the collected data from the monitoring at Silverdale with the AQS objectives showed that the monitoring location was subject to concentrations of PM10 and PM2.5 that were likely to meet their respective AQS objectives.</p> <p>The H₂S data was compared with its World Health Organisation (WHO) guidelines and was found to be within the specified health limits. Comparison of the H₂S data with the guideline for odour annoyance indicated that the air quality at the monitoring site exceeded this guideline for less than 1% of the monitoring time.</p>
<p><u>On-site gas management.</u> That the reference 'emissions from site activities shall be free from odours at levels likely to cause pollution outside the site' should read 'emissions from activities shall be free from odours at levels likely to cause a nuisance' – since it is more likely that nuisance rather than pollution would be a just cause for remedial action.</p>	<p>Pollution is the term used and defined in the Environmental Permitting Regulations (EPR) and the standard we are required to regulate against. The Environment Agency has drafted template permit conditions to apply appropriate environmental controls to this type of facility and to make the permit determination process more efficient. These conditions are based on legal requirements and our experience of best practice over many years of regulation. We do not therefore consider a change to the template condition is necessary or appropriate.</p>
<p><u>Gas Infrastructure Monitoring and Maintenance.</u> That CLP Eurogas should inspect more frequently than monthly. CLP Eurogas inspections and maintenance schedules should be more frequent and more rigorous in view of the odour nuisance alleged and experienced</p>	<p>CLP have a permanent presence on site. There are 2 CLP staff present at the Walleys facility and an Area Manager in attendance as well for half of the week. The amount of staff present can increase to 5 or 6 if there is infrastructure development works or similar to complete. The gas field is balanced once a week, with the strategic monitoring points of the gas field checked three times per week to</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
<p>recently. Gas field balancing should also be more often than monthly. CLP Eurogas should have a more frequent and monitoring presence on site.</p>	<p>assess if any additional balancing, over and above this is required.</p> <p>The Environment Agency has and can in the future undertake a technical review of landfill gas management systems at Walleys Landfill site, as we do at many other similar sites. The objective of any site audit is to determine whether the landfill gas collection system installed at the site is:</p> <ul style="list-style-type: none"> • Capable of collecting and treating the gas generated at the site. • Being operated and maintained so as to maximise gas collection efficiency and minimise fugitive landfill gas emissions. • Treating the gas in a manner that minimises point source emissions. <p>This Industry Code of Practice (ICoP) addresses the management of gas produced from landfill sites accepting biodegradable waste. The ICoP represents current best practice and has been written by the landfill gas industry with input from the Environment Agency (EA). It is a set of guiding principles, which, when followed, will demonstrate best practice. There is an expectation that the frequency of inspection or maintenance would be increased if there is evidence to suggest a problem. The Operator has an approved Gas Management Plan that is referenced in the operating techniques in Table S1.2. There is also Section 2.9 and specifically condition 2.9.3 in the permit that requires the operator to comply with this plan and to submit revisions of the plan in the future, should this prove necessary.</p> <p>Routine gas infrastructure checks or field balancing frequencies are a minimum. If there was a problem then this would result in an increase the frequency of this or any other checks made to the gas management system. The current frequency of checks carried out on the system are considered adequate but frequency will be increased in response to an event if this is considered appropriate in line with ICoP.</p> <p>The Operator has a gas action plan that established the steps required to be taken should there be an event on site relating to the gas extraction system or a breach of an action or compliance limit.</p>
<p><u>Monitoring H₂S and Gas Wells</u></p> <p>Re S4.1, monitoring data should be more frequently reported to the EA Control of H₂S emissions for prevention of odour events –</p>	<p>Monitoring data is reported to the Environment Agency as per Table 4.1 in the permit which for gas in external boreholes is quarterly. However if there is a breach of a permit compliance limit then the Environment Agency is informed immediately.</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
<p>records of levels of H₂S should be made available to the public for inspection.</p> <p>Re 4.2 gas well monitoring - what is the minimum frequency for this activity? Again, this should be done, and records kept and made available for public inspection so that testing times and frequency can be noted – and should be more often than weekly when complaints/reports of odour are reported.</p>	<p>Condition 4.3.1 of the notifications section of the permit ensures;</p> <p>(a) any activities that gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately</p> <ul style="list-style-type: none"> (i) inform the Environment Agency; (ii) take the measures necessary to limit the environmental consequences of such an incident or accident; and (iii) take the measures necessary to prevent further possible incidents or accidents, and; <p>(b) of a breach of any permit condition the operator must immediately—</p> <ul style="list-style-type: none"> (i) inform the Environment Agency; and (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time. <p>(c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored, and;</p> <p>Condition 4.3.2 Any breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule. Monitoring data can be made available to the public when requested.</p>
<p><u>Complaints</u></p> <p>Complaints/reports should be immediate and on receipt of gas complaints. We understand that it can take up to 24 hours or longer for a complaint/report to be ‘substantiated’/investigated/located by the Environment Agency.</p>	<p>The complaints procedure is covered in Section 5.1 of the Odour Management Plan.</p> <p>We do receive complaints of odour from residents in the vicinity of this site and in response we continue to undertake odour checks in the area and visit the site regularly. We can only take action where odour is confirmed by our Officers, deemed offensive and the operator is not using all appropriate measures. During site visits since 2019 we have only substantiated one odour complaint at offensive levels and therefore we are satisfied that the operator has taken all appropriate measures to minimise odour.</p> <p>Monitoring records are available to the public on request.</p> <p>The updated Landfill Gas Risk Assessment and gas management plan has been reviewed by the EA Specialist and accepted and is in line with our guidance.</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
	<p>The Installation will be inspected by the Environment Agency to ensure compliance. This can include both announced and unannounced visits and the frequency of inspection will be based on what we consider appropriate. The Operator is required to comply with the Permit conditions. Any breach in Permit conditions is an offence and would be subject to appropriate enforcement action in accordance with the Environment Agency's Enforcement and Sanctions Guidance</p> <p>Compliance Assessment Reports are produced following routine Environment Agency inspections which are placed on the public register.</p>
<p><u>Gas Extraction</u></p> <p>Upgraded gas extraction and additional gas wells should be phased in before any malfunction/odour or nuisances/air pollution become significant.</p>	<p>Any defects are required to be rectified and any recommendations or improvements are expected to be adopted by the Operator. The Operator includes procedures for continuous review and incorporating necessary changes in the operational and post-closure phases. Improvements are routinely planned and upgrades to the system are continuously made. The Operator will have considered during planning and design any changes that are likely to occur over the whole life of the landfill, and make appropriate provision for these.</p>
<p><u>Operator/Agency</u></p> <p>The relationship between Red Industries and the EA should not be what is 'agreed' but what is necessary.</p>	<p>There appears to be a concern that regulation relies on what is agreed with the permit holder but this is not the case. We will impose anything we consider is necessary to protect the environment and people.</p>
<p><u>Diagnostic Testing</u></p> <p>Re 4.1 Appendix 2 the six-month testing of gas analysers and collection of instruments for diagnostic testing should be enforced and reports made available for public inspection.</p>	<p>Reports on any diagnostic testing will be kept by the Operator. The Environment Agency can request these records for review at any time.</p> <p>Auditable records of any testing carried out will be retained by the Operator. The frequency of testing and calibration are set by the equipment manufacturers.</p> <p>We were satisfied that their EMS/ operating techniques adequately described how they undertake the sampling and submit those samples to appropriate labs and interpret the results. The Operator develops these procedures based on our detailed guidance on gov.uk and our guidance '<i>How to comply with your environmental permit Additional guidance for: Landfill (EPR 5.02)</i>'.</p> <p>We would apply MCERTS as a default standard to be where the operator does not have adequate procedures in place. MCERTS is a certification scheme for product certification of monitoring systems (for example, instruments, analysers and</p>

Brief summary of issue raised	Summary of actions taken or show how this has been covered
	<p>equipment), the competency certification of personnel, the accreditation of laboratories and organisations involved in sampling.</p> <p>Condition 3.5.2 requires the operator to maintain records of all monitoring required by the permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data. Section 4 of the permit covers record keeping and Section 4.2 covers the reporting requirement made to the Agency.</p>

Annex II: Consultation on the Minded to Decision

This section reports on the outcome of the public consultation on our draft decision carried out between 19/08/2020 and 16/09/2020.

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

Representations from Statutory and Non-Statutory Bodies	
Brief summary of issues raised	Summary of action taken / how this has been covered
Public Health England dated 16/09/2020	
Previously PHE raising concerns about the assessment of emissions to air and confirmed that the latest landfill gas risk assessment has addressed these concerns and agreed that public health risks from emissions to air are low, on the basis of the evidence presented.	Noted. No further action.
On-going generation of odours causing annoyance and potential nuisance. Benefit for the EA to monitor frequency of complaints over time, which could be used as an indicator of the effectiveness of the OMP and if it needs to be amended. The trends in complaint data could be considered at the quarterly liaison group meetings	The proposed Installation will be operated in accordance with our sector technical guidance notes, H4 – Odour Management therefore we do not consider odour will cause any significant pollution of the environment or harm to human health. EA are already monitoring complaints and these are recorded on the public register. This is also something that could be considered at the liaison meetings.
We recommend that the local community are informed of planned works that could cause and mitigate odour issues.	Noted, this could be an ongoing agenda item at the liaison meetings.
In some cases the perception of risk may have a greater impact on health than any emissions themselves. A 2009 report was mentioned which suggested that this should be considered as part of any risk assessment.	The report itself is based on a limited number of case studies and acknowledges that neither the cases nor literature reviewed are exhaustive and that much more work is needed. We have to make our decision based on the environmental and health impacts of the proposal. PHE have raised no concerns about actual or perceived health impacts. We can only refuse the application if we consider the impacts are unacceptable. The Permit contains conditions to ensure that the activities at the Installation do not have an unacceptable impact on the local environment or human health. So we do not consider that the proposed increase in throughput would have a significant impact on human health either directly from emissions or from any perceived risk from emissions.
Newcastle-Under-Lyme Borough Council dated 18/09/2020	
Objection to the variation application - Though agreed that the technical comments raised by the Borough Council in June, August and November 2019 have been considered by the EA, although in their view, the ongoing odour complaints	Whilst their position is noted we are satisfied that odour is appropriately addressed and that the permit contains. The Permit contains conditions to ensure that the activities at the Installation do not have an unacceptable impact on the local environment or human health.

and concern this is generating remain to be appropriately addressed.	
The BC recognises that the increase in the permitted annual waste tonnage inputted into the site has the potential to bring forward the closure of the site and the permanent capping of the landfill area and its eventual restoration. They consider that the application of a permanent cap alongside appropriate operating practices up until permit surrender will provide a long term resolution to a number of matters.	Noted and agreed
The Borough Council will continue to share details of complaints and officers observations, with the expectation that this will positively influence operations and practices and be of benefit to our resident's. At the same time the Borough Council will continue to investigate potential statutory nuisances and will take action in line with its legal obligations. Officers and Councillors will also continue to push for improvements in operations and regulation through appropriate engagement with the operator and the EA	<p>Noted.</p> <p>The Installation will be inspected by the Environment Agency to ensure compliance. This can include both announced and unannounced visits and the frequency of inspection will be based on what we consider appropriate. The Operator is required to comply with the Permit conditions. Any breach in Permit conditions is an offence and would be subject to appropriate enforcement action in accordance with the Environment Agency's Enforcement and Sanctions Guidance.</p> <p>We will do this by:</p> <ul style="list-style-type: none"> • requiring monitoring of the main pollutants for which limits are set and periodic monitoring for other pollutants; • carrying out audits of the Operator's procedures and methods for emissions monitoring; • regular announced and occasional unannounced inspections; • adding or changing conditions in the Permit if required; • requiring the Operator to inform us if they exceed any of the emission limits in the Permit, or if they fail to comply with any operating conditions; • investigating non-compliance with any condition of the Permit; and • taking enforcement action if needed, including issuing notices, prosecuting serious breaches or potentially revoking the Permit.

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

Representations from Local MP, Councillors and Parish / Town / Community Councils	
Brief summary of issues raised	Summary of action taken / how this has been covered
Silverdale Parish Council	
Concern raised that the Licence holder has not estimated any changes to levels of pollution brought about by an increase of 60 per cent in waste tonnage and queried whether this should be addressed.	We are satisfied we have sufficient information to assess the risks and that there will be no significant pollution of the environment or harm to human health
Tonnage increase before the final outcome of the application, by giving a temporary permission to vary the tonnage to 400,000 tonnes per annum for 12 months, the Environment Agency effectively pre-empted the variation application by the contractor. We believe the Environment Agency was in error in	While the application was being determined we allowed the operator to accept up to 400,000 tonnes of waste in 2019 subject to appropriate controls. Decisions to allow temporary situations like this are made on a case by case basis in line with our regulatory remit. This enforcement position is independent of any permit variation decision process and is not an indicator of any final decision in relation to any such application

<p>making that decision and erred in the way this was communicated.</p>	<p>The position was issued in October 2019 and communicated to the local liaison meeting</p>
<p>Concerns were raised about the Air Quality Report Calculation for Silverdale 2019</p> <p>And that a period of high readings for particulate matter at the beginning of the year were eliminated for the technical comparison of pollution levels at Walleys Quarry with Air Quality Standards. As such it was considered that there is a possibility therefore that the AQS for PM10 24-hour mean not to exceed 50mg.m-3 on more than 35 occasions during one year may have been exceeded. It was stated that the proposal should not be approved until the calculation is reviewed for PM10 as an urgent matter for public health</p>	<p>The air monitoring report is separate to this variation. We are satisfied that we have sufficient information to determine the variation application.</p> <p>However, concerns the monitors were only run at certain times is not correct. These were continuous monitoring whose calibration was checked as required during the studies. All monitoring data was reviewed and included within the report.</p> <p>The permit requires the operator to prevent or minimise dust emissions from the facility in particular permit conditions 1.1.1, 2.4 and 3.2.1. As explained in Annex I of this decision document we depend on the operating techniques and their dust management plan in order to manage dust and prevent it from leaving the site. Dust complaints from this site are rare.</p> <p>The main concern about PM10/ PM2.5 relates mainly to vehicle emissions, i.e. soot particles and their potential health effects and PM2.5 in particular is more commonly associated with the combustion industry and the incineration of waste.</p> <p>The type of dust we might expect from a landfill will have much larger particle size than PM10. This site already conducts depositional dust monitoring and the dust management plan details directional and Frisbee gauges. So they are measuring deposition rates rather than PM10 / PM2.5 concentrations. Monitoring points are located at the boundary of the site. The dust monitoring plan also has a deposited dust action level of 200mg/m²/day and monitoring techniques are in line with the M17 'Monitoring of particulate matter in ambient air around waste facilities' guidance. Exceedance of the levels initiate further investigation and if necessary additional measures and / or monitoring.</p> <p>Monitoring of PM10 or PM2.5 has not been added to the permit as we consider that this variation does not increase the risk and it is not considered that there will be a significant impact on the nearest receptors from releases of particulate matter.</p>

c) Representations from Community and Other Organisations

Representations from Community and Other Organisations	
Brief summary of issues raised	Summary of action taken / how this has been covered
Thistleberry Residents Association	
<p>Remain of the view that the increase in the the amount of waste to the site should be granted in order to speed up the process of infilling on the condition that several extra measures be put in place, such as rigorous monitoring of the site by the EA and by Red Industries themselves and a more rapid response to complaints, particularly of odour by all parties involved.</p>	<p>Noted</p>

The effects of dust needs to be monitored. Makes reference to SGN Landfill (EPR 5.02): how to comply with your environmental permit – additional guidance. No provision appears to have been made to control or monitor dust particles of 2.5s, which we are informed could be harmful	As discussed in Section 4.5 of this document, the Environment Agency is satisfied, following a review of information provided by the Operator, that the proposals for managing and mitigating dust are acceptable. Dust complaints from this site are rare. Also see Silverdale PC response above.
Given the doubling of waste input, it would also be expedient if the EA, the County Council, the Borough Council and the Police were to coordinate their activities with regard to any adverse impacts from this permitted increase in terms of traffic and other deleterious effects off site which could generate complaints and cause undue nuisance to residents, and which would go beyond just talking about them.	Noted. Offsite traffic impacts are outside the remit of the permit.
EA and Red should take a more proactive approach and rapid response to serious complaints and monitoring of the site.	We consider our approach to regulating this site both appropriate and effective. The Environment Agency complete regular inspections at the site and regular assessments within the local area taking in consideration the location and times of complaints. Environment Agency staff have been on site and within the local area when complaints have been received.
Poolfields Residents Association and Stop The Stink (combined response)	
Expressed concern over continued odour and health impact concerns.	The impact of odour emissions is addressed in section 4.2 of this decision document. We are satisfied that appropriate measures will be in place to prevent or where that is not practicable to minimise odour and to prevent pollution from odour. We consider that all relevant sensitive human receptors have been taken into account. The Installation is unlikely to contribute to an exceedance of the air quality standards for human health. We consulted with Public Health England who stated that public health risks from emissions to air are low, on the basis of the evidence presented.

d) Representations from Individual Members of the Public

A total of 138 responses were received from individual members of the public.

Representations from Individual Members of the Public	
Brief summary of issues raised	Summary of action taken / how this has been covered
The following issues were raised; Odour Traffic Health Pests (seagulls) Misc. Mud / debris on Road Pests (other) Air Quality Dust Noise Litter	These issues were the same as those raised previously and already reported in Annex I of this decision document. The Environment Agency response has not been repeated and reference should be made to Annex 1 for an explanation of the particular concerns or issues. Also some of the consultation representations 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.
Concern that the landfill is above the water table and could become contaminated. Concern	We have determined the proposed change will not compromise the design of the landfill both in the

<p>over geological fault lines in relation to contamination.</p>	<p>short term and long term. The original assumptions are not dependent on the rate of waste input. The design of the landfill complies with the engineering standard required by the Landfill Directive. The design as required by the landfill directive include:</p> <ul style="list-style-type: none"> • Leachate drainage/management infrastructure which allows leachate to be maintained at the level specified in the permit and • Basal and sidewall geological barrier which limits the input of contaminants into the groundwater and migration of landfill gasses in the subsurface. The barrier has also helped to seal the pathway created by the geological fault. <p>The landfill is currently operational. As a result the groundwater level is artificially kept below the base of the landfill. This represents the short term condition. For this scenario the risk pathway is the landfill lining. This pathway has been considered in the risk assessment which demonstrated the landfill would not present an unacceptable risk of emission of hazardous and non-hazardous substances to groundwater.</p> <p>The long term scenario considered in the HRA was a scenario where the groundwater levels have been allowed to rebound such that hydraulic containment conditions prevail at the site. This means where either the groundwater level or the piezometric head is above the leachate head. We therefore consider the rate of waste input will not compromise the design of the landfill and the 'assumptions' that underlie the design. The principle of hydraulic containment is independent of the 'rate of waste input'. As a result the increase in annual waste input is not considered to alter the conclusions of the risk assessment provided with the application.</p>
<p>Concern over geological fault lines and gas migration.</p>	<p>As stated above basal and sidewall geological barrier limits the input of contaminants into the groundwater and migration of landfill gasses in the subsurface as the pathways created by the fault line has been sealed by the barrier. In addition the applicant has submitted several revisions of the landfill gas risk assessment as part of the ongoing determination of this variation which included the assessment of the risk of lateral emissions. We are satisfied that all emissions have been adequately risk assessed and we are satisfied that risks from lateral emissions are insignificant. The site is surrounded by gas perimeter boreholes that are monitored on a regular basis. Any lateral migration would be detected at this point.</p>

Summary

The application has been subject to a full and robust determination in accordance with our policy and operational procedures, including publication of the application. The outcome of this determination is to grant the permit.