MILTON LANDFILL SITE

LANDFILL GAS RISK ASSESSMENT

FCC Environment UK Limited

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1 Introduction

1.1 Report Objectives

The purpose of this report is to provide a quantitative Landfill Gas Risk Assessment (LFGRA) for Milton Landfill Site (the Site) operated by FCC Environment Limited (the Operator, FCC) in support of a variation application to permit BV4584IU. Previous LFGRA's have been produced for the Site and are provided in the following report:

- Golders Associates, Landfill Gas Generation & Risk Assessment, Ref 03523331.504/A.0, December 2003 (2003 LFGRA)

Under the requirements of the Landfill Directive, landfill gas must be collected from all landfills receiving biodegradable waste. The gas plant onsite currently consists of a flare and three engines. The LFGRA has been prepared to support a permit variation application which proposes to vary leachate level compliance limits and increase annual tonnage for the last year of operation at the Site. The model has been updated where possible to include site specific information and reflect proposed operations at the Site.

The GasSim2.5 numerical modelling and risk assessment package has been developed by Golder Associates and the Environment Agency (Agency) to provide a nationally consistent approach to the Agency's statutory duty in respect of gaseous emissions from landfill sites. GasSim2.5 is able to assess emissions from the landfill on a cell-by-cell basis, taking different cell characteristics into account e.g., different liner and capping specifications to give a more realistic assessment. GasSim2.5 is also able to introduce monthly time steps for the assessment, amend moisture content of the waste after completion of capping and model the effects of surcharged waste.

1.2 Justification for Modelling Approach and Software

This report is a quantitative risk assessment based on actual and predicted waste inputs to the site and as-built engineering specifications. The GasSim2.5 models have been generated on the basis of information provided by FCC including details of proposed waste inputs, landfill characteristics and capping arrangements.

The GasSim2.5 gas risk assessment process follows a 2-tier screening approach. After running the model populated with site-specific inputs, the first Tier 1 assessment initially provides an estimate of landfill gas generation over the lifecycle of the landfill site. The model assumes point source emissions of landfill gas combustion products and fugitive emissions of untreated gas will occur. The magnitude of these emissions is however influenced by the specification of gas control measures to be employed at site i.e., gas engines, gas flare, capping specification and liner, which are all inputs into the model. The Tier 1 model outputs will provide estimates of 'daughter' species formed by the gas plant based on the quantities of the 'parent' species calculated to be present in the trace gas source term.

The Tier 1 phase of the model subsequently carries out a conservative assessment of the likely impact of these fugitive emissions on adjacent receptors by comparison against relevant

Environmental Assessment Limits (EALs). If concentrations of these substances are found to be 'not insignificant' then further assessment using the GasSim2.5 Tier 2 AERMOD air-dispersion modelling function is carried out. This will use site-specific meteorological data rather than the 'representative' windrose used by the Tier 1 assessment and calculate Predicted Environmental Concentrations (PEC) of potential pollutants at specific receptors. 'Tier 3' modelling is normally only implemented if PECs are still found to be an issue after GasSim Tier 2 air dispersion modelling or in locations with extremes of topography.

1.3 The Assessment

The GasSim2.5 Tier 1 and Tier 2 assessment includes a quantitative assessment of the gas plant and surface emissions from the Site. The assessment assumes that all gas produced is utilised by either gas engines or flares which will be brought online / decommissioned as required. Any gas not utilised by the engines e.g., due to down-times for maintenance or breakdown will be treated via flaring. All aspects of the practical management of landfill gas at Site will be detailed in the gas management plan as provided at Appendix D.

1.4 Model parametrisation, validation and sensitivity analysis

Site specific information has been used in the GasSim2.5 model where available as presented in Section 3, if not available default values have been utilised. Where possible logtriangular and loguniform distributions have been used to account for variability in the input parameter ranges.

Based on recorded data, gas utilised at the Site in 2020 was 12,865,636 m^3. This equates to approximately 1,400 m^3/hour of gas being utilised in the gas engines and 50 m^3/hour in the gas flare. The predicted gas generation at the Site for 2020 using the modelled outputs is estimated at 1,200 m^3/hour therefore it is considered representative of the Site. Gas generation is discussed in Section 5.2.

2 Source term

2.1 Site Location and Regulatory History

The Site is centred on National Grid Reference TL 46500 63200, approximately 1 km west of the centre of the village of Milton and 3 km north of the centre of Cambridge and occupies an area of approximately 48.5 ha. The Site comprises an L-shaped plot of land consisting of three phases of development: Phase 1, Phase 2 (Cells 1 to 10) and Phase 3 (Cells 12 to Cell 24B). It is surrounded by agricultural land, domestic and commercial properties. Phase 1 and Phase 2 have been restored. Cells 12A – 14B of Phase 3 have also been restored, with Cells 15 to 24B to be completed by 2025. The Site is required to be completed by 2026.

Waste Management Licence (WML) reference 70140 was issued on 20th August 1992 to Cambridgeshire County Council. The WML has been varied numerous times. It was changed to an environmental permit referenced BV4584IU in 2005. The latest variation was issued on 18th April 2016 which replaced the carbon dioxide compliance limits with action levels in accordance with Industry Code of Practice.

2.2 Permitted Tonnages for Disposal

Prior to 2004, the Site was permitted to accept both hazardous and non-hazardous waste. This included Category 1 (uncontaminated soils), 2a and 2b (household/commercial or similar materials), 2c (site leachate), 3a (non-special liquids and sludges) 3b (flue and incinerator ash, fragmentiser materials (non-special solids), 3c (contaminated soils, brick, stone, sand, concrete, road planings, etc.), 3e (tyres) and 5 (clinical waste and autoclaved waste) wastes. No limits were applied, with the exception of difficult wastes for which limits were set.

The site currently accepts non-hazardous waste and has a limit of 150,000 tonnes per year. The waste types are specified in Schedule 2 of permit EPR/BV4584IU/V009.

The permit variation application proposes to increase the limit to 200,000 tonnes for the last year of operation.

2.3 Landfill Gas Source Term

The hazard source term at Site is the landfilled waste and its potential to produce landfill gas. If appropriate controls are not in place, this landfill gas has the potential to migrate laterally from Site through the ground or through ambient air as surface emissions (the pathways). Treatment of the gas in a flare or gas engine also has the potential to generate potentially harmful combustion products.

If these emissions reach sensitive receptors then they can cause a number of adverse impacts. Lateral migration of landfill gas can cause vegetation stress by creating anoxic conditions in sub-surface stratum and potentially create asphyxiative conditions or explosive atmospheres in sub-surface structures or buildings. Fugitive surface emissions of untreated landfill gas can cause amenity issues such as malodours detectable off-site or potentially harmful concentrations of certain gases. Combustion products also have the potential to cause harm to human health or sensitive ecological receptors.

This assessment is concerned with the generation of landfill gas within the Site. Landfill gas is produced by the microbial breakdown of wastes in a complex series of reactions. In a modern landfill the decomposition processes are mainly anaerobic and typically produce a gas mixture comprising mainly carbon dioxide and methane. Other minor constituents may include nitrogen, oxygen, water vapour, higher alkanes, hydrogen and trace substances such as hydrogen sulphide, organo-sulphur compounds, esters, alcohols, low molecular weight aromatic and aliphatic hydrocarbons. The trace compounds are normally only present at levels which do not cause harm;

however, some substances are highly odorous and can be detected even at extremely low concentrations.

Landfill gas production and its trace gas composition varies significantly depending on a wide range of factors including:.

- composition of the waste (e.g., organic content, presence of inhibitors).
- method of landfilling (e.g., degree of compaction).
- leachate level control.
- unsaturated moisture content (through rainfall or recirculation of leachate).
- temperature.
- pH; and
- ingress of oxygen.

Other Potential Sources of Ground Gas

Methane and carbon dioxide, the major constituents of landfill gas, can occur from a variety of natural and anthropogenic sources, as summarised in Table 1.

Table 1 Potential Sources of Ground Gases

Gas	Source	Comments
Landfill Gas	Anaerobic decomposition of degradable waste within landfill sites. Typically 60% methane and 40% carbon dioxide during methanogenic phase.	Composition varies over time, particularly in early stages. Contains a range of minor compounds.
Landfill Associated Gases	Anaerobic degradation of leachate external to site. Degassing of dissolved gases in groundwater. Evolution of gases following interaction between leachate and groundwater.	Can result in secondary (external) production of methane or carbon dioxide.
Sewer Gas	Anaerobic degradation of organic components of sewage producing methane and carbon dioxide.	Often characterised by hydrogen sulphide odour.
Marsh / Peat Gas	Anaerobic microbial degradation of organic material (usually waterlogged vegetation / peat). Often associated with presence of river alluvium or dredgings.	
Geogenic Gas	Natural seepages of carbon dioxide and hydrocarbon gases derived from geologic sources such as coal seams and deep oil / gas source formations. Can be present in solution in groundwaters.	Methane most common but can contain carbon dioxide and higher alkanes.

Gas	Source	Comments
Mine Gases	Various types. Most common is "fire damp" with high methane content, produced by the desorption of gas trapped in coal. "Black damp" (Stythe gas) with high carbon dioxide and denser than air. "White damp" is high in carbon monoxide.	Methane most common. Can contain higher alkanes, carbon dioxide and carbon monoxide. Often low in oxygen.
Natural Shallow Ground Gas	Various types: ▪ high carbon dioxide formed by subsurface aerobic activity leading to depleted oxygen and elevated carbon dioxide. ▪ chemical degradation of rocks (e.g., carbonates) producing carbon dioxide. ▪ carbon dioxide production in root zone of soils by plants	Gases can be emitted from ground under falling barometric pressure conditions.
Mains Gas	Leakage from underground pipework or storage tanks. Mainly methane but often contains higher alkanes.	An odouriser is added to permit detection of leaks. May also contain other trace gases e.g., higher alkanes, helium.
Other Sources	▪ Degradation of leaked or spilled hydrocarbons. ▪ Anaerobic degradation of organic contaminants in groundwaters (e.g., silage liquor). ▪ Reactions between monitoring well construction components and environment. ▪ Reaction between landfill construction materials and environment.	Hydrocarbon spillages often have an 'oily' odour. Fuel spillages common – Petrol or Diesel. Can degrade to produce methane / carbon dioxide.

2.4 Landfill Gas Management

A Landfill Gas Extraction System is applied to all Phases of Milton Landfill. This comprises a network of 146 vertical 160 mm diameter gas extraction wells installed across the Site which extract gas for treatment in the Gas Plant comprising three 1 MW Jenbacher Gas Engines with a 3000 m^3/hr flare on standby. The gas infrastructure is shown on the Gas Infrastructure Plan (Drawing No. 5353_GI13) dated October 2021.

The gas extraction wells have been installed at approximately 50m intervals and this well distribution has been defined through site-based operational experience, Industry Codes of Practice and Environment Agency guidance. The gas extraction wells have been spaced with a radius of influence to ensure that the landfill gas is drawn back towards the centre of the Site. The drilled gas wells have been installed to an approximate depth of between 4 to 21 mbgl (no more than 80% of the depth of the waste or a minimum 3 m stand off from the base). These wells are expected to have been constructed with 5 m of plain pipe below ground level and the remainder of the length slotted. The pin wells have been constructed with 3 m of plain pipe below ground level and the remainder of the length slotted.

Condensate knockout pots, a condensate pumping system and a self-dewatering drainage vessel are installed at the low points in the gas main to prevent blockages within the pipework. Wellhead chambers are installed over the vertical gas wells and contain pressure and gas monitoring facilities.

The site's Gas Management Plan sets out the routine operation and maintenance of the gas management system. The system is regularly balanced in accordance with the routine monitoring undertaken at the site. All minor faults identified on site during routine monitoring are addressed at the time of identification or shortly afterwards by the monitoring technician and site staff whilst major works are carried out by approved contractors.

The Gas Management Plan (Document ref: EMS-4-13-08-LNF) version 6 dated January 2021 is appended at Appendix D.

2.5 Leachate Levels and impact on Gas Abstraction System

The in-waste abstraction system is monitored by the Operator on a weekly basis for gas flow rate, quality and pressure to maintain its effectiveness. When inefficiencies, faults and gas migration events arise or abstraction wells are damaged beyond repair, gas wells are replaced, and pipe maintenance is undertaken. If it is seen necessary for additional wells to be installed for more effective environmental control then these are provided.

All gas extraction wells are balanced to maximise gas collection efficiency and maintain low oxygen concentrations to reduce likelihood of heating events within the waste. Balancing and site infrastructure inspections are carried out by suitably trained monitoring technicians.

The Operator proposes to allow leachate levels to rise at the Site. This increase in saturated waste can inhibit gas production compared to similar wastes that are moist but unsaturated. High leachate heads can also interfere with gas collection by partially or fully submerging the response zone of gas wells and reducing their ability extract gas. The depth of waste varies between 10 – 20 m across the Site. Leachate can perch above layers of low permeability material and the material itself can act as a physical barrier to gas movement.

Based on the current leachate level compliance limits set at 6.5 m AOD, excluding the leachate well specific compliance limits, the largest increase in leachate head will be in Phase 2 and 3 which will experience a maximum increase of 2.5 m. If it is assumed that the upper-most 5 m section of all wells was constructed with plain pipe where it extends through the cap to varying degrees, the depth of the slotted pipe (the response zone) below that through which can be drawn can vary depending on measured base depth of the well and the liquid level within it. The increase in leachate head will likely reduce the effective slotted sections and therefore reduce the response zone of the gas wells by a maximum of 2.5 m in Phase 2 and Phase 3.

Gas production at this site is expected to have peaked in 2014 and is on the decline (current GasSim2.5 estimate of 1,200 m^3 / hour in 2020). This will continue to decline, particularly in the older waste deposits. The gradual saturation of the waste deposits is unlikely to significantly affect gas production volumes or the sites' ability to control gas. The rising head of leachate may displace gas upwards. The rate of the rise is limited and the volume of displaced gas is unlikely to be insignificant and well within the capability of the system. Wetting of waste which may have been dry historically may temporarily increase gas production, however this is likely to be countered by the overall declining gas source term. A review of leachate levels at the Site as part of the Hydrogeological Risk Assessment already shows elevated leachate levels reported at the Site at a level comparable to the proposed compliance limit increase.

The Well Condition Survey Reports provided by FCC and produced by Infinis for July to December 2020 and January to June 2021 demonstrate that on average across all gas wells surveyed the effective slotted sections are approximately 4 – 5 m in depth (ranging from 1 m to 11 m) with approximately 25% of the effective slotted sections below liquid level. A review of this data suggests that even where liquid levels occlude a significant depth of the pipe i.e., 50% flooded, there is still some 1 - 5 m which remains available for gas extraction. Anecdotal industry experience echoes this conclusion, with many abstraction wells not being drilled past 10-15m due to perceived limited effectiveness. Most of the wells will have >1.5 m of available slotted pipework through which to pull gas with an effective response zone of 1 to 11 m. There is a sufficient depth of unsaturated waste and slotted sections of the gas wells that gas extraction will not be inhibited by the raising of leachate levels.

A sensitivity analysis of the GasSim2.5 model based on the current leachate level limits was undertaken to determine the potential impact on gas generation from the increase in leachate levels. The change in leachate head had no discernible impact on the modelled gas generation with the modelled gas generation rates comparable with the gas generation rates discussed in Section 5.2. By changing the moisture content of the waste post leachate head rise the gas generation shows that there would be a temporary peak in gas production prior to reducing gas production expected to continue to decline as shown in the gas production curve. The reality is that leachate level rises will be driven by infiltration or groundwater intrusion.

The moisture content and degradation rate component of GasSim2.5 model is limited in its ability to model multiple degradation rate changes during the lifetime of the Site as a result in changes in leachate levels. It is considered, as shown in the gas production data provided by the Operator, that the leachate level increase would not result in a significant increase in gas production due to variability in leachate level compliance as discussed in the Hydrogeological Risk Assessment Report (McDonnell Cole, Report Ref: 1714-HRA-R2.0).

The Site Operates 3 Jenbacher 1 MW gas engines and 1 3000 m^3/hr flare. As of 2020 the Operator was extracting approximately 1220 m^3/hr of gas from the Site therefore there is considerable spare capacity with the existing gas plant on Site to treat excess gas.

The displacement of gas by rising leachate levels is not considered to be an issue. Leachate levels were and are not considered to be an obstruction to recovery of gas from the Site based on Well Condition Survey Reports provided by FCC. Management of the gas field and gas control infrastructure is carried out on behalf of the Operator by Infinis and will continue to be managed by Infinis.

3 Pathways

In the context of environmental risk assessment, Pathways are defined as the environmental transport processes by which a Hazard (itself defined as a property or situation that in particular circumstances could lead to harm) moves from its Source to one or more environmental Receptors. In the case of landfill gas migration, there are three transport processes that should be considered:

- atmospheric dispersion from the surface of the Site.
- sub-surface lateral migration through the surrounding superficial geology or along preferential management-made migration pathways such as service ducts, pipelines and trenches; and
- direct release of combustion products arising from the active management of landfill gas (flares and engines).

The GasSim2.5 model will be used in this assessment to determine concentrations of various raw gases both from surface emissions and combustion products from gas plant emissions at identified receptor points.

3.1 Engineering Controls

3.1.1 Basal and Sidewall Liner

Phase I, Phase II and Cells 1 to 5a were not constructed on the basis of engineered containment. The cells of these phases are contained by a natural geological barrier at their base comprising the in-situ Gault Clay. The Gault Clay varies between 15 m to 20 m depth beneath the Site. Rising and falling head tests conducted on the in situ Gualt Clay during the construction of Phase II recorded permeability ranging from $3x10^{-10}$ m/s to $4x10^{-7}$ m/s. It is reported that in 1996 a retrospective side wall liner / cut off wall was installed along the northern, eastern and southern boundaries. The wall was engineered to a maximum permeability of 1×10^{-9} m/s and a thickness of 1m against the Gault Clay and 3m against the River Terrace / Drift deposits. In the final cells, closest to Butt Lane, the sidewall liner is 1 m thick above original ground level, where the waste will fill up against an inert stockpile. Phase 2, Cells 6 to 11b and Phase 3 were lined with 1 m engineered Gault Clay and are fully contained.

3.1.2 Capping

All cells have been progressively capped on completion. The cap comprises a minimum thickness of 1 m of site derived clay engineered to achieve a maximum permeability of $< 1 \times 10^{-9}$ m/s. Capping of Phase III continued in line with the progress of cell completion. Cell 24A was constructed in 2018 and Cell24B (the final cell at Site) was constructed in 2019. These cells are partially complete. Cells 22, 23 and 24 are currently temporarily capped. CQA information available for the later cells (Cell 9 to 12) describes a 0.15 m to 0.25 m thick clay regulation layer between the final waste surface and 1 m thick engineered clay cap. The restoration layer has been placed on top of the engineered clay cap comprising 800 mm subsoil and 300 mm topsoil.

3.2 Geology, Groundwater and Topography

3.2.1 Geology

The British Geological Survey (BGS) website and the BGS Sheet 188 for Cambridge indicates that the Site is located on the Gault Formation overlain by occasional River Terrace Deposits. The Gault Formation comprises Pale to dark grey or blue-grey clay or mudstone, glauconitic in part, with a sandy base. According to the 2003 LFGRA, the Gault Formation has varying thickness from 27 m to 43 m. The Gault formation is underlain by Lower Greensand Beds.

3.2.2 Groundwater and Groundwater Levels

According to the 2003 LFGRA, a substantial thickness of Gault Clay (15 to 20 m) is present beneath the Site and is classified as a non-aquifer and confines groundwater in the underlying Lower Greensand Beds. The Gault Clay has a low permeability; however it is considered to have a higher horizontal conductivity than vertical due to its layered structure. It is therefore considered that the Gault Clay forms a vertical saturated pathway due to the downward hydraulic gradient that has been developed between the River Terrace Deposits and Lower Greensand aquifers.

The Lower Greensand Beds underlie the Gault Clay and is classified as a major aquifer. Groundwater flow within the aquifer is towards the north-east.

The River Terrace Deposits have been removed from the development area of the Site but are shown along the perimeter. The base of the River Terrace Deposits varies from 10.4 AOD on the west to 6.7m AOD on the east. The River Terrace Deposits are classified as a minor aquifer. It typically flows southeast towards the River Cam. However, there are disturbances which have resulted in a gradient being developed to the north, which are likely to be associated with landfilling activities and the presence of drains and ditches which have been cut into the River Terrace Deposits. Groundwater levels in the River Terrace Deposits vary in relation to the base of the deposits, but are at approximately 7 – 10 m AOD. The groundwater levels in the Greensand are at around 6 – 7 m AOD.

4 Receptors

A review has been made of the receptors detailed in the 2003 LFGRA. Several new receptors have been identified since 2003 and incorporated into Table 10. It is considered that an assessment of the impact on the adjacent residential, commercial and industrial receptors listed in Table 2 will provide a worst-case assessment for potential impact of the FCC site. The receptors will be assessed in the model in the event that any emissions fail at the site boundary.

4.1.1 Human Exposure

There is a Human Exposure Module option available in GasSim2.5 for assessing long-term (chronic) off-site exposure of members of the public to landfill gas trace constituents arising from terrestrial lateral migration and atmospheric dispersion. The Agency and Golder Associates however do not recommend the use of this module and it is not included in this assessment.

Table 2 Receptors

Receptor	Receptor Number	GasSim2.5 receptor ID	Grid Reference	Approx. Distance from Waste Deposits (m)	Direction from Site Boundary
Sun Close Farm / New Close Farm	1	DR001	TL 46572 63292	65	N
Milton Village	2	DR002	TL 47021 62544	90	NE
Cambridge Science Park (NE)	3	DR003	TL 46541 62108	60	S
Cambridge College	4	DR004	TL 45979 61948	580	SSW
Fieldstead Farm	5	DR005	TL 45054 62593	905	WSW
Impington Town	6	DR006	TL 45378 63522	970	W
Evolution Business Park	7	DR007	TL 46254 63299	60	W
Bedham Farm / Origin8	8	DR008	TL 45966 64157	860	NW
Milton Maize Maze	9	DR009	TL 47404 63353	845	NE
Milton Road Park and Ride / Balancing Ponds	10	DR010	TL 46754 63029	75	E
Milton C of E Primary School	11	DR011	TL 47461 62947	850	E
Priority Species (Great Crested Newt)	12	DR012	TL 45943 62476	195	S
Milton Road Hedgerows (LWS)	13	DR013	TL 47218 61798	440	SE
King's Hedges Hedgerow Milton Country Park	14	DR014	TL 45490 61885	940	SW
Worts Meadow (LNR)	15	DR015	TL 47363 65048	1,925	N
Bramblefields (LNR)	16	Not modelled		1,515	E
Fenland (SAC & RAMSAR)	17	Not modelled		9,925	NE
Histone Road (SSSI)	18	Not modelled		2,220	SW
River Cam (LWS)	19	Not modelled		2,450	SW
Ditton Meadows (LWS)	20	Not modelled		2,350	SW

A Nature and Heritage Conservation Screen (ref: EPR/BV4584IU/V010) identified two Local Nature Reserves (LNR) Worst Meadow and Bramblefields, and four Local Wildlife Sites (LWS) Milton Road Hedgerows, River Cam and Ditton Meadows and King's Hedges Hedgerow. A Special Area of Conservation (SAC) and Ramsar site, Fenland was identified and Site of Special Scientific Interest (SSSI), Histon Road were identified over 2km from the Site and these have been excluded from this LFGRA as well as River Cam LWS and Ditton Meadows LWS.

5 Landfill Gas Risk Assessment

This risk assessment takes a combined qualitative and quantitative approach to assess the impact of the Site on sensitive receptors. The first stage is a quantitative modelling exercise which uses the information detailed in Section 2 – 4 above to build a representative model of the Site using the GasSim2.5 modelling software. The model provides an estimate of the likely volume and composition of landfill gas generated by the Site gas source term over its lifetime.

The landfill gas risk assessment is to assess raising leachate levels and an increase in tonnage for the last year of operation. It is proposed to vary the leachate level limits to be set at 8.5 mAOD in the east of Phase III (Cells 12A, 12C, 13A, 14A, 15B and 20B), 9 mAOD in the remaining cells of Phase 3 and 8 mAOD in Phase 1 and 2. Leachate level limits are currently set at 6.5 m AOD in Phase 1. It also assesses the potential effect of increasing the tonnage input for the last year of operation from 150,000 tpa to 200,000 tpa.

This information is then used in a risk screening exercise to assess the risk to receptors from the surface emissions generated by the Site directly and those arising from gas control infrastructure. This follows the source-pathway-receptor approach as required by the Agency (2004). Section 5.1.1 to Section 5.1.9 provides the inputs used in the GasSim2.5 model.

5.1.1 Waste Tonnages

According to the 2003 LFGRA the annual input for Household, Commercial, Industrial and Inert waste from 1986 to 1992 was approximately 80,000 tonnes. This increased to approximately 150,000 tonnes per annum from 1993 to 2002. The loss of a domestic refuse contract in 2003 dropped the average tonnage to approximately 50,000 tonnes per annum. This was projected for three years until 2005 as being the typical mass of refuse disposed of. Based on the available void during that time, and the fact the Site was predicted to stop filling in 2025, it was assumed that the mass of waste would increase after 2005 if a new domestic waste contract was obtained and the total tonnage was predicted as approximately 140,000 tonnes per annum.

Data for the period 2014 onwards is based on information provided by FCC. For 2024 200,000 tonnes will be used. The waste input data for 1986 to 2024 and used in the GasSim model is provided in Table 3.

Table 3 Waste input – 1980 to 2024

Year	Waste Input Per Annum (Tonnes)	Phase / Cell
1980 - 1986	80,000	Phase 1

Year	Waste Input Per Annum (Tonnes)	Phase / Cell
1987 - 1990	75,000 - 85,000	Phase 1
1991	75,000 - 85,000	Phase 2 Cell 1, 2 and 3
1992	75,000 - 85,000	Phase 2 Cell 4, 5A and 5B
1993	134,323	Phase 2 Cell 6 - 10
1994	118,391	Phase 3 Cell 12A
1995	115,603	Phase 3 Cell 12B
1996	110,190	Phase 3 Cell 12C
1997	140,000 - 150,000	Phase 3 Cell 12C
1998	149,073	Phase 3 Cell 13A
1999	150,348	Phase 3 Cell 13B
2000	158,289	Phase 3 Cell 14A
2001	125,370	Phase 3 Cell 14B
2002	165,809	Phase 3 Cell 15A & 20A
2003	40,000 - 50,000	Phase 3 Cell 15A & B, 20A
2004	40,000 - 50,000	Phase 3 Cell 16A, Cell 16B, 17A
2005	40,000 - 50,000	Phase 3 Cell 16A, Cell 16B, 17A
2006	130,000 - 165,000	Phase 3 Cell 16A, Cell 16B, 17A
2007	130,000 - 165,000	Phase 3 Cell 16A, Cell 16B, 17A
2008	130,000 - 165,000	Phase 3 Cell 18A & B
2009	130,000 - 165,000	Phase 3 Cell 18A & B
2010	130,000 - 165,000	Phase 3 Cell 18A & B
2011	130,000 - 165,000	Phase 3 Cell 18C & D
2012	130,000 - 165,000	Phase 3 Cell 18C & D
2013	130,000 - 165,000	Phase 3 Cell 18C & D, 19A & 19B
2014	158,746	Phase 3 Cell 18C & D, 19A & 19B
2015	183,552	Phase 3 Cell 18D, 19A & B, 20B
2016	226,751	Phase 3 Cell 18D, 19A & B, 20B
2017	120,085	Phase 3 Cell 20B, 22, 23
2018	224,852	Phase 3 Cell 20B, 22, 23, 24A
2019	47,613	Phase 3 Cell 20B, 22, 23, 24A & 24B
2020	38121	Phase 3 Cell 20B, 22, 23, 24A & 24B
2021	0	Phase 3 Cell 20B, 22, 23, 24A & 24B
2022	0	Phase 3 Cell 20B, 22, 23, 24A & 24B
2023	0	Phase 3 Cell 20B, 22, 23, 24A & 24B
2024	200,000	Phase 3 Cell 20B, 22, 23, 24A & 24B

5.1.2 Waste Composition

Site specific details of waste composition were available for 1993 to 1996, and for July 1998 to February 2003 as taken from the 2003 GRA. Where site specific information was not available, the waste composition was derived from available data, assuming recent waste compositions were representative for past and future disposal. Waste composition for 2014 onward is based on waste returns provided by FCC.

Table 4 Waste Composition Inputs

Input Period	Domestic %	Civic Amenity %	Commercial %	Industrial %	Inert %
1980 - 1992	46.0 - 49.0	0	22.0 – 25.0	20.0 – 25.0	4.5 – 8.4
1993	40.2	6.2	20.1	33.5	0
1994	46.6	6.9	23.3	23.3	0
1995	46	6.2	23	24.8	0
1996	48.7	6.1	24.3	20.9	0
1997	46.0 – 49.0	0	22.0 – 25.0	20.0 – 25.0	4.5 – 8.5
1998	46.6	0	23.3	24.7	5.4
1999	49.2	0	24.6	20.3	5.9
2000	47.4	0	23.7	20.5	8.4
2001	29	0	14.5	37	19.5
2002	44	0	22	26.1	7.9
2003 - 2005	6.0 – 12.0	0	3.0 – 7.0	60.0 – 78.0	13.0 – 21.0
2006 - 2013	46.0 – 49.0	0	22.0 – 25.0	20.0 – 25.0	4.5 – 8.5
2014	7	0	0 - 5	0 -10	80 - 90
2015	5	0	0 - 5	0 -10	80 - 90
2016	4	0	0 - 5	0 -10	80 - 90
2017	4	0	0 - 5	0 -10	80 - 90
2018	7	0	0 - 5	0 -10	80 - 90
2019	17	0	0 - 5	0 -10	70-80
2020	17	0	0 - 5	0 -10	70-80
2021	No waste accepted				
2022	No waste accepted				
2023	No waste accepted				
2024	10 - 15	0	0 - 5	0 -10	75-85

5.1.3 Landfill Gas Pollution Control

The values in brackets are the statistical distribution parameters entered into GasSim2.5 for modelling purposes. GasSim2.5 cannot account for gradual capping of individual cells and gas extraction from sacrificial / permanent systems will only apply when the cell is completed. Surface emissions from uncompleted cells are therefore expected to be a conservative representation.

5.1.4 Engineered Controls: Liner

Phase 1 was developed as an uncontained facility, relying on the in-situ Gault Clay bed which is approximately 15 – 20 m thick beneath the Site. Due to limitations in the GasSim2.5 model 10 m of clay was provided for in Phase 1 and Phase 2 (Cells 1-5). The liner properties (component, thickness and permeability) are detailed in Table 5.

Table 5 Basal Liner Properties

Area	Liner Component	Liner Thickness (m)	Liner Permeability
Phase 1 and Phase 2 (Cells 1 to 5a & 5b)	In situ Gault Clay	10	$3x10^{-10}$ m/s to $4x10^{-7}$ m/s
Phase 2 (Cells 6 to 11b) and Phase 3	Single Clay	1.0 – 1.2	$1x10^{-11}$, $1x10^{-10}$, $1x10^{-9}$

5.1.5 Engineered Controls: Cap

GasSim2.5 enables both temporary and permanent capping to be included in the assessment. The capping engineering properties (thickness, permeability and date of emplacement) for the temporary cap and permanent cap are detailed in Table 6. The cap details are based on the capping specifications used in 2003 LFGRA and confirmed via Construction Quality Assurance Reports provided by FCC. Phase 1, 2 and parts of Phase 3have been permanently capped with 1m of site derived clay, engineered to a permeability of < 1 x 10^{-9} m/s. Capping of Phase III continued in line with the progress of cell completion.

Table 6 Cap Properties

Area	Cap Type & Thickness of Temporary Cap (m)	Permeability of Temporary Cap (m/s)	Cap Type & Thickness of Permanent Cap (m)	Permeability of Permanent Cap (m/s)
All phases	SINGLE (0.0)	SINGLE (0.0	SINGLE CLAY (UNIFORM 1.0 – 1.2)	LOGTRIANGULAR ($1x10^{-11}$, $1x10^{-10}$, $1x10^{-9}$)

The Site is located in Area 28 (Cambridgeshire and Bedfordshire) in the Ministry of Agriculture, Fisheries and Food, Technical Bulletin 35 (Reference 4). The climate data for this area indicates that the long-term average annual rainfall is 574 mm/year and the potential for evaporation for grassland is 523 mm/year. The estimated effective rainfall for the Site is 51 mm/year based upon the monthly difference between precipitation and the potential evaporation. Infiltration rates used in the 2003 LFGRA were 51 mm/year for uncapped areas and 5mm/year for capped areas. Infiltration rates used for uncapped areas is 51 mm/year and 5.1 mm/year for capped areas (10% of the value for uncapped areas for capped areas).

5.1.6 Flare and Gas Engine Specifications

The Gas Plant is located to the north of Phase 1 and Phase 2 near the boundary of the Site. The landfill gas control system is based on an active landfill gas system incorporating a network of gas extraction wells, a high temperature Haase flare installed in 2004, and power generation plant, currently consisting of three Jenbacher 1 MW engines.

The input parameters for capacity, stack height, air / fuel ratio and orifice diameter are based on the technical specification of the gas plant previously provided by FCC to inform the 2003 LFGRA. A summary of the gas engine and flare parameters are provided in Table 7.

Flare and gas engine down time, methane / hydrogen destruction efficiency are GasSim2.5 default values. The downtime represents a worst-case scenario. It is assumed that the flares will be progressively replaced throughout the life span of the Site with those of a comparable operating capacity.

Table 7 Summary of Landfill Gas Flare and Gas Engine Characteristics

Input Parameters	Flare	Engine		
	Haas Flare (3000 m^3/hr)	Jenbacher 1MW Engine 1	Jenbacher 1MW Engine 2	Jenbacher 1MW Engine 3
Year Commissioned	2004	2004	2004	2006
Year Decommissioned	2100	2100	2100	2100
Downtime (%)	7.5	7.5	7.5	7.5
Minimum Capacity (m^3/hr)	300	-	-	-
Maximum Capacity (m^3/hr)	3000	600	600	600
Air / Fuel Ratio	4	7	7	7
Stack Height (m)	10	5	5	5
Orifice Diameter (m)	1.8	0.35	0.35	0.35
Destruction Efficiency (Methane) (%)	Uniform 99-100%	Uniform 99-100%	Uniform 99-100%	Uniform 99-100%
Destruction Efficiency (Hydrogen) (%)	Uniform 99-100%	Uniform 99-100%	Uniform 99-100%	Uniform 99-100%

5.1.7 Trace Gases

The Tier 1 modelling exercise used trace gas monitoring data for 2020 provided by FCC. Trace gas data from 2019 to 2021 has been used for specific compounds where available to reflect the most up to date composition of trace gas at the Site as the Site nears completion. Default values for a broad range of compounds used within the model have been derived by Golder Associates from several study sites. Reference should be made to the GasSim2.5 User Manual for further details of the source of this data.

Compounds predicted to have 'not insignificant' emissions were selected for further assessment using the Tier 2 Atmospheric Dispersion modelling component of GasSim2.5.

5.1.8 Combustion Emissions

The combustion emissions for carbon monoxide, oxides of nitrogen and volatile organic compounds (VOCs) are shown at Table 8. To provide conservative emission output values the permit limit was used and the maximum uncertainty percentage (LFTGN05[1] and LFTGN08[2] respectively). All other trace gas plant emission values used are from previous assessments for the following combustion products: benzo(a)pyrene, dioxins and furans, hydrogen chloride (HCl), hydrogen fluoride (HF), nitrogen oxide (NOx), particulate matter (PM_{10}), sulphur dioxide and total non-methane volatile organic compounds (NMVOCs).

Table 8 Summary of Combustion Emissions parameters (NO_x, CO, VOC)

		Emission Limit Value mg(N)/m³
Engines	NOx	650
	CO	1500
	VOC	1750
Flare	NOx	150
	CO	100
	VOC	10

5.1.9 Waste Moisture Content and Leachate Levels

It is proposed to vary the leachate level limits to be set at 8.5 mAOD in the east of Phase III (Cells 12A, 12C, 13A, 14A, 15B and 20B), 9 mAOD in the remaining cells of Phase 3 and 8 mAOD in Phase 1 and 2. Leachate level limits are currently set at 6.5 m AOD in Phase 1. The current compliance limits are set at 6.5 mAOD for most wells with the exception of L12DR2, L07RB, L03/2014R, L11 and L15R which have well specific limits. The leachate head has been calculated based on the basal elevation of the cells provided by FCC, which has been based on the basal depth of the leachate chambers. The leachate head for each phase is provided below in Table 9.

1 Environment Agency. LFTGN05 v2 2010: Guidance for monitoring enclosed landfill gas flares
2 Environment Agency. LFTGN08 v2 2010: Guidance for monitoring landfill gas engine emissions

Table 9 Modelled Leachate Heads

	Well ID	Basal Elevation (m AOD)	Current Leachate Limit (m AOD)	Proposed Leachate Limit (m AOD)	Modelled Leachate Head (m)	Modelled Average leachate head (m)
Phase 1	LM01/A	-2.14	6.5	8	10.14	9.05
	LM01/B	-1.12	6.5	8	9.12	
	LM01/C	0.92	6.5	8	7.08	
	LM01/D	-1.86	6.5	8	9.86	
Phase 2						
Cell 1	L06R	3.88	6.5	8	4.12	
Cell 2	L07RB	5.43	8	8	2.57	
Cell 3	L03/2014R	4.9	8.1	8.1	3.20	
Cells 5a/b	L10R	4.45	6.5	8	3.55	
Cell 6	L11	6.43	8.4	8.4	1.97	
Cell 7	L07/2014R	4.82	6.5	8	3.18	
Cells 4, 8 - 10	Leachate head based on average for Cells 1, 2, 3, 5a & b, 6 and 7 - no basal elevation provided		Cell 4, 8, 9-10 – 6.5	8	3.10	
Phase 3						
Cell 12A	L15R	5.94	8	8.5	2.56	
Cell 12B	L16	3.89	6.5	9	5.11	
Cell 12C N	L17	5.75	6.5	8.5	2.75	
Cell 12C S	L12DR2	5.36	9.5	9.5	4.14	
Cell 13B	L18	3.78	6.5	9	5.22	
Cell 13A	L19r	2.12	6.5	8.5	6.38	
Cell 16B	L25R	4.16	6.5	9	4.84	
Cell 17A	L27AR	4.02	6.5	9	4.98	4.84
	L27BR	4.57	6.5	9	4.43	
	L27R	3.88	6.5	9	5.12	
Cell 18A	L28BR	4.08	6.5	9	4.92	4.77
	L28	4.04	6.5	9	4.96	
	L28a	4.58	6.5	9	4.42	
Cell 18B	L29A	4.62	6.5	9	4.38	4.82
	L29B	3.75	6.5	9	5.25	
Cell 18C	L30	3.07	6.5	9	5.93	5.47
	L30a	3.61	6.5	9	5.39	
	L30b	3.91	6.5	9	5.09	
Cell 18D	L31a	3.77	6.5	9	5.23	5.16

	Well ID	Basal Elevation (m AOD)	Current Leachate Limit (m AOD)	Proposed Leachate Limit (m AOD)	Modelled Leachate Head (m)	Modelled Average leachate head (m)
	L31BR	3.89	6.5	9	5.11	
	L31R	3.85	6.5	9	5.15	
Cell 19A	L33a	3.05	6.5	9	5.95	5.70
	L33BR	3.84	6.5	9	5.16	
	L33R	3.01	6.5	9	5.99	
Cell 19B	L32AR	3.66	6.5	9	5.34	
Cell 20B	L26	3.6	6.5	8.5	5.40	4.62
	L26a	5.72	6.5	8.5	3.28	
	L26b	3.81	6.5	8.5	5.19	
Cell 22	L34	6.1	6.5	9	2.90	2.78
	L34A	7.38	6.5	9	1.62	
	L34B	5.17	6.5	9	3.83	
Cell 23	L35	2.78	6.5	9	6.22	6.28
	L35A	2.67	6.5	9	6.33	
Cell 24B	L36B	4.6	6.5	9	4.40	
Cell 14B, 15A, 16A and 24A	Leachate head based on average recorded values for Phase 3 - no basal elevations provided		6.5	9	4.79	
Cell 14A & 15B	Leachate head based on average recorded values for Phase 3 - no basal elevations provided		6.5	8.5	4.79	

5.1.10 Human Exposure

There is a Human Exposure Module option available in GasSim2.5 for assessing long-term (chronic) off-site exposure of members of the public to landfill gas trace constituents arising from terrestrial lateral migration and atmospheric dispersion. The Agency and Golder Associates however do not recommend the use of this module and it is not included in this assessment.

5.1.11 Tier 1 Risk Screening Exercise

There are normally at least two tiers of risk screening exercise carried out as a GasSim2.5 modelling exercise. The initial Tier 1 screening tool uses the predicted gas generation outputs to assess the 'worst case' impact of surface and gas plant emissions from the Site on surrounding receptors based on a 'representative' windrose. The assessment is carried out at the Site boundary and the nearest sensitive receptor and includes a broad range of gases. The concentrations at the boundary and receptor are compared against long term and short term EALs for human health in order to assess whether the impact of any trace component represented in GasSim2.5 is either insignificant, not insignificant or requires more detailed atmospheric dispersion modelling.

5.1.12 Tier 2 Risk Assessment Exercise

If concentrations of fugitive gases are found to be significant enough to warrant more detailed atmospheric dispersion modelling, then GasSim2.5 can carry out a secondary 'Tier 2' assessment using a version of AERMOD. This will incorporate site-specific windrose data and predict concentrations of 'not insignificant' gas species at specific receptors. The simplified implementation of the USEPA's AERMOD used in the Tier 2 assessment is however limited by its inability to accurately account for extremes of topography i.e., if the point of emission from the Site is significantly different in height to the receptors. Where this is the case (and / or concentrations of emissions are still deemed to be not insignificant after the Tier 2 assessment) a more detailed Tier 3 risk screening exercise is required using more complex modelling software e.g., AERMOD.

5.1.13 Lifecycle Phases / Scenarios

This assessment considers the landfill over all stages of its life, from emplacement of waste at the site (post 1986) to the decommissioning of the gas plant, and ultimately to the cessation of gas production at the Site. It is considered that this assessment is representative of the performance of the landfill over this time period. The tables in Section 5 above detail uncertainties built into the model to represent landfill engineering performance and account for variations that may occur over time whilst the landfill is producing gas GasSim 2.5 Composition Files

The ranges of values entered into the model are presented in Appendix A of this report. Values for each of these parameters have been justified in the text of this report and are derived from the design specification detailed in the 2003 Golder Associates Report and up to date information provided by FCC. The outputs from the GasSim2.5 model are discussed in Section 5.3.

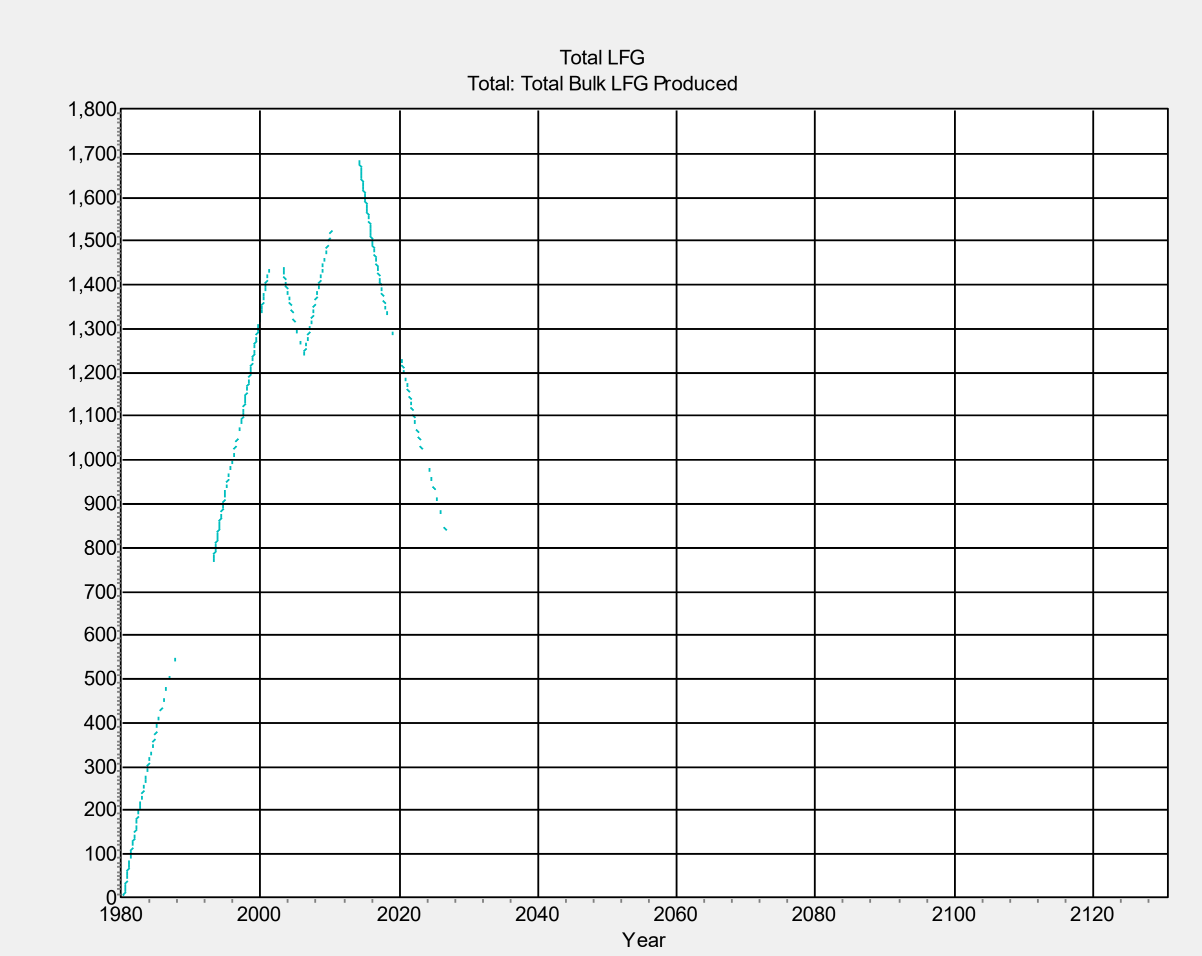
5.2 Landfill Gas Generation Assessment

5.2.1 Landfill Gas Generation

Peak gas production based on the 50 percentile (50%ile) has occurred in 2014 with a volume of 1650 m^3/hr. It is predicted that the volume of landfill gas generated has steadily declined since 2014.

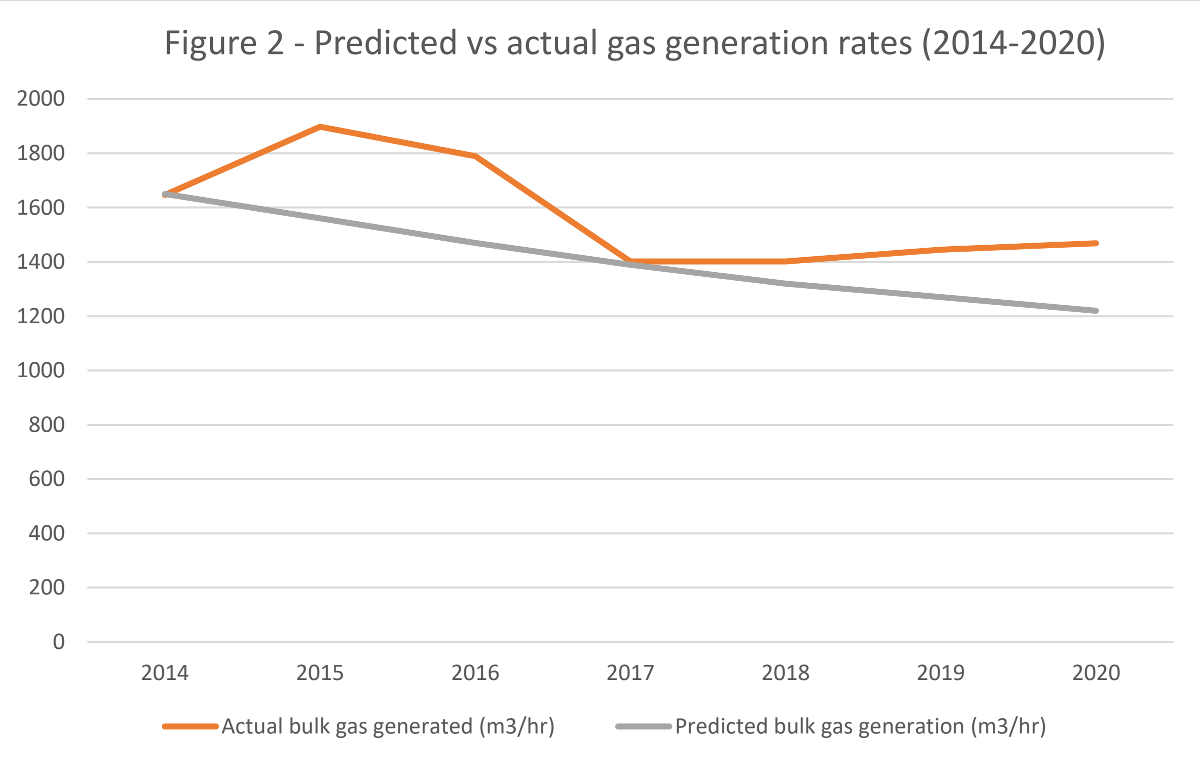
Table 10 provides a summary breakdown of the volumes of gas produced over the period 2014 to 2100 based on the 50%ile average annual gas generation. This is presented graphically below and in Appendix B.

Figure 1 Bulk Gas Production



There is a reduction in the predicted gas generation rates at the Site when compared to the 2003 LFGRA which predicted that peak gas production with a volume 2,881 m^3/hr (based on 95%ile) would occur in 2026. It is expected that the revised prediction for the amount of gas generated is lower than that in the 2003 LFGRA due to the reduction in domestic waste inputs and increased proportion of inert waste deposited. A continued decline in gas generation is expected even with the increase in waste inputs in the last year of operation due to the high proportion of inert waste compared to that modelled in the 2003 LFGRA.

The predicted gas generation rates have been compared to the extraction rates provided by the Operator for 2014 to 2020 as shown in Figure 2.



The site has experienced a fluctuating decline in gas generation when compared to the predicted gas generation curve. Extraction rates will continue to be compared to predicted gas generation rates. The modelled gas generation volumes are largely consistent with the volumes reported by the Operator. It is therefore not considered necessary to carry out further assessment of the efficacy of gas management infrastructure to account for differences between the predicted and actual volume of gas collected.

Table 10 Total Volume of Landfill Gas Produced (50%ile Yearly Average)

Year	Volume Bulk Landfill Gas (m^3/hr)	Year	Volume Bulk Landfill Gas (m^3/hr)	Year	Volume Bulk Landfill Gas (m^3/hr)	Year	Volume Bulk Landfill Gas (m^3/hr)
2011	1580	2025	908	2039	380	2053	174
2012	1620	2026	851	2040	359	2054	165
2013	1650	2027	797	2041	339	2055	156
2014	1650	2028	747	2042	320	2056	148
2015	1560	2029	701	2043	302	2057	141
2016	1470	2030	658	2044	285	2058	133

2017	1390	2031	618	2045	270	2059	127
2018	1320	2032	579	2046	255	2060	120
2019	1270	2033	545	2047	241	2070	72
2020	1220	2034	513	2048	228	2080	44
2021	1150	2035	482	2049	216	2090	27
2022	1070	2036	454	2050	205	2100	17
2023	1020	2037	428	2051	194		
2024	970	2038	403	2052	184		

5.3 Tier 1 and Tier 2 Assessment

5.3.1 Tier 1 Assessment

The Agency guidance on 'Air emissions risk assessment for your environmental permit' (Updated 7 October 2020) states that the Process Contribution (PC) concentration is insignificant at the receptor when the emission is less than 1% of the long-term Environmental Standard and less than 10% of the short-term Environmental Standard. Standard best-practice when carrying out this assessment is to use a staged approach whereby a determination of the emissions at the Site boundary (or the closest receptors to the Site) is made. If predicted concentrations are not shown to be greater than 1% of the applicable EAL, then no further assessment or modelling is necessary.

If the PC exceeds 1% of the long-term Environmental Standard, then the background concentrations also need to be taken into account. The PC plus the background concentration (Predicted Environmental Concentration – PEC) must be less than 70% of the Environmental Standard for the emissions to be considered insignificant. If the PC exceeds 10% of the short-term Environmental Standard, then the background concentrations also need to be taken into account. The short-term PC must be less than 20% of the headroom (i.e., the Environmental Standard minus double the annual average background concentration) for the emission to be considered insignificant. If the concentration fails the PEC assessment criteria, then a direct comparison with the relevant Environmental Standard is required.

5.3.2 Background Concentrations

Non-zero background concentrations must be entered for those few pollutants, such as carbon monoxide, nitrogen oxides and sulphur dioxide, which are normally present in the atmosphere at concentrations of a similar order of magnitude to their EQSs or EALs. The background data available for the Site available from Defra is Carbon Monoxide (CO), Sulphur Dioxide (SO_2) and Nitrogen Oxides (NOx). The predicted CO, SO_2, and NOx concentrations for the Site are based on the central grid reference for the Site (X: 546500, Y: 262500) and gives a background concentration of CO of 378 µg/m^3, SO_2 of 3.34 µg/m^3 and 20.04 µg/m^3 for NOx. The predicted long-term concentration of CO, SO_2, and NOx at each receptor will have to take this into account if required. The guidance also states that when assessing short term effects, the short-term background should be taken to be equal to twice the long-term background.

5.3.3 Generated Gases to be Modelled

The Tier 1 screening considered the treatment of landfill gas in the gas plant comprising a gas flare and three gas engines. NOx, CO and total Volatile Organic Compounds (VOCs) required to be monitored as part of LFTGN08 and LFTGN05 were screened out after the Tier 1 assessment. All surface emissions were screened out during the Tier 1 assessment.

Predicted gas engine emissions of NOx and SO_2 were modelled as 'not insignificant' as part of the Tier 1 assessment and required further modelling as part of the Tier 2 assessment. The peak year of production of NOx and SO_2 and associated emission rate as determined by GasSim2.5 and respective Environmental Standards of NOx and SO_2 are detailed in Table 11.

Table 11 Gases Modelled and Associated EALs

Source of Gas Emission	Gas Emission	Predicted Peak Year of Emission	Long-Term EAL (µg/m³)	Short-Term EAL (µg/m³)
Gas Engines	Sulphur Dioxide	2023	200	40
Gas Engines	Nitrogen Oxide	2023	350	-

5.3.4 Tier 2 Atmospheric Dispersion

The Tier 1 screening module identified nitrogen oxide and sulphur dioxide emissions from the gas engines are considered significant requiring further modelling as part of an advanced Tier 2 Atmospheric Dispersion exercise. For conservatism, the peak predicted year of emission for each individual compound at the Site boundary was selected for the Tier 2 modelling exercise. Site specific meteorological data for Cambridge (2018, 2019 and 2020) was used in the Tier 2 assessment. The peak emission rate year 2023 was modelled for the gas engines and the flare. The 95ile emission rate outputs for modelling retrieved from the Tier 2 Simulation parameter section of the GasSim2.5 models are summarised in Table 12 and 13. Boundary and discrete Receptors, as detailed in Table 2, were modelled.

Table 12 Tier 2 Simulation Parameters (NOx)

Gas Plant	NOx emission rate (g/s)
Jenbacher Engine 1	0.0176
Jenbacher Engine 2	0.3803
Jenbacher Engine 3	0.7026

Table 13 Tier 2 Simulation Parameters (SO2)

Gas Plant	SO2 emission rate (g/s)
Jenbacher Engine 1	0.0087
Jenbacher Engine 2	0.1870
Jenbacher Engine 3	0.3455

5.3.5 Tier 2 Atmospheric Dispersion Outputs

The Tier 2 atmospheric dispersion simulation results are summarised in Table 14 to 25.

Table 14 Predicted Concentrations of Nitrogen Oxides at Boundary Receptor (Modelled Met Data 2018)

Receptor ID	Grid Reference at boundary	Air Quality Standard (µg/m^3)	Process Contribution (PC) µg/m^3	Predicted Environmental Concentration (PEC) µg/m^3	Tier 2 PEC greater than EAL
Long term EAL	546500 262829	40	4.61	24.64	No
Short term EAL	546611 262617	200	110.76	150.82	No

Table 15 Predicted Concentrations of Nitrogen Oxides at Discrete Receptor (Modelled Met Data 2018)

Receptor ID	Receptor	PC Annual Mean (µg/m3)	PC Worst Hour (µg/m3)	PEC Annual Mean (µg/m3)	PEC Worst Hour (µg/m3)
DR001	Sun Close Farm / New Close Farm	1.08	10.53	21.11	50.59
DR002	Milton Village	0.89	14.7	20.92	54.76
DR003	Cambridge Science Park (NE)	0.73	14.35	20.76	54.41
DR004	Cambridge College	0.46	7.87	20.49	47.93
DR005	Fieldstead Farm	0.17	5.98	20.2	46.04
DR006	Impington Town	0.29	6.02	20.32	46.08
DR007	Evolution Business Park	0.8	9.36	20.83	49.42
DR008	Bedham Farm / Origin8	0.29	6.18	20.32	46.24
DR009	Milton Maize Maze	0.63	6.43	20.66	46.49
DR010	Milton Road Park and Ride / Balancing Ponds	2.17	16.95	22.2	57.01
DR011	Milton C of E Primary School	0.63	6.71	20.66	46.77
DR012	Priority Species (Great Crested Newt)	0.53	10.18	20.56	50.24
DR013	Milton Road Hedgerows (LWS)	0.29	6.95	20.32	47.01
DR014	King's Hedges Hedgerow Milton Country Park	0.24	5.77	20.27	45.83
DR015	Worts Meadow (LNR)	0.18	5.51	20.21	45.57

Table 16: Predicted Concentrations of Nitrogen Oxides at Boundary Receptor (Modelled Met Data 2019)

Receptor ID	Grid Reference at boundary	Air Quality Standard (µg/m³)	Process Contribution (PC) µg/m³	Predicted Environmental Concentration (PEC) µg/m³	Tier 2 Process Environmental Contribution greater than EAL
Long term EAL	546648 262616	40	5.66	25.69	No
Short term EAL	546611 262617	200	116.98	157.04	No

Table 17 Predicted Concentrations of Nitrogen Oxides at Discrete Receptor (Modelled Met Data 2019)

Receptor ID	Receptor	PC Annual Mean (µg/m3)	PC Worst Hour (µg/m3)	PEC Annual Mean (µg/m3)	PEC Worst Hour (µg/m3)
DR001	Sun Close Farm / New Close Farm	0.99	10.46	21.02	50.52
DR002	Milton Village	1.11	14.7	21.14	54.76
DR003	Cambridge Science Park (NE)	0.42	14.1	20.45	54.16
DR004	Cambridge College	0.29	7.79	20.32	47.85
DR005	Fieldstead Farm	0.16	5.82	20.19	45.88
DR006	Impington Town	0.26	6.16	20.29	46.22
DR007	Evolution Business Park	0.74	10.8	20.77	50.86
DR008	Bedham Farm / Origin8	0.28	6.11	20.31	46.17
DR009	Milton Maize Maze	0.84	6.44	20.87	46.5
DR010	Milton Road Park and Ride / Balancing Ponds	2.54	16.93	22.57	56.99
DR011	Milton C of E Primary School	0.7	6.72	20.73	46.78
DR012	Priority Species (Great Crested Newt)	0.45	10.48	20.48	50.54
DR013	Milton Road Hedgerows (LWS)	0.37	6.84	20.4	46.9
DR014	King's Hedges Hedgerow Milton Country Park	0.18	6.09	20.21	46.15
DR015	Worts Meadow (LNR)	0.2	5.52	20.23	45.58

Table 18 Predicted Concentrations of Nitrogen Oxides at Boundary Receptor (Modelled Met Data 2020)

	Grid Reference at boundary	Air Quality Standard (µg/m³)	Process Contribution (PC) µg/m³	Predicted Environmental Concentration (PEC) µg/m³	Tier 2 Process Environmental Contribution greater than EAL
Long term EAL	546648 262616	40	4.25	24.28	No
Short term EAL	546611 262617	200	112.53	152.59	No

Table 19 Predicted Concentrations of Nitrogen Oxides at Discrete Receptor (Modelled Met Data 2020)

Receptor ID	Receptor	PC Annual Mean (µg/m3)	PC Worst Hour (µg/m3)	PEC Annual Mean (µg/m3)	PEC Worst Hour (µg/m3)
DR001	Sun Close Farm / New Close Farm	1.08	10.48	21.11	50.54
DR002	Milton Village	1	14.58	21.03	54.64
DR003	Cambridge Science Park (NE)	0.48	14.2	20.51	54.26
DR004	Cambridge College	0.33	7.45	20.36	47.51
DR005	Fieldstead Farm	0.16	6.16	20.19	46.22
DR006	Impington Town	0.19	6.18	20.22	46.24
DR007	Evolution Business Park	0.58	9.38	20.61	49.44
DR008	Bedham Farm / Origin8	0.22	6.13	20.25	46.19
DR009	Milton Maize Maze	0.75	6.44	20.78	46.5
DR010	Milton Road Park and Ride / Balancing Ponds	2.58	16.88	22.61	56.94
DR011	Milton C of E Primary School	0.84	7.02	20.87	47.08
DR012	Priority Species (Great Crested Newt)	0.49	10.48	20.52	50.54
DR013	Milton Road Hedgerows (LWS)	0.25	6.8	20.28	46.86
DR014	King's Hedges Hedgerow Milton Country Park	0.22	6.11	20.25	46.17
DR015	Worts Meadow (LNR)	0.19	5.56	20.22	45.62

Table 20 Predicted Concentrations of Sulphur Dioxide at Boundary Receptor (2018 met data)

	Grid Reference at boundary	Air Quality Standard (µg/m³)	Process Contribution (PC) µg/m³	Predicted Environmental Concentration (PEC) µg/m³	Tier 2 Process Environmental Contribution greater than EAL
Worst annual mean (1 year)	546500 262829		2.27	5.61	No
Short term EAL (1 hour)	546611 262617	350	108.96	115.64	No

Table 21 Predicted Concentrations of Sulphur Dioxide at Discrete Receptor (2018 met data)

Receptor ID	Receptor	PC Annual Mean (µg/m³)	PC Worst Hour (µg/m³)	PEC Annual Mean (µg/m³)	PEC Worst Hour (µg/m³)	PC 4th Worst 24-hour mean (µg/m³)	PC 36th worst 15-minute mean (µg/m³)
DR001	Sun Close Farm / New Close Farm	0.53	10.36	3.87	17.04	3.45	12.26
DR002	Milton Village	0.44	14.46	3.78	21.14	3.26	13.88
DR003	Cambridge Science Park (NE)	0.36	14.12	3.7	20.8	3.04	11.77
DR004	Cambridge College	0.23	7.75	3.57	14.43	2.26	8.59
DR005	Fieldstead Farm	0.08	5.89	3.42	12.57	0.9	4.68
DR006	Impington Town	0.14	5.93	3.48	12.61	1.02	5.95
DR007	Evolution Business Park	0.4	9.21	3.74	15.89	2.61	10.45
DR008	Bedham Farm / Origin8	0.14	6.08	3.48	12.76	0.86	5.79
DR009	Milton Maize Maze	0.31	6.33	3.65	13.01	1.53	7.12
DR010	Milton Road Park and Ride / Balancing Ponds	1.07	16.67	4.41	23.35	6.28	20.95
DR011	Milton C of E Primary School	0.31	6.6	3.65	13.28	1.62	7.75
DR012	Priority Species (Great Crested Newt)	0.26	10.01	3.6	16.69	2.85	9.77
DR013	Milton Road Hedgerows (LWS)	0.14	6.83	3.48	13.51	1.4	7.54
DR014	King's Hedges Hedgerow Milton Country Park	0.12	5.68	3.46	12.36	1.53	5.59
DR015	Worts Meadow (LNR)	0.09	5.42	3.43	12.1	0.58	3.74

Table 22 Predicted Concentrations of Sulphur Dioxide at Boundary Receptor (2019 met data)

	Grid Reference at boundary	Air Quality Standard (µg/m³)	Process Contribution (PC) µg/m³	Predicted Environmental Concentration (PEC) µg/m³	Tier 2 Process Environmental Contribution greater than EAL
Worst annual mean (1 year)	546648 262616		2.79	6.13	No
Short term EAL (1 hour)	546611 262617	350	115.07	121.75	No

Table 23 Predicted Concentrations of Sulphur Dioxide at Discrete Receptor (2019 met data)

Receptor ID	Receptor	PC Annual Mean (µg/m³)	PC Worst Hour (µg/m³)	PEC Annual Mean (µg/m³)	PEC Worst Hour (µg/m³)	PC 4th Worst 24-hour mean (µg/m³)	PC 36th worst 15-minute mean (µg/m³)
DR001	Sun Close Farm / New Close Farm	0.49	10.29	3.83	16.97	3.14	12.15
DR002	Milton Village	0.55	14.46	3.89	21.14	3.44	15.2
DR003	Cambridge Science Park (NE)	0.21	13.87	3.55	20.55	2.01	6.65
DR004	Cambridge College	0.14	7.67	3.48	14.35	1.62	7.75
DR005	Fieldstead Farm	0.08	5.73	3.42	12.41	0.87	4.8
DR006	Impington Town	0.13	6.06	3.47	12.74	1.17	5.95
DR007	Evolution Business Park	0.36	10.63	3.7	17.31	2.31	10.3
DR008	Bedham Farm / Origin8	0.14	6.02	3.48	12.7	0.95	5.64
DR009	Milton Maize Maze	0.41	6.34	3.75	13.02	1.73	7.36
DR010	Milton Road Park and Ride / Balancing Ponds	1.25	16.65	4.59	23.33	5.41	20.36
DR011	Milton C of E Primary School	0.34	6.61	3.68	13.29	1.52	7.88
DR012	Priority Species (Great Crested Newt)	0.22	10.31	3.56	16.99	2.38	10.62
DR013	Milton Road Hedgerows (LWS)	0.18	6.73	3.52	13.41	1.84	7.76
DR014	King's Hedges Hedgerow Milton Country Park	0.09	5.99	3.43	12.67	1.03	5.69
DR015	Worts Meadow (LNR)	0.1	5.43	3.44	12.11	0.67	3.61

Table 24 Predicted Concentrations of Sulphur Dioxide at Boundary Receptor (2020 met data)

	Grid Reference at boundary	Air Quality Standard (µg/m³)	Process Contribution (PC) µg/m³	Predicted Environmental Concentration (PEC) µg/m³	Tier 2 Process Environmental Contribution greater than EAL
Worst annual mean (1 year)	546648 262616		2.09	5.43	No
Short term EAL (1 hour)	546611 262617	350	110.70	117.38	No

Table 25 Predicted Concentrations of Sulphur Dioxide at Discrete Receptor (2020 met data)

Receptor ID	Receptor	PC Annual Mean (µg/m³)	PC Worst Hour (µg/m³)	PEC Annual Mean (µg/m³)	PEC Worst Hour (µg/m³)	PC 4th Worst 24-hour mean (µg/m³)	PC 36th worst 15-minute mean (µg/m³)
DR001	Sun Close Farm / New Close Farm	0.53	10.31	3.87	16.99	3.36	12.15
DR002	Milton Village	0.49	14.34	3.83	21.02	3.37	14.88
DR003	Cambridge Science Park (NE)	0.24	13.97	3.58	20.65	3.7	10.44
DR004	Cambridge College	0.16	7.33	3.5	14.01	1.65	6.37
DR005	Fieldstead Farm	0.08	6.06	3.42	12.74	0.84	5.04
DR006	Impington Town	0.09	6.08	3.43	12.76	0.97	5.52
DR007	Evolution Business Park	0.29	9.23	3.63	15.91	2.51	9.88
DR008	Bedham Farm / Origin8	0.11	6.03	3.45	12.71	0.88	4.96
DR009	Milton Maize Maze	0.37	6.33	3.71	13.01	1.48	7.08
DR010	Milton Road Park and Ride / Balancing Ponds	1.27	16.6	4.61	23.28	6.2	20.88
DR011	Milton C of E Primary School	0.41	6.91	3.75	13.59	2.18	8.23
DR012	Priority Species (Great Crested Newt)	0.24	10.31	3.58	16.99	2.7	10.06
DR013	Milton Road Hedgerows (LWS)	0.12	6.69	3.46	13.37	1.68	6.85
DR014	King's Hedges Hedgerow Milton Country Park	0.11	6.01	3.45	12.69	1.22	6.07
DR015	Worts Meadow (LNR)	0.09	5.47	3.43	12.15	0.6	3.76

5.3.6 Tier 2 Atmospheric Dispersion Conclusions

The Tier 2 atmospheric dispersion simulation results identify that the NOx emissions and SO2 emissions from the GUP pass both short term and long term Environmental Assessment Levels and are therefore screened from further assessment. Carbon monoxide and VOC emissions both screened out as part of the Tier 1 Assessment.

Emissions from the gas engine are monitored in accordance with Table S3.2 of the environmental permit. No exceedances of the gas engine compliance limits have been reported by FCC. Based on the results of the Tier 2 modelling exercise the proposed change in leachate levels and increase in tonnage from 150,000 tonnes per annum to 200,000 tonnes for the last year of operation will not have an adverse impact on predicted gas emissions from the Site. No further modelling is considered to be required.

5.3.7 Sub-Surface Lateral Migration and Vegetation Stress

Sub-surface landfill gas migration beyond the boundary of the Site can give rise to a number of potential risks, including explosion, asphyxiation, toxicity, and vegetation damage. Should the fugitive gas then be liberated to atmosphere, there are the additional risks of odour nuisance and contributions to global warming.

GasSim2.5 can be used to model the sub-surface migration of landfill gas beyond the confines of the Site boundary. Milton Landfill Site operates on the principle of hydraulic containment. In addition, the landfill is clay lined with the depth of Gault Clay around the Site between 15 – 20 m. The Gault Clay has a low rate of gas transmissivity. This is supported by the perimeter gas monitoring data recorded at the Site. Perimeter boreholes are monitored in accordance with Table S3.5 of the environmental permit and confirmation from FCC is that the perimeter gas boreholes are compliant.

5.3.8 Landfill Gas Completion Criteria

Landfill gas production curves for Milton Landfill Site indicate that it is likely active extraction and management of the gas will be required (flare and gas engines) until approximately 2080 at which point the gas generated is predicted to fall to 44 m^3hr^{-1}.

This is comparable with the benchmark level of 50-100 m^3hr^{-1} suggested in Environment Agency document LFTGN03 below which active gas control and treatment is not required.

5.3.9 Global Atmospheric Impact

Global Warming Potential (GWP) and Ozone Depletion Potential (ODP) of each compound can be defined by the user in GasSim2.5. This is provided at Appendix C.

There is a lack of reliable literature sources containing this information for the combustion products modelled, nor are there any default levels given and consequently the assessment of the global impact to atmosphere is qualitative only.

During combustion, methane is converted to carbon dioxide by the following equation

$$CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$$

Although carbon dioxide is a known greenhouse gas, its GWP is 21 times less than that of methane, and its release into the environment is preferable to that of methane with regards to GWP.

Therefore, it is concluded that the flare and gas engines will have a positive effect with regards to GWP and OPD due to the combustion of methane and its removal from the environment. The negative effect of the production of any combustion products with a global warming potential will be minimal as compared to the positive effect achieved by preventing large volumes of methane from entering the environment.

6 Accidents and their Consequences

There are a number of possible accident scenarios which could potentially occur on the site and result in fugitive releases of landfill gas from the site into the surrounding environment.

6.1.1 Damage to the Gas Utilisation Plant

Damage or vandalism to pipes, pumps and gas flares or engines may occur. It is, however, very unlikely that the whole system would be affected simultaneously by such an event. The resulting consequences would be a potential increase in landfill gas escape to the surrounding land or atmosphere whilst the efficacy of the system is compromised.

Effective out-of-hours site security and regular monitoring of the system will ensure that any such problems are quickly identified, and the situation rectified before harm to the environment occurs.

6.1.2 Accident Scenarios

Accident scenarios are represented within the GasSim2.5 modelling by failures in the gas collection system and the operation of the gas engines and flare due to mechanical breakdown or otherwise. For this assessment, a down-time of between 3% and 5% has been assumed for the flare and for the gas engines. This is considered to be a very conservative estimate and represents breakdown in addition to down-time associated with routine maintenance. In reality, it is considered that an overall down-time of 2.5% would be more representative of the installation. A 3% to 5% down-time therefore represents a worst-case scenario, as it covers the risk of all likely eventualities of failures that would influence emissions from the landfill.

The risks from a number of accident scenarios are considered qualitatively assessed in greater detail in Table 27. The following definitions are used in the context of the assessments:

Hazard: a property or situation that in particular circumstances could lead to harm.

Probability: the chance that a hazard will evolve and that the hazard will follow a pathway to a receptor:

Low (L) = very unlikely to happen

Medium (M) = likely to happen

High (H) = will definitely happen

Consequence: the adverse effects or impacts of a hazard being realised upon a receptor:

Low (L) = minor – negligible impact upon human health or environment

Medium (M) = some – minor impact upon human health or environment

High (H) = major impact upon human health or environment

Risk: a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of occurrence.

The general L – M – H ratings listed in the risk assessment tables below are for use as a guide only based on the matrix in Table 26.

Table 26 Qualitative Assessment of Risk

Probability	Consequence	Risk
Low	L	L
	M	L
	H	M
Medium	L	L
	M	M
	H	H
High	L	M
	M	H
	H	H

Table 27 Accident Risk Assessment

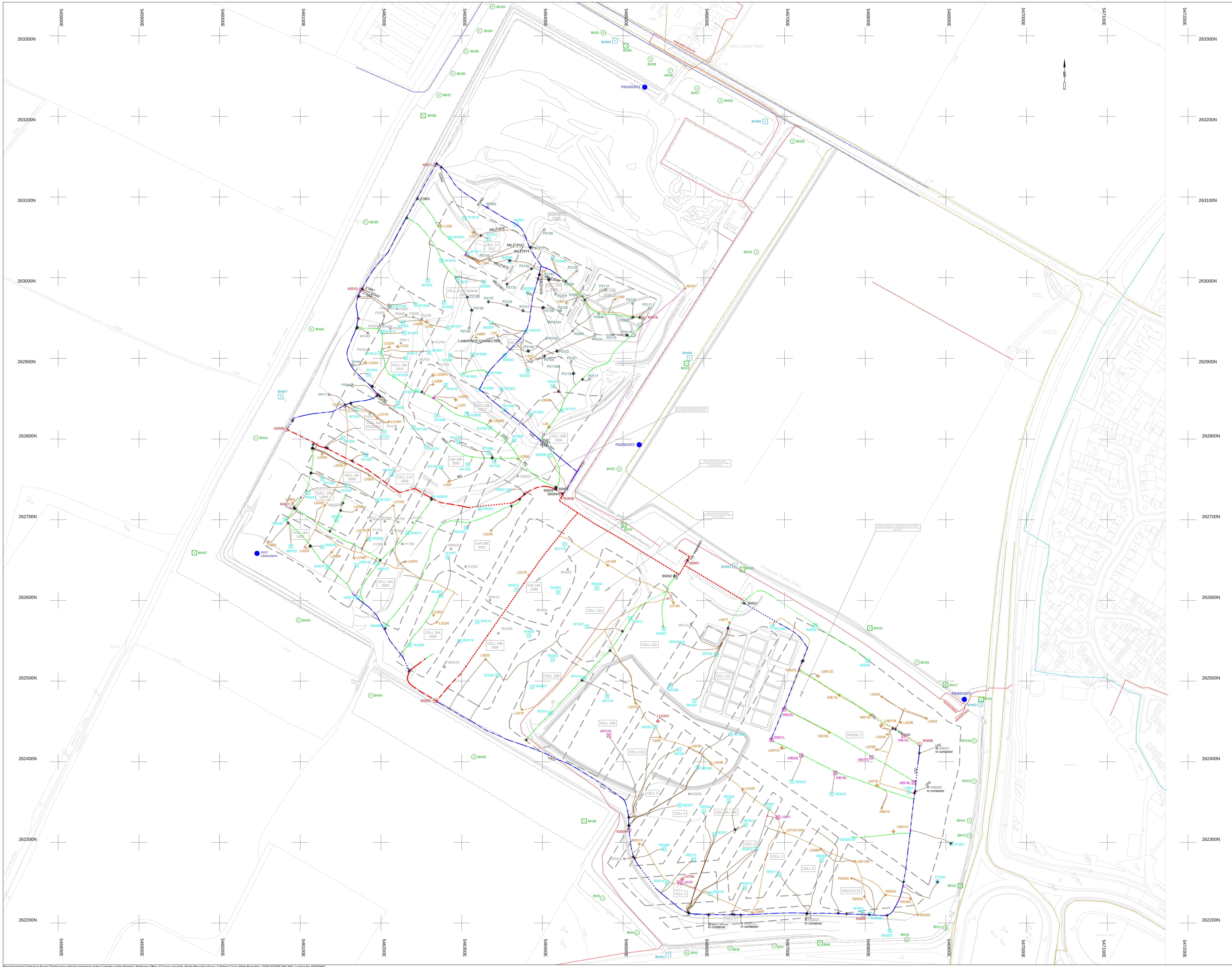
Hazard	Pathway and Receptor	Probability of Hazard	Consequence of Hazard	Risk factor (Probability x Consequence)	Mitigation measures	Mitigated Risk
Inability to control lateral gas migration	Build-up of explosive gases in the ground	L	M	L	• Full inspection and maintenance scheme in place to ensure that the system runs at optimum performance • Monitoring boreholes outside contained area monitored to reveal any off-site migration • Review of performance of the system at regular intervals • Procedure to increase monitoring in event of trigger levels being exceeded • Implementation of Landfill Gas Action Plan	L
Ingress of O_2 causing underground fire	Fire, noxious gases to atmosphere, damage to liner	L	M	M	• Checking of O_2 levels in gas collection scheme • Visual inspection of landfill areas • Temperature and CO monitoring if required	L
Penetration of engineered containment system with drilling rig	Emission of gas (and leachate) to surrounding ground and groundwater from waste mass	L	H	M	• Gas wells installed under conditions of strict CQA • Use of experienced drilling contractors only • Well locations surveyed to determine exact depth of basal liner • Minimum 3m stand-off between base of well and basal liner • Leachate drainage blanket provides additional warning of proximity of basal liner during drilling operations	L
Explosion in landfill gas compound	Uncontrolled emission of landfill gas and combustion products to atmosphere	L	M	L	• Construction of gas engines and flare in accordance with strict CQA regime • No naked flames allowed in gas compound • Permit to work system in gas compound	L
Vandalism of any component of gas management system	Uncontrolled emission of landfill gas, condensate or combustion products to atmosphere	M	M	M	• Pipework buried within restoration materials upon site completion • Security compound surrounding gas management plant • Appropriate site security measures	L

7 Conclusion

The Operator proposes to increase leachate level compliance limits and increase the annual waste input tonnage from 150,000 tonnes to 200,000 tonnes for the last year of operation.

Atmospheric dispersion modelling carried out using the Tier 2 air dispersion module identified no exceedances at any discrete receptors. The increase in waste inputs for the last year of operation is therefore not considered to result in a risk to the environment or human health. Gas generation is expected to continue to decline compared to original estimates in the 2003 GRA due to the proportion of inert waste accepted from those predicted and which have negligible gas generation potential.

The proposed raising of leachate levels are not considered to reduce the unsaturated zone sufficiently to impact on gas production rates and/or interfere with gas collection and gas management. It is considered that the increase in leachate head will not displace or create a surge of gas and the gas engines installed at the Site have sufficient capacity to treat gas extracted at the Site. It is not considered necessary to carry out further assessment of gas management infrastructure. Infinis will continue to manage landfill gas at the Site. Landfill gas will continue to be monitored in the in-waste gas wells and at the perimeter boreholes in accordance with Table S3.5 and Table S3.9 of the Permit.



3rd Party LEGEND

FCC Monitoring Points (Copied from Client provided drawing '653M282P EMP DRAFT.dwg')

- Landfill Gas Monitoring Borehole
- Combined Gas/ Groundwater Monitoring Point
- Groundwater Monitoring Borehole
- Dust Point
- Leachate Collection Point
- Leachate Monitoring Point

Services & Utilities (Copied from Client provided drawing '653S260.dwg')

- HVO — High Voltage Overhead Electricity Cable
- HVU — High Voltage Underground Electricity Cable
- UT — Telephone Underground Cable
- OT — Telephone Overhead Cable
- FS — Foul Sewer
- WM — Water Main

UTEC StarNet LEGEND

Monitoring Points

- Landfill Gas Surface Monitoring Point
- Gas Flare Stack
- Landfill Gas Extraction/ Leachate Monitoring Point
- Condensate Unit (Knock-out Pot)
- Groundwater Pumping Point
- Surface Water Monitoring Point
- Leachate Collection Point
- Leachate Monitoring Point
- Leachate Recirculation Point
- Valve
- KOP
- PEG
- Manifold
- Finn Drains
- Strategic Monitoring Point

Gas Wells

- Pin well
- Gas Well 63Ø
- Gas Well 90Ø
- Gas Well 110Ø
- Gas Well 120Ø
- Gas Well 160Ø
- Gas Well 180Ø
- Gas Well 225Ø
- Gas Well 250Ø >
- Proposed Gas Well
- Assumed Underground Well
- Decommissioned Well

Infrastructure Pipework

Above ground Pipe		Underground Pipe
32	32mm Gas Pipe	— — —
55	55mm Gas Pipe	— — —
63	63mm Gas Pipe	— — —
90	90mm Gas Pipe	— — —
110	110mm Gas Pipe	— — —
120	120mm Gas Pipe	— — —
125	125mm Gas Pipe	— — —
160	160mm Gas Pipe	— — —
180	180mm Gas Pipe	— — —
200	200mm Gas Pipe	— — —
250	250mm Gas Pipe	— — —
280	280mm Gas Pipe	— — —
315	315mm Gas Pipe	— — —
355	355mm Gas Pipe	— — —
400	400mm Gas Pipe	— — —
450	450mm Gas Pipe	— — —
500	500mm Gas Pipe	— — —
650	650mm Gas Pipe	— — —
L	Leachate Pipe	
A	Airline Pipe	
A/D	Air and Discharge Pipe	
D	Discharge Pipe	
CON	Condensate Pipe	
LR	Leachate Recirculation Pipe	
— – – —	Assumed Pipe	

Notes:

1. All dimensions are in metres unless otherwise stated.
2. All survey co-ordinates related to National Grid co-ordinates system (OSTN15) derived from the national GPS network - positions and levels checked against site control.
3. For ground levels and top of well levels please refer to spreadsheet: '5353_GI12 - Milton - Gas Well Co-ordinates and levels - May 2021.xls'.
4. Background mapping, site survey data, basal cell footprint and environmental monitoring points copied from client provided plan: '653M282P EMP DRAFT.dwg'.
5. Services and utilities copied from client provided plan: '653S260.dwg'.

Disclaimer

THIS INFORMATION SHOULD NOT BE REGARDED AS ACCURATE AND SHOULD BE USED FOR GUIDANCE PURPOSES ONLY.

UTEC STARNET

GARD ID Prefix: MIL

Files/ information used: '653M282 EMP DRAFT.dwg' & '653S260.dwg'

REVISIONS

No	Description	By	Chk'd	Date

Project:

MILTON
LANDFILL SITE

Title:

Gas Infrastructure Plan

Drawn By	T.R.	Date	01/10/2021
Chk'd By	J.M.	Date	04/10/2021
Scale 1:	1:1500	Sheet Size A0	

Infinis Limited
First Floor
500 Pavilion Drive
Northampton Business Park
Northampton
NN4 7YJ

infinis

Drawing No 5353_GI13 | Rev -

Appendix A – GasSim2.5 Model

ProjectDetails

Project Name	Milton Landfill GRA 2021
Client	FCC Environment
Model	g:\jobs\k\k0010-5999\5348 fcc milton landfill gas risk assessment\6 - reports\lfgra\reissue milton gra\milton gra 2021.gss
Model Date	02/03/2022 13:59:44
Comments	
Start Year	1980
Operation Period	46
Simulation Period	150
Iterations	201

Confined Migration Pathway

Waste Composition

Year	Composition
1980	England 2000-2010 waste streams
Newspapers	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(48.5)
Hemi-Cellulose (%)	SINGLE(9.0)
Decomposition (%)	SINGLE(35.0)
Magazines	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(42.3)
Hemi-Cellulose (%)	SINGLE(9.4)
Decomposition (%)	SINGLE(46.0)
Other paper	
Domestic	SINGLE(19.8)
Civic Amenity	SINGLE(3.3)
Commercial	SINGLE(28.8)
Industrial	SINGLE(8.8)
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(87.4)
Hemi-Cellulose (%)	SINGLE(8.4)
Decomposition (%)	SINGLE(98.0)
Liquid cartons	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Card packaging	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Other card	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Wood	
Domestic	SINGLE(3.0)
Civic Amenity	SINGLE(11.2)
Commercial	SINGLE(3.3)
Industrial	SINGLE(5.0)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(21.0)
Hemi-Cellulose (%)	SINGLE(11.0)
Decomposition (%)	SINGLE(75.0)
Textiles	
Domestic	SINGLE(3.3)
Civic Amenity	SINGLE(2.3)
Commercial	SINGLE(1.1)
Industrial	SINGLE(0.3)
Water (%)	SINGLE(25.0)
Cellulose (%)	SINGLE(20.0)
Hemi-Cellulose (%)	SINGLE(20.0)
Decomposition (%)	SINGLE(50.0)
Disposable nappies	
Domestic	SINGLE(3.3)
Civic Amenity	SINGLE(2.9)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Other misc. combustibles	
Domestic	SINGLE(0.3)
Civic Amenity	SINGLE(4.2)
Commercial	SINGLE(10.4)
Industrial	SINGLE(17.7)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)

Decomposition (%)	SINGLE(50.0)
Garden waste	
Domestic	SINGLE(16.0)
Civic Amenity	SINGLE(32.1)
Commercial	SINGLE(9.8)
Industrial	SINGLE(4.7)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(25.7)
Hemi-Cellulose (%)	SINGLE(13.0)
Decomposition (%)	SINGLE(62.0)
Other putrescible	
Domestic	SINGLE(25.6)
Civic Amenity	SINGLE(14.8)
Commercial	SINGLE(10.4)
Industrial	SINGLE(6.8)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(55.4)
Hemi-Cellulose (%)	SINGLE(7.2)
Decomposition (%)	SINGLE(76.0)
10mm fines	
Domestic	SINGLE(4.1)
Civic Amenity	SINGLE(1.2)
Commercial	SINGLE(1.9)
Industrial	SINGLE(0.5)
Water (%)	SINGLE(40.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Sewage sludge	
Sewage Sludge	SINGLE(100.0)
Water (%)	SINGLE(70.0)
Cellulose (%)	SINGLE(14.0)
Hemi-Cellulose (%)	SINGLE(14.0)
Decomposition (%)	SINGLE(75.0)
Composted organic material	
Composted Organic Material	SINGLE(100.0)
Water (%)	SINGLE(30.0)
Cellulose (%)	UNIFORM(7.47, 9.59)
Hemi-Cellulose (%)	UNIFORM(7.47, 9.59)
Decomposition (%)	SINGLE(57.0)
Incinerator ash	
Commercial	SINGLE(0.2)
Industrial	SINGLE(25.5)
Incinerator Ash	SINGLE(100.0)
Water (%)	SINGLE(30.0)
Cellulose (%)	TRIANGULAR(0.5, 0.7, 1.5)
Hemi-Cellulose (%)	TRIANGULAR(0.5, 0.7, 1.5)
Decomposition (%)	SINGLE(57.0)
Non degradable	
Domestic	SINGLE(24.6)
Civic Amenity	SINGLE(28.0)
Commercial	SINGLE(34.1)
Industrial	SINGLE(30.7)
Inert	SINGLE(100.0)
Water (%)	SINGLE(0.0)
Cellulose (%)	SINGLE(0.0)
Hemi-Cellulose (%)	SINGLE(0.0)
Decomposition (%)	SINGLE(0.0)
Calcium Sulphate (%)	
Domestic	TRIANGULAR(0.2, 0.35, 2.3)
Civic Amenity	TRIANGULAR(0.2, 0.35, 2.3)
Composted Organic Material	TRIANGULAR(0.2, 0.35, 2.3)
Incinerator Ash	TRIANGULAR(0.2, 0.35, 2.3)
Residues from MRF	TRIANGULAR(0.2, 0.35, 2.3)
Recycling Schemes	TRIANGULAR(0.2, 0.35, 2.3)
Chemical Sludge	TRIANGULAR(0.2, 0.35, 2.3)
Industrial Liquid Waste	TRIANGULAR(0.2, 0.35, 2.3)
Iron (%)	
Domestic	TRIANGULAR(0.3, 4.8, 8.2)
Civic Amenity	TRIANGULAR(0.3, 4.8, 8.2)
Commercial	TRIANGULAR(0.3, 4.8, 8.2)
Industrial	TRIANGULAR(0.3, 4.8, 8.2)
Inert	TRIANGULAR(0.3, 4.8, 8.2)
Liquid Inert	TRIANGULAR(0.3, 4.8, 8.2)
Sewage Sludge	TRIANGULAR(0.3, 4.8, 8.2)
Composted Organic Material	TRIANGULAR(0.3, 4.8, 8.2)
Incinerator Ash	TRIANGULAR(0.3, 4.8, 8.2)
Residues from MRF	TRIANGULAR(0.3, 4.8, 8.2)
Recycling Schemes	TRIANGULAR(0.3, 4.8, 8.2)
Chemical Sludge	TRIANGULAR(0.3, 4.8, 8.2)
Industrial Liquid Waste	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 1	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 2	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 3	TRIANGULAR(0.3, 4.8, 8.2)
1981	England 2000-2010 waste streams
1982	England 2000-2010 waste streams

1983	England 2000-2010 waste streams
1984	England 2000-2010 waste streams
1985	England 2000-2010 waste streams
1986	England 2000-2010 waste streams
1987	England 2000-2010 waste streams
1988	England 2000-2010 waste streams
1989	England 2000-2010 waste streams
1990	England 2000-2010 waste streams
1991	England 2000-2010 waste streams
1992	England 2000-2010 waste streams
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2001	England 2000-2010 waste streams
2002	England 2000-2010 waste streams
2003	England 2000-2010 waste streams
2004	England 2000-2010 waste streams
2005	England 2000-2010 waste streams
2006	England 2000-2010 waste streams
2007	England 2000-2010 waste streams
2008	England 2000-2010 waste streams
2009	England 2000-2010 waste streams
2010	England 2010-2013 waste streams
Newspapers	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(48.5)
Hemi-Cellulose (%)	SINGLE(9.0)
Decomposition (%)	SINGLE(35.0)
Magazines	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(42.3)
Hemi-Cellulose (%)	SINGLE(9.4)
Decomposition (%)	SINGLE(46.0)
Other paper	
Domestic	SINGLE(14.9)
Civic Amenity	SINGLE(3.3)
Commercial	SINGLE(28.8)
Industrial	SINGLE(8.8)
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(87.4)
Hemi-Cellulose (%)	SINGLE(8.4)
Decomposition (%)	SINGLE(98.0)
Liquid cartons	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Card packaging	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Other card	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Wood	
Domestic	SINGLE(2.3)
Civic Amenity	SINGLE(11.2)
Commercial	SINGLE(3.3)
Industrial	SINGLE(5.0)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(21.0)
Hemi-Cellulose (%)	SINGLE(11.0)
Decomposition (%)	SINGLE(75.0)
Textiles	
Domestic	SINGLE(2.5)
Civic Amenity	SINGLE(2.3)
Commercial	SINGLE(1.1)
Industrial	SINGLE(0.3)
Water (%)	SINGLE(25.0)
Cellulose (%)	SINGLE(20.0)
Hemi-Cellulose (%)	SINGLE(20.0)
Decomposition (%)	SINGLE(50.0)
Disposable nappies	
Domestic	SINGLE(2.5)
Civic Amenity	SINGLE(2.9)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)

Decomposition (%)	SINGLE(50.0)
Other misc. combustibles	
Domestic	SINGLE(0.2)
Civic Amenity	SINGLE(4.2)
Commercial	SINGLE(10.4)
Industrial	SINGLE(17.7)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Garden waste	
Domestic	SINGLE(12.0)
Civic Amenity	SINGLE(32.1)
Commercial	SINGLE(9.8)
Industrial	SINGLE(4.7)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(25.7)
Hemi-Cellulose (%)	SINGLE(13.0)
Decomposition (%)	SINGLE(62.0)
Other putrescible	
Domestic	SINGLE(19.2)
Civic Amenity	SINGLE(14.8)
Commercial	SINGLE(10.4)
Industrial	SINGLE(6.8)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(55.4)
Hemi-Cellulose (%)	SINGLE(7.2)
Decomposition (%)	SINGLE(76.0)
10mm fines	
Domestic	SINGLE(3.1)
Civic Amenity	SINGLE(1.2)
Commercial	SINGLE(1.9)
Industrial	SINGLE(0.5)
Water (%)	SINGLE(40.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Sewage sludge	
Sewage Sludge	SINGLE(100.0)
Water (%)	SINGLE(70.0)
Cellulose (%)	SINGLE(14.0)
Hemi-Cellulose (%)	SINGLE(14.0)
Decomposition (%)	SINGLE(75.0)
Composted organic material	
Composted Organic Material	SINGLE(100.0)
Water (%)	SINGLE(30.0)
Cellulose (%)	UNIFORM(7.47, 9.59)
Hemi-Cellulose (%)	UNIFORM(7.47, 9.59)
Decomposition (%)	SINGLE(57.0)
Incinerator ash	
Commercial	SINGLE(0.2)
Industrial	SINGLE(25.5)
Incinerator Ash	SINGLE(100.0)
Water (%)	SINGLE(30.0)
Cellulose (%)	TRIANGULAR(0.5, 0.7, 1.5)
Hemi-Cellulose (%)	TRIANGULAR(0.5, 0.7, 1.5)
Decomposition (%)	SINGLE(57.0)
Non degradable	
Domestic	SINGLE(43.3)
Civic Amenity	SINGLE(28.0)
Commercial	SINGLE(34.1)
Industrial	SINGLE(30.7)
Inert	SINGLE(100.0)
Water (%)	SINGLE(0.0)
Cellulose (%)	SINGLE(0.0)
Hemi-Cellulose (%)	SINGLE(0.0)
Decomposition (%)	SINGLE(0.0)
Calcium Sulphate (%)	
Domestic	TRIANGULAR(0.2, 0.35, 2.3)
Civic Amenity	TRIANGULAR(0.2, 0.35, 2.3)
Composted Organic Material	TRIANGULAR(0.2, 0.35, 2.3)
Incinerator Ash	TRIANGULAR(0.2, 0.35, 2.3)
Residues from MRF	TRIANGULAR(0.2, 0.35, 2.3)
Recycling Schemes	TRIANGULAR(0.2, 0.35, 2.3)
Chemical Sludge	TRIANGULAR(0.2, 0.35, 2.3)
Industrial Liquid Waste	TRIANGULAR(0.2, 0.35, 2.3)
Iron (%)	
Domestic	TRIANGULAR(0.3, 4.8, 8.2)
Civic Amenity	TRIANGULAR(0.3, 4.8, 8.2)
Commercial	TRIANGULAR(0.3, 4.8, 8.2)
Industrial	TRIANGULAR(0.3, 4.8, 8.2)
Inert	TRIANGULAR(0.3, 4.8, 8.2)
Liquid Inert	TRIANGULAR(0.3, 4.8, 8.2)
Sewage Sludge	TRIANGULAR(0.3, 4.8, 8.2)
Composted Organic Material	TRIANGULAR(0.3, 4.8, 8.2)
Incinerator Ash	TRIANGULAR(0.3, 4.8, 8.2)

Residues from MRF	TRIANGULAR(0.3, 4.8, 8.2)
Recycling Schemes	TRIANGULAR(0.3, 4.8, 8.2)
Chemical Sludge	TRIANGULAR(0.3, 4.8, 8.2)
Industrial Liquid Waste	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 1	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 2	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 3	TRIANGULAR(0.3, 4.8, 8.2)
2011	England 2010-2013 waste streams
2012	England 2010-2013 waste streams
2013	England 2010-2013 waste streams
2014	England 2013-2020 waste streams
Newspapers	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(48.5)
Hemi-Cellulose (%)	SINGLE(9.0)
Decomposition (%)	SINGLE(35.0)
Magazines	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(42.3)
Hemi-Cellulose (%)	SINGLE(9.4)
Decomposition (%)	SINGLE(46.0)
Other paper	
Domestic	SINGLE(9.9)
Civic Amenity	SINGLE(3.3)
Commercial	SINGLE(28.8)
Industrial	SINGLE(8.8)
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(87.4)
Hemi-Cellulose (%)	SINGLE(8.4)
Decomposition (%)	SINGLE(98.0)
Liquid cartons	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Card packaging	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Other card	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Wood	
Domestic	SINGLE(1.5)
Civic Amenity	SINGLE(11.2)
Commercial	SINGLE(3.3)
Industrial	SINGLE(5.0)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(21.0)
Hemi-Cellulose (%)	SINGLE(11.0)
Decomposition (%)	SINGLE(75.0)
Textiles	
Domestic	SINGLE(1.7)
Civic Amenity	SINGLE(2.3)
Commercial	SINGLE(1.1)
Industrial	SINGLE(0.3)
Water (%)	SINGLE(25.0)
Cellulose (%)	SINGLE(20.0)
Hemi-Cellulose (%)	SINGLE(20.0)
Decomposition (%)	SINGLE(50.0)
Disposable nappies	
Domestic	SINGLE(1.7)
Civic Amenity	SINGLE(2.9)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Other misc. combustibles	
Domestic	SINGLE(0.2)
Civic Amenity	SINGLE(4.2)
Commercial	SINGLE(10.4)
Industrial	SINGLE(17.7)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Garden waste	
Domestic	SINGLE(8.0)
Civic Amenity	SINGLE(32.1)
Commercial	SINGLE(9.8)
Industrial	SINGLE(4.7)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(25.7)

Hemi-Cellulose (%)	SINGLE(13.0)
Decomposition (%)	SINGLE(62.0)
Other putrescible	
Domestic	SINGLE(12.8)
Civic Amenity	SINGLE(14.8)
Commercial	SINGLE(10.4)
Industrial	SINGLE(6.8)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(55.4)
Hemi-Cellulose (%)	SINGLE(7.2)
Decomposition (%)	SINGLE(76.0)
10mm fines	
Domestic	SINGLE(2.1)
Civic Amenity	SINGLE(1.2)
Commercial	SINGLE(1.9)
Industrial	SINGLE(0.5)
Water (%)	SINGLE(40.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Sewage sludge	
Sewage Sludge	SINGLE(100.0)
Water (%)	SINGLE(70.0)
Cellulose (%)	SINGLE(14.0)
Hemi-Cellulose (%)	SINGLE(14.0)
Decomposition (%)	SINGLE(75.0)
Composted organic material	
Composted Organic Material	SINGLE(100.0)
Water (%)	SINGLE(30.0)
Cellulose (%)	UNIFORM(7.47, 9.59)
Hemi-Cellulose (%)	UNIFORM(7.47, 9.59)
Decomposition (%)	SINGLE(57.0)
Incinerator ash	
Commercial	SINGLE(0.2)
Industrial	SINGLE(25.5)
Incinerator Ash	SINGLE(100.0)
Water (%)	SINGLE(30.0)
Cellulose (%)	TRIANGULAR(0.5, 0.7, 1.5)
Hemi-Cellulose (%)	TRIANGULAR(0.5, 0.7, 1.5)
Decomposition (%)	SINGLE(57.0)
Non degradable	
Domestic	SINGLE(62.1)
Civic Amenity	SINGLE(28.0)
Commercial	SINGLE(34.1)
Industrial	SINGLE(30.7)
Inert	SINGLE(100.0)
Water (%)	SINGLE(0.0)
Cellulose (%)	SINGLE(0.0)
Hemi-Cellulose (%)	SINGLE(0.0)
Decomposition (%)	SINGLE(0.0)
Calcium Sulphate (%)	
Domestic	TRIANGULAR(0.2, 0.35, 2.3)
Civic Amenity	TRIANGULAR(0.2, 0.35, 2.3)
Composted Organic Material	TRIANGULAR(0.2, 0.35, 2.3)
Incinerator Ash	TRIANGULAR(0.2, 0.35, 2.3)
Residues from MRF	TRIANGULAR(0.2, 0.35, 2.3)
Recycling Schemes	TRIANGULAR(0.2, 0.35, 2.3)
Chemical Sludge	TRIANGULAR(0.2, 0.35, 2.3)
Industrial Liquid Waste	TRIANGULAR(0.2, 0.35, 2.3)
Iron (%)	
Domestic	TRIANGULAR(0.3, 4.8, 8.2)
Civic Amenity	TRIANGULAR(0.3, 4.8, 8.2)
Commercial	TRIANGULAR(0.3, 4.8, 8.2)
Industrial	TRIANGULAR(0.3, 4.8, 8.2)
Inert	TRIANGULAR(0.3, 4.8, 8.2)
Liquid Inert	TRIANGULAR(0.3, 4.8, 8.2)
Sewage Sludge	TRIANGULAR(0.3, 4.8, 8.2)
Composted Organic Material	TRIANGULAR(0.3, 4.8, 8.2)
Incinerator Ash	TRIANGULAR(0.3, 4.8, 8.2)
Residues from MRF	TRIANGULAR(0.3, 4.8, 8.2)
Recycling Schemes	TRIANGULAR(0.3, 4.8, 8.2)
Chemical Sludge	TRIANGULAR(0.3, 4.8, 8.2)
Industrial Liquid Waste	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 1	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 2	TRIANGULAR(0.3, 4.8, 8.2)
User Defined 3	TRIANGULAR(0.3, 4.8, 8.2)
2015	England 2013-2020 waste streams
2016	England 2013-2020 waste streams
2017	England 2013-2020 waste streams
2018	England 2013-2020 waste streams
2019	England 2013-2020 waste streams
2020	England 2013-2020 waste streams
2021	England 2020+ waste streams
Newspapers	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(48.5)

Hemi-Cellulose (%)	SINGLE(9.0)
Decomposition (%)	SINGLE(35.0)
Magazines	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(42.3)
Hemi-Cellulose (%)	SINGLE(9.4)
Decomposition (%)	SINGLE(46.0)
Other paper	
Domestic	SINGLE(6.9)
Civic Amenity	SINGLE(3.3)
Commercial	SINGLE(28.8)
Industrial	SINGLE(8.8)
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(87.4)
Hemi-Cellulose (%)	SINGLE(8.4)
Decomposition (%)	SINGLE(98.0)
Liquid cartons	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Card packaging	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Other card	
Water (%)	SINGLE(30.0)
Cellulose (%)	SINGLE(57.3)
Hemi-Cellulose (%)	SINGLE(9.9)
Decomposition (%)	SINGLE(64.0)
Wood	
Domestic	SINGLE(1.1)
Civic Amenity	SINGLE(11.2)
Commercial	SINGLE(3.3)
Industrial	SINGLE(5.0)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(21.0)
Hemi-Cellulose (%)	SINGLE(11.0)
Decomposition (%)	SINGLE(75.0)
Textiles	
Domestic	SINGLE(1.2)
Civic Amenity	SINGLE(2.3)
Commercial	SINGLE(1.1)
Industrial	SINGLE(0.3)
Water (%)	SINGLE(25.0)
Cellulose (%)	SINGLE(20.0)
Hemi-Cellulose (%)	SINGLE(20.0)
Decomposition (%)	SINGLE(50.0)
Disposable nappies	
Domestic	SINGLE(1.2)
Civic Amenity	SINGLE(2.9)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Other misc. combustibles	
Domestic	SINGLE(0.1)
Civic Amenity	SINGLE(4.2)
Commercial	SINGLE(10.4)
Industrial	SINGLE(17.7)
Water (%)	SINGLE(20.0)
Cellulose (%)	SINGLE(25.0)
Hemi-Cellulose (%)	SINGLE(25.0)
Decomposition (%)	SINGLE(50.0)
Garden waste	
Domestic	SINGLE(5.6)
Civic Amenity	SINGLE(32.1)
Commercial	SINGLE(9.8)
Industrial	SINGLE(4.7)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(25.7)
Hemi-Cellulose (%)	SINGLE(13.0)
Decomposition (%)	SINGLE(62.0)
Other putrescible	
Domestic	SINGLE(9.0)
Civic Amenity	SINGLE(14.8)
Commercial	SINGLE(10.4)
Industrial	SINGLE(6.8)
Water (%)	SINGLE(65.0)
Cellulose (%)	SINGLE(55.4)
Hemi-Cellulose (%)	SINGLE(7.2)
Decomposition (%)	SINGLE(76.0)
10mm fines	
Domestic	SINGLE(1.4)
Civic Amenity	SINGLE(1.2)

Commercial		SINGLE(1.9)
Industrial		SINGLE(0.5)
Water (%)		SINGLE(40.0)
Cellulose (%)		SINGLE(25.0)
Hemi-Cellulose (%)		SINGLE(25.0)
Decomposition (%)		SINGLE(50.0)
Sewage sludge		
Sewage Sludge		SINGLE(100.0)
Water (%)		SINGLE(70.0)
Cellulose (%)		SINGLE(14.0)
Hemi-Cellulose (%)		SINGLE(14.0)
Decomposition (%)		SINGLE(75.0)
Composted organic material		
Composted Organic Material		SINGLE(100.0)
Water (%)		SINGLE(30.0)
Cellulose (%)		UNIFORM(7.47, 9.59)
Hemi-Cellulose (%)		UNIFORM(7.47, 9.59)
Decomposition (%)		SINGLE(57.0)
Incinerator ash		
Commercial		SINGLE(0.2)
Industrial		SINGLE(25.5)
Incinerator Ash		SINGLE(100.0)
Water (%)		SINGLE(30.0)
Cellulose (%)		TRIANGULAR(0.5, 0.7, 1.5)
Hemi-Cellulose (%)		TRIANGULAR(0.5, 0.7, 1.5)
Decomposition (%)		SINGLE(57.0)
Non degradable		
Domestic		SINGLE(73.5)
Civic Amenity		SINGLE(28.0)
Commercial		SINGLE(34.1)
Industrial		SINGLE(30.7)
Inert		SINGLE(100.0)
Water (%)		SINGLE(0.0)
Cellulose (%)		SINGLE(0.0)
Hemi-Cellulose (%)		SINGLE(0.0)
Decomposition (%)		SINGLE(0.0)
Calcium Sulphate (%)		
Domestic		TRIANGULAR(0.2, 0.35, 2.3)
Civic Amenity		TRIANGULAR(0.2, 0.35, 2.3)
Composted Organic Material		TRIANGULAR(0.2, 0.35, 2.3)
Incinerator Ash		TRIANGULAR(0.2, 0.35, 2.3)
Residues from MRF		TRIANGULAR(0.2, 0.35, 2.3)
Recycling Schemes		TRIANGULAR(0.2, 0.35, 2.3)
Chemical Sludge		TRIANGULAR(0.2, 0.35, 2.3)
Industrial Liquid Waste		TRIANGULAR(0.2, 0.35, 2.3)
Iron (%)		
Domestic		TRIANGULAR(0.3, 4.8, 8.2)
Civic Amenity		TRIANGULAR(0.3, 4.8, 8.2)
Commercial		TRIANGULAR(0.3, 4.8, 8.2)
Industrial		TRIANGULAR(0.3, 4.8, 8.2)
Inert		TRIANGULAR(0.3, 4.8, 8.2)
Liquid Inert		TRIANGULAR(0.3, 4.8, 8.2)
Sewage Sludge		TRIANGULAR(0.3, 4.8, 8.2)
Composted Organic Material		TRIANGULAR(0.3, 4.8, 8.2)
Incinerator Ash		TRIANGULAR(0.3, 4.8, 8.2)
Residues from MRF		TRIANGULAR(0.3, 4.8, 8.2)
Recycling Schemes		TRIANGULAR(0.3, 4.8, 8.2)
Chemical Sludge		TRIANGULAR(0.3, 4.8, 8.2)
Industrial Liquid Waste		TRIANGULAR(0.3, 4.8, 8.2)
User Defined 1		TRIANGULAR(0.3, 4.8, 8.2)
User Defined 2		TRIANGULAR(0.3, 4.8, 8.2)
User Defined 3		TRIANGULAR(0.3, 4.8, 8.2)
2022		England 2020+ waste streams
2023		England 2020+ waste streams
2024		England 2020+ waste streams
2025		England 2020+ waste streams
Justification:	[Changed]	Not Justified

Trace Gases

No Combustion Products Selected

Phase 1

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year	AmountDepositied (t)
1980	SINGLE(8.00E+04)
1981	SINGLE(8.00E+04)
1982	SINGLE(8.00E+04)
1983	SINGLE(8.00E+04)
1984	SINGLE(8.00E+04)
1985	SINGLE(8.00E+04)
1986	SINGLE(8.00E+04)
1987	LOGUNIFORM(7.50E+04, 8.50E+04)
1988	LOGUNIFORM(7.50E+04, 8.50E+04)
1989	LOGUNIFORM(7.50E+04, 8.50E+04)

1990		LOGUNIFORM(7.50E+04, 8.50E+04)
Justification:	[Changed]	Golders GRA 2003

Waste Breakdown

1980	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1981	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1982	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1983	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1984	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1985	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1986	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1987	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1988	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1989	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
1990	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.4)
Justification: [Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)

Carbon tetrachloride (tetrachloromethane)		SINGLE(0.054)
Carbonyl sulphide		LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene		LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane		LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane		LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)		LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane		LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane		LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane		LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)		LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.5)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)

Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		SINGLE(10.0)
Liner Hydraulic Conductivity		LOGUNIFORM(3.00E-10, 4.00E-07)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	19
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 1

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1991		LOGUNIFORM(2.50E+04, 2.83E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1991

Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.4)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)

Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.12)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		SINGLE(10.0)
Liner Hydraulic Conductivity		LOGUNIFORM(3.00E-10, 4.00E-07)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	15
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 2

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1991		LOGUNIFORM(2.50E+04, 2.83E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1991

Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.4)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)

Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(2.57)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		SINGLE(10.0)
Liner Hydraulic Conductivity		LOGUNIFORM(3.00E-10, 4.00E-07)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		15
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 3

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1991		LOGUNIFORM(2.50E+04, 2.83E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1991

Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.4)
Justification:	[Default]	Default Value

Trace Gases

Source Gases		Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane		LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane		LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane		LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane		LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene		LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane		SINGLE(0.0)
1,2-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.01, 9.8, 300.0)

1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene	LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene	LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)	LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)	LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane	LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)	LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification: [Default]	Default Value

VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(3.2)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		SINGLE(10.0)
Liner Hydraulic Conductivity		LOGUNIFORM(3.00E-10, 4.00E-07)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	24
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 4

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1992		LOGUNIFORM(2.50E+04, 2.83E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1992

Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.4)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)

Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene	LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene	LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)	LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)	LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane	LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)	LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)

Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(3.1)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		SINGLE(10.0)

Liner Hydraulic Conductivity		LOGUNIFORM(3.00E-10, 4.00E-07)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	23
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 5A and 5B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1992		LOGUNIFORM(2.50E+04, 2.83E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1992

Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.4)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)

Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(3.55)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		SINGLE(10.0)
Liner Hydraulic Conductivity		LOGUNIFORM(3.00E-10, 4.00E-07)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		21
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 6

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1993		SINGLE(3.36E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1993

Domestic		SINGLE(40.2)
Civic Amenity		SINGLE(6.2)
Commercial		SINGLE(20.1)
Industrial		SINGLE(33.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)

Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(1.97)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	21
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 7

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1993		SINGLE(3.36E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1993

Domestic		SINGLE(40.2)
Civic Amenity		SINGLE(6.2)
Commercial		SINGLE(20.1)
Industrial		SINGLE(33.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)

Acetone		LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile		LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic		LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene		LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane		SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)		SINGLE(0.038)
Butane		LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid		LOGUNIFORM(0.215, 0.216)
Carbon disulphide		LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide		LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)		SINGLE(0.054)
Carbonyl sulphide		LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene		LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane		LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane		LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)		LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane		LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane		LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane		LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)		LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average

Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(3.18)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	20
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 8

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1993		SINGLE(3.36E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1993

Domestic		SINGLE(40.2)
Civic Amenity		SINGLE(6.2)
Commercial		SINGLE(20.1)
Industrial		SINGLE(33.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)

Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(3.1)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value

Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	20
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cells 9-10

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1993		SINGLE(3.36E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1993

Domestic		SINGLE(40.2)
Civic Amenity		SINGLE(6.2)
Commercial		SINGLE(20.1)
Industrial		SINGLE(33.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)

Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(3.1)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		20
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 12C

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1996		SINGLE(5.51E+04)
1997		LOGUNIFORM(7.00E+04, 7.50E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1996

Domestic		SINGLE(48.7)
Civic Amenity		SINGLE(6.1)
Commercial		SINGLE(24.3)

Industrial		SINGLE(20.9)
1997		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)

Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(2.75)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		21
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 12C south

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1996		SINGLE(5.51E+04)
1997		LOGUNIFORM(7.00E+04, 7.50E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

1996		
Domestic		SINGLE(48.7)
Civic Amenity		SINGLE(6.1)
Commercial		SINGLE(24.3)
Industrial		SINGLE(20.9)
1997		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases		Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane		LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane		LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane		LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane		LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene		LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane		SINGLE(0.0)
1,2-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.01, 9.8, 300.0)

1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene	LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene	LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)	LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)	LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane	LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)	LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification: [Default]	Default Value

VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.14)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		24
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 12A

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1994		SINGLE(1.18E+05)
Justification:	[Changed]	Not Justified

Waste Breakdown

1994

Domestic		SINGLE(46.6)
Civic Amenity		SINGLE(6.9)
Commercial		SINGLE(23.3)
Industrial		SINGLE(23.3)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)

Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene	LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene	LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)	LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)	LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane	LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)	LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)

Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(2.56)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)

Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		19
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 13A

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1998		SINGLE(1.49E+05)
Justification:	[Changed]	Not Justified

Waste Breakdown

1998

Domestic		SINGLE(46.6)
Commercial		SINGLE(23.3)
Industrial		SINGLE(24.7)
Inert		SINGLE(5.4)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)

Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(6.38)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		19
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 12B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1995		SINGLE(1.16E+05)
Justification:	[Changed]	Not Justified

Waste Breakdown

1995

Domestic		SINGLE(46.0)
Civic Amenity		SINGLE(6.2)
Commercial		SINGLE(23.0)
Industrial		SINGLE(24.8)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)

Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(5.11)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		24
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 13B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
1999		SINGLE(1.50E+05)
Justification:	[Changed]	Not Justified

Waste Breakdown

1999

Domestic		SINGLE(49.2)
Commercial		SINGLE(24.6)
Industrial		SINGLE(20.3)
Inert		SINGLE(5.9)
Justification:	[Default]	Default Value

Trace Gases

Source Gases		Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane		LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane		LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane		LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane		LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene		LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane		SINGLE(0.0)
1,2-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol		LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane		LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol		SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane		LOGUNIFORM(0.05, 1.5)
2-Propanol		LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)		LOGTRIANGULAR(0.43, 0.504, 0.541)

Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene	LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene	LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)	LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)	LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane	LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)	LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification: [Default]	Default Value
VOC Halflife	NORMAL(4.11, 1.56)
Justification: [Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase	Average
Justification: [Default]	Default Value
Degradation rate - after change	Average

Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(5.22)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	18
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 14B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2001		SINGLE(1.25E+05)
Justification:	[Changed]	Not Justified

Waste Breakdown

2001

Domestic		SINGLE(29.0)
Commercial		SINGLE(14.5)
Industrial		SINGLE(37.0)
Inert		SINGLE(19.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)

Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.79)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value

Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	21
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 14A

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2000		SINGLE(1.58E+05)
Justification:	[Changed]	Not Justified

Waste Breakdown

2000

Domestic		SINGLE(47.4)
Commercial		SINGLE(23.7)
Industrial		SINGLE(20.5)
Inert		SINGLE(8.4)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)

Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.79)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		22
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 15A

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2002		SINGLE(8.29E+04)
2003		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2002

Domestic		SINGLE(44.0)
Commercial		SINGLE(22.0)
Industrial		SINGLE(26.1)

Inert		SINGLE(7.9)
2003		
Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)

Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.79)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		22
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 15B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2003		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2003

Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)

Acetone		LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile		LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic		LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene		LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane		SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)		SINGLE(0.038)
Butane		LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid		LOGUNIFORM(0.215, 0.216)
Carbon disulphide		LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide		LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)		SINGLE(0.054)
Carbonyl sulphide		LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene		LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane		LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane		LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)		LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane		LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane		LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane		LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)		LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average

Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.79)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	24
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 16A

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2004		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
2005		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
2006		LOGUNIFORM(4.33E+04, 5.00E+04)
2007		LOGUNIFORM(4.33E+04, 5.00E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2004		
Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
2005		
Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
2006		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2007		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)

Butadiene (modelled as 1,3-Butadiene)		SINGLE(0.038)
Butane		LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid		LOGUNIFORM(0.215, 0.216)
Carbon disulphide		LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide		LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)		SINGLE(0.054)
Carbonyl sulphide		LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene		LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane		LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane		LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)		LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane		LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane		LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane		LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)		LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.79)
Justification:	[Changed]	Not Justified

Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		23
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 16B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2004		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
2005		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
2006		LOGUNIFORM(4.33E+04, 5.00E+04)
2007		LOGUNIFORM(4.33E+04, 5.00E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2004		
Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
2005		
Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
2006		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2007		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases		Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane		LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane		LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane		LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane		LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene		LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane		SINGLE(0.0)
1,2-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol		LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane		LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol		SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane		LOGUNIFORM(0.05, 1.5)
2-Propanol		LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)		LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone		LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile		LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic		LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene		LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane		SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)		SINGLE(0.038)
Butane		LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid		LOGUNIFORM(0.215, 0.216)
Carbon disulphide		LOGTRIANGULAR(0.269, 2.16, 4.49)

Carbon monoxide		LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)		SINGLE(0.054)
Carbonyl sulphide		LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene		LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane		LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane		LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)		LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane		LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane		LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane		LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)		LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.84)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)

Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	25
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 17A

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2004		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
2005		LOGTRIANGULAR(1.33E+04, 1.50E+04, 1.67E+04)
2006		LOGUNIFORM(4.33E+04, 5.00E+04)
2007		LOGUNIFORM(4.33E+04, 5.00E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2004		
Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
2005		
Domestic		LOGUNIFORM(6.0, 12.0)
Commercial		LOGUNIFORM(3.0, 7.0)
Industrial		LOGUNIFORM(60.0, 78.0)
Inert		LOGUNIFORM(13.0, 21.0)
2006		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2007		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)

Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene	LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene	LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)	LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)	LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane	LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)	LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)

Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.84)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified

liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	23
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 18A

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2008		LOGUNIFORM(6.50E+04, 8.25E+04)
2009		LOGUNIFORM(6.50E+04, 8.25E+04)
2010		LOGUNIFORM(6.50E+04, 8.25E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2008		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2009		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2010		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)

Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.77)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	19
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 18B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2008		LOGUNIFORM(6.50E+04, 8.25E+04)
2009		LOGUNIFORM(6.50E+04, 8.25E+04)
2010		LOGUNIFORM(6.50E+04, 8.25E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2008		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2009		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2010		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)

Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.82)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		20
Water Table (mAOD)		9.3
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 18C

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2011		LOGUNIFORM(6.50E+04, 8.25E+04)
2012		LOGUNIFORM(6.50E+04, 8.25E+04)
2013		LOGUNIFORM(3.25E+04, 4.13E+04)
2014		SINGLE(3.97E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2011		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2012		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2013		
Domestic		LOGUNIFORM(46.0, 49.0)
Commercial		LOGUNIFORM(22.0, 25.0)
Industrial		LOGUNIFORM(20.0, 25.0)
Inert		LOGUNIFORM(4.5, 8.5)
2014		
Domestic		SINGLE(7.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)

Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(5.47)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	21
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 18D

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year	AmountDepositied (t)
2011	LOGUNIFORM(6.50E+04, 8.25E+04)
2012	LOGUNIFORM(6.50E+04, 8.25E+04)
2013	LOGUNIFORM(3.25E+04, 4.13E+04)
2014	SINGLE(3.97E+04)

2015		SINGLE(4.59E+04)
2016		SINGLE(5.67E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2011	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.5)
2012	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.5)
2013	
Domestic	LOGUNIFORM(46.0, 49.0)
Commercial	LOGUNIFORM(22.0, 25.0)
Industrial	LOGUNIFORM(20.0, 25.0)
Inert	LOGUNIFORM(4.5, 8.5)
2014	
Domestic	SINGLE(7.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
2015	
Domestic	SINGLE(5.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
2016	
Domestic	SINGLE(4.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
Justification: [Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)

Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(5.16)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	22
Water Table (mAOD)	9.3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 19A

Infiltration	SINGLE(51.0)

Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2013		UNIFORM(3.25E+04, 4.13E+04)
2014		SINGLE(3.97E+04)
2015		SINGLE(4.59E+04)
2016		SINGLE(5.67E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2013		
Domestic		UNIFORM(46.0, 49.0)
Commercial		UNIFORM(22.0, 25.0)
Industrial		UNIFORM(20.0, 25.0)
Inert		UNIFORM(4.5, 8.5)
2014		
Domestic		SINGLE(7.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2015		
Domestic		SINGLE(5.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2016		
Domestic		SINGLE(4.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)

Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(5.7)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	21
Water Table (mAOD)	9.6
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 19B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year	AmountDepositied (t)
2013	UNIFORM(3.25E+04, 4.13E+04)
2014	SINGLE(3.97E+04)

2015		SINGLE(4.59E+04)
2016		SINGLE(5.67E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2013	
Domestic	UNIFORM(46.0, 49.0)
Commercial	UNIFORM(22.0, 25.0)
Industrial	UNIFORM(20.0, 25.0)
Inert	UNIFORM(4.5, 8.5)
2014	
Domestic	SINGLE(7.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
2015	
Domestic	SINGLE(5.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
2016	
Domestic	SINGLE(4.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
Justification: [Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)

Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(5.34)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	26
Water Table (mAOD)	9.6
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 20B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year	AmountDepositied (t)
2017	SINGLE(4.00E+04)
2018	SINGLE(5.62E+04)
2019	SINGLE(4.29E+04)
2020	SINGLE(9.80E+03)
2021	SINGLE(6.69E+03)
2022	SINGLE(8.67E+03)
2023	SINGLE(4.00E+04)

Justification:	[Changed]	Not Justified

Waste Breakdown

2017	
Domestic	SINGLE(4.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
2018	
Domestic	SINGLE(7.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(80.0, 90.0)
2019	
Domestic	SINGLE(17.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(70.0, 80.0)
2020	
Domestic	SINGLE(17.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(70.0, 80.0)
2021	
Domestic	UNIFORM(10.0, 15.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(75.0, 85.0)
2022	
Domestic	UNIFORM(10.0, 15.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(75.0, 85.0)
2023	
Domestic	UNIFORM(10.0, 15.0)
Commercial	UNIFORM(0.0, 5.0)
Industrial	UNIFORM(0.0, 10.0)
Inert	UNIFORM(75.0, 85.0)

Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)

Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.62)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	22
Water Table (mAOD)	9.6
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 22

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2017		SINGLE(4.00E+04)
2018		SINGLE(5.62E+04)
2019		SINGLE(4.29E+04)
2020		SINGLE(9.80E+03)
2021		SINGLE(6.69E+03)
2022		SINGLE(8.67E+03)
2023		SINGLE(4.00E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2017		
Domestic		SINGLE(4.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2018		
Domestic		SINGLE(7.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2019		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2020		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2021		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2022		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2023		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)

Chlorotrifluoromethane		LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane		LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)		LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(2.78)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		

Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	25
Water Table (mAOD)	9.6
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Cell 23

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2017		SINGLE(4.00E+04)
2018		SINGLE(5.62E+04)
2019		SINGLE(4.29E+04)
2020		SINGLE(9.80E+03)
2021		SINGLE(6.69E+03)
2022		SINGLE(8.67E+03)
2023		SINGLE(4.00E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2017		
Domestic		SINGLE(4.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2018		
Domestic		SINGLE(7.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2019		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2020		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2021		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2022		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2023		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)

Butane		LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid		LOGUNIFORM(0.215, 0.216)
Carbon disulphide		LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide		LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)		SINGLE(0.054)
Carbonyl sulphide		LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene		LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane		LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane		LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)		LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane		LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane		LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane		LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)		LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide		LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide		LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide		LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane		LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)		SINGLE(0.162)
Ethanol		LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate		LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene		LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene		UNIFORM(0.2, 5.8)
Ethylene dibromide		SINGLE(0.0)
Ethylene dichloride		LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)		LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113		LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan		LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons		SINGLE(0.0)
Hexachlorocyclohexane (all isomers)		SINGLE(0.0)
Hexane		LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total		LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)		SINGLE(0.0)
Hydrogen sulphide		LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene		LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury		LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)		SINGLE(0.54)
Methyl chloride (chloromethane)		LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)		LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)		LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone		LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid		SINGLE(0.0)
Odour Units (Predicted)		TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)		LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane		LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)		LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)		SINGLE(0.0)
Phenol		SINGLE(0.0)
PM10s		SINGLE(0.0)
Propane		LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol		LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S		LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S		LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(6.28)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)

Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		22
Water Table (mAOD)		9.6
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 24

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2017		SINGLE(4.00E+04)
2018		SINGLE(5.62E+04)
2019		SINGLE(4.29E+04)
2020		SINGLE(9.80E+03)
2021		SINGLE(6.69E+03)
2022		SINGLE(8.67E+03)
2023		SINGLE(4.00E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2017		
Domestic		SINGLE(4.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2018		
Domestic		SINGLE(7.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2019		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2020		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2021		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2022		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2023		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases		Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane		LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane		LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane		LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane		LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene		LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane		LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane		SINGLE(0.0)

1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)
t-1,2-Dichloroethene	LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene	LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)	LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)	LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane	LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)	LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)

Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.79)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)		20
Water Table (mAOD)		9.6
Geosphere Moisture Content		LOGUNIFORM(10.0, 20.0)
Geosphere Porosity		LOGUNIFORM(20.0, 40.0)

Cell 24B

Infiltration		SINGLE(51.0)
Justification:	[Changed]	Not Justified

Waste Input

Year		AmountDepositied (t)
2017		SINGLE(4.00E+04)
2018		SINGLE(5.62E+04)
2019		SINGLE(4.29E+04)
2020		SINGLE(9.80E+03)
2021		SINGLE(6.69E+03)
2022		SINGLE(8.67E+03)
2023		SINGLE(4.00E+04)
Justification:	[Changed]	Not Justified

Waste Breakdown

2017		
Domestic		SINGLE(4.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2018		
Domestic		SINGLE(7.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(80.0, 90.0)
2019		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2020		
Domestic		SINGLE(17.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(70.0, 80.0)
2021		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2022		
Domestic		UNIFORM(10.0, 15.0)
Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
2023		
Domestic		UNIFORM(10.0, 15.0)

Commercial		UNIFORM(0.0, 5.0)
Industrial		UNIFORM(0.0, 10.0)
Inert		UNIFORM(75.0, 85.0)
Justification:	[Default]	Default Value

Trace Gases

Source Gases	Concentration [mg/m3]
1,1,1,2-Tetrafluorochloroethane	LOGTRIANGULAR(0.002, 0.2, 2.0)
1,1,1-Trichlorotrifluoroethane	LOGTRIANGULAR(0.005, 0.4, 8.0)
1,1,2-Trichloroethane	LOGTRIANGULAR(0.004, 1.0, 10.0)
1,1-Dichloroethane	LOGTRIANGULAR(0.032, 0.093, 0.215)
1,1-Dichloroethene	LOGTRIANGULAR(0.03, 2.8, 19.0)
1,1-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.05, 0.25, 6.4)
1,2-Dichloropropane	SINGLE(0.0)
1,2-Dichlorotetrafluoroethane	LOGTRIANGULAR(0.01, 9.8, 300.0)
1-butanethiol	LOGUNIFORM(1.00E-30, 8.00E-02)
1-Chloro-1,1-difluoroethane	LOGTRIANGULAR(0.04, 0.57, 31.0)
2-butoxy ethanol	SINGLE(0.108)
2-Chloro-1,1,1-trifluoroethane	LOGUNIFORM(0.05, 1.5)
2-Propanol	LOGTRIANGULAR(0.005, 2.0, 34.0)
Acetalehyde (ethanal)	LOGTRIANGULAR(0.43, 0.504, 0.541)
Acetone	LOGTRIANGULAR(0.005, 0.1, 50.0)
Acrylonitrile	LOGTRIANGULAR(0.02, 0.4, 38.0)
Arsenic	LOGTRIANGULAR(0.012, 0.017, 0.022)
Benzene	LOGTRIANGULAR(16.78, 43.216, 81.147)
Bromodichloromethane	SINGLE(0.0)
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.038)
Butane	LOGTRIANGULAR(0.19, 1.0, 709.0)
Butene isomers	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.80E+00)
Butyric acid	LOGUNIFORM(0.215, 0.216)
Carbon disulphide	LOGTRIANGULAR(0.269, 2.16, 4.49)
Carbon monoxide	LOGTRIANGULAR(0.11, 1.1, 5000.0)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.054)
Carbonyl sulphide	LOGTRIANGULAR(0.006, 0.2, 4.4)
Chlorobenzene	LOGUNIFORM(0.002, 3000.0)
Chlorodifluoromethane	LOGTRIANGULAR(0.005, 0.1, 9900.0)
Chloroethane	LOGTRIANGULAR(0.054, 1.057, 3.065)
Chlorofluorocarbons (CFCs) (Total)	LOGTRIANGULAR(0.06, 102.3, 1230.0)
Chlorofluoromethane	LOGTRIANGULAR(0.008, 0.2, 110.0)
Chloroform (trichloromethane)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 7.00E+01)
Chlorotrifluoromethane	LOGTRIANGULAR(0.1, 0.2, 49.0)
Dichlorodifluoromethane	LOGTRIANGULAR(0.01, 9.0, 790.0)
Dichlorofluoromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 6.02E+02)
Dichloromethane (methylene chloride)	LOGTRIANGULAR(0.487, 3.18, 4.54)
Diethyl disulphide	LOGTRIANGULAR(1.00E-03, 2.00E-02, 2.60E+00)
Dimethyl disulphide	LOGTRIANGULAR(0.054, 0.09, 0.108)
Dimethyl sulphide	LOGTRIANGULAR(0.595, 4.25, 9.738)
Ethane	LOGTRIANGULAR(0.005, 6.25, 200.0)
Ethanethiol (ethyl mercaptan)	SINGLE(0.162)
Ethanol	LOGTRIANGULAR(0.005, 0.2, 810.0)
Ethyl butyrate	LOGTRIANGULAR(0.509, 0.709, 0.866)
Ethyl toluene (all isomers)	LOGTRIANGULAR(1.00E-03, 1.00E-02, 8.30E+00)
Ethylbenzene	LOGTRIANGULAR(1.00E-03, 1.00E-03, 8.75E+02)
Ethylene	UNIFORM(0.2, 5.8)
Ethylene dibromide	SINGLE(0.0)
Ethylene dichloride	LOGTRIANGULAR(0.006, 0.01, 1820.0)
Fluorotrichloromethane	LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Formaldehyde (methanal)	LOGTRIANGULAR(0.32, 0.43, 0.54)
Freon 113	LOGTRIANGULAR(0.013, 4.8, 125.0)
Furan	LOGTRIANGULAR(0.02, 0.82, 6.2)
Halons	SINGLE(0.0)
Hexachlorocyclohexane (all isomers)	SINGLE(0.0)
Hexane	LOGTRIANGULAR(1.00E-03, 9.60E+00, 4.40E+01)
Hydrochlorofluorocarbons (HCFCs) (Total	LOGTRIANGULAR(0.02, 128.8, 916.2)
Hydrofluorocarbons (HFCs) (Total)	SINGLE(0.0)
Hydrogen sulphide	LOGTRIANGULAR(2.012, 29.893, 84.441)
Limonene	LOGTRIANGULAR(1.00E-03, 1.00E-01, 2.40E+02)
Mercury	LOGUNIFORM(1.70E-04, 1.33E-03)
Methanethiol (methyl mercaptan)	SINGLE(0.54)
Methyl chloride (chloromethane)	LOGTRIANGULAR(0.006, 0.2, 10.0)
Methyl chloroform (1,1,1-Trichloroethane)	LOGTRIANGULAR(1.00E-03, 1.80E+02, 1.60E+03)
Methyl ethyl ketone (2-butanone)	LOGTRIANGULAR(0.005, 0.005, 73.0)
Methyl isobutyl ketone	LOGTRIANGULAR(0.005, 0.2, 9.9)
Nitric acid	SINGLE(0.0)
Odour Units (Predicted)	TRIANGULAR(5.00E+04, 1.25E+05, 2.50E+05)
PAH (reported as Naphthalene)	LOGTRIANGULAR(1.00E-03, 2.00E-01, 1.70E+01)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	LOGTRIANGULAR(0.006, 0.05, 2.7)
Pentane	LOGTRIANGULAR(0.02, 0.3, 105.0)
Pentene (all isomers)	LOGTRIANGULAR(6.452, 6.4735, 6.495)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.0)
Phenol	SINGLE(0.0)
PM10s	SINGLE(0.0)
Propane	LOGTRIANGULAR(1.00E-03, 1.90E+00, 1.29E+01)
Propanethiol	LOGUNIFORM(1.00E-30, 9.00E-02)
Sulphide, total simulations with H2S	LOGTRIANGULAR(1.00E-03, 2.40E+00, 5.58E+03)
Sulphide, total simulations without H2S	LOGTRIANGULAR(5.00E-04, 8.00E-03, 3.50E+00)

t-1,2-Dichloroethene		LOGTRIANGULAR(0.02, 0.24, 2.6)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		LOGUNIFORM(1.00E-03, 5.00E+01)
Tetrachloroethylene (Tetrachloroethene)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 7.70E+03)
Toluene		LOGTRIANGULAR(17.321, 25.91, 33.0)
Trichlorobenzene (all isomers)		LOGTRIANGULAR(0.01, 0.01, 0.13)
Trichloroethylene (trichloroethene)		LOGTRIANGULAR(0.25, 1.65, 88.0)
Trichlorofluoromethane		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.00E+03)
Trichlorotrifluoroethane		LOGTRIANGULAR(1.00E-03, 4.80E+00, 2.40E+01)
Trimethylbenzene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-02, 1.87E+02)
Vinyl chloride (chloroethene, chloroethylene)		LOGTRIANGULAR(1.1, 31.0, 730.0)
Xylene (all isomers)		LOGTRIANGULAR(1.00E-03, 1.00E-03, 6.18E+04)
Justification:	[Default]	Default Value
VOC Halflife		NORMAL(4.11, 1.56)
Justification:	[Default]	Default Value

Waste Moisture Content

Degradation rate - Filling Phase		Average
Justification:	[Default]	Default Value
Degradation rate - after change		Average
Justification:	[Default]	Default Value
Waste Density		UNIFORM(0.8, 1.2)
Justification:	[Default]	Default Value
Leachate Head		SINGLE(4.4)
Justification:	[Changed]	Not Justified
Hydraulic Conductivity		LOGUNIFORM(1.00E-09, 1.00E-05)
Justification:	[Default]	Default Value

Engineered Controls

Cap		Single Clay
Cap Thickness		UNIFORM(1.0, 1.2)
Cap Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Cap	[Changed]	Not Justified
Cap Thickness	[Changed]	Not Justified
Cap Hydraulic Conductivity	[Changed]	Not Justified
liner		Single Clay
Liner Thickness		UNIFORM(1.0, 1.2)
Liner Hydraulic Conductivity		LOGTRIANGULAR(1.00E-11, 1.00E-10, 1.00E-09)
Justifications		
Liner	[Changed]	Not Justified
Liner Thickness	[Changed]	Not Justified
Liner Hydraulic Conductivit	[Changed]	Not Justified
Justification:	[Default]	Default Value
Methane Oxidation %		SINGLE(10.0)
Justification:	[Default]	Default Value
Land Raise Depth		#UNDEFINED?

Geosphere

Ground Surface (mAOD)	20
Water Table (mAOD)	9.6
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)

Site Characteristics

Proportion to CO2 [%]		SINGLE(57.5)
Justification:	[Changed]	Not Justified
Proportion to CH4 [%]		SINGLE(42.5)
Justification:	[Changed]	Not Justified

Cellulose Decay Rates

		Slow	Moderate	Fast
Dry		SINGLE(0.013)	SINGLE(0.046)	SINGLE(0.076)
Average		SINGLE(0.046)	SINGLE(0.076)	SINGLE(0.116)
Wet		SINGLE(0.076)	SINGLE(0.116)	SINGLE(0.694)
Saturated		SINGLE(0.013)	SINGLE(0.046)	SINGLE(0.076)
User Defined 1		SINGLE(0.046)	UNIFORM(0.046, 0.076)	UNIFORM(0.076, 0.116)
User Defined 2		UNIFORM(0.046, 0.076)	UNIFORM(0.076, 0.116)	UNIFORM(0.116, 0.694)
Justification:	[Default]	Default Value		

Gas Plant

Jenbacher		Spark Ignition Engine	
January 1992 to December 2003		0 to 600	Downtime [%]: UNIFORM(3.0, 5.0)
Justification:	[Changed]	Not Justified	
Destruction Efficiency CH4	[Changed]	Not Justified	
Destruction Efficiency H2	[Changed]	Not Justified	
Properties	[Changed]	Not Justified	
Jenbacher		Spark Ignition Engine	
January 1992 to December 2003		0 to 600	Downtime [%]: UNIFORM(3.0, 5.0)
Justification:	[Changed]	Not Justified	
Destruction Efficiency CH4	[Changed]	Not Justified	
Destruction Efficiency H2	[Changed]	Not Justified	
Properties	[Changed]	Not Justified	
Jenbacher		Spark Ignition Engine	
January 2004 to December 2100		0 to 600	Downtime [%]: UNIFORM(3.0, 5.0)
Justification:	[Changed]	Not Justified	
Destruction Efficiency CH4	[Changed]	Not Justified	

Destruction Efficiency H2	[Changed]	Not Justified	
Properties	[Changed]	Not Justified	
Jenbacher		Spark Ignition Engine	
January 2004 to December 2100		0 to 600	Downtime [%]: UNIFORM(3.0, 5.0)
Justification:	[Changed]	Not Justified	
Destruction Efficiency CH4	[Changed]	Not Justified	
Destruction Efficiency H2	[Changed]	Not Justified	
Properties	[Changed]	Not Justified	
Jenbacher		Spark Ignition Engine	
January 2006 to December 2100		0 to 600	Downtime [%]: UNIFORM(3.0, 5.0)
Justification:	[Changed]	Not Justified	
Destruction Efficiency CH4	[Changed]	Not Justified	
Destruction Efficiency H2	[Changed]	Not Justified	
Properties	[Changed]	Not Justified	
Haase		Flare	
January 2004 to December 2100		300 to 3000	Downtime [%]: UNIFORM(3.0, 5.0)
Justification:	[Changed]	Not Justified	
Destruction Efficiency CH4	[Changed]	Not Justified	
Destruction Efficiency H2	[Changed]	Not Justified	
Properties	[Changed]	Not Justified	
Haase		Flare	
January 1992 to December 2004		300 to 1500	Downtime [%]: UNIFORM(3.0, 5.0)
Justification:	[Changed]	Not Justified	
Destruction Efficiency CH4	[Changed]	Not Justified	
Destruction Efficiency H2	[Changed]	Not Justified	
Properties	[Changed]	Not Justified	
Engine/Flare Order	[Changed]	Not Justified	

Trace Gas Plant

1,1,1,2-Tetrafluorochloroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1,1,1-Trichlorotrifluoroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1,1,2-Trichloroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1,1-Dichloroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1,1-Dichloroethene		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1,1-Dichlorotetrafluoroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1,2-Dichloropropane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1,2-Dichlorotetrafluoroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1-butanethiol		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
1-Chloro-1,1-difluoroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
2-butoxy ethanol		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
2-Chloro-1,1,1-trifluoroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)

Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
2-Propanol		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Acetalehyde (ethanal)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Acetone		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Acrylonitrile		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Arsenic		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Benzene		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Benzo(a)pyrene		
Spark Ignition Engine:	combustion products	LOGUNIFORM(1.10E-12, 9.60E-10)
Dual Fuel Engine:	combustion products	LOGUNIFORM(1.10E-12, 9.60E-10)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	LOGUNIFORM(1.00E-06, 6.00E-04)
Bromodichloromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Butadiene (modelled as 1,3-Butadiene)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Butane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Butene isomers		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Butyric acid		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Carbon disulphide		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Carbon monoxide		
Spark Ignition Engine:	combustion products	SINGLE(1.50E+03)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	SINGLE(100.0)
Carbon tetrachloride (tetrachloromethane)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Carbonyl sulphide		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Chlorobenzene		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)

Flare:	non-combustion products	SINGLE(99.0)
Chlorodifluoromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Chloroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Chlorofluorocarbons (CFCs) (Total)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Chlorofluoromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Chloroform (trichloromethane)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Chlorotrifluoromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Dichlorodifluoromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Dichlorofluoromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Dichloromethane (methylene chloride)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Diethyl disulphide		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Dimethyl disulphide		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Dimethyl sulphide		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Dioxins and furans (modelled as 2,3,7,8-TCDD)		
Spark Ignition Engine:	combustion products	LOGUNIFORM(7.00E-10, 2.30E-06)
Dual Fuel Engine:	combustion products	LOGUNIFORM(7.00E-10, 2.30E-06)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	LOGTRIANGULAR(9.00E-09, 3.10E-08, 3.60E-07)
Ethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Ethanethiol (ethyl mercaptan)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Ethanol		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Ethyl butyrate		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)

Ethyl toluene (all isomers)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Ethylbenzene		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Ethylene		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Ethylene dibromide		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Ethylene dichloride		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Fluorotrichloromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Formaldehyde (methanal)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Freon 113		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Furan		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Halons		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Hexachlorocyclohexane (all isomers)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Hexane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Hydrochlorofluorocarbons (HCFCs) (Total)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Hydrofluorocarbons (HFCs) (Total)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Hydrogen chloride, or (Total chloride (reported as HCl))		
Spark Ignition Engine:	combustion products	LOGTRIANGULAR(5.00E-04, 1.00E+01, 5.84E+02)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	LOGUNIFORM(0.5, 36.0)
Hydrogen fluoride, or (Total fluoride (reported as HF))		
Spark Ignition Engine:	combustion products	LOGTRIANGULAR(2.00E-04, 7.00E+00, 4.50E+01)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	LOGUNIFORM(0.4, 21.0)
Hydrogen sulphide		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Limonene		

Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Mercury		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Methanethiol (methyl mercaptan)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Methyl chloride (chloromethane)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Methyl chloroform (1,1,1-Trichloroethane)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Methyl ethyl ketone (2-butanone)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Methyl isobutyl ketone		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Nitric acid		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Nitrogen dioxide (NO2)		
Spark Ignition Engine:	combustion products	SINGLE(0.0)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	SINGLE(0.0)
Nitrogen monoxide (NO)		
Spark Ignition Engine:	combustion products	SINGLE(0.0)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	SINGLE(0.0)
Nitrogen oxides (NOx)		
Spark Ignition Engine:	combustion products	SINGLE(650.0)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	SINGLE(150.0)
Odour Units (Predicted)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
PAH (reported as Naphthalene)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Pentane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Pentene (all isomers)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Perfluorocarbons (PFCs) (Total)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Phenol		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)

Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
PM10s		
Spark Ignition Engine:	combustion products	TRIANGULAR(1.2, 4.6, 12.5)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	UNIFORM(1.0, 10.0)
Propane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Propanethiol		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Sulphide, total simulations with H2S		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Sulphide, total simulations without H2S		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Sulphur dioxide		
Spark Ignition Engine:	combustion products	LOGUNIFORM(18.0, 402.0)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	UNIFORM(0.0, 482.0)
t-1,2-Dichloroethene		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Tetrachloroethylene (Tetrachloroethene)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Toluene		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Total non-methane volatile organic compounds (NMVOCs)		
Spark Ignition Engine:	combustion products	LOGTRIANGULAR(0.0118, 18.1, 90.0)
Dual Fuel Engine:	combustion products	TRIANGULAR(0.0118, 18.1, 90.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	LOGUNIFORM(1.0, 30.0)
Total volatile organic compounds (VOCs)		
Spark Ignition Engine:	combustion products	SINGLE(1.75E+03)
Dual Fuel Engine:	combustion products	SINGLE(0.0)
Other Engine:	combustion products	SINGLE(0.0)
Flare:	combustion products	SINGLE(10.0)
Trichlorobenzene (all isomers)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Trichloroethylene (trichloroethene)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Trichlorofluoromethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Trichlorotrifluoroethane		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Trimethylbenzene (all isomers)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)

Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Vinyl chloride (chloroethene, chloroethylene)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Xylene (all isomers)		
Spark Ignition Engine:	non-combustion products	SINGLE(99.0)
Dual Fuel Engine:	non-combustion products	SINGLE(99.0)
Other Engine:	non-combustion products	SINGLE(99.0)
Flare:	non-combustion products	SINGLE(99.0)
Justification: [Changed]	Utilised trace gas data provided by Operator where possible	

Global Impact

Bulk Gases

Global Warming Potential		
Carbon Dioxide [t]:		1
Methane [t carbon dioxoide]:		21
Hydrogen [t carbon dioxide]:		0
Justification:	[Default]	Default Value
Ozone Depletion Potential		
Carbon Dioxide [t trichlorofluoromethane]:		0
Methane [t trichlorofluoromethane]:		0
Hydrogen [t trichlorofluoromethane]:		0
Justification:	[Default]	Default Value

Trace Gases

Gas	Global Warming Potential	Ozone Depletion Potential
1,1,1,2-Tetrafluorochloroethane	609	0.02
1,1,1-Trichlorotrifluoroethane	6130	1
1,1,2-Trichloroethane	0	0
1,1-Dichloroethane	0	0
1,1-Dichloroethene	0	0
1,1-Dichlorotetrafluoroethane	10000	0.94
1,2-Dichloropropane	0	0
1,2-Dichlorotetrafluoroethane	0	0
1-butanethiol	0	0
1-Chloro-1,1-difluoroethane	2310	0.07
2-butoxy ethanol	0	0
2-Chloro-1,1,1-trifluoroethane	0	0
2-Propanol	0	0
Acetalehyde (ethanal)	1.3	0
Acetone	0.5	0
Acrylonitrile	0	0
Arsenic	0	0
Benzene	0	0
Benzo(a)pyrene	0	0
Bromodichloromethane	1300	1890
Butadiene (modelled as 1,3-Butadiene)	0	0
Butane	4	0
Butene isomers	0	0
Butyric acid	0	0
Carbon disulphide	0	0
Carbon monoxide	0	0
Carbon tetrachloride (tetrachloromethane)	1400	0.73
Carbonyl sulphide	0	0
Chlorobenzene	0	0
Chlorodifluoromethane	1810	0.05
Chloroethane	0	0
Chlorofluorocarbons (CFCs) (Total)	0	0
Chlorofluoromethane	0	0
Chloroform (trichloromethane)	30	0
Chlorotrifluoromethane	14400	0
Dichlorodifluoromethane	10900	1
Dichlorofluoromethane	210	0
Dichloromethane (methylene chloride)	9	0
Diethyl disulphide	0	0
Dimethyl disulphide	0	0
Dimethyl sulphide	0	0
Dioxins and furans (modelled as 2,3,7,8-TCDD)	0	0
Ethane	5.5	0
Ethanethiol (ethyl mercaptan)	0	0
Ethanol	0	0
Ethyl butyrate	0	0
Ethyl toluene (all isomers)	0	0
Ethylbenzene	0	0
Ethylene	3.7	0
Ethylene dibromide	0	0
Ethylene dichloride	0	0
Fluorotrichloromethane	4750	1
Formaldehyde (methanal)	0	0
Freon 113	6130	1
Furan	0	0
Halons	0	0
Hexachlorocyclohexane (all isomers)	0	0

Hexane	0	0
Hydrochlorofluorocarbons (HCFCs) (Total	0	0
Hydrofluorocarbons (HFCs) (Total)	0	0
Hydrogen chloride, or (Total chloride (reported as HCl))	0	0
Hydrogen fluoride, or (Total fluoride (reported as HF))	0	0
Hydrogen sulphide	0	0
Limonene	0	0
Mercury	0	0
Methanethiol (methyl mercaptan)	0	0
Methyl chloride (chloromethane)	146	0
Methyl chloroform (1,1,1-Trichloroethane)	0	0
Methyl ethyl ketone (2-butanone)	0	0
Methyl isobutyl ketone	0	0
Nitric acid	0	0
Nitrogen dioxide (NO2)	0	0
Nitrogen monoxide (NO)	0	0
Nitrogen oxides (NOx)	0	0
Odour Units (Predicted)	0	0
PAH (reported as Naphthalene)	0	0
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	0	0
Pentane	0	0
Pentene (all isomers)	0	0
Perfluorocarbons (PFCs) (Total)	0	0
Phenol	0	0
PM10s	0	0
Propane	3.3	0
Propanethiol	0	0
Sulphide, total simulations with H2S	0	0
Sulphide, total simulations without H2S	0	0
Sulphur dioxide	0	0
t-1,2-Dichloroethene	0	0
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	0	0
Tetrachloroethylene (Tetrachloroethene)	0	0
Toluene	2.7	0
Total non-methane volatile organic compounds (NMVOCs)	0	0
Total volatile organic compounds (VOCs)	0	0
Trichlorobenzene (all isomers)	0	0
Trichloroethylene (trichloroethene)	0	0
Trichlorofluoromethane	4750	1
Trichlorotrifluoroethane	6130	1
Trimethylbenzene (all isomers)	0	0
Vinyl chloride (chloroethene, chloroethylene)	0	0
Xylene (all isomers)	0	0

Lateral Migration

Bulk Gases

Air Diffusion Coefficients		
CO2 Dispersivity		SINGLE(0.1613)
CH4 Dispersivity		SINGLE(0.2192)
H2 Dispersivity		#UNDEFINED?
Justification:	[Default]	Default Value

Geosphere

Cell	Phase 1
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 1
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 2
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 3
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 4
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 5A and 5B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 6
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 7
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 8
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cells 9-10

Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 12C
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 12C south
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 12A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 13A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 12B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 13B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 14B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 14A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 15A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 15B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 16A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 16B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 17A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 18A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 18B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 18C
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 18D
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 19A
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 19B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 20B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 22
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 23
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 24
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Cell	Cell 24B
Geosphere Moisture Content	LOGUNIFORM(10.0, 20.0)
Geosphere Porosity	LOGUNIFORM(20.0, 40.0)
Justification: [Changed]	Not Justified

Trace Gases

Gas	Air Diffusion Coefficient
1,1,1,2-Tetrafluorochloroethane	SINGLE(0.071)
1,1,1-Trichlorotrifluoroethane	#UNDEFINED?
1,1,2-Trichloroethane	#UNDEFINED?
1,1-Dichloroethane	SINGLE(0.0742)
1,1-Dichloroethene	#UNDEFINED?
1,1-Dichlorotetrafluoroethane	#UNDEFINED?
1,2-Dichloropropane	#UNDEFINED?
1,2-Dichlorotetrafluoroethane	#UNDEFINED?
1-butanethiol	#UNDEFINED?

1-Chloro-1,1-difluoroethane	#UNDEFINED?
2-butoxy ethanol	#UNDEFINED?
2-Chloro-1,1,1-trifluoroethane	#UNDEFINED?
2-Propanol	#UNDEFINED?
Acetalehyde (ethanal)	SINGLE(0.1235)
Acetone	#UNDEFINED?
Acrylonitrile	#UNDEFINED?
Arsenic	#UNDEFINED?
Benzene	SINGLE(0.088)
Benzo(a)pyrene	SINGLE(0.043)
Bromodichloromethane	#UNDEFINED?
Butadiene (modelled as 1,3-Butadiene)	SINGLE(0.102)
Butane	#UNDEFINED?
Butene isomers	SINGLE(0.0977)
Butyric acid	#UNDEFINED?
Carbon disulphide	SINGLE(0.108)
Carbon monoxide	SINGLE(0.2013)
Carbon tetrachloride (tetrachloromethane)	SINGLE(0.078)
Carbonyl sulphide	#UNDEFINED?
Chlorobenzene	SINGLE(0.073)
Chlorodifluoromethane	#UNDEFINED?
Chloroethane	SINGLE(0.1085)
Chlorofluorocarbons (CFCs) (Total)	SINGLE(0.0826)
Chlorofluoromethane	#UNDEFINED?
Chloroform (trichloromethane)	SINGLE(0.104)
Chlorotrifluoromethane	#UNDEFINED?
Dichlorodifluoromethane	#UNDEFINED?
Dichlorofluoromethane	#UNDEFINED?
Dichloromethane (methylene chloride)	SINGLE(0.099)
Diethyl disulphide	#UNDEFINED?
Dimethyl disulphide	SINGLE(0.0898)
Dimethyl sulphide	SINGLE(0.0898)
Dioxins and furans (modelled as 2,3,7,8-TCDD)	SINGLE(0.104)
Ethane	#UNDEFINED?
Ethanethiol (ethyl mercaptan)	#UNDEFINED?
Ethanol	#UNDEFINED?
Ethyl butyrate	#UNDEFINED?
Ethyl toluene (all isomers)	SINGLE(0.0796)
Ethylbenzene	#UNDEFINED?
Ethylene	SINGLE(0.0796)
Ethylene dibromide	#UNDEFINED?
Ethylene dichloride	SINGLE(0.104)
Fluorotrichloromethane	#UNDEFINED?
Formaldehyde (methanal)	SINGLE(0.1591)
Freon 113	#UNDEFINED?
Furan	#UNDEFINED?
Halons	SINGLE(0.0754)
Hexachlorocyclohexane (all isomers)	#UNDEFINED?
Hexane	#UNDEFINED?
Hydrochlorofluorocarbons (HCFCs) (Total	SINGLE(0.0967)
Hydrofluorocarbons (HFCs) (Total)	#UNDEFINED?
Hydrogen chloride, or (Total chloride (reported as HCl))	SINGLE(0.1763)
Hydrogen fluoride, or (Total fluoride (reported as HF))	SINGLE(0.2081)
Hydrogen sulphide	SINGLE(0.1623)
Limonene	#UNDEFINED?
Mercury	#UNDEFINED?
Methanethiol (methyl mercaptan)	#UNDEFINED?
Methyl chloride (chloromethane)	SINGLE(0.1724)
Methyl chloroform (1,1,1-Trichloroethane)	SINGLE(0.078)
Methyl ethyl ketone (2-butanone)	#UNDEFINED?
Methyl isobutyl ketone	#UNDEFINED?
Nitric acid	#UNDEFINED?
Nitrogen dioxide (NO2)	SINGLE(0.2276)
Nitrogen monoxide (NO)	SINGLE(0.2276)
Nitrogen oxides (NOx)	SINGLE(0.2276)
Odour Units (Predicted)	#UNDEFINED?
PAH (reported as Naphthalene)	SINGLE(0.059)
para-Dichlorobenzene (modelled as 1,4-Dichlorobenzene)	SINGLE(0.069)
Pentane	SINGLE(0.1999)
Pentene (all isomers)	SINGLE(0.1999)
Perfluorocarbons (PFCs) (Total)	SINGLE(0.071)
Phenol	#UNDEFINED?
PM10s	#UNDEFINED?
Propane	#UNDEFINED?
Propanethiol	#UNDEFINED?
Sulphide, total simulations with H2S	#UNDEFINED?
Sulphide, total simulations without H2S	#UNDEFINED?
Sulphur dioxide	SINGLE(0.1289)
t-1,2-Dichloroethene	#UNDEFINED?
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)	SINGLE(0.071)
Tetrachloroethylene (Tetrachloroethene)	SINGLE(0.072)

Toluene		SINGLE(0.087)
Total non-methane volatile organic compounds (NMVOCs)		#UNDEFINED?
Total volatile organic compounds (VOCs)		#UNDEFINED?
Trichlorobenzene (all isomers)		SINGLE(0.03)
Trichloroethylene (trichloroethene)		SINGLE(0.079)
Trichlorofluoromethane		#UNDEFINED?
Trichlorotrifluoroethane		#UNDEFINED?
Trimethylbenzene (all isomers)		SINGLE(0.0619)
Vinyl chloride (chloroethene, chloroethylene)		SINGLE(0.1126)
Xylene (all isomers)		SINGLE(0.0684)
Justification:	[Default]	Default Value

Appendix B – GasSim2.5 Outputs

Year of Interest: All

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Acrylonitrile - surface	1983	264	8.8	0
Acrylonitrile - surface	1984	264	8.8	0
Acrylonitrile - surface	1985	264	8.8	0
Acrylonitrile - surface	1986	264	8.8	0
Acrylonitrile - surface	1987	264	8.8	0
Acrylonitrile - surface	1988	264	8.8	0
Acrylonitrile - surface	1989	264	8.8	0
Acrylonitrile - surface	1990	264	8.8	0
Acrylonitrile - surface	1991	264	8.8	0
Acrylonitrile - surface	1992	264	8.8	0
Arsenic - surface	1981	0	0.003	0
Arsenic - surface	1982	0	0.003	0
Arsenic - surface	1983	0	0.003	0
Arsenic - surface	1984	0	0.003	0
Arsenic - surface	1985	0	0.003	0
Arsenic - surface	1986	0	0.003	0
Arsenic - surface	1987	0	0.003	0
Arsenic - surface	1988	0	0.003	0
Arsenic - surface	1989	0	0.003	0
Arsenic - surface	1990	0	0.003	0
Arsenic - surface	1991	0	0.003	0
Arsenic - surface	1992	0	0.003	0
Arsenic - surface	1993	0	0.003	0
Arsenic - surface	1994	0	0.003	0
Arsenic - surface	1995	0	0.003	0
Arsenic - surface	1996	0	0.003	0
Arsenic - surface	1997	0	0.003	0
Arsenic - surface	1998	0	0.003	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Arsenic - surface	1999	0	0.003	0
Arsenic - surface	2000	0	0.003	0
Arsenic - surface	2001	0	0.003	0
Arsenic - surface	2002	0	0.003	0
Arsenic - surface	2003	0	0.003	0
Arsenic - surface	2004	0	0.003	0
Arsenic - surface	2005	0	0.003	0
Arsenic - surface	2006	0	0.003	0
Arsenic - surface	2007	0	0.003	0
Arsenic - surface	2008	0	0.003	0
Arsenic - surface	2009	0	0.003	0
Arsenic - surface	2010	0	0.003	0
Arsenic - surface	2011	0	0.003	0
Arsenic - surface	2012	0	0.003	0
Arsenic - surface	2013	0	0.003	0
Arsenic - surface	2014	0	0.003	0
Arsenic - surface	2015	0	0.003	0
Arsenic - surface	2016	0	0.003	0
Arsenic - surface	2018	0	0.003	0
Arsenic - surface	2019	0	0.003	0
Arsenic - surface	2020	0	0.003	0
Arsenic - surface	2021	0	0.003	0
Arsenic - surface	2022	0	0.003	0
Arsenic - surface	2023	0	0.003	0
Arsenic - surface	2024	0	0.003	0
Benzene - surface	1980	0	5	0
Benzene - surface	1981	0	5	0
Benzene - surface	1982	0	5	0
Benzene - surface	1983	0	5	0
Benzene - surface	1984	0	5	0
Benzene - surface	1985	0	5	0
Benzene - surface	1986	0	5	0
Benzene - surface	1987	0	5	0
Benzene - surface	1988	0	5	0
Benzene - surface	1989	0	5	0
Benzene - surface	1990	0	5	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Benzene - surface	1991	0	5	0
Benzene - surface	1992	0	5	0
Benzene - surface	1993	0	5	0
Benzene - surface	1994	0	5	0
Benzene - surface	1995	0	5	0
Benzene - surface	1996	0	5	0
Benzene - surface	1997	0	5	0
Benzene - surface	1998	0	5	0
Benzene - surface	1999	0	5	0
Benzene - surface	2000	0	5	0
Benzene - surface	2001	0	5	0
Benzene - surface	2002	0	5	0
Benzene - surface	2003	0	5	0
Benzene - surface	2004	0	5	0
Benzene - surface	2005	0	5	0
Benzene - surface	2006	0	5	0
Benzene - surface	2007	0	5	0
Benzene - surface	2008	0	5	0
Benzene - surface	2009	0	5	0
Benzene - surface	2010	0	5	0
Benzene - surface	2011	0	5	0
Benzene - surface	2012	0	5	0
Benzene - surface	2013	0	5	0
Benzene - surface	2014	0	5	0
Benzene - surface	2015	0	5	0
Benzene - surface	2016	0	5	0
Benzene - surface	2017	0	5	0
Benzene - surface	2018	0	5	0
Benzene - surface	2019	0	5	0
Benzene - surface	2020	0	5	0
Benzene - surface	2021	0	5	0
Benzene - surface	2022	0	5	0
Benzene - surface	2023	0	5	0
Benzene - surface	2024	0	5	0
Carbon monoxide - engine	2011	10000	0	378
Carbon monoxide - engine	2012	10000	0	378

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Carbon monoxide - engine	2013	10000	0	378
Ethylene dichloride - surface	1981	700	42	0
Ethylene dichloride - surface	1982	700	42	0
Ethylene dichloride - surface	1983	700	42	0
Ethylene dichloride - surface	1984	700	42	0
Ethylene dichloride - surface	1985	700	42	0
Ethylene dichloride - surface	1986	700	42	0
Ethylene dichloride - surface	1987	700	42	0
Ethylene dichloride - surface	1988	700	42	0
Ethylene dichloride - surface	1989	700	42	0
Ethylene dichloride - surface	1990	700	42	0
Ethylene dichloride - surface	1991	700	42	0
Ethylene dichloride - surface	1992	700	42	0
Ethylene dichloride - surface	1993	700	42	0
Ethylene dichloride - surface	1994	700	42	0
Ethylene dichloride - surface	1995	700	42	0
Ethylene dichloride - surface	1996	700	42	0
Ethylene dichloride - surface	1997	700	42	0
Ethylene dichloride - surface	2001	700	42	0
Ethylene dichloride - surface	2002	700	42	0
Ethylene dichloride - surface	2003	700	42	0
Ethylene dichloride - surface	2006	700	42	0
Ethylene dichloride - surface	2007	700	42	0
Ethylene dichloride - surface	2009	700	42	0
Ethylene dichloride - surface	2010	700	42	0
Ethylene dichloride - surface	2012	700	42	0
Ethylene dichloride - surface	2013	700	42	0
Ethylene dichloride - surface	2014	700	42	0
Ethylene dichloride - surface	2015	700	42	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	1993	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	1994	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	1995	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	1996	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	1997	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	1998	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	1999	160	16	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2000	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2001	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2002	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2003	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2004	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2005	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2006	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2007	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2008	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2009	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2010	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2011	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2012	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2013	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2014	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2015	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2016	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2017	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2018	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2019	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2020	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2021	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2022	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2023	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2024	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2025	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2026	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2027	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2028	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2029	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2030	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2031	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2032	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2033	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2034	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2035	160	16	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2036	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2037	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2038	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2039	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2040	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2041	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2042	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine	2043	160	16	0
Hydrogen sulphide - surface	1982	150	140	0
Hydrogen sulphide - surface	1983	150	140	0
Hydrogen sulphide - surface	1984	150	140	0
Hydrogen sulphide - surface	1985	150	140	0
Hydrogen sulphide - surface	1986	150	140	0
Hydrogen sulphide - surface	1987	150	140	0
Hydrogen sulphide - surface	1988	150	140	0
Hydrogen sulphide - surface	1989	150	140	0
Hydrogen sulphide - surface	1990	150	140	0
Hydrogen sulphide - surface	1991	150	140	0
Hydrogen sulphide - surface	1992	150	140	0
Hydrogen sulphide - surface	1993	150	140	0
Hydrogen sulphide - surface	1997	150	140	0
Hydrogen sulphide - surface	2001	150	140	0
Hydrogen sulphide - surface	2002	150	140	0
Hydrogen sulphide - surface	2007	150	140	0
Hydrogen sulphide - surface	2010	150	140	0
Nitrogen oxides (NOx) - engine	1993	200	40	20.03
Nitrogen oxides (NOx) - engine	1994	200	40	20.03
Nitrogen oxides (NOx) - engine	1995	200	40	20.03
Nitrogen oxides (NOx) - engine	1996	200	40	20.03
Nitrogen oxides (NOx) - engine	1997	200	40	20.03
Nitrogen oxides (NOx) - engine	1998	200	40	20.03
Nitrogen oxides (NOx) - engine	1999	200	40	20.03
Nitrogen oxides (NOx) - engine	2000	200	40	20.03
Nitrogen oxides (NOx) - engine	2001	200	40	20.03
Nitrogen oxides (NOx) - engine	2002	200	40	20.03
Nitrogen oxides (NOx) - engine	2003	200	40	20.03

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Nitrogen oxides (NOx) - engine	2004	200	40	20.03
Nitrogen oxides (NOx) - engine	2005	200	40	20.03
Nitrogen oxides (NOx) - engine	2006	200	40	20.03
Nitrogen oxides (NOx) - engine	2007	200	40	20.03
Nitrogen oxides (NOx) - engine	2008	200	40	20.03
Nitrogen oxides (NOx) - engine	2009	200	40	20.03
Nitrogen oxides (NOx) - engine	2010	200	40	20.03
Nitrogen oxides (NOx) - engine	2011	200	40	20.03
Nitrogen oxides (NOx) - engine	2012	200	40	20.03
Nitrogen oxides (NOx) - engine	2013	200	40	20.03
Nitrogen oxides (NOx) - engine	2014	200	40	20.03
Nitrogen oxides (NOx) - engine	2015	200	40	20.03
Nitrogen oxides (NOx) - engine	2016	200	40	20.03
Nitrogen oxides (NOx) - engine	2017	200	40	20.03
Nitrogen oxides (NOx) - engine	2018	200	40	20.03
Nitrogen oxides (NOx) - engine	2019	200	40	20.03
Nitrogen oxides (NOx) - engine	2020	200	40	20.03
Nitrogen oxides (NOx) - engine	2021	200	40	20.03
Nitrogen oxides (NOx) - engine	2022	200	40	20.03
Nitrogen oxides (NOx) - engine	2023	200	40	20.03
Nitrogen oxides (NOx) - engine	2024	200	40	20.03
Nitrogen oxides (NOx) - engine	2025	200	40	20.03
Nitrogen oxides (NOx) - engine	2026	200	40	20.03
Nitrogen oxides (NOx) - engine	2027	200	40	20.03
Nitrogen oxides (NOx) - engine	2028	200	40	20.03
Nitrogen oxides (NOx) - engine	2029	200	40	20.03
Nitrogen oxides (NOx) - engine	2030	200	40	20.03
Nitrogen oxides (NOx) - engine	2031	200	40	20.03
Nitrogen oxides (NOx) - engine	2032	200	40	20.03
Nitrogen oxides (NOx) - engine	2033	200	40	20.03
Nitrogen oxides (NOx) - engine	2034	200	40	20.03
Nitrogen oxides (NOx) - engine	2035	200	40	20.03
Nitrogen oxides (NOx) - engine	2036	200	40	20.03
Nitrogen oxides (NOx) - engine	2037	200	40	20.03
Nitrogen oxides (NOx) - engine	2038	200	40	20.03
Nitrogen oxides (NOx) - engine	2039	200	40	20.03

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Nitrogen oxides (NOx) - engine	2040	200	40	20.03
Nitrogen oxides (NOx) - engine	2041	200	40	20.03
Nitrogen oxides (NOx) - engine	2042	200	40	20.03
Nitrogen oxides (NOx) - engine	2043	200	40	20.03
Nitrogen oxides (NOx) - engine	2044	200	40	20.03
Nitrogen oxides (NOx) - engine	2045	200	40	20.03
Nitrogen oxides (NOx) - engine	2046	200	40	20.03
Nitrogen oxides (NOx) - engine	2047	200	40	20.03
Nitrogen oxides (NOx) - engine	2048	200	40	20.03
Nitrogen oxides (NOx) - engine	2049	200	40	20.03
Nitrogen oxides (NOx) - engine	2050	200	40	20.03
Nitrogen oxides (NOx) - engine	2051	200	40	20.03
Nitrogen oxides (NOx) - engine	2052	200	40	20.03
Nitrogen oxides (NOx) - engine	2053	200	40	20.03
Nitrogen oxides (NOx) - engine	2054	200	40	20.03
Nitrogen oxides (NOx) - engine	2055	200	40	20.03
Nitrogen oxides (NOx) - engine	2056	200	40	20.03
Nitrogen oxides (NOx) - engine	2057	200	40	20.03
Nitrogen oxides (NOx) - engine	2058	200	40	20.03
Nitrogen oxides (NOx) - engine	2059	200	40	20.03
Nitrogen oxides (NOx) - engine	2060	200	40	20.03
Nitrogen oxides (NOx) - engine	2061	200	40	20.03
Nitrogen oxides (NOx) - engine	2062	200	40	20.03
Nitrogen oxides (NOx) - engine	2063	200	40	20.03
Nitrogen oxides (NOx) - engine	2064	200	40	20.03
Nitrogen oxides (NOx) - engine	2065	200	40	20.03
Nitrogen oxides (NOx) - engine	2066	200	40	20.03
Nitrogen oxides (NOx) - engine	2067	200	40	20.03
Nitrogen oxides (NOx) - engine	2068	200	40	20.03
Nitrogen oxides (NOx) - engine	2069	200	40	20.03
Nitrogen oxides (NOx) - engine	2070	200	40	20.03
Nitrogen oxides (NOx) - engine	2071	200	40	20.03
Nitrogen oxides (NOx) - engine	2072	200	40	20.03
Nitrogen oxides (NOx) - engine	2073	200	40	20.03
Nitrogen oxides (NOx) - engine	2074	200	40	20.03
Nitrogen oxides (NOx) - engine	2075	200	40	20.03

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Nitrogen oxides (NOx) - engine	2076	200	40	20.03
Nitrogen oxides (NOx) - engine	2077	200	40	20.03
Nitrogen oxides (NOx) - engine	2078	200	40	20.03
Nitrogen oxides (NOx) - engine	2079	200	40	20.03
Nitrogen oxides (NOx) - engine	2080	200	40	20.03
Nitrogen oxides (NOx) - engine	2081	200	40	20.03
Nitrogen oxides (NOx) - engine	2082	200	40	20.03
Nitrogen oxides (NOx) - engine	2083	200	40	20.03
Nitrogen oxides (NOx) - engine	2084	200	40	20.03
Nitrogen oxides (NOx) - engine	2085	200	40	20.03
Nitrogen oxides (NOx) - engine	2086	200	40	20.03
Nitrogen oxides (NOx) - engine	2087	200	40	20.03
Nitrogen oxides (NOx) - engine	2088	200	40	20.03
Nitrogen oxides (NOx) - engine	2089	200	40	20.03
Nitrogen oxides (NOx) - engine	2090	200	40	20.03
PM10s - engine	2011	0	40	0
PM10s - engine	2012	0	40	0
PM10s - engine	2013	0	40	0
PM10s - engine	2014	0	40	0
PM10s - engine	2015	0	40	0
Sulphur dioxide - engine	1993	350	0	3.34
Sulphur dioxide 15 min - engine	1993	266		3.34
Sulphur dioxide 24 hour - engine	1993	125		3.34
Sulphur dioxide - engine	1994	350	0	3.34
Sulphur dioxide 15 min - engine	1994	266		3.34
Sulphur dioxide 24 hour - engine	1994	125		3.34
Sulphur dioxide - engine	1995	350	0	3.34
Sulphur dioxide 15 min - engine	1995	266		3.34
Sulphur dioxide 24 hour - engine	1995	125		3.34
Sulphur dioxide - engine	1996	350	0	3.34
Sulphur dioxide 15 min - engine	1996	266		3.34
Sulphur dioxide 24 hour - engine	1996	125		3.34
Sulphur dioxide - engine	1997	350	0	3.34
Sulphur dioxide 15 min - engine	1997	266		3.34
Sulphur dioxide 24 hour - engine	1997	125		3.34
Sulphur dioxide - engine	1998	350	0	3.34

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	1998	266		3.34
Sulphur dioxide 24 hour - engine	1998	125		3.34
Sulphur dioxide - engine	1999	350	0	3.34
Sulphur dioxide 15 min - engine	1999	266		3.34
Sulphur dioxide 24 hour - engine	1999	125		3.34
Sulphur dioxide - engine	2000	350	0	3.34
Sulphur dioxide 15 min - engine	2000	266		3.34
Sulphur dioxide 24 hour - engine	2000	125		3.34
Sulphur dioxide - engine	2001	350	0	3.34
Sulphur dioxide 15 min - engine	2001	266		3.34
Sulphur dioxide 24 hour - engine	2001	125		3.34
Sulphur dioxide - engine	2002	350	0	3.34
Sulphur dioxide 15 min - engine	2002	266		3.34
Sulphur dioxide 24 hour - engine	2002	125		3.34
Sulphur dioxide - engine	2003	350	0	3.34
Sulphur dioxide 15 min - engine	2003	266		3.34
Sulphur dioxide 24 hour - engine	2003	125		3.34
Sulphur dioxide - engine	2004	350	0	3.34
Sulphur dioxide 15 min - engine	2004	266		3.34
Sulphur dioxide 24 hour - engine	2004	125		3.34
Sulphur dioxide - engine	2005	350	0	3.34
Sulphur dioxide 15 min - engine	2005	266		3.34
Sulphur dioxide 24 hour - engine	2005	125		3.34
Sulphur dioxide - engine	2006	350	0	3.34
Sulphur dioxide 15 min - engine	2006	266		3.34
Sulphur dioxide 24 hour - engine	2006	125		3.34
Sulphur dioxide - engine	2007	350	0	3.34
Sulphur dioxide 15 min - engine	2007	266		3.34
Sulphur dioxide 24 hour - engine	2007	125		3.34
Sulphur dioxide - engine	2008	350	0	3.34
Sulphur dioxide 15 min - engine	2008	266		3.34
Sulphur dioxide 24 hour - engine	2008	125		3.34
Sulphur dioxide - engine	2009	350	0	3.34
Sulphur dioxide 15 min - engine	2009	266		3.34
Sulphur dioxide 24 hour - engine	2009	125		3.34
Sulphur dioxide - engine	2010	350	0	3.34

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	2010	266		3.34
Sulphur dioxide 24 hour - engine	2010	125		3.34
Sulphur dioxide - engine	2011	350	0	3.34
Sulphur dioxide 15 min - engine	2011	266		3.34
Sulphur dioxide 24 hour - engine	2011	125		3.34
Sulphur dioxide - engine	2012	350	0	3.34
Sulphur dioxide 15 min - engine	2012	266		3.34
Sulphur dioxide 24 hour - engine	2012	125		3.34
Sulphur dioxide - engine	2013	350	0	3.34
Sulphur dioxide 15 min - engine	2013	266		3.34
Sulphur dioxide 24 hour - engine	2013	125		3.34
Sulphur dioxide - engine	2014	350	0	3.34
Sulphur dioxide 15 min - engine	2014	266		3.34
Sulphur dioxide 24 hour - engine	2014	125		3.34
Sulphur dioxide - engine	2015	350	0	3.34
Sulphur dioxide 15 min - engine	2015	266		3.34
Sulphur dioxide 24 hour - engine	2015	125		3.34
Sulphur dioxide - engine	2016	350	0	3.34
Sulphur dioxide 15 min - engine	2016	266		3.34
Sulphur dioxide 24 hour - engine	2016	125		3.34
Sulphur dioxide - engine	2017	350	0	3.34
Sulphur dioxide 15 min - engine	2017	266		3.34
Sulphur dioxide 24 hour - engine	2017	125		3.34
Sulphur dioxide - engine	2018	350	0	3.34
Sulphur dioxide 15 min - engine	2018	266		3.34
Sulphur dioxide 24 hour - engine	2018	125		3.34
Sulphur dioxide - engine	2019	350	0	3.34
Sulphur dioxide 15 min - engine	2019	266		3.34
Sulphur dioxide 24 hour - engine	2019	125		3.34
Sulphur dioxide - engine	2020	350	0	3.34
Sulphur dioxide 15 min - engine	2020	266		3.34
Sulphur dioxide 24 hour - engine	2020	125		3.34
Sulphur dioxide - engine	2021	350	0	3.34
Sulphur dioxide 15 min - engine	2021	266		3.34
Sulphur dioxide 24 hour - engine	2021	125		3.34
Sulphur dioxide - engine	2022	350	0	3.34

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	2022	266		3.34
Sulphur dioxide 24 hour - engine	2022	125		3.34
Sulphur dioxide - engine	2023	350	0	3.34
Sulphur dioxide 15 min - engine	2023	266		3.34
Sulphur dioxide 24 hour - engine	2023	125		3.34
Sulphur dioxide - engine	2024	350	0	3.34
Sulphur dioxide 15 min - engine	2024	266		3.34
Sulphur dioxide 24 hour - engine	2024	125		3.34
Sulphur dioxide - engine	2025	350	0	3.34
Sulphur dioxide 15 min - engine	2025	266		3.34
Sulphur dioxide 24 hour - engine	2025	125		3.34
Sulphur dioxide - engine	2026	350	0	3.34
Sulphur dioxide 15 min - engine	2026	266		3.34
Sulphur dioxide 24 hour - engine	2026	125		3.34
Sulphur dioxide - engine	2027	350	0	3.34
Sulphur dioxide 15 min - engine	2027	266		3.34
Sulphur dioxide 24 hour - engine	2027	125		3.34
Sulphur dioxide - engine	2028	350	0	3.34
Sulphur dioxide 15 min - engine	2028	266		3.34
Sulphur dioxide 24 hour - engine	2028	125		3.34
Sulphur dioxide - engine	2029	350	0	3.34
Sulphur dioxide 15 min - engine	2029	266		3.34
Sulphur dioxide 24 hour - engine	2029	125		3.34
Sulphur dioxide - engine	2030	350	0	3.34
Sulphur dioxide 15 min - engine	2030	266		3.34
Sulphur dioxide 24 hour - engine	2030	125		3.34
Sulphur dioxide - engine	2031	350	0	3.34
Sulphur dioxide 15 min - engine	2031	266		3.34
Sulphur dioxide 24 hour - engine	2031	125		3.34
Sulphur dioxide - engine	2032	350	0	3.34
Sulphur dioxide 15 min - engine	2032	266		3.34
Sulphur dioxide 24 hour - engine	2032	125		3.34
Sulphur dioxide - engine	2033	350	0	3.34
Sulphur dioxide 15 min - engine	2033	266		3.34
Sulphur dioxide 24 hour - engine	2033	125		3.34
Sulphur dioxide - engine	2034	350	0	3.34

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	2034	266		3.34
Sulphur dioxide 24 hour - engine	2034	125		3.34
Sulphur dioxide - engine	2035	350	0	3.34
Sulphur dioxide 15 min - engine	2035	266		3.34
Sulphur dioxide 24 hour - engine	2035	125		3.34
Sulphur dioxide - engine	2036	350	0	3.34
Sulphur dioxide 15 min - engine	2036	266		3.34
Sulphur dioxide 24 hour - engine	2036	125		3.34
Sulphur dioxide - engine	2037	350	0	3.34
Sulphur dioxide 15 min - engine	2037	266		3.34
Sulphur dioxide 24 hour - engine	2037	125		3.34
Sulphur dioxide - engine	2038	350	0	3.34
Sulphur dioxide 15 min - engine	2038	266		3.34
Sulphur dioxide 24 hour - engine	2038	125		3.34
Sulphur dioxide - engine	2039	350	0	3.34
Sulphur dioxide 15 min - engine	2039	266		3.34
Sulphur dioxide 24 hour - engine	2039	125		3.34
Sulphur dioxide - engine	2040	350	0	3.34
Sulphur dioxide 15 min - engine	2040	266		3.34
Sulphur dioxide 24 hour - engine	2040	125		3.34
Sulphur dioxide - engine	2041	350	0	3.34
Sulphur dioxide 15 min - engine	2041	266		3.34
Sulphur dioxide 24 hour - engine	2041	125		3.34
Sulphur dioxide - engine	2042	350	0	3.34
Sulphur dioxide 15 min - engine	2042	266		3.34
Sulphur dioxide 24 hour - engine	2042	125		3.34
Sulphur dioxide - engine	2043	350	0	3.34
Sulphur dioxide 15 min - engine	2043	266		3.34
Sulphur dioxide 24 hour - engine	2043	125		3.34
Sulphur dioxide - engine	2044	350	0	3.34
Sulphur dioxide 15 min - engine	2044	266		3.34
Sulphur dioxide 24 hour - engine	2044	125		3.34
Sulphur dioxide - engine	2045	350	0	3.34
Sulphur dioxide 15 min - engine	2045	266		3.34
Sulphur dioxide 24 hour - engine	2045	125		3.34
Sulphur dioxide - engine	2046	350	0	3.34

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	2046	266		3.34
Sulphur dioxide 24 hour - engine	2046	125		3.34
Sulphur dioxide - engine	2047	350	0	3.34
Sulphur dioxide 15 min - engine	2047	266		3.34
Sulphur dioxide 24 hour - engine	2047	125		3.34
Sulphur dioxide - engine	2048	350	0	3.34
Sulphur dioxide 15 min - engine	2048	266		3.34
Sulphur dioxide 24 hour - engine	2048	125		3.34
Sulphur dioxide 15 min - engine	2049	266		3.34
Sulphur dioxide 24 hour - engine	2049	125		3.34
Sulphur dioxide 15 min - engine	2050	266		3.34
Sulphur dioxide 24 hour - engine	2050	125		3.34
Sulphur dioxide 15 min - engine	2051	266		3.34
Sulphur dioxide 24 hour - engine	2051	125		3.34
Sulphur dioxide 15 min - engine	2052	266		3.34
Sulphur dioxide 24 hour - engine	2052	125		3.34
Sulphur dioxide 15 min - engine	2053	266		3.34
Sulphur dioxide 24 hour - engine	2053	125		3.34
Sulphur dioxide 15 min - engine	2054	266		3.34
Sulphur dioxide 24 hour - engine	2054	125		3.34
Sulphur dioxide 15 min - engine	2055	266		3.34
Sulphur dioxide 24 hour - engine	2055	125		3.34
Sulphur dioxide 15 min - engine	2056	266		3.34
Sulphur dioxide 24 hour - engine	2056	125		3.34
Sulphur dioxide 15 min - engine	2057	266		3.34
Sulphur dioxide 24 hour - engine	2057	125		3.34
Sulphur dioxide 15 min - engine	2058	266		3.34
Sulphur dioxide 15 min - engine	2059	266		3.34
Vinyl chloride (chloroethene, chloroethylene) - surface	1982	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1983	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1984	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1985	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1986	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1987	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1988	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1989	1851	159	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Vinyl chloride (chloroethene, chloroethylene) - surface	1990	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1991	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1992	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1993	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2001	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2007	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2010	1851	159	0

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Acrylonitrile - surface - 1983	4.28819(6.32456m)	2.74918(143.558m)	Yes	No	0.088444(6.32456m)	0.0265381(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1984	5.16383(6.32456m)	3.31055(143.558m)	Yes	No	0.106504(6.32456m)	0.0319571(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1985	5.90877(6.32456m)	3.78813(143.558m)	Yes	No	0.121868(6.32456m)	0.0365673(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1986	6.56118(6.32456m)	4.2064(143.558m)	Yes	No	0.135324(6.32456m)	0.0406048(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1987	7.09308(6.32456m)	4.5474(143.558m)	Yes	No	0.146295(6.32456m)	0.0438965(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1988	7.45174(6.32456m)	4.77734(143.558m)	Yes	No	0.153692(6.32456m)	0.0461161(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1989	7.79445(6.32456m)	4.99705(143.558m)	Yes	No	0.160761(6.32456m)	0.0482371(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1990	8.17028(6.32456m)	5.238(143.558m)	Yes	No	0.168512(6.32456m)	0.050563(143.558m)	Yes (at receptor)	No
Acrylonitrile - surface - 1991	8.12885(6.32456m)	6.99368(77.9295m)	Yes	No	0.167658(6.32456m)	0.119413(77.9295m)	No	No
Acrylonitrile - surface - 1992	6.96854(6.32456m)	5.9954(77.9295m)	Yes	No	0.143726(6.32456m)	0.102368(77.9295m)	No	No
Arsenic - surface - 1981	0.00446697(6.32456m)	0.00286379(143.558m)	No EAL	No EAL	9.21313e-005(6.32456m)	2.76445e-005(143.558m)	Yes (at receptor)	No
Arsenic - surface - 1982	0.00738672(6.32456m)	0.00473566(143.558m)	No EAL	No EAL	0.000152351(6.32456m)	4.57138e-005(143.558m)	No	No
Arsenic - surface - 1983	0.00974892(6.32456m)	0.00625007(143.558m)	No EAL	No EAL	0.000201071(6.32456m)	6.03326e-005(143.558m)	No	No
Arsenic - surface - 1984	0.0116711(6.32456m)	0.00748242(143.558m)	No EAL	No EAL	0.000240717(6.32456m)	7.22285e-005(143.558m)	No	No
Arsenic - surface - 1985	0.0132629(6.32456m)	0.00850287(143.558m)	No EAL	No EAL	0.000273546(6.32456m)	8.20791e-005(143.558m)	No	No
Arsenic - surface - 1986	0.0144957(6.32456m)	0.00929328(143.558m)	No EAL	No EAL	0.000298975(6.32456m)	8.9709e-005(143.558m)	No	No
Arsenic - surface - 1987	0.0155607(6.32456m)	0.00997602(143.558m)	No EAL	No EAL	0.000320939(6.32456m)	9.62996e-005(143.558m)	No	No
Arsenic - surface - 1988	0.0165075(6.32456m)	0.010583(143.558m)	No EAL	No EAL	0.000340467(6.32456m)	0.000102159(143.558m)	No	No
Arsenic - surface - 1989	0.0172298(6.32456m)	0.0110461(143.558m)	No EAL	No EAL	0.000355364(6.32456m)	0.000106629(143.558m)	No	No
Arsenic - surface - 1990	0.0178091(6.32456m)	0.0114175(143.558m)	No EAL	No EAL	0.000367312(6.32456m)	0.000110214(143.558m)	No	No
Arsenic - surface - 1991	0.018347(6.32456m)	0.0157849(77.9295m)	No EAL	No EAL	0.000378407(6.32456m)	0.000269517(77.9295m)	No	No
Arsenic - surface - 1992	0.0181886(6.32456m)	0.0156486(77.9295m)	No EAL	No EAL	0.00037514(6.32456m)	0.00026719(77.9295m)	No	No
Arsenic - surface - 1993	0.00904494(6.32456m)	0.00778184(77.9295m)	No EAL	No EAL	0.000186552(6.32456m)	0.00013287(77.9295m)	No	No
Arsenic - surface - 1994	0.00490773(6.32456m)	0.00422238(77.9295m)	No EAL	No EAL	0.000101222(6.32456m)	7.20945e-005(77.9295m)	No	No
Arsenic - surface - 1995	0.00293833(6.32456m)	0.002528(77.9295m)	No EAL	No EAL	6.06031e-005(6.32456m)	4.31641e-005(77.9295m)	No	No
Arsenic - surface - 1996	0.00299088(6.32456m)	0.00257321(77.9295m)	No EAL	No EAL	6.16869e-005(6.32456m)	4.3936e-005(77.9295m)	No	No
Arsenic - surface - 1997	0.0076415(6.32456m)	0.00657439(77.9295m)	No EAL	No EAL	0.000157606(6.32456m)	0.000112254(77.9295m)	No	No
Arsenic - surface - 1998	0.00367046(6.32456m)	0.00315789(77.9295m)	No EAL	No EAL	7.57032e-005(6.32456m)	5.3919e-005(77.9295m)	No	No
Arsenic - surface - 1999	0.00382668(6.32456m)	0.0032923(77.9295m)	No EAL	No EAL	7.89253e-005(6.32456m)	5.62139e-005(77.9295m)	No	No
Arsenic - surface - 2000	0.00597782(6.32456m)	0.00514303(77.9295m)	No EAL	No EAL	0.000123293(6.32456m)	8.78141e-005(77.9295m)	No	No
Arsenic - surface - 2001	0.00930658(6.32456m)	0.00800694(77.9295m)	No EAL	No EAL	0.000191948(6.32456m)	0.000136714(77.9295m)	No	No
Arsenic - surface - 2002	0.00833221(6.32456m)	0.00716864(77.9295m)	No EAL	No EAL	0.000171852(6.32456m)	0.0001224(77.9295m)	No	No
Arsenic - surface - 2003	0.00598463(6.32456m)	0.00514889(77.9295m)	No EAL	No EAL	0.000123433(6.32456m)	8.79141e-005(77.9295m)	No	No
Arsenic - surface - 2004	0.00297752(6.32456m)	0.00256172(77.9295m)	No EAL	No EAL	6.14113e-005(6.32456m)	4.37397e-005(77.9295m)	No	No

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Arsenic - surface - 2005	0.00274037(6.32456m)	0.00235768(77.9295m)	No EAL	No EAL	5.652e-005(6.32456m)	4.0256e-005(77.9295m)	No	No
Arsenic - surface - 2006	0.00437659(6.32456m)	0.00376541(77.9295m)	No EAL	No EAL	9.02671e-005(6.32456m)	6.4292e-005(77.9295m)	No	No
Arsenic - surface - 2007	0.00948159(6.32456m)	0.00815751(77.9295m)	No EAL	No EAL	0.000195558(6.32456m)	0.000139285(77.9295m)	No	No
Arsenic - surface - 2008	0.00260116(6.32456m)	0.00223791(77.9295m)	No EAL	No EAL	5.36489e-005(6.32456m)	3.8211e-005(77.9295m)	No	No
Arsenic - surface - 2009	0.00644988(6.32456m)	0.00554918(77.9295m)	No EAL	No EAL	0.000133029(6.32456m)	9.47487e-005(77.9295m)	No	No
Arsenic - surface - 2010	0.00965514(6.32456m)	0.00830682(77.9295m)	No EAL	No EAL	0.000199137(6.32456m)	0.000141834(77.9295m)	No	No
Arsenic - surface - 2011	0.00251692(6.32456m)	0.00216544(77.9295m)	No EAL	No EAL	5.19114e-005(6.32456m)	3.69735e-005(77.9295m)	No	No
Arsenic - surface - 2012	0.00413338(6.32456m)	0.00355617(77.9295m)	No EAL	No EAL	8.5251e-005(6.32456m)	6.07193e-005(77.9295m)	No	No
Arsenic - surface - 2013	0.00600663(6.32456m)	0.00516782(77.9295m)	No EAL	No EAL	0.000123887(6.32456m)	8.82374e-005(77.9295m)	No	No
Arsenic - surface - 2014	0.00770715(6.32456m)	0.00663087(77.9295m)	No EAL	No EAL	0.00015896(6.32456m)	0.000113218(77.9295m)	No	No
Arsenic - surface - 2015	0.0046225(6.32456m)	0.00397698(77.9295m)	No EAL	No EAL	9.53391e-005(6.32456m)	6.79045e-005(77.9295m)	No	No
Arsenic - surface - 2016	0.00402273(6.32456m)	0.00346097(77.9295m)	No EAL	No EAL	8.29689e-005(6.32456m)	5.90939e-005(77.9295m)	No	No
Arsenic - surface - 2018	0.00169473(6.32456m)	0.00145806(77.9295m)	No EAL	No EAL	3.49537e-005(6.32456m)	2.48955e-005(77.9295m)	Yes (at receptor)	No
Arsenic - surface - 2019	0.00246241(6.32456m)	0.00211854(77.9295m)	No EAL	No EAL	5.07871e-005(6.32456m)	3.61727e-005(77.9295m)	No	No
Arsenic - surface - 2020	0.00295088(6.32456m)	0.00253879(77.9295m)	No EAL	No EAL	6.08618e-005(6.32456m)	4.33483e-005(77.9295m)	No	No
Arsenic - surface - 2021	0.00265008(6.32456m)	0.00228(77.9295m)	No EAL	No EAL	5.46579e-005(6.32456m)	3.89296e-005(77.9295m)	No	No
Arsenic - surface - 2022	0.00226373(6.32456m)	0.00194761(77.9295m)	No EAL	No EAL	4.66894e-005(6.32456m)	3.32542e-005(77.9295m)	No	No
Arsenic - surface - 2023	0.00219288(6.32456m)	0.00188665(77.9295m)	No EAL	No EAL	4.52281e-005(6.32456m)	3.22134e-005(77.9295m)	No	No
Arsenic - surface - 2024	0.00179146(6.32456m)	0.00154129(77.9295m)	No EAL	No EAL	3.69489e-005(6.32456m)	2.63166e-005(77.9295m)	Yes (at receptor)	No
Benzene - surface - 1980	3.47819(6.32456m)	2.22988(143.558m)	No EAL	No EAL	0.0717377(6.32456m)	0.0215253(143.558m)	Yes (at receptor)	No
Benzene - surface - 1981	15.0839(6.32456m)	9.67034(143.558m)	No EAL	No EAL	0.311105(6.32456m)	0.0933488(143.558m)	No	No
Benzene - surface - 1982	24.1988(6.32456m)	15.5139(143.558m)	No EAL	No EAL	0.4991(6.32456m)	0.149758(143.558m)	No	No
Benzene - surface - 1983	31.9139(6.32456m)	20.4602(143.558m)	No EAL	No EAL	0.658225(6.32456m)	0.197504(143.558m)	No	No
Benzene - surface - 1984	38.21(6.32456m)	24.4966(143.558m)	No EAL	No EAL	0.788081(6.32456m)	0.236468(143.558m)	No	No
Benzene - surface - 1985	42.9658(6.32456m)	27.5456(143.558m)	No EAL	No EAL	0.88617(6.32456m)	0.2659(143.558m)	No	No
Benzene - surface - 1986	46.6406(6.32456m)	29.9015(143.558m)	No EAL	No EAL	0.961961(6.32456m)	0.288642(143.558m)	No	No
Benzene - surface - 1987	49.9945(6.32456m)	32.0517(143.558m)	No EAL	No EAL	1.03114(6.32456m)	0.309398(143.558m)	No	No
Benzene - surface - 1988	53.0695(6.32456m)	34.0231(143.558m)	No EAL	No EAL	1.09456(6.32456m)	0.328428(143.558m)	No	No
Benzene - surface - 1989	55.2769(6.32456m)	35.4382(143.558m)	No EAL	No EAL	1.14009(6.32456m)	0.342089(143.558m)	No	No
Benzene - surface - 1990	56.5911(6.32456m)	36.2808(143.558m)	No EAL	No EAL	1.16719(6.32456m)	0.350222(143.558m)	No	No
Benzene - surface - 1991	56.9203(6.32456m)	48.9715(77.9295m)	No EAL	No EAL	1.17398(6.32456m)	0.836159(77.9295m)	No	No
Benzene - surface - 1992	53.26(6.32456m)	45.8224(77.9295m)	No EAL	No EAL	1.09849(6.32456m)	0.782389(77.9295m)	No	No
Benzene - surface - 1993	25.3747(6.32456m)	21.8312(77.9295m)	No EAL	No EAL	0.523353(6.32456m)	0.372754(77.9295m)	No	No
Benzene - surface - 1994	13.1881(6.32456m)	11.3464(77.9295m)	No EAL	No EAL	0.272005(6.32456m)	0.193733(77.9295m)	No	No

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Benzene - surface - 1995	8.23199(6.32456m)	7.08242(77.9295m)	No EAL	No EAL	0.169785(6.32456m)	0.120928(77.9295m)	No	No
Benzene - surface - 1996	7.85157(6.32456m)	6.75512(77.9295m)	No EAL	No EAL	0.161939(6.32456m)	0.115339(77.9295m)	No	No
Benzene - surface - 1997	21.7653(6.32456m)	18.7258(77.9295m)	No EAL	No EAL	0.448909(6.32456m)	0.319732(77.9295m)	No	No
Benzene - surface - 1998	10.2676(6.32456m)	8.83377(77.9295m)	No EAL	No EAL	0.211769(6.32456m)	0.150831(77.9295m)	No	No
Benzene - surface - 1999	10.3075(6.32456m)	8.86805(77.9295m)	No EAL	No EAL	0.212591(6.32456m)	0.151416(77.9295m)	No	No
Benzene - surface - 2000	16.6367(6.32456m)	14.3134(77.9295m)	No EAL	No EAL	0.343132(6.32456m)	0.244393(77.9295m)	No	No
Benzene - surface - 2001	27.9189(6.32456m)	24.0201(77.9295m)	No EAL	No EAL	0.575827(6.32456m)	0.410128(77.9295m)	No	No
Benzene - surface - 2002	23.0102(6.32456m)	19.7969(77.9295m)	No EAL	No EAL	0.474585(6.32456m)	0.338019(77.9295m)	No	No
Benzene - surface - 2003	17.1791(6.32456m)	14.7801(77.9295m)	No EAL	No EAL	0.354319(6.32456m)	0.252361(77.9295m)	No	No
Benzene - surface - 2004	7.67829(6.32456m)	6.60604(77.9295m)	No EAL	No EAL	0.158365(6.32456m)	0.112794(77.9295m)	No	No
Benzene - surface - 2005	7.20944(6.32456m)	6.20266(77.9295m)	No EAL	No EAL	0.148695(6.32456m)	0.105907(77.9295m)	No	No
Benzene - surface - 2006	12.1623(6.32456m)	10.4639(77.9295m)	No EAL	No EAL	0.250848(6.32456m)	0.178665(77.9295m)	No	No
Benzene - surface - 2007	26.7144(6.32456m)	22.9838(77.9295m)	No EAL	No EAL	0.550983(6.32456m)	0.392434(77.9295m)	No	No
Benzene - surface - 2008	6.69041(6.32456m)	5.75611(77.9295m)	No EAL	No EAL	0.13799(6.32456m)	0.0982821(77.9295m)	No	No
Benzene - surface - 2009	18.4024(6.32456m)	15.8326(77.9295m)	No EAL	No EAL	0.379549(6.32456m)	0.270331(77.9295m)	No	No
Benzene - surface - 2010	28.5324(6.32456m)	24.5479(77.9295m)	No EAL	No EAL	0.588481(6.32456m)	0.419141(77.9295m)	No	No
Benzene - surface - 2011	6.14562(6.32456m)	5.2874(77.9295m)	No EAL	No EAL	0.126753(6.32456m)	0.0902791(77.9295m)	No	No
Benzene - surface - 2012	10.7042(6.32456m)	9.20943(77.9295m)	No EAL	No EAL	0.220775(6.32456m)	0.157245(77.9295m)	No	No
Benzene - surface - 2013	15.6777(6.32456m)	13.4884(77.9295m)	No EAL	No EAL	0.323353(6.32456m)	0.230306(77.9295m)	No	No
Benzene - surface - 2014	20.1813(6.32456m)	17.363(77.9295m)	No EAL	No EAL	0.416239(6.32456m)	0.296463(77.9295m)	No	No
Benzene - surface - 2015	12.3419(6.32456m)	10.6184(77.9295m)	No EAL	No EAL	0.254552(6.32456m)	0.181303(77.9295m)	No	No
Benzene - surface - 2016	10.7501(6.32456m)	9.24891(77.9295m)	No EAL	No EAL	0.221721(6.32456m)	0.157919(77.9295m)	No	No
Benzene - surface - 2017	3.04874(6.32456m)	2.62299(77.9295m)	No EAL	No EAL	0.0628803(6.32456m)	0.044786(77.9295m)	Yes (at receptor)	No
Benzene - surface - 2018	4.29394(6.32456m)	3.69431(77.9295m)	No EAL	No EAL	0.0885626(6.32456m)	0.063078(77.9295m)	No	No
Benzene - surface - 2019	6.51251(6.32456m)	5.60305(77.9295m)	No EAL	No EAL	0.13432(6.32456m)	0.0956687(77.9295m)	No	No
Benzene - surface - 2020	8.00364(6.32456m)	6.88595(77.9295m)	No EAL	No EAL	0.165075(6.32456m)	0.117573(77.9295m)	No	No
Benzene - surface - 2021	6.92473(6.32456m)	5.95771(77.9295m)	No EAL	No EAL	0.142822(6.32456m)	0.101724(77.9295m)	No	No
Benzene - surface - 2022	5.94529(6.32456m)	5.11504(77.9295m)	No EAL	No EAL	0.122622(6.32456m)	0.0873362(77.9295m)	No	No
Benzene - surface - 2023	5.69012(6.32456m)	4.89551(77.9295m)	No EAL	No EAL	0.117359(6.32456m)	0.0835879(77.9295m)	No	No
Benzene - surface - 2024	4.86042(6.32456m)	4.18167(77.9295m)	No EAL	No EAL	0.100246(6.32456m)	0.0713995(77.9295m)	No	No
Carbon monoxide - engine - 2011	1065.32(10.8167m)	125.332(420.06m)	Yes (at receptor)	No	54.3106(10.8167m)	11.6952(420.06m)	No EAL	No EAL
Carbon monoxide - engine - 2012	1057.54(10.8167m)	124.417(420.06m)	Yes (at receptor)	No	53.9139(10.8167m)	11.6098(420.06m)	No EAL	No EAL
Carbon monoxide - engine - 2013	1041.41(10.8167m)	122.519(420.06m)	Yes (at receptor)	No	53.0916(10.8167m)	11.4327(420.06m)	No EAL	No EAL
Ethylene dichloride - surface - 1981	27.4775(6.32456m)	17.6159(143.558m)	Yes	No	0.566723(6.32456m)	0.170048(143.558m)	Yes (at receptor)	No

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Ethylene dichloride - surface - 1982	43.6168(6.32456m)	27.9629(143.558m)	Yes	No	0.899597(6.32456m)	0.269929(143.558m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1983	55.0719(6.32456m)	35.3068(143.558m)	Yes	No	1.13586(6.32456m)	0.34082(143.558m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1984	63.5673(6.32456m)	40.7533(143.558m)	Yes	No	1.31108(6.32456m)	0.393396(143.558m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1985	68.9377(6.32456m)	44.1963(143.558m)	Yes	No	1.42184(6.32456m)	0.426631(143.558m)	No	No
Ethylene dichloride - surface - 1986	74.8239(6.32456m)	47.9699(143.558m)	Yes (at receptor)	No	1.54324(6.32456m)	0.463059(143.558m)	No	No
Ethylene dichloride - surface - 1987	80.6415(6.32456m)	51.6996(143.558m)	Yes (at receptor)	No	1.66323(6.32456m)	0.499061(143.558m)	No	No
Ethylene dichloride - surface - 1988	85.3114(6.32456m)	54.6935(143.558m)	Yes (at receptor)	No	1.75955(6.32456m)	0.527962(143.558m)	No	No
Ethylene dichloride - surface - 1989	89.4351(6.32456m)	57.3372(143.558m)	Yes (at receptor)	No	1.8446(6.32456m)	0.553482(143.558m)	No	No
Ethylene dichloride - surface - 1990	92.7518(6.32456m)	59.4635(143.558m)	Yes (at receptor)	No	1.91301(6.32456m)	0.574008(143.558m)	No	No
Ethylene dichloride - surface - 1991	90.0389(6.32456m)	77.4652(77.9295m)	No	No	1.85705(6.32456m)	1.32267(77.9295m)	No	No
Ethylene dichloride - surface - 1992	76.7743(6.32456m)	66.053(77.9295m)	Yes (at receptor)	No	1.58347(6.32456m)	1.12781(77.9295m)	No	No
Ethylene dichloride - surface - 1993	33.1332(6.32456m)	28.5062(77.9295m)	Yes	No	0.683372(6.32456m)	0.486726(77.9295m)	No	No
Ethylene dichloride - surface - 1994	33.5297(6.32456m)	28.8473(77.9295m)	Yes	No	0.691549(6.32456m)	0.492551(77.9295m)	No	No
Ethylene dichloride - surface - 1995	23.3937(6.32456m)	20.1269(77.9295m)	Yes	No	0.482496(6.32456m)	0.343654(77.9295m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1996	20.6341(6.32456m)	17.7526(77.9295m)	Yes	No	0.425579(6.32456m)	0.303115(77.9295m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1997	46.9606(6.32456m)	40.4026(77.9295m)	Yes	No	0.968562(6.32456m)	0.68985(77.9295m)	No	No
Ethylene dichloride - surface - 2001	28.7281(6.32456m)	24.7163(77.9295m)	Yes	No	0.592516(6.32456m)	0.422015(77.9295m)	No	No
Ethylene dichloride - surface - 2002	50.8175(6.32456m)	43.721(77.9295m)	Yes	No	1.04811(6.32456m)	0.746509(77.9295m)	No	No
Ethylene dichloride - surface - 2003	38.9324(6.32456m)	33.4956(77.9295m)	Yes	No	0.80298(6.32456m)	0.571916(77.9295m)	No	No
Ethylene dichloride - surface - 2006	24.5934(6.32456m)	21.159(77.9295m)	Yes	No	0.507238(6.32456m)	0.361276(77.9295m)	Yes (at receptor)	No
Ethylene dichloride - surface - 2007	56.2288(6.32456m)	48.3766(77.9295m)	Yes	No	1.15972(6.32456m)	0.826(77.9295m)	No	No
Ethylene dichloride - surface - 2009	38.7349(6.32456m)	33.3257(77.9295m)	Yes	No	0.798908(6.32456m)	0.569016(77.9295m)	No	No
Ethylene dichloride - surface - 2010	60.02(6.32456m)	51.6383(77.9295m)	Yes	No	1.23791(6.32456m)	0.881693(77.9295m)	No	No
Ethylene dichloride - surface - 2012	24.3255(6.32456m)	20.9285(77.9295m)	Yes	No	0.501714(6.32456m)	0.357342(77.9295m)	Yes (at receptor)	No
Ethylene dichloride - surface - 2013	35.2608(6.32456m)	30.3367(77.9295m)	Yes	No	0.727253(6.32456m)	0.51798(77.9295m)	No	No
Ethylene dichloride - surface - 2014	46.4346(6.32456m)	39.9501(77.9295m)	Yes	No	0.957714(6.32456m)	0.682124(77.9295m)	No	No
Ethylene dichloride - surface - 2015	23.2852(6.32456m)	20.0335(77.9295m)	Yes	No	0.480256(6.32456m)	0.342059(77.9295m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 1993	4.48059(10.8167m)	0.527128(420.06m)	Yes	No	0.228422(10.8167m)	0.0491881(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 1994	7.93653(10.8167m)	0.93371(420.06m)	Yes	No	0.404608(10.8167m)	0.0871277(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 1995	9.40892(10.8167m)	1.10693(420.06m)	Yes	No	0.47967(10.8167m)	0.103292(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 1996	10.1136(10.8167m)	1.18984(420.06m)	Yes	No	0.515597(10.8167m)	0.111028(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 1997	9.45627(10.8167m)	1.1125(420.06m)	Yes	No	0.482084(10.8167m)	0.103811(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 1998	11.6352(10.8167m)	1.36884(420.06m)	Yes	No	0.593166(10.8167m)	0.127732(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 1999	12.4782(10.8167m)	1.46802(420.06m)	Yes	No	0.636142(10.8167m)	0.136986(420.06m)	Yes (at receptor)	No

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2000	12.4485(10.8167m)	1.46453(420.06m)	Yes	No	0.634629(10.8167m)	0.13666(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2001	12.4313(10.8167m)	1.46251(420.06m)	Yes	No	0.633752(10.8167m)	0.136471(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2002	12.2208(10.8167m)	1.43774(420.06m)	Yes	No	0.623023(10.8167m)	0.134161(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2003	12.5417(10.8167m)	1.4755(420.06m)	Yes	No	0.639381(10.8167m)	0.137684(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2004	12.5416(10.8167m)	1.47548(420.06m)	Yes	No	0.639374(10.8167m)	0.137682(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2005	12.4836(10.8167m)	1.46866(420.06m)	Yes	No	0.636419(10.8167m)	0.137046(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2006	11.9192(10.8167m)	1.40226(420.06m)	Yes	No	0.607645(10.8167m)	0.13085(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2007	11.0966(10.8167m)	1.30548(420.06m)	Yes	No	0.565707(10.8167m)	0.121819(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2008	14.0663(10.8167m)	1.65486(420.06m)	Yes	No	0.717108(10.8167m)	0.154421(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2009	13.7351(10.8167m)	1.6159(420.06m)	Yes	No	0.700222(10.8167m)	0.150785(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2010	13.3826(10.8167m)	1.57442(420.06m)	Yes	No	0.68225(10.8167m)	0.146915(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2011	16.0117(10.8167m)	1.88372(420.06m)	Yes (at receptor)	No	0.81628(10.8167m)	0.175777(420.06m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2012	15.9883(10.8167m)	1.88098(420.06m)	Yes	No	0.815089(10.8167m)	0.17552(420.06m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2013	15.8375(10.8167m)	1.86323(420.06m)	Yes	No	0.807401(10.8167m)	0.173865(420.06m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2014	15.2144(10.8167m)	1.78993(420.06m)	Yes	No	0.775635(10.8167m)	0.167024(420.06m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2015	15.1142(10.8167m)	1.77815(420.06m)	Yes	No	0.77053(10.8167m)	0.165925(420.06m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2016	14.1809(10.8167m)	1.66834(420.06m)	Yes	No	0.722949(10.8167m)	0.155679(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2017	14.4022(10.8167m)	1.69438(420.06m)	Yes	No	0.734229(10.8167m)	0.158108(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2018	13.5019(10.8167m)	1.58846(420.06m)	Yes	No	0.688333(10.8167m)	0.148225(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2019	12.6795(10.8167m)	1.49171(420.06m)	Yes	No	0.646407(10.8167m)	0.139197(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2020	11.8874(10.8167m)	1.39852(420.06m)	Yes	No	0.606024(10.8167m)	0.1305(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2021	11.1205(10.8167m)	1.3083(420.06m)	Yes	No	0.566929(10.8167m)	0.122082(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2022	10.4053(10.8167m)	1.22416(420.06m)	Yes	No	0.530469(10.8167m)	0.114231(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2023	9.75142(10.8167m)	1.14723(420.06m)	Yes	No	0.497131(10.8167m)	0.107052(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2024	9.44467(10.8167m)	1.11114(420.06m)	Yes	No	0.481493(10.8167m)	0.103684(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2025	9.45403(10.8167m)	1.11224(420.06m)	Yes	No	0.48197(10.8167m)	0.103787(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2026	8.85237(10.8167m)	1.04146(420.06m)	Yes	No	0.451297(10.8167m)	0.0971818(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2027	8.29435(10.8167m)	0.975806(420.06m)	Yes	No	0.422849(10.8167m)	0.0910558(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2028	7.7764(10.8167m)	0.91487(420.06m)	Yes	No	0.396444(10.8167m)	0.0853697(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2029	7.29526(10.8167m)	0.858266(420.06m)	Yes	No	0.371915(10.8167m)	0.0800878(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2030	6.84797(10.8167m)	0.805644(420.06m)	Yes	No	0.349112(10.8167m)	0.0751775(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2031	6.43167(10.8167m)	0.756667(420.06m)	Yes	No	0.327889(10.8167m)	0.0706072(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2032	6.04372(10.8167m)	0.711026(420.06m)	Yes	No	0.308111(10.8167m)	0.0663483(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2033	5.68225(10.8167m)	0.6685(420.06m)	Yes	No	0.289683(10.8167m)	0.0623801(420.06m)	Yes (at receptor)	No

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2034	5.34522(10.8167m)	0.628849(420.06m)	Yes	No	0.272501(10.8167m)	0.0586801(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2035	5.03075(10.8167m)	0.591853(420.06m)	Yes	No	0.256469(10.8167m)	0.0552278(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2036	4.73712(10.8167m)	0.557309(420.06m)	Yes	No	0.2415(10.8167m)	0.0520044(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2037	4.46278(10.8167m)	0.525033(420.06m)	Yes	No	0.227514(10.8167m)	0.0489927(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2038	4.20628(10.8167m)	0.494856(420.06m)	Yes	No	0.214438(10.8167m)	0.0461768(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2039	3.9663(10.8167m)	0.466624(420.06m)	Yes	No	0.202204(10.8167m)	0.0435423(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2040	3.74164(10.8167m)	0.440193(420.06m)	Yes	No	0.19075(10.8167m)	0.041076(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2041	3.53119(10.8167m)	0.415434(420.06m)	Yes	No	0.180022(10.8167m)	0.0387656(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2042	3.33394(10.8167m)	0.392228(420.06m)	Yes	No	0.169965(10.8167m)	0.0366001(420.06m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2043	3.14893(10.8167m)	0.370463(420.06m)	Yes	No	0.160534(10.8167m)	0.0345692(420.06m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1982	18.1615(6.32456m)	11.6434(143.558m)	Yes (at receptor)	No	0.374582(6.32456m)	0.112395(143.558m)	Yes	No
Hydrogen sulphide - surface - 1983	24.3108(6.32456m)	15.5857(143.558m)	No	No	0.501409(6.32456m)	0.150451(143.558m)	Yes	No
Hydrogen sulphide - surface - 1984	29.6039(6.32456m)	18.9792(143.558m)	No	No	0.610581(6.32456m)	0.183208(143.558m)	Yes	No
Hydrogen sulphide - surface - 1985	33.1861(6.32456m)	21.2757(143.558m)	No	Yes	0.684463(6.32456m)	0.205377(143.558m)	Yes	No
Hydrogen sulphide - surface - 1986	35.9902(6.32456m)	23.0735(143.558m)	No	Yes	0.742298(6.32456m)	0.222731(143.558m)	Yes	No
Hydrogen sulphide - surface - 1987	38.0072(6.32456m)	24.3666(143.558m)	No	Yes	0.783899(6.32456m)	0.235213(143.558m)	Yes	No
Hydrogen sulphide - surface - 1988	39.304(6.32456m)	25.1979(143.558m)	No	Yes	0.810644(6.32456m)	0.243238(143.558m)	Yes	No
Hydrogen sulphide - surface - 1989	40.6688(6.32456m)	26.0729(143.558m)	No	Yes	0.838794(6.32456m)	0.251685(143.558m)	Yes	No
Hydrogen sulphide - surface - 1990	41.6409(6.32456m)	26.6961(143.558m)	No	Yes	0.858843(6.32456m)	0.257701(143.558m)	Yes	No
Hydrogen sulphide - surface - 1991	41.7351(6.32456m)	35.9069(77.9295m)	No	Yes	0.860787(6.32456m)	0.613089(77.9295m)	Yes	No
Hydrogen sulphide - surface - 1992	36.6979(6.32456m)	31.5731(77.9295m)	No	Yes	0.756894(6.32456m)	0.539092(77.9295m)	Yes	No
Hydrogen sulphide - surface - 1993	15.9506(6.32456m)	13.7231(77.9295m)	Yes (at receptor)	No	0.32898(6.32456m)	0.234314(77.9295m)	Yes	No
Hydrogen sulphide - surface - 1997	15.9544(6.32456m)	13.7264(77.9295m)	Yes (at receptor)	No	0.329059(6.32456m)	0.23437(77.9295m)	Yes	No
Hydrogen sulphide - surface - 2001	22.5213(6.32456m)	19.3763(77.9295m)	No	No	0.464502(6.32456m)	0.330838(77.9295m)	Yes	No
Hydrogen sulphide - surface - 2002	15.7842(6.32456m)	13.58(77.9295m)	Yes (at receptor)	No	0.325549(6.32456m)	0.23187(77.9295m)	Yes	No
Hydrogen sulphide - surface - 2007	18.622(6.32456m)	16.0215(77.9295m)	No	No	0.384079(6.32456m)	0.273557(77.9295m)	Yes	No
Hydrogen sulphide - surface - 2010	22.3656(6.32456m)	19.2423(77.9295m)	No	No	0.46129(6.32456m)	0.32855(77.9295m)	Yes	No
Nitrogen oxides (NOx) - engine - 1993	65.0658(10.8167m)	7.6548(420.06m)	Yes (at receptor)	Yes	6.63416(10.8167m)	1.42859(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 1994	115.321(10.8167m)	13.5672(420.06m)	Yes (at receptor)	Yes	11.7582(10.8167m)	2.532(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 1995	136.269(10.8167m)	16.0316(420.06m)	Yes (at receptor)	Yes	13.8941(10.8167m)	2.99193(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 1996	146.308(10.8167m)	17.2127(420.06m)	Yes (at receptor)	Yes	14.9177(10.8167m)	3.21236(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 1997	136.865(10.8167m)	16.1018(420.06m)	Yes (at receptor)	Yes	13.9549(10.8167m)	3.00503(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 1998	168.001(10.8167m)	19.7648(420.06m)	Yes (at receptor)	Yes	17.1295(10.8167m)	3.68865(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 1999	177.417(10.8167m)	20.8726(420.06m)	No	Yes	18.0896(10.8167m)	3.89539(420.06m)	No	Yes

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Nitrogen oxides (NOx) - engine - 2000	176.774(10.8167m)	20.797(420.06m)	No	Yes	18.0241(10.8167m)	3.88128(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2001	177.205(10.8167m)	20.8477(420.06m)	No	Yes	18.068(10.8167m)	3.89074(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2002	174.151(10.8167m)	20.4884(420.06m)	No	Yes	17.7566(10.8167m)	3.82369(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2003	178.724(10.8167m)	21.0263(420.06m)	No	Yes	18.2228(10.8167m)	3.92407(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2004	178.738(10.8167m)	21.028(420.06m)	No	Yes	18.2243(10.8167m)	3.9244(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2005	177.294(10.8167m)	20.8581(420.06m)	No	Yes	18.077(10.8167m)	3.89268(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2006	171.675(10.8167m)	20.197(420.06m)	No	Yes	17.5041(10.8167m)	3.76931(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2007	159.827(10.8167m)	18.8032(420.06m)	Yes (at receptor)	Yes	16.2961(10.8167m)	3.50918(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2008	202.85(10.8167m)	23.8647(420.06m)	No	Yes	20.6827(10.8167m)	4.4538(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2009	197.959(10.8167m)	23.2893(420.06m)	No	Yes	20.184(10.8167m)	4.34641(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2010	192.38(10.8167m)	22.633(420.06m)	No	Yes	19.6152(10.8167m)	4.22392(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2011	230.82(10.8167m)	27.1553(420.06m)	No	Yes	23.5346(10.8167m)	5.06791(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2012	229.134(10.8167m)	26.957(420.06m)	No	Yes	23.3627(10.8167m)	5.0309(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2013	225.639(10.8167m)	26.5458(420.06m)	No	Yes	23.0063(10.8167m)	4.95416(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2014	216.223(10.8167m)	25.438(420.06m)	No	Yes	22.0463(10.8167m)	4.74743(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2015	214.81(10.8167m)	25.2718(420.06m)	No	Yes	21.9022(10.8167m)	4.7164(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2016	201.528(10.8167m)	23.7092(420.06m)	No	Yes	20.5479(10.8167m)	4.42477(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2017	205.56(10.8167m)	24.1836(420.06m)	No	Yes	20.9591(10.8167m)	4.51331(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2018	192.694(10.8167m)	22.6699(420.06m)	No	Yes	19.6472(10.8167m)	4.23081(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2019	180.873(10.8167m)	21.2791(420.06m)	No	Yes	18.4419(10.8167m)	3.97126(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2020	169.529(10.8167m)	19.9446(420.06m)	Yes (at receptor)	Yes	17.2853(10.8167m)	3.7222(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2021	158.581(10.8167m)	18.6566(420.06m)	Yes (at receptor)	Yes	16.169(10.8167m)	3.48182(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2022	148.351(10.8167m)	17.4531(420.06m)	Yes (at receptor)	Yes	15.126(10.8167m)	3.25721(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2023	138.989(10.8167m)	16.3517(420.06m)	Yes (at receptor)	Yes	14.1714(10.8167m)	3.05166(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2024	134.815(10.8167m)	15.8606(420.06m)	Yes (at receptor)	Yes	13.7459(10.8167m)	2.96002(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2025	135.204(10.8167m)	15.9063(420.06m)	Yes (at receptor)	Yes	13.7855(10.8167m)	2.96855(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2026	126.606(10.8167m)	14.8948(420.06m)	Yes (at receptor)	Yes	12.9088(10.8167m)	2.77978(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2027	118.63(10.8167m)	13.9565(420.06m)	Yes (at receptor)	Yes	12.0956(10.8167m)	2.60466(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2028	111.227(10.8167m)	13.0855(420.06m)	Yes (at receptor)	Yes	11.3408(10.8167m)	2.44212(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2029	104.35(10.8167m)	12.2764(420.06m)	Yes (at receptor)	Yes	10.6396(10.8167m)	2.29112(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2030	97.9561(10.8167m)	11.5242(420.06m)	Yes (at receptor)	Yes	9.98768(10.8167m)	2.15073(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2031	92.006(10.8167m)	10.8242(420.06m)	Yes (at receptor)	Yes	9.381(10.8167m)	2.02009(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2032	86.4593(10.8167m)	10.1717(420.06m)	Yes (at receptor)	Yes	8.81546(10.8167m)	1.89831(420.06m)	No	Yes
Nitrogen oxides (NOx) - engine - 2033	81.2903(10.8167m)	9.56357(420.06m)	Yes (at receptor)	Yes	8.28843(10.8167m)	1.78482(420.06m)	No	Yes

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Nitrogen oxides (NOx) - engine - 2034	76.4706(10.8167m)	8.99654(420.06m)	Yes (at receptor)	Yes	7.797(10.8167m)	1.679(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2035	71.9733(10.8167m)	8.46745(420.06m)	Yes (at receptor)	Yes	7.33846(10.8167m)	1.58025(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2036	67.7741(10.8167m)	7.97342(420.06m)	Yes (at receptor)	Yes	6.9103(10.8167m)	1.48805(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2037	63.8503(10.8167m)	7.5118(420.06m)	Yes (at receptor)	Yes	6.51023(10.8167m)	1.40191(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2038	60.1817(10.8167m)	7.0802(420.06m)	Yes (at receptor)	Yes	6.13617(10.8167m)	1.32136(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2039	56.7511(10.8167m)	6.6766(420.06m)	Yes (at receptor)	Yes	5.78639(10.8167m)	1.24603(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2040	53.541(10.8167m)	6.29895(420.06m)	Yes (at receptor)	Yes	5.45909(10.8167m)	1.17555(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2041	50.5337(10.8167m)	5.94515(420.06m)	Yes (at receptor)	Yes	5.15246(10.8167m)	1.10952(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2042	47.7147(10.8167m)	5.6135(420.06m)	Yes (at receptor)	Yes	4.86503(10.8167m)	1.04763(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2043	45.0706(10.8167m)	5.30242(420.06m)	Yes (at receptor)	Yes	4.59543(10.8167m)	0.989575(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2044	42.5891(10.8167m)	5.01048(420.06m)	Yes (at receptor)	Yes	4.34242(10.8167m)	0.935091(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2045	40.2568(10.8167m)	4.73609(420.06m)	Yes (at receptor)	Yes	4.10461(10.8167m)	0.883882(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2046	38.0649(10.8167m)	4.47822(420.06m)	Yes (at receptor)	Yes	3.88112(10.8167m)	0.835757(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2047	36.0046(10.8167m)	4.23583(420.06m)	Yes (at receptor)	Yes	3.67106(10.8167m)	0.790521(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2048	34.067(10.8167m)	4.00788(420.06m)	Yes (at receptor)	Yes	3.4735(10.8167m)	0.747979(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2049	32.2439(10.8167m)	3.79341(420.06m)	Yes (at receptor)	Yes	3.28762(10.8167m)	0.707952(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2050	30.5278(10.8167m)	3.5915(420.06m)	Yes (at receptor)	No	3.11264(10.8167m)	0.670271(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2051	28.9115(10.8167m)	3.40135(420.06m)	Yes (at receptor)	No	2.94784(10.8167m)	0.634784(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2052	27.3885(10.8167m)	3.22218(420.06m)	Yes (at receptor)	No	2.79256(10.8167m)	0.601346(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2053	25.953(10.8167m)	3.05329(420.06m)	Yes (at receptor)	No	2.64618(10.8167m)	0.569826(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2054	24.5991(10.8167m)	2.89402(420.06m)	Yes (at receptor)	No	2.50815(10.8167m)	0.540101(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2055	23.3219(10.8167m)	2.74375(420.06m)	Yes (at receptor)	No	2.37792(10.8167m)	0.512058(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2056	22.1164(10.8167m)	2.60193(420.06m)	Yes (at receptor)	No	2.255(10.8167m)	0.48559(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2057	20.9782(10.8167m)	2.46802(420.06m)	Yes (at receptor)	No	2.13895(10.8167m)	0.460599(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2058	19.9031(10.8167m)	2.34154(420.06m)	Yes	No	2.02933(10.8167m)	0.436995(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2059	18.8873(10.8167m)	2.22203(420.06m)	Yes	No	1.92576(10.8167m)	0.414691(420.06m)	No	No
Nitrogen oxides (NOx) - engine - 2060	17.9271(10.8167m)	2.10907(420.06m)	Yes	No	1.82786(10.8167m)	0.39361(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2061	17.0192(10.8167m)	2.00226(420.06m)	Yes	No	1.73529(10.8167m)	0.373676(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2062	16.1605(10.8167m)	1.90124(420.06m)	Yes	No	1.64774(10.8167m)	0.354823(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2063	15.3481(10.8167m)	1.80566(420.06m)	Yes	No	1.5649(10.8167m)	0.336985(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2064	14.5792(10.8167m)	1.7152(420.06m)	Yes	No	1.4865(10.8167m)	0.320102(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2065	13.8512(10.8167m)	1.62956(420.06m)	Yes	No	1.41228(10.8167m)	0.304119(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2066	13.1619(10.8167m)	1.54846(420.06m)	Yes	No	1.342(10.8167m)	0.288984(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2067	12.5089(10.8167m)	1.47164(420.06m)	Yes	No	1.27542(10.8167m)	0.274647(420.06m)	Yes (at receptor)	No

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Nitrogen oxides (NOx) - engine - 2068	11.8902(10.8167m)	1.39885(420.06m)	Yes	No	1.21233(10.8167m)	0.261063(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2069	11.3038(10.8167m)	1.32986(420.06m)	Yes	No	1.15255(10.8167m)	0.248189(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2070	10.748(10.8167m)	1.26447(420.06m)	Yes	No	1.09587(10.8167m)	0.235984(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2071	10.2209(10.8167m)	1.20246(420.06m)	Yes	No	1.04213(10.8167m)	0.224412(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2072	9.72107(10.8167m)	1.14365(420.06m)	Yes	No	0.991167(10.8167m)	0.213437(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2073	9.24687(10.8167m)	1.08787(420.06m)	Yes	No	0.942818(10.8167m)	0.203025(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2074	8.79694(10.8167m)	1.03493(420.06m)	Yes	No	0.896942(10.8167m)	0.193147(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2075	8.36993(10.8167m)	0.984698(420.06m)	Yes	No	0.853405(10.8167m)	0.183771(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2076	7.96468(10.8167m)	0.937021(420.06m)	Yes	No	0.812085(10.8167m)	0.174873(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2077	7.57999(10.8167m)	0.891764(420.06m)	Yes	No	0.772862(10.8167m)	0.166427(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2078	7.21474(10.8167m)	0.848793(420.06m)	Yes	No	0.73562(10.8167m)	0.158408(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2079	6.86787(10.8167m)	0.807985(420.06m)	Yes	No	0.700254(10.8167m)	0.150792(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2080	6.53837(10.8167m)	0.76922(420.06m)	Yes	No	0.666657(10.8167m)	0.143557(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2081	6.22529(10.8167m)	0.732387(420.06m)	Yes	No	0.634736(10.8167m)	0.136683(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2082	5.92778(10.8167m)	0.697386(420.06m)	Yes	No	0.604401(10.8167m)	0.130151(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2083	5.64502(10.8167m)	0.66412(420.06m)	Yes	No	0.57557(10.8167m)	0.123943(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2084	5.37623(10.8167m)	0.632498(420.06m)	Yes	No	0.548165(10.8167m)	0.118041(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2085	5.12069(10.8167m)	0.602434(420.06m)	Yes	No	0.522109(10.8167m)	0.11243(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2086	4.8777(10.8167m)	0.573848(420.06m)	Yes	No	0.497335(10.8167m)	0.107095(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2087	4.64663(10.8167m)	0.546663(420.06m)	Yes	No	0.473774(10.8167m)	0.102022(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2088	4.42686(10.8167m)	0.520807(420.06m)	Yes	No	0.451366(10.8167m)	0.0971966(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2089	4.2178(10.8167m)	0.496212(420.06m)	Yes	No	0.43005(10.8167m)	0.0926065(420.06m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2090	4.01891(10.8167m)	0.472813(420.06m)	Yes	No	0.409771(10.8167m)	0.0882397(420.06m)	Yes (at receptor)	No
PM10s - engine - 2011	8.43547(10.8167m)	0.992408(420.06m)	No EAL	No EAL	0.430044(10.8167m)	0.0926051(420.06m)	Yes (at receptor)	No
PM10s - engine - 2012	8.37917(10.8167m)	0.985785(420.06m)	No EAL	No EAL	0.427174(10.8167m)	0.0919871(420.06m)	Yes (at receptor)	No
PM10s - engine - 2013	8.25291(10.8167m)	0.970931(420.06m)	No EAL	No EAL	0.420737(10.8167m)	0.0906009(420.06m)	Yes (at receptor)	No
PM10s - engine - 2014	7.91251(10.8167m)	0.930884(420.06m)	No EAL	No EAL	0.403383(10.8167m)	0.086864(420.06m)	Yes (at receptor)	No
PM10s - engine - 2015	7.84864(10.8167m)	0.92337(420.06m)	No EAL	No EAL	0.400127(10.8167m)	0.0861629(420.06m)	Yes (at receptor)	No
Sulphur dioxide - engine - 1993	68.9894(10.8167m)	8.1164(420.06m)	Yes (at receptor)	Yes	3.51711(10.8167m)	0.75737(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 1993	92.4458(10.8167m)	10.876(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 1993	40.7038(10.8167m)	4.78868(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 1994	122.275(10.8167m)	14.3853(420.06m)	Yes (at receptor)	Yes	6.23364(10.8167m)	1.34234(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 1994	163.849(10.8167m)	19.2763(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 1994	72.1423(10.8167m)	8.48733(420.06m)	Yes (at receptor)	Yes				

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Sulphur dioxide - engine - 1995	144.486(10.8167m)	16.9984(420.06m)	Yes (at receptor)	Yes	7.36596(10.8167m)	1.58618(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 1995	193.611(10.8167m)	22.7778(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 1995	85.2468(10.8167m)	10.029(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 1996	155.131(10.8167m)	18.2507(420.06m)	Yes (at receptor)	Yes	7.90863(10.8167m)	1.70304(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 1996	207.875(10.8167m)	24.4559(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 1996	91.5272(10.8167m)	10.7679(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 1997	145.119(10.8167m)	17.0728(420.06m)	Yes (at receptor)	Yes	7.3982(10.8167m)	1.59312(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 1997	194.459(10.8167m)	22.8775(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 1997	85.6199(10.8167m)	10.0729(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 1998	178.132(10.8167m)	20.9567(420.06m)	Yes (at receptor)	Yes	9.08123(10.8167m)	1.95554(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 1998	238.697(10.8167m)	28.082(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 1998	105.098(10.8167m)	12.3644(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 1999	188.116(10.8167m)	22.1313(420.06m)	Yes (at receptor)	Yes	9.59023(10.8167m)	2.06515(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 1999	252.075(10.8167m)	29.6559(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 1999	110.988(10.8167m)	13.0575(420.06m)	No	Yes				
Sulphur dioxide - engine - 2000	187.434(10.8167m)	22.0511(420.06m)	Yes (at receptor)	Yes	9.55548(10.8167m)	2.05767(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2000	251.162(10.8167m)	29.5485(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2000	110.586(10.8167m)	13.0102(420.06m)	No	Yes				
Sulphur dioxide - engine - 2001	187.891(10.8167m)	22.1048(420.06m)	Yes (at receptor)	Yes	9.57876(10.8167m)	2.06268(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2001	251.774(10.8167m)	29.6205(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2001	110.856(10.8167m)	13.0419(420.06m)	No	Yes				
Sulphur dioxide - engine - 2002	184.653(10.8167m)	21.7239(420.06m)	Yes (at receptor)	Yes	9.4137(10.8167m)	2.02713(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2002	247.435(10.8167m)	29.11(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2002	108.945(10.8167m)	12.8171(420.06m)	No	Yes				
Sulphur dioxide - engine - 2003	189.501(10.8167m)	22.2942(420.06m)	Yes (at receptor)	Yes	9.66084(10.8167m)	2.08035(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2003	253.931(10.8167m)	29.8743(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2003	111.806(10.8167m)	13.1536(420.06m)	No	Yes				
Sulphur dioxide - engine - 2004	189.517(10.8167m)	22.2961(420.06m)	Yes (at receptor)	Yes	9.66163(10.8167m)	2.08052(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2004	253.952(10.8167m)	29.8767(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2004	111.815(10.8167m)	13.1547(420.06m)	No	Yes				
Sulphur dioxide - engine - 2005	187.985(10.8167m)	22.1159(420.06m)	Yes (at receptor)	Yes	9.58355(10.8167m)	2.06371(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2005	251.9(10.8167m)	29.6353(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2005	110.911(10.8167m)	13.0484(420.06m)	No	Yes				
Sulphur dioxide - engine - 2006	182.027(10.8167m)	21.415(420.06m)	Yes (at receptor)	Yes	9.27982(10.8167m)	1.99831(420.06m)	No EAL	No EAL

	Short Term				Long term			
	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?	Predicted Boundary Concentration µg/m3	Predicted Nearest Receptor Concentration µg/m3	Is the emission rate Insignificant?	Is detailed modelling required?
Sulphur dioxide 15 min - engine - 2006	243.916(10.8167m)	28.6961(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2006	107.396(10.8167m)	12.6348(420.06m)	No	Yes				
Sulphur dioxide - engine - 2007	169.465(10.8167m)	19.9371(420.06m)	Yes (at receptor)	Yes	8.63939(10.8167m)	1.8604(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2007	227.083(10.8167m)	26.7156(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2007	99.9843(10.8167m)	11.7629(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2008	215.082(10.8167m)	25.3038(420.06m)	Yes (at receptor)	Yes	10.965(10.8167m)	2.36119(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2008	288.21(10.8167m)	33.9071(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2008	126.899(10.8167m)	14.9292(420.06m)	No	Yes				
Sulphur dioxide - engine - 2009	209.896(10.8167m)	24.6937(420.06m)	Yes (at receptor)	Yes	10.7006(10.8167m)	2.30425(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2009	281.261(10.8167m)	33.0895(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2009	123.839(10.8167m)	14.5693(420.06m)	No	Yes				
Sulphur dioxide - engine - 2010	203.981(10.8167m)	23.9978(420.06m)	Yes (at receptor)	Yes	10.399(10.8167m)	2.23932(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2010	273.335(10.8167m)	32.157(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2010	120.349(10.8167m)	14.1587(420.06m)	No	Yes				
Sulphur dioxide - engine - 2011	244.739(10.8167m)	28.7929(420.06m)	Yes (at receptor)	Yes	12.4769(10.8167m)	2.68676(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2011	327.951(10.8167m)	38.5824(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2011	144.396(10.8167m)	16.9878(420.06m)	No	Yes				
Sulphur dioxide - engine - 2012	242.952(10.8167m)	28.5826(420.06m)	Yes (at receptor)	Yes	12.3858(10.8167m)	2.66714(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2012	325.555(10.8167m)	38.3006(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2012	143.342(10.8167m)	16.8637(420.06m)	No	Yes				
Sulphur dioxide - engine - 2013	239.246(10.8167m)	28.1466(420.06m)	Yes (at receptor)	Yes	12.1968(10.8167m)	2.62645(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2013	320.589(10.8167m)	37.7164(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2013	141.155(10.8167m)	16.6065(420.06m)	No	Yes				
Sulphur dioxide - engine - 2014	229.262(10.8167m)	26.972(420.06m)	Yes (at receptor)	Yes	11.6879(10.8167m)	2.51685(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2014	307.211(10.8167m)	36.1425(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2014	135.265(10.8167m)	15.9135(420.06m)	No	Yes				
Sulphur dioxide - engine - 2015	227.764(10.8167m)	26.7958(420.06m)	Yes (at receptor)	Yes	11.6115(10.8167m)	2.50041(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2015	305.204(10.8167m)	35.9063(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2015	134.381(10.8167m)	15.8095(420.06m)	No	Yes				
Sulphur dioxide - engine - 2016	213.681(10.8167m)	25.1389(420.06m)	Yes (at receptor)	Yes	10.8935(10.8167m)	2.3458(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2016	286.332(10.8167m)	33.6861(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2016	126.072(10.8167m)	14.832(420.06m)	No	Yes				
Sulphur dioxide - engine - 2017	217.956(10.8167m)	25.6419(420.06m)	Yes (at receptor)	Yes	11.1115(10.8167m)	2.39274(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2017	292.061(10.8167m)	34.3602(420.06m)	No	Yes				

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Sulphur dioxide 24 hour - engine - 2017	128.594(10.8167m)	15.1287(420.06m)	No	Yes				
Sulphur dioxide - engine - 2018	204.314(10.8167m)	24.0369(420.06m)	Yes (at receptor)	Yes	10.416(10.8167m)	2.24297(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2018	273.781(10.8167m)	32.2095(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2018	120.545(10.8167m)	14.1818(420.06m)	No	Yes				
Sulphur dioxide - engine - 2019	191.78(10.8167m)	22.5623(420.06m)	Yes (at receptor)	Yes	9.77701(10.8167m)	2.10537(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2019	256.985(10.8167m)	30.2335(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2019	113.15(10.8167m)	13.3118(420.06m)	No	Yes				
Sulphur dioxide - engine - 2020	179.752(10.8167m)	21.1473(420.06m)	Yes (at receptor)	Yes	9.16382(10.8167m)	1.97333(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2020	240.868(10.8167m)	28.3374(420.06m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2020	106.054(10.8167m)	12.4769(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2021	168.144(10.8167m)	19.7816(420.06m)	Yes (at receptor)	Yes	8.57203(10.8167m)	1.84589(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2021	225.313(10.8167m)	26.5074(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2021	99.2048(10.8167m)	11.6712(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2022	157.297(10.8167m)	18.5055(420.06m)	Yes (at receptor)	Yes	8.01907(10.8167m)	1.72682(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2022	210.778(10.8167m)	24.7974(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2022	92.8053(10.8167m)	10.9183(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2023	147.371(10.8167m)	17.3377(420.06m)	Yes (at receptor)	Yes	7.51301(10.8167m)	1.61784(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2023	197.476(10.8167m)	23.2325(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2023	86.9486(10.8167m)	10.2292(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2024	142.945(10.8167m)	16.8171(420.06m)	Yes (at receptor)	Yes	7.28739(10.8167m)	1.56926(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2024	191.546(10.8167m)	22.5349(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2024	84.3376(10.8167m)	9.92207(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2025	143.357(10.8167m)	16.8655(420.06m)	Yes (at receptor)	Yes	7.30839(10.8167m)	1.57378(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2025	192.098(10.8167m)	22.5998(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2025	84.5806(10.8167m)	9.95066(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2026	134.241(10.8167m)	15.793(420.06m)	Yes (at receptor)	Yes	6.84364(10.8167m)	1.4737(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2026	179.882(10.8167m)	21.1626(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2026	79.202(10.8167m)	9.31788(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2027	125.784(10.8167m)	14.7981(420.06m)	Yes (at receptor)	Yes	6.41253(10.8167m)	1.38087(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2027	168.551(10.8167m)	19.8295(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2027	74.2127(10.8167m)	8.7309(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2028	117.934(10.8167m)	13.8746(420.06m)	Yes (at receptor)	Yes	6.01235(10.8167m)	1.29469(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2028	158.032(10.8167m)	18.592(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2028	69.5813(10.8167m)	8.18604(420.06m)	Yes (at receptor)	Yes				

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Sulphur dioxide - engine - 2029	110.642(10.8167m)	13.0168(420.06m)	Yes (at receptor)	Yes	5.64059(10.8167m)	1.21464(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2029	148.261(10.8167m)	17.4425(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2029	65.279(10.8167m)	7.67988(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2030	103.863(10.8167m)	12.2192(420.06m)	Yes (at receptor)	Yes	5.29498(10.8167m)	1.14022(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2030	139.177(10.8167m)	16.3737(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2030	61.2792(10.8167m)	7.20932(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2031	97.5542(10.8167m)	11.477(420.06m)	Yes (at receptor)	Yes	4.97335(10.8167m)	1.07096(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2031	130.723(10.8167m)	15.3791(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2031	57.557(10.8167m)	6.77141(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2032	91.673(10.8167m)	10.7851(420.06m)	Yes (at receptor)	Yes	4.67353(10.8167m)	1.00639(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2032	122.842(10.8167m)	14.452(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2032	54.0871(10.8167m)	6.36319(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2033	86.1924(10.8167m)	10.1403(420.06m)	Yes (at receptor)	Yes	4.39412(10.8167m)	0.946225(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2033	115.498(10.8167m)	13.588(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2033	50.8535(10.8167m)	5.98276(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2034	81.082(10.8167m)	9.53906(420.06m)	Yes (at receptor)	Yes	4.13359(10.8167m)	0.890123(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2034	108.65(10.8167m)	12.7823(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2034	47.8384(10.8167m)	5.62804(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2035	76.3135(10.8167m)	8.97806(420.06m)	Yes (at receptor)	Yes	3.89049(10.8167m)	0.837774(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2035	102.26(10.8167m)	12.0306(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2035	45.025(10.8167m)	5.29706(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2036	71.861(10.8167m)	8.45424(420.06m)	Yes (at receptor)	Yes	3.6635(10.8167m)	0.788894(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2036	96.2938(10.8167m)	11.3287(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2036	42.398(10.8167m)	4.988(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2037	67.7007(10.8167m)	7.96479(420.06m)	Yes (at receptor)	No	3.45141(10.8167m)	0.743222(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2037	90.7189(10.8167m)	10.6728(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2037	39.9434(10.8167m)	4.69922(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2038	63.8108(10.8167m)	7.50715(420.06m)	Yes (at receptor)	No	3.2531(10.8167m)	0.700519(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2038	85.5065(10.8167m)	10.0596(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2038	37.6484(10.8167m)	4.42922(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2039	60.1734(10.8167m)	7.07922(420.06m)	Yes (at receptor)	No	3.06766(10.8167m)	0.660587(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2039	80.6323(10.8167m)	9.48615(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2039	35.5023(10.8167m)	4.17674(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2040	56.7697(10.8167m)	6.67879(420.06m)	Yes (at receptor)	No	2.89414(10.8167m)	0.623221(420.06m)	No EAL	No EAL

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Sulphur dioxide 15 min - engine - 2040	76.0714(10.8167m)	8.94958(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2040	33.4941(10.8167m)	3.94049(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2041	53.5811(10.8167m)	6.30366(420.06m)	Yes (at receptor)	No	2.73158(10.8167m)	0.588216(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2041	71.7986(10.8167m)	8.4469(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2041	31.6128(10.8167m)	3.71916(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2042	50.592(10.8167m)	5.95201(420.06m)	Yes (at receptor)	No	2.5792(10.8167m)	0.555402(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2042	67.7933(10.8167m)	7.97569(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2042	29.8493(10.8167m)	3.51168(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2043	47.7885(10.8167m)	5.62217(420.06m)	Yes (at receptor)	No	2.43628(10.8167m)	0.524625(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2043	64.0366(10.8167m)	7.53371(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2043	28.1952(10.8167m)	3.31708(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2044	45.1574(10.8167m)	5.31263(420.06m)	Yes (at receptor)	No	2.30214(10.8167m)	0.49574(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2044	60.5109(10.8167m)	7.11892(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2044	26.6428(10.8167m)	3.13445(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2045	42.6843(10.8167m)	5.02169(420.06m)	Yes (at receptor)	No	2.17606(10.8167m)	0.468591(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2045	57.197(10.8167m)	6.72906(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2045	25.1838(10.8167m)	2.9628(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2046	40.3603(10.8167m)	4.74827(420.06m)	Yes (at receptor)	No	2.05758(10.8167m)	0.443078(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2046	54.0828(10.8167m)	6.36268(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2046	23.8126(10.8167m)	2.80148(420.06m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2047	38.1758(10.8167m)	4.49127(420.06m)	Yes (at receptor)	No	1.94622(10.8167m)	0.419096(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2047	51.1555(10.8167m)	6.0183(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2047	22.5237(10.8167m)	2.64985(420.06m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2048	36.1214(10.8167m)	4.24957(420.06m)	Yes (at receptor)	No	1.84148(10.8167m)	0.396542(420.06m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2048	48.4026(10.8167m)	5.69443(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2048	21.3116(10.8167m)	2.50725(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2049	45.8124(10.8167m)	5.38969(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2049	20.1711(10.8167m)	2.37307(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2050	43.374(10.8167m)	5.10283(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2050	19.0975(10.8167m)	2.24677(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2051	41.0776(10.8167m)	4.83266(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2051	18.0864(10.8167m)	2.12781(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2052	38.9138(10.8167m)	4.57809(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2052	17.1337(10.8167m)	2.01573(420.06m)	Yes (at receptor)	No				

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Sulphur dioxide 15 min - engine - 2053	36.8741(10.8167m)	4.33813(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2053	16.2356(10.8167m)	1.91007(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2054	34.9506(10.8167m)	4.11183(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2054	15.3887(10.8167m)	1.81043(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2055	33.1359(10.8167m)	3.89834(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2055	14.5897(10.8167m)	1.71643(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2056	31.4231(10.8167m)	3.69683(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2056	13.8355(10.8167m)	1.62771(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2057	29.8059(10.8167m)	3.50658(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2057	13.1235(10.8167m)	1.54394(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2058	28.2784(10.8167m)	3.32687(420.06m)	Yes (at receptor)	No				
Sulphur dioxide 15 min - engine - 2059	26.8351(10.8167m)	3.15708(420.06m)	Yes (at receptor)	No				
Vinyl chloride (chloroethene, chloroethylene) - surface - 1982	87.9077(6.32456m)	56.358(143.558m)	Yes	No	1.8131(6.32456m)	0.544029(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1983	115.621(6.32456m)	74.1253(143.558m)	Yes	No	2.38469(6.32456m)	0.715539(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1984	137.698(6.32456m)	88.279(143.558m)	Yes	No	2.84003(6.32456m)	0.852166(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1985	154.878(6.32456m)	99.2928(143.558m)	Yes	No	3.19435(6.32456m)	0.958483(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1986	167.693(6.32456m)	107.508(143.558m)	Yes	No	3.45866(6.32456m)	1.03779(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1987	177.774(6.32456m)	113.971(143.558m)	Yes	No	3.66658(6.32456m)	1.10018(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1988	185.274(6.32456m)	118.78(143.558m)	Yes (at receptor)	No	3.82128(6.32456m)	1.1466(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1989	194.998(6.32456m)	125.014(143.558m)	Yes (at receptor)	No	4.02184(6.32456m)	1.20678(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1990	202.638(6.32456m)	129.912(143.558m)	Yes (at receptor)	No	4.1794(6.32456m)	1.25405(143.558m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1991	202.414(6.32456m)	174.147(77.9295m)	Yes (at receptor)	No	4.17478(6.32456m)	2.97345(77.9295m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1992	177.704(6.32456m)	152.888(77.9295m)	Yes	No	3.66514(6.32456m)	2.61046(77.9295m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1993	78.2113(6.32456m)	67.2893(77.9295m)	Yes	No	1.61311(6.32456m)	1.14892(77.9295m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2001	82.9498(6.32456m)	71.3661(77.9295m)	Yes	No	1.71084(6.32456m)	1.21853(77.9295m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2007	90.0162(6.32456m)	77.4456(77.9295m)	Yes	No	1.85658(6.32456m)	1.32234(77.9295m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2010	87.1019(6.32456m)	74.9384(77.9295m)	Yes	No	1.79648(6.32456m)	1.27953(77.9295m)	Yes (at receptor)	No

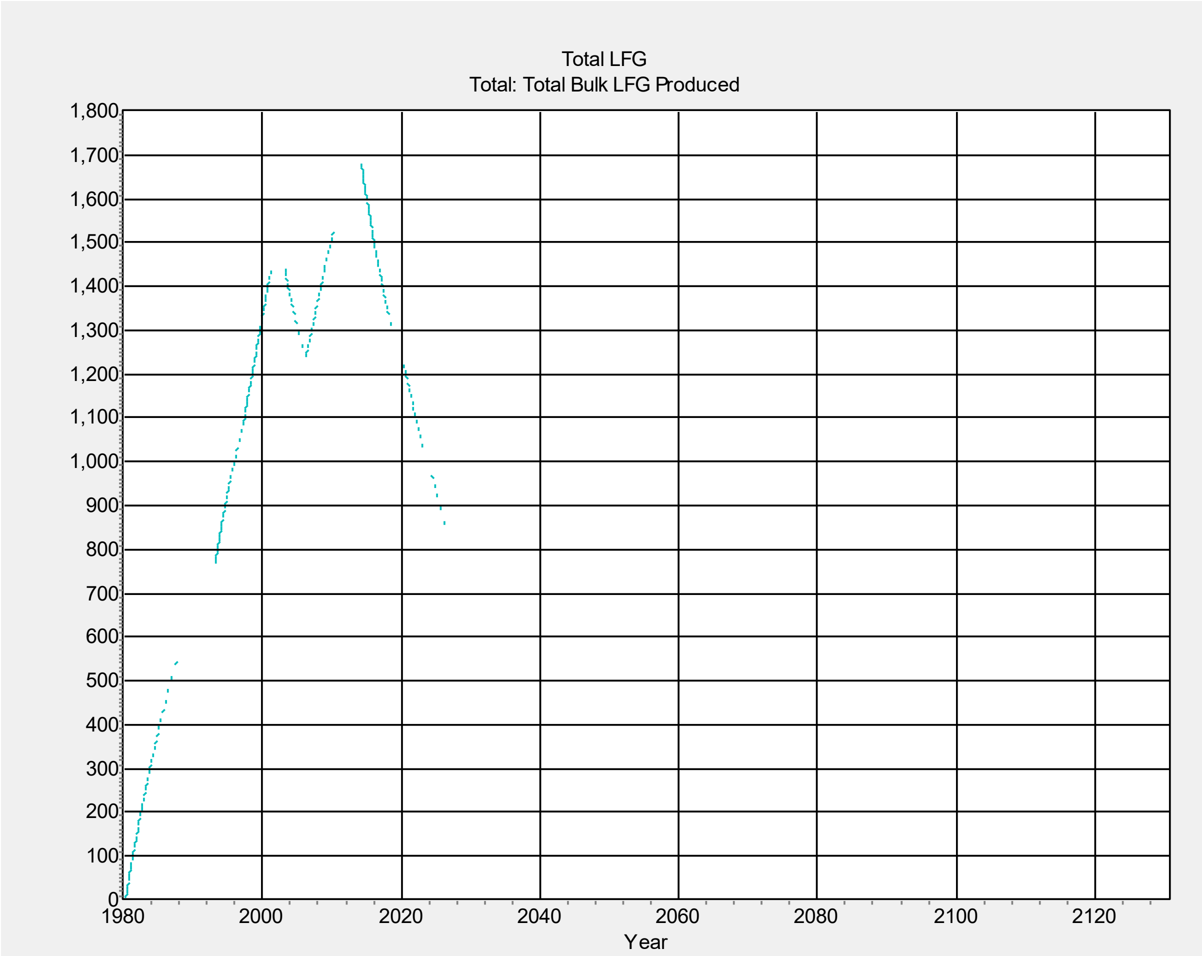
Not Modelled:

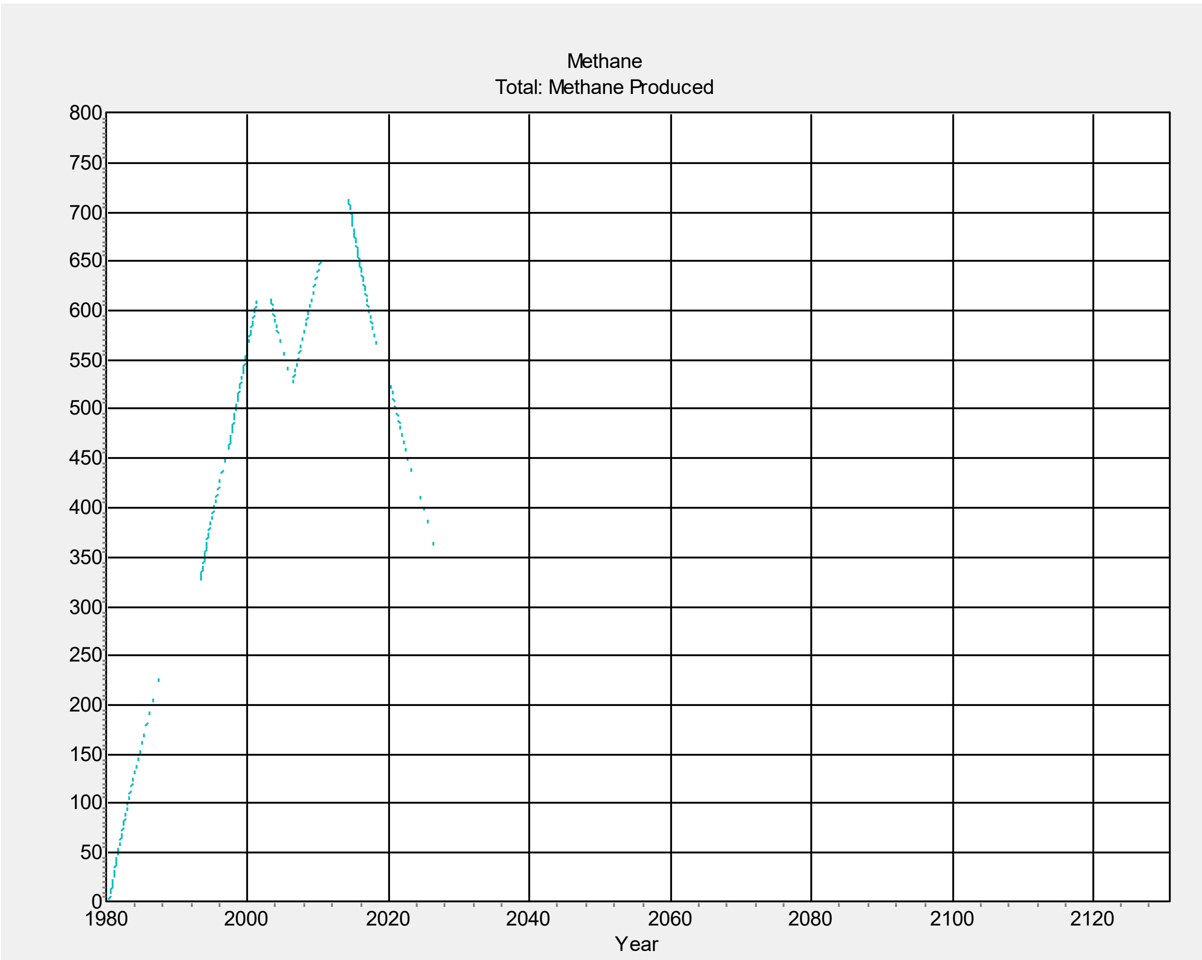
1,1,1,2-Tetrafluorochloroethane
1,1,1-Trichlorotrifluoroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,1-Dichlorotetrafluoroethane
1,2-Dichloropropane
1,2-Dichlorotetrafluoroethane
1-butanethiol
1-Chloro-1,1-difluoroethane
2-butoxy ethanol
2-Chloro-1,1,1-trifluoroethane
2-Propanol
Bromodichloromethane
Butene isomers
Butyric acid
Carbonyl sulphide
Chlorobenzene
Chlorodifluoromethane
Chloroethane
Chlorofluorocarbons (CFCs) (Total)
Chlorofluoromethane
Chlorotrifluoromethane
Dichlorodifluoromethane
Dichlorofluoromethane
Diethyl disulphide
Dimethyl disulphide
Dimethyl sulphide
Dioxins and furans (modelled as 2,3,7,8-TCDD)
Ethane
Ethanethiol (ethyl mercaptan)
Ethanol
Ethyl butyrate
Ethyl toluene (all isomers)
Ethylene
Ethylene dibromide
Fluorotrichloromethane
Freon 113
Furan
Halons
Hexachlorocyclohexane (all isomers)
Hydrochlorofluorocarbons (HCFCs) (Total)
Hydrofluorocarbons (HFCs) (Total)

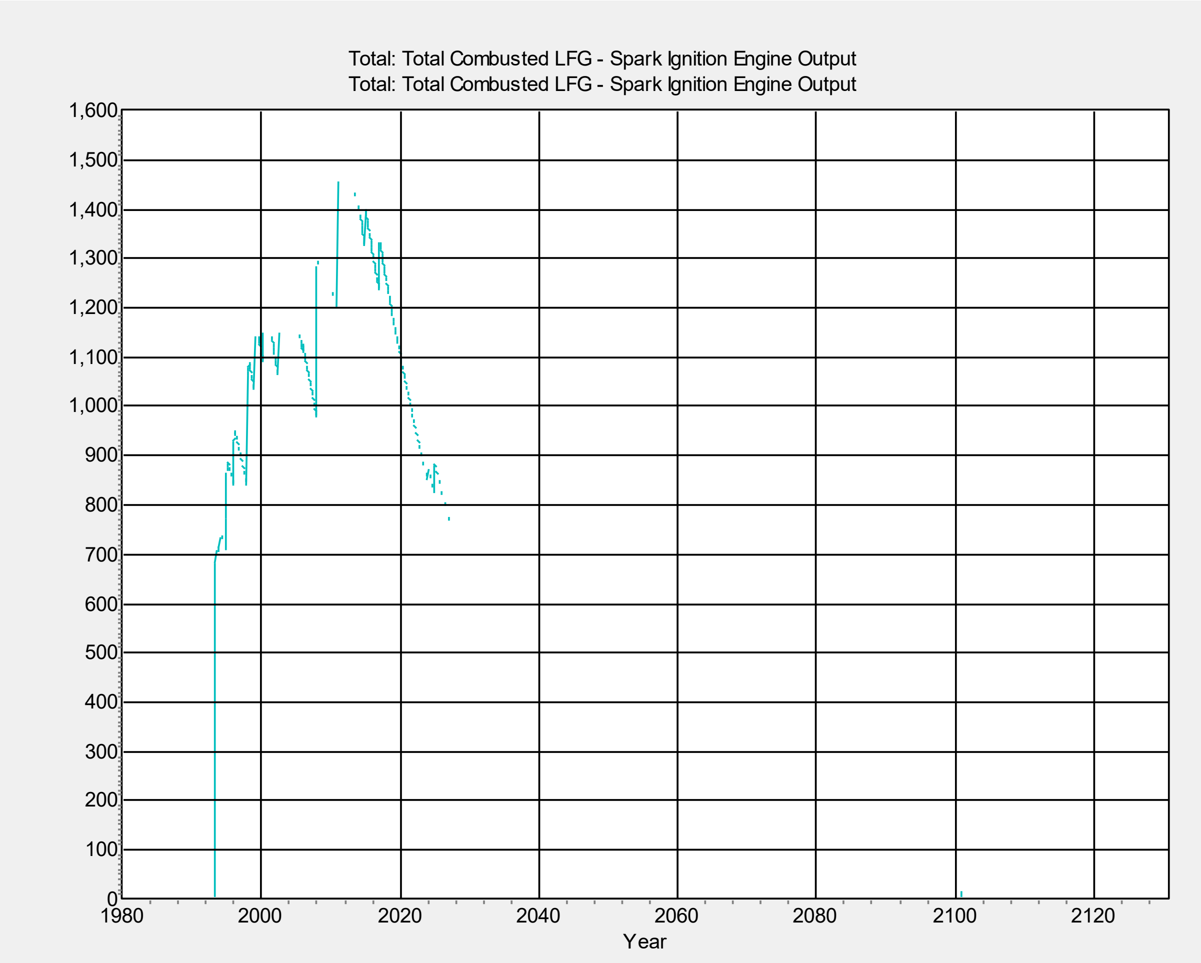
Limonene

Not Modelled:

Methanethiol (methyl mercaptan)
Methyl isobutyl ketone
Nitrogen dioxide (NO2)
Nitrogen monoxide (NO)
Odour Units (Predicted)
Pentane
Pentene (all isomers)
Perfluorocarbons (PFCs) (Total)
Propane
Propanethiol
Sulphide, total simulations with H2S
Sulphide, total simulations without H2S
t-1,2-Dichloroethene
Tetrachloroethane (modelled as 1,1,2,2-Tetrachloroethane)
Total non-methane volatile organic compounds (NMVOCs)
Total volatile organic compounds (VOCs)
Trichlorofluoromethane
Trichlorotrifluoroethane


Total LFG
Total: Total Bulk LFG Produced
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
1980
2000
2020
2040
2060
2080
2100
2120
Year


Methane
Total: Methane Produced
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
1980
2000
2020
2040
2060
2080
2100
2120
Year


Total: Total Combusted LFG - Spark Ignition Engine Output
Total: Total Combusted LFG - Spark Ignition Engine Output
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
1980
2000
2020
2040
2060
2080
2100
2120
Year

Appendix C – Global Warming Potential

Global Impact Results: 50th percentile [Sum of all years]			
Species	Gas released (tonnes)	Global warming potential (tonnes of Carbon Dioxide)	Ozone depletion potential (tonnes of trichlorofluoromethane)
Methane - 'Surface'	31000	652000	0
Methane - 'Engine'	1330	28000	0
Methane - 'Flare'	0	0	0
Carbon Dioxide - 'Surface'	138000	138000	0
Carbon Dioxide - 'Engine'	860000	860000	0
Carbon Dioxide - 'Flare'	0	0	0
Chloroform (trichloromethane)	0.0811	2.43	0
Dichloromethane (methylene chloride)	0.134	1.21	0
Hydrofluorocarbons (HFCs) (Total)	0	0	0
Perfluorocarbons (PFCs) (Total)	0	0	0
Total CH4	32400	680000	0
Total CO2	998000	998000	0
Trace Gases	0.219	3.66	0
Total	1030000	1680000	0
	Engines	Flares	Total
CH4 Burned (t)	133000	0	133000
GWP Reduction (t CO2)	2440000	0	2440000
Bulk LFG CH4 percentage	42.5		
Bulk LFG CO2 percentage	57.5		
Lo (t CH4)	168000		

Appendix D – Gas Management Plan

MILTON GAS MANAGEMENT PLAN

Contents

1.0 Introduction

1.1 Report Context

Milton Landfill Site is covered by Environmental Permit BV4584IU.
An annual review of Gas Management Plan is required for submission to the Environment Agency as part of FCC's Environmental Management System.

1.2 Landfill Gas Management Plan

This Landfill Gas is produced by the degradation of putrescible waste in an anaerobic environment. It is constituted of 60% Methane, 40% Carbon Dioxide and other trace elements. Methane and Carbon Dioxide can act as asphyxiants if their presence displaces Oxygen; Methane is explosive when mixed in ambient air at concentrations of between 5% and 15%; and various trace elements can be harmful to health in sufficiently large quantities. Peak gas flow is expected in 2019 at a rate of 2500m3/h.
This Landfill Gas Management Plan will outline the methods used to control and utilise this Landfill Gas.
The total volume of gas treated at Milton in 2020 was 12, 865, 636m^3 (224, 210 m^3 of this total figure was flared) with average methane content of 41.4%.

1.3 Quantities, Types of Waste, Rates and Methods of Filling

Historically the site accepted a range of commercial, industrial, domestic and inert waste types and was operated on the principle of engineered containment. The active landfill was classified to accept non-hazardous waste accepting household, industrial and commercial wastes.
In April 2020, Milton Landfill Site closed to waste during the Coronavirus pandemic and has now been officially mothballed.

Table 1: Annual waste input

Landfill Waste Inputs	
Year	**Tonnes**
2013	147,642
2014	158,733
2015	123,535
2016	128,500
2017	91,511
2018	195,815
2019	168, 856
2020	33, 854

2.0 Landfill Gas Risk Assessment

The Landfill Gas Risk Assessment has been used to derive the necessary mitigation measures that will be required at the installation to ensure that risks associated with the generation of gas are acceptable.

3.0 Landfill Gas Control Measures

3.1 Containment System

The landfill was developed within a number of disused clay pits excavated during the 1970's, and waste acceptance commenced in the 1980's. Phase III however, has been developed within arable land. The site is located on Cretaceous Gault Clay, which is overlain by River Gravel Terrace Deposits (RGTD). Geological data suggests that locally, the thickness of the Gault Clay ranges from 10.2 – 18.7m, and is underlain by the Cretaceous Lower Greensand.
Both hazardous and non-hazardous wastes were accepted at Milton until the 15 July 2004 and only non-hazardous thereafter. Phases I and Phase II, Cells 1 – 5B, have not been constructed on the basis of engineered containment. The cells of these phases are naturally contained by a basal geological barrier comprised of in-situ Gault Clay. The depth of insitu clay has been proven to the depths used in the HRA modelling in Improvement Condition 1a.
The basal lining systems of Phase II, Cell 6 onwards and Phase III were constructed with a fully engineered 1m clay liner prior to waste acceptance. Sidewall slope lining (where available) comprises a 1m thick low permeability engineered mineral liner. The capping system emplaced across the site comprises 1m thick site derived clay overlain by a suitable depth of subsoil.

These factors will contribute greatly to limit egress of landfill gas to atmosphere or to lateral migration, and also to limit ingress of oxygen.

3.2 Landfill gas extraction

Landfill gas (LFG) control is based on an active gas extraction system incorporating a Gas Utilisation Plant (GUP).

The gas collected is utilised within the GUP by 3 landfill gas engines. In the event of engine maintenance or shutdown, residual gas is flared.

Optimal well spacing has been defined through site-based knowledge and in line with Environment Agency (EA) guidance, and operational experience. Gas extraction wells have been spaced with a radius of influence to ensure that the landfill gas is drawn back towards the centre of the site, to minimise the risk of oxygen being drawn into the system from outside the landfill.

Vertical wells are drilled into the waste and lined with butt fused sections of polyethylene (PE). The vertical wells are retro drilled into the waste. The vertical gas wells are drilled into the waste to no more than 80% of the depth of the waste or a minimum of three metre stand off from the base to ensure there is no interference with the basal lining system. Gas extraction pipework is of various sizes from 63mm outside diameter to 315mm.

All well heads are located above ground and have their own valves as well as at the manifolds or main connections.

The site ring main comprises of 180- 315mm diameter gas collection pipe running along the boundary of the site connecting to the gas compound.

3.3 Condensate management

Condensate management within the gas system comprises of pumped knock out pots. These are MDPE vessels installed at natural or engineered low points within the gas main for the collection of condensate. Compressed air or electric pumps are installed in each pot to allow the condensate to be pumped back into the landfill.

3.4 LFG infrastructure – inspection, maintenance and servicing

Landfill gas extraction wells are inspected during each monitoring round. Routine gas well condition surveys are also carried out to ascertain whether the gas wells are still intact within the waste. If during any of these surveys any further remediation works are identified, action will be taken to program these works as soon as is reasonably practicable. If the works are extensive they shall be carried out in accordance with Agency guidance LFTGN 03- Guidance on the Management of Landfill Gas.

4.0 Operational procedures

4.1 System description

The gas collected is by 3 engines and one flare.

Table 2: Gas Plant

Engine/Flare	Capacity(m/hr
Flare	3000
Engine 1	600
Engine 2	600
Engine 3	600

4.2 Commissioning data

Commissioning data for gas wells is contained within Construction Quality Assurance (CQA) reports for each phase of the drilling which are passed onto the relevant FCC personnel on completion of the works.

4.3 Extraction rate optimisation

Maximisation of gas extraction from the landfill is a key aspect of gas plant operations with environmental drivers ensuring optimisation of this task. These environmental drivers are primarily driven by parameters specified within the site environmental permit and as agreed by the site manager and Infinis to maximise extraction rates whilst ensuring environmental control.

4.4 Limiting of Uncapped areas

FCC Environment progressively caps filled areas as required to control surface emissions. Temporary capping or thick soil layers are used as an intermediary to permanent capping. Drilling of gas infrastructure is completed as soon as possible following final waste placement.

5.0 Monitoring Plan

5.1 LFG infrastructure - routine operation and in-waste monitoring

Gas extraction from the landfill is optimised to ensure effective environmental control. Monitoring and balancing of the gas extraction field is typically completed at a frequency of at least once per month by trained, experienced technicians. Gas field monitoring is carried out using a portable infra-red landfill gas analyser.

Landfill gas extraction wells (and strategic points as appropriate) will be monitored in accordance with Table 5 below and in line with the typical accuracy range of the gas analyser used on site.

Table 3: In-waste monitoring landfill gas monitoring frequencies

Determinand	Monitoring Frequencies	Typical Accuracies
Methane (CH_4) (%)	monthly	%v/v ±3
Carbon Dioxide (CO_2) (%)	monthly	%v/v ±3
Carbon Monoxide (CO) (%)	monthly	±15ppm
Oxygen (O_2) (%)	monthly	%v/v ±1
Atmospheric Pressure (mb)	monthly	±5mb
Differential pressure (mb)	monthly	±4mb
Meteorological Data	monthly	-

Carbon Monoxide is recorded using the infra red gas analyser; however due to the potential interference between substances ,Infinis have adopted the procedure of sampling, using sample bags any internal gas wells which breach 100ppm (as indicated by the hand held instrument with an H2S filter in place). Previously, the results from laboratory analysis have shown the majority of associated results are in fact significantly less than 100ppm.

Trends will be reviewed monthly against the Environmental Permit (EP) trigger levels and agreed Gas Operating Parameters (GOPs) for the site. Extraction rates will be reviewed and adjusted at a frequency of at least once per month or more frequently if required.

Field-based investigations are instigated where observed values are outside of these parameters. To assist with fault-finding, monitoring will be completed at one or all of the strategic monitoring points located in key locations along the gas extraction main pipe line.

Landfill gas extraction wells are inspected during each monitoring round to ensure integrity. Any anomalies identified are reported to the appropriate site representative for rectification.

5.2 Trace gas monitoring

Annual trace gas monitoring will be conducted in accordance with the requirements of the Environmental Permit and LFTGN04.

The laboratory undertaking the analysis will be suitably accredited in accordance with LFTGN04. Samples will be taken from a representative location e.g. from the main gas line entering the gas utilisation compound or other location as required by the Permit.

Sampling will be conducted under representative conditions. Preliminary bulk gas analysis will be conducted to confirm that the composition is suitable for monitoring trace gases. See Table 6 below for preliminary parameters monitored:

Table 4: Trace gas monitoring - preliminary checks and field measurements

Parameter	Units
Methane	%
Carbon dioxide	%
Oxygen	%
Nitrogen	%
Hydrogen sulphide (field value)	ppmv
Carbon monoxide (field value)	ppmv

Carbon monoxide levels greater than 25ppmv (as determined within the laboratory), may indicate a fire. Where levels above 100ppmv are found during the above preliminary checks, the monitoring organisation will notify Infinis without delay so appropriate action can be taken.

Trace gases which are to be monitored at the site include the standard priority components identified within LFTGN04. Duplicate samples will be taken for each substance requiring determination.

The results will be summarised in a way that allows meaningful interpretation. Data will be assessed for consistency with previously reported data (if available). Any priority trace components that are not positively identified using the recommended methods will be reported as being below their respective detection limits. The report will be submitted to the relevant Environment Agency authority by the FCC Environment.

5.3 Perimeter Monitoring (Subsurface Emissions)

5.3.1 General

Monitoring of subsurface emissions at the perimeter of the landfill site is undertaken in accordance with the monitoring schedule, which is attached in Appendix 2 The location of the perimeter boreholes is shown on the Environmental Monitoring Plan 653M282Q attached in Appendix 3.

5.3.2 Monitoring of Boreholes

Monitoring of boreholes will be carried out in accordance with the requirements of the Environmental Permits. The method statement for carrying out monitoring of perimeter gas boreholes is attached as Appendix 4.

5.3.3 Derivation of Borehole Specific Control and Triggers

Assessment levels for CO2 have been set according to the Environment Agency guidelines and are listed in Appendix 5. Methane trigger limits are also included in Appendix 5.

5.3.4 Carbon dioxide levels above Permitted limits or Action Levels

The following action plan will be implemented when levels of Carbon Dioxide exceed the Permitted limits or Action Levels.

1) The Site Business Manager will be informed of the borehole and Action levels which have been breached.

2) The borehole(s) will be re-monitored within a period of within one week after the initial breach; the adjacent gas field will also be checked within one week.

3) If the breach(es) is encountered 3 consecutive times the following list of parameters will be recorded, (as outlined in section 5 of the ICoP, Jan 2011), and further monitoring of the wells will continue.

- Weather conditions (changes in atmospheric pressure over the preceding 2 days should be reviewed)
- Ground conditions
- Leachate or ground water fluctuations
- Activities near the area
- Pressure and flow within the well
- Presence of methane, level of O2, balance of gas
- Variability of the readings
- Ground water levels
- Temperature within the well
- Odours coming from the well
- Assessing the status of all Gas Management Wells and gas field data
- Check total gas abstraction volumes
- Integrity of gas extraction system

From this an investigation will be carried out to determine the source of the gas and potential pathways as per steps 4 and 5 below; any findings from the investigation will be submitted to the Environment Agency, within 5 weeks from the detection of the breach.

4) Conceptual model – sources and pathways checked

5) Extended pathway assessment

6) Detailed Investigation of gas migration - If it is believed that there is potential for gas migration from the landfill an investigation will be carried out as per Section 7 of the ICoP, Jan 2011. A further more detailed action plan will be drawn up in this instance and submitted to the Environment Agency for agreement.

5.3.5 Perimeter Monitoring Boreholes

Below is a list of all perimeter gas boreholes that are monitored monthly:

BH03, BH04, BH10-46, 15A, W02- W07, (BH12R, W01R Drilled in December 2020 are monitored on a weekly basis)
(BH05- 8, W01 are currently not being monitored due to health and safety issues)

5.3.6 Maintenance of LFG Perimeter Monitoring Points

Perimeter monitoring points are inspected when monitored and also on a regular basis by the site management. Any identified faults are repaired immediately or as soon as parts can be obtained.

5.3.7 Monitoring Personnel

All monitoring is carried out by trained and competent personnel. Usually, monitoring will be completed by employees of FCC Environment. It may, however, be necessary upon occasion to employ contractors to undertake monitoring. In these cases, only experienced and reputable contractors will be used.

5.3.8 Monitoring Equipment

Monitoring of boreholes is undertaken using appropriate equipment which is maintained and calibrated according to manufacturer's instructions. This will usually be a Geotechnical Instruments GA2000+, GA5000 Gas Analyser or similar.

5.3.9 Monitoring Methodology

Monitoring will conducted in accordance with the Environment Monitoring Procedure attached in Appendix 4.

5.3.10 Methodology for Data Storage, Retrieval and Presentation

Landfill Gas readings in the field are either stored electronically onto the Gas Analyser or recorded manually. Data is then transferred into a comma delimited file and imported to the Monitor-Pro database. The original data files are also archived on a shared drive. The Monitor-Pro database holds all data and records any alterations made; it also allows data to be exported or presented in a number ways.

5.3.11 Methodology for Data Interpretation

Data is interpreted as required and where appropriate. This process is often aided by the Monitor-Pro database.

5.3.12 Means of Communicating Results to the Environment Agency

Monitoring data will be submitted to the Environment Agency on a quarterly basis. This will include manipulated data where appropriate e.g. water levels may be converted to a meters above ordnance data (mAOD) format; but will include little discussion of results. An interpretive report will be submitted annually; this includes full interpretation and discussion of results.

5.4 Gas flare and engine monitoring

Monitoring of the emissions from the engines and flare will be conducted at frequencies specified within the Environmental Permit. Reference will also be made to Environment Agency Guidance LFTGN 05 (flares) and LFTGN 08 (engines).
Enclosed flares will only be monitored if they have been running more than 10% of the year.

The parameters to be monitored and methodology will be determined by the guidance documents above and the Environmental Permit and will be outlined in a Site Specific Protocol (SSP). Results will be compared with relevant emission limit values dependent upon the commissioning date for the plant item as indicated in Table 7 below.

Table 5: Landfill gas flare and engine emission monitoring parameters

Emission limit values (mg/m^3)*			
Parameter	**Flares**	**Engines first commissioned 2006 onwards**	**Engines first commissioned after 1 January 1998 and before 31 December 2005**
Nitrogen Oxides as (NOx)	150	500	650
Carbon monoxide (CO)	100 for flares first commissioned prior to 2004. 50 for flares first commissioned 2004 onwards	1400	1500
Total volatile organic compounds (VOC's)	10	1000	1750

*Engines which were commissioned prior to 1997 have site-specific emission limit values. See Environmental Permit for details.

Note: NMVOCs are no longer included in the annual monitoring as Environment Agency guidance specifies that no suitable method is available – see LFTGN08 for details.
Engine emissions samples will typically be taken from the sampling port situated immediately after the engine turbo. Flare emissions samples will be taken from an agreed single location close to the top of the flare.

To ensure the sample is representative, engines should be running under typical operational conditions.

The test will be reported in accordance with the Agency's LFTGN 05 and LFTGN 08 guidance and will include details of:

- The test methods
- Variations from standard methods
- A tabulated data summary

Any data which is determined to be approaching the limit (as defined in LFTGN 05/08) will be highlighted in the report.

Any data which is determined to be non-compliant, will be investigated and reported to the Permit Environment Agency (if applicable) by FCC Environment.

5.5 Surface Emissions Monitoring

5.5.1 FID walkover survey

FID walkover surveys are carried out on an annual basis. The FID walkover procedure and method is attached as Appendix 6.

5.5.2 Flux Box Survey

A Flux box to monitor the surface emissions from temporary and permanent capped areas was carried out by Enitial in September 2015. The area of site that was capped in 2017 was surveyed April 2018. A full site flux is currently due following the temporary capping in the last quarter of 2020..

Before the flux box survey, a FID walkover survey will be carried out in line with guidance. All flux box monitoring will be carried out with reference to LFTGN07.

All newly completed capping will be monitored for surface emissions within one year of completion. Future flux box surveys for previously capped and restored areas of site will be subject to periodic flux box surveys in line with guidance. The methodology for flux boxing is attached as Appendix 7.

5.5.3 Reporting and Remediation

Results will be presented as per Guidance on monitoring landfill gas surface emissions LFTGN07.

Following breaches of the emission limits outlined in the Environmental Permits remediation will be carried out as required and details of actions will be incorporated into the FID report. For FID surveys the guidance levels of 100ppm for capped areas and 1000ppm for point source emissions will be used. Any breaches from the FID survey will be remediated before the subsequent flux box survey.

Following failures of either an FID walkover or flux box survey, remedial measures will be carried out as required.

6.0 Action Plan

6.1 Landfill gas emergency procedure

Failure Scenario 1: Loss of 1 Engine
The flare has sufficient capacity to combust surplus landfill gas in the event of an engine being offline. Action will be taken to ensure that the engine becomes operational as soon as practicable.

Failure Scenario 2: Lost of multiple Engines
The flare have sufficient capacity to combust surplus landfill gas in the event of all engines being offline. Action will be taken to ensure that the engines become operational as soon as practicable.

Failure Scenario 3: Flare failure
In the event of the flare failing arrangements will be made for the supply of a temporary flare until the permenant flare is repaired.

Gas plant (blower) failure
The site operates on duty and standby blowers. In the event of a blower failure, the affected unit would be isolated and the stand by blower would be operated until repairs can be made to the duty blower

Total site shutdown
Attempts will be made to restart the plant as soon as reasonably practicable. An assessment of likely shutdown duration will be made. If the duration of the shutdown is liable to result in significant pollution or complaints, action will be taken to obtain alternative means of control e.g. a diesel powered standby generator to power the site in line with procedure
LC-01-028 Significant Event Handling

Fracture of the gas collection main
In the event of a fracture of the gas collection main, the relevant section of pipework will be isolated. Pipework will be repaired prior to resumption of extraction.

Inform All Relevant People

All of the above scenarios would be detected telemetry at the Gas Utilisation Plant. When present, staff on site will react to this. If no staff are present on site, the Infinis Control Centre will contact relevant Infinis staff, who will attend the site as soon as possible to remediate the failure. Depending upon the severity of the situation, Infinis staff may inform FCC environment staff who will decide whether or not it is necessary to inform other bodies and on what timescale.

Verify Consistency of Monitoring Results

If deemed necessary, additional monitoring may take place following a failure scenario.

Assessment of Nearby Properties

Where nearby properties are believed to be at risk, additional monitoring may take place in consultation with regulators and the occupiers of the property.

6.2 Migration

Where methane migration is identified, investigation into possible causes of the gas migration will be undertaken between Infinis and the FCC Environment. This will comprise identification of:

- Whether the gas extraction system/gas plant are operating normally
- The integrity of the external perimeter and gas extraction system
- Any recent changes to the gas extraction system/gas plant
- An assessment of weather conditions at the times of monitoring
- Possible fluctuations of leachate and groundwater levels in the vicinity of the migration
- Any other abnormal site condition or operation

In order to identify the possible cause of gas migration it may be necessary to:

- Visually inspect the integrity of the gas extraction system, including pipe work and all associated head works and valves (for signs of physical failure and possible vandalism)
- Check the gas extraction system for condensate blockages and well failures
- Assess the affected area of the site for signs of gas leakage and vegetation dieback

If the breaches in trigger levels are verified or the cause cannot be easily detected and rectified, the Environment Agency will be informed by the FCC Environment.

If no possible cause of gas migration is identified, and if, after an extended period of time gas levels show no sign of stabilising, the following measures will be considered by FCC Environment in consultation with Infinis and the Environment Agency:

- Further investigation (if possible) to determine the composition of gases and to identify the possible source of the gas
- Consideration of additional external boreholes further from the landfill to assess possible extent of gas migration
- Extension of the gas extraction system within affected areas and
- Revision of the landfill gas risk assessment (where relevant)

Following the evaluation of measures highlighted above, it may be necessary to agree and implement further measures in the form of an action plan agreed with the Environment Agency.

6.3 Landfill fire action plan

The site is routinely checked for the presence of possible landfill fires through visible inspection of site and interpretation of monitoring results. A hot spot may be suspected if a number of the following are observed during site inspection and monitoring:

- substantial settlement over a short period of time;
- smoke or smoulder emanating from the gas extraction system or landfill;
- elevated levels of CO – exceeding 100 parts per million (ppm) indicated on hand held IR instrument;
- elevated levels of oxygen greatly exceeding 5%;
- combustion residue in extraction wells or headers; or
- increase in gas temperatures in the extraction system and excessive temperatures.

If it is believed that a fire is present, the following procedures will be followed:

- The waste mass in and around the hot spot needs to become anaerobic – this will be achieved through turning off main isolation valves, closing all surrounding valves and wells, or completely turning off gas extraction.
- The waste mass in and around the hot spot needs to be cooled – this will be achieved through injection of water or leachate into the waste through existing wells, or if necessary new wells.
- The point at which oxygen enters into the waste mass needs to be identified and sealed – this will be achieved through location of all possible points and sealing using engineered clay, hydrated bentonite or pre membrane.
- This basic procedure will be followed for all suspected fires and adapted for each individual situation along with carbon monoxide analysis and temperature recording appropriate to each situation.

6.4 Verify Consistency of Monitoring Results

If deemed necessary, additional monitoring may take place following a failure scenario.

6.5 Assessment of Nearby Properties

Where nearby properties are believed to be at risk, additional monitoring may take place in consultation with Environment Agency and the occupiers of the property.

7.0 Aftercare and Completion Plan

The volume of gas yielded can be expected to decrease over time in existing cells. The production of Landfill Gas is adequate to present a risk but inadequate to support economically viable utilisation and therefore landfill gas control is continuing without utilisation. Monitoring will continue until such a time as it can be demonstrated that the volume of landfill gas production is low enough to have ceased to cause a risk. It is, however, likely to be the case that risk posed by landfill gas reduces gradually over time and the frequency of monitoring should be progressively reduced to reflect this.

8.0 References

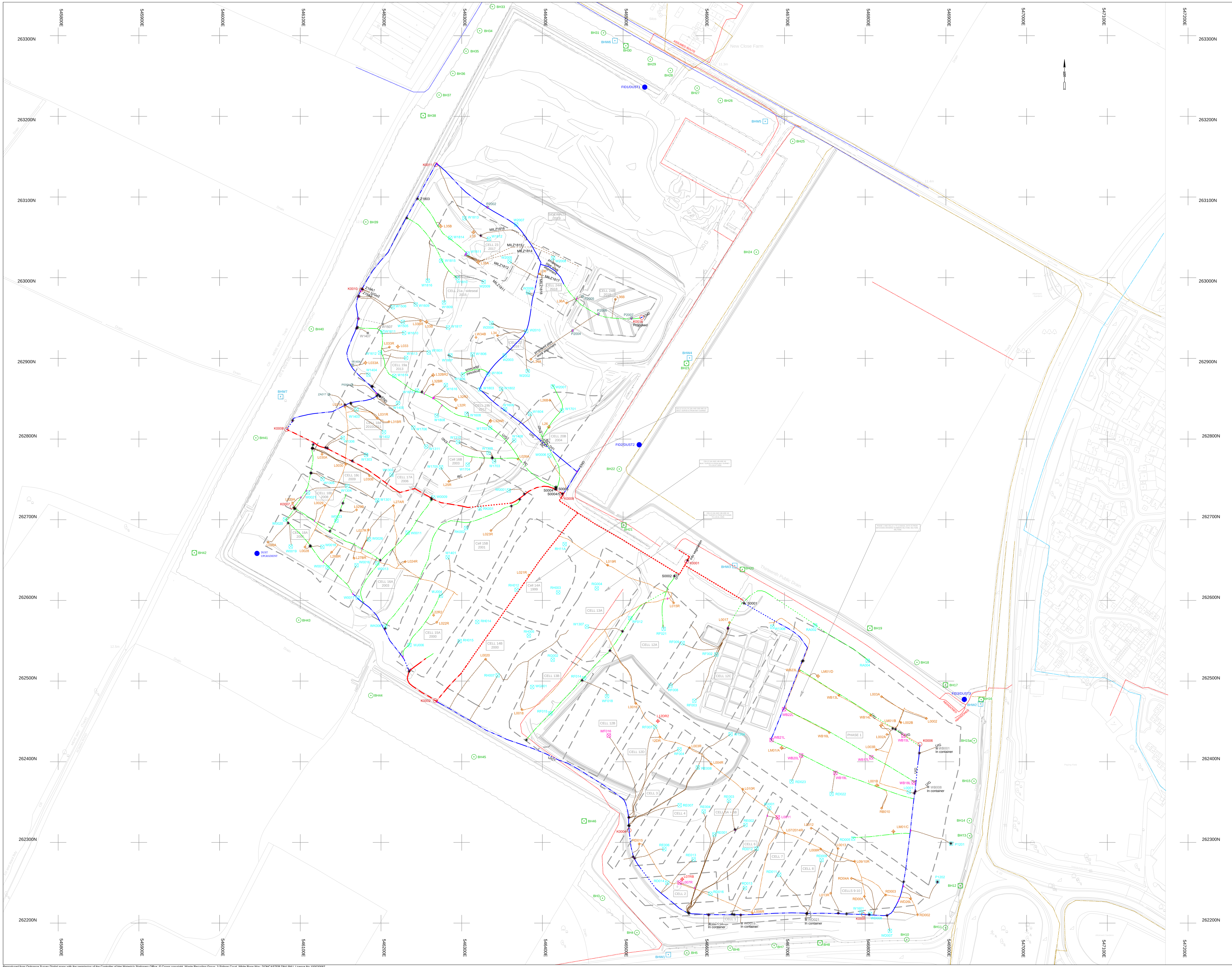
Environment Agency, LFTGN 03: Guidance on the Management of Landfill Gas
Environment Agency, LFTGN 04, Guidance for Monitoring Trace Components in Landfill Gas.
Environment Agency, LFTGN 05, Guidance for Monitoring Enclosed Landfill Gas Flares.
Environment Agency, LFTGN 07, Guidance on Monitoring Landfill Gas Surface Emissions.
Environment Agency, LFTGN 08, Guidance on Monitoring Landfill Gas Engine Emissions.

Tables

Appendix

1. Gas Infrastructure Plan
2. Monitoring Schedule
3. Environmental Monitoring Plan 653M282K
4. Perimeter Gas Method Statement
5. CO2 Trigger Levels/CH4 Trigger Limits
6. Surface Emission Method Statement
7. Flux Box Method Statement (Enitial Projects Ltd)
8. LC-01-028 Significant Event Handling- INFINIS Procedure

Appendix 1



3rd Party LEGEND

FCC Monitoring Points (Copied from Client provided drawing '653M282P EMP DRAFT.dwg')

- Landfill Gas Monitoring Borehole
- Combined Gas/ Groundwater Monitoring Point
- Groundwater Monitoring Borehole
- Dust Point
- Leachate Collection Point
- Leachate Monitoring Point

Services & Utilities (Copied from Client provided drawing '653S260.dwg')

- HVO — High Voltage Overhead Electricity Cable
- HVU — High Voltage Underground Electricity Cable
- UT — Telephone Underground Cable
- OT — Telephone Overhead Cable
- FS — Foul Sewer
- WM — Water Main

UTEC StarNet LEGEND

Monitoring Points

- Landfill Gas Surface Monitoring Point
- Gas Flare Stack
- Landfill Gas Extraction/ Leachate Monitoring Point
- Condensate Unit (Knock-out Pot)
- Groundwater Pumping Point
- Surface Water Monitoring Point
- Leachate Collection Point
- Leachate Monitoring Point
- Leachate Recirculation Point
- Valve
- KOP
- PEG
- Manifold
- Finn Drains
- Strategic Monitoring Point

Gas Wells

- Pin well
- Gas Well 63Ø
- Gas Well 90Ø
- Gas Well 110Ø
- Gas Well 120Ø
- Gas Well 160Ø
- Gas Well 180Ø
- Gas Well 225Ø
- Gas Well 250Ø >
- Proposed Gas Well
- Assumed Underground Well

Infrastructure Pipework

Above ground Pipe		Underground Pipe
32	32mm Gas Pipe	– – – –
55	55mm Gas Pipe	– – – –
63	63mm Gas Pipe	– – – –
90	90mm Gas Pipe	– – – –
110	110mm Gas Pipe	– – – –
120	120mm Gas Pipe	– – – –
125	125mm Gas Pipe	– – – –
160	160mm Gas Pipe	– – – –
180	180mm Gas Pipe	– – – –
200	200mm Gas Pipe	– – – –
250	250mm Gas Pipe	– – – –
280	280mm Gas Pipe	– – – –
315	315mm Gas Pipe	– – – –
355	355mm Gas Pipe	– – – –
400	400mm Gas Pipe	– – – –
450	450mm Gas Pipe	– – – –
500	500mm Gas Pipe	– – – –
650	650mm Gas Pipe	– – – –
L	Leachate Pipe	
A	Airline Pipe	
A/D	Air and Discharge Pipe	
D	Discharge Pipe	
CON	Condensate Pipe	
LR	Leachate Recirculation Pipe	
— – – —	Assumed Pipe	

Notes:

1. All dimensions are in metres unless otherwise stated.
2. All survey co-ordinates related to National Grid co-ordinates system (OSTN15) derived from the national GPS network - positions and levels checked against site control.
3. For ground levels and depths to base of proposed wells please refer to spreadsheet: '5353_GI11 - Milton - Proposed Wells List - November 2020.xls'.
4. For ground levels and top of well levels please refer to spreadsheet: '5353_GI11 - Milton - Gas Well Co-ordinates and levels - November 2020.xls'.
5. Background mapping, site survey data, basal cell footprint and environmental monitoring points copied from client provided plan: '653M282P EMP DRAFT.dwg'.
6. Services and utilities copied from client provided plan: '653S260.dwg'.

Disclaimer

THIS INFORMATION SHOULD NOT BE REGARDED AS ACCURATE AND SHOULD BE USED FOR GUIDANCE PURPOSES ONLY.

UTEC STARNET

GARD ID Prefix: MIL

Files/ information used: '653M282 EMP DRAFT.dwg' & '653S260.dwg'

REVISIONS

No	Description	By	Chk'd	Date

Project:

MILTON
LANDFILL SITE

Title:

Gas Infrastructure Plan

Drawn By	A.M.	Date	17/11/2020
Chk'd By	J.M.	Date	19/11/2020
Scale 1:	1:1500	Sheet Size A0	

Infinis Limited
First Floor
500 Pavilion Drive
Northampton Business Park
Northampton
NN4 7YJ

infinis

Drawing No 5353_GI11

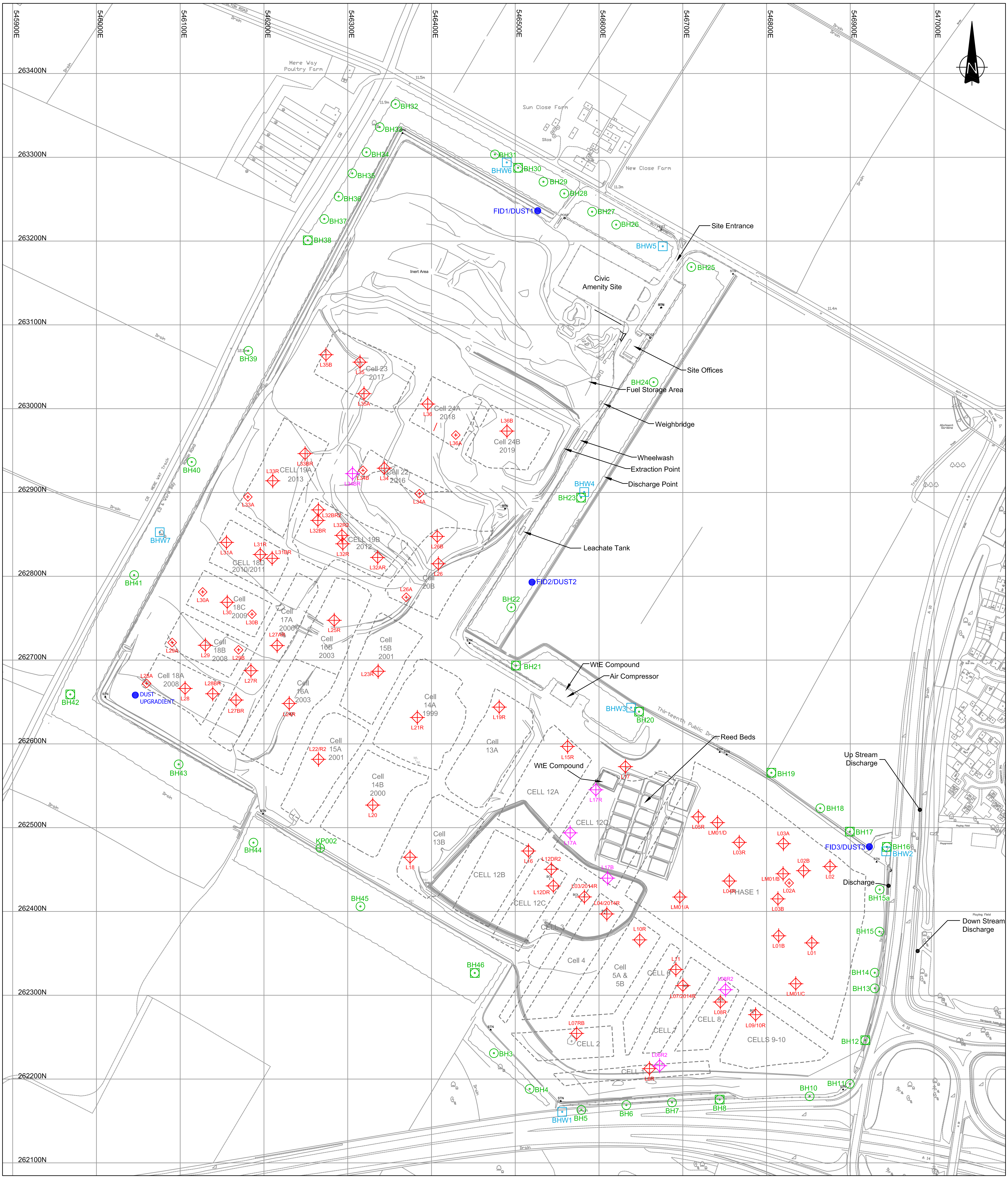
Rev -

Appendix 2

Milton

Interval	Type	Sample Points	Field Determinands	Sampling Determinands	Month	Comments
Weekly	Gas	BH12R, W01R	Gas Comp, Diff Pressure, Field log, Ground Conditions- waterlogged/frozen/snow covered	none	All	
	Ground Water	BH12R, W01R	field log, condition, DTL, DTB, purge vol	Cl, EC, NH4-N, Ph, Cd, Zinc, Chromium, MCPP. MILGWQ		
Monthly	Gas	BH03, BH04, BH10-46,12R, 15A , W01R,W02-07	Gas Comp, Diff Pressure, Field log, Ground Conditions- waterlogged/frozen/snow covered	none	Jan, Feb, Apr, May, July, Aug, Oct, Nov	
	Surface Water	Discharge or Lagoon, Upstream Discharge, Downstream Discharge	Visual oil and grease	Cl, EC, NH4-N, pH, Suspended Solids. MILSWD		
	Leachate	L01, L01B, L02, L02A, L02B, L03A, L03B, L03R, L04R, L05R, L06R,L07RB, L10R, L11, L15R, L16, L17, L18, L19R, L20, L21R, L22R2, L23R, L25R, L26, L26A, L26B, L27R, L27AR, L27BR, L28, L28A, L28BR, L29, L29A, L29B, L30, L30A, L30B, L31R, L31A, L31BR, L32R2, L32AR, L32BR2, L33R, L33A, L33BR, L24R, L12DR2, L03/2014R, L04/2014R, L07/2014R, L09/10R, L08R, L34, L34A, L34B, L35, L35A, L35B, L36, L36A, L36B, LM01A, LM01B, LM01C, LM01D	DTL, Pulse Counter reading	none		48hr pump suspension
	Ground Water	BH12R, W01R	field log, condition, DTL, DTB, purge vol	Cl, EC, NH4-N, Ph, Cd, Zinc, Chromium, MCPP. MILGWQ		
	Leachate	Active area wells that have been raised- check with site manager, operational manager	Dip to Base	none		
	Fugitive Emissions FID	3 main sensitive azimuths at site boundary. Any temporary capped areas.	Flammable Gases (ppm)	none		
Quarterly	Gas	BH03, BH04, BH10-46,12R, 15A , W01R,W02-07	Gas Comp, Diff Pressure, Field log, Ground Conditions- waterlogged/frozen/snow covered		March, September, December (except dust- February, August, November)	
	Groundwater	W01R,W02-07, BH12,BH12R, BH16, BH17, BH19, BH20, BH21, BH23, BH30, BH38, BH42, BH46	field log, condition, DTL, DTB, purge vol	Cl, EC, NH4-N, Ph, Cd, Zinc, Chromium, MCPP. MILGWQ		
	Leachate	L26, L32R2, L33R, L34, L35, L36	DTL, Pulse Counter Reading	Cl, EC, NH4-N, pH, Total Sulphates, Total Alkalinity, COD, BOD, Sodium, Potassium, Calcium, Magnesium, Cd, Iron, Lead, Nickel, Copper, Manganese, Zinc, Chromium, Arsenic. MILLQ		
	Leachate	L01, L01B, L02, L02A, L02B, L03A, L03B, L03R, L04R, L05R, L06R,L07RB, L10R, L11, L15R, L16, L17, L18, L19R, L20, L21R, L22R2, L23R, L25R, L26, L26A, L26B, L27R, L27AR, L27BR, L28, L28A, L28BR, L29, L29A, L29B, L30, L30A, L30B, L31R, L31A, L31BR, L32R2, L32AR, L32BR2, L33R, L33A, L33BR, L24R, L12DR2, L03/2014R, L04/2014R, L07/2014R, L09/10R, L08R, L34, L34A, L34B, L35, L35A, L35B, L36, L36A, L36B, LM01A, LM01B, LM01C, LM01D	DTL, Pulse Counter reading	none		48hr pump suspension
	Leachate	Active area wells that have been raised- check with site manager, operational manager	Dip to Base	none		
	Dust	3 main sensitive azimuths at site boundary and background.	Deposited Dust (mg/m^2) DUST BOTTLES OUT FOR 7 DAYS	Deposited Dust (mg/m2 daily)		
	Fugitive Emissions FID	3 main sensitive azimuths at site boundary. Any temporary capped areas.	Flammable Gases (ppm)	none		
	Surface Water	Discharge or Lagoon, Upstream Discharge, Downstream Discharge	Visual oil and grease	Cl, EC, NH4-N, pH, Suspended Solids. MILSWD		
	Leachate Tank	Leachate Tank		Cl, EC, NH4-N, pH, COD, Calcium, Iron, Lead, Nickel, Zinc, Chromium. TANK		
Biannual	Noise	Location 1- Sun Close Farm, Location 2- Mereway Farm		Monitoring to take place between: 06.00- 07.00 (night- time) AND 07.00- 16.00 (day- time) LIMIT- 42dB Laeq 1hr for night- time and 55dB Laeq 1hr day- time	March, September	
Annual	Gas	BH03, BH04, BH10-46,12R, 15A , W01R,W02-07	Gas Comp, Diff Pressure, Field log, Ground Conditions- waterlogged/frozen/snow covered	none	June (except Annual FID- Full Site and Dust - May)	
	Dust	3 main sensitive azimuths at site boundary and background.	Deposited Dust (mg/m^2) DUST BOTTLES OUT FOR 7 DAYS	Deposited Dust (mg/m2 daily)		
	Fugitive Emissions FID	3 main sensitive azimuths at site boundary. Any temporary capped areas.	Flammable Gases (ppm)	none		
	Surface Water	Discharge or Lagoon, Upstream Discharge, Downstream Discharge	Visual oil and grease	Cl, EC, NH4-N, pH, Suspended Solids. MILSWD		
	Leachate Tank	Leachate Tank		Cl, EC, NH4-N, pH, COD, Calcium, Iron, Lead, Nickel, Zinc, Chromium. TANK		
	Groundwaters	W01R,W02-07, BH12,BH12R, BH16, BH17, BH19, BH20, BH21, BH23, BH30, BH38, BH42, BH46	field log, condition, DTL, DTB, purge vol	Cl, EC, NH4-N, pH, Total Sulphates, Total Alkalinity, Sodium, Potassium, Calcium, Magnesium, Cd, Iron, Lead, Nickel, Copper, Manganese, Zinc, Chromium, MCPP, Xylene. MILGWA1		
	Leachate	L01, L02, L03R, L04r, L06r, L07RB, L10R, L11, L15R, L16, L17, L18, L19R, L20, L21R, L22R2, L28, L29, L30, L24R, L12DR2, L03/2014R, L04/2014R, L07/2014R, L09/10R, L08R, L23R, L25R, L27R, L31R	field log, condition, DTL, DTB, purge vol	Cl, EC, NH4-N, pH, Total Sulphates, Total Alkalinity, COD, BOD, Sodium, Potassium, Calcium, Magnesium, Cd, Iron, Lead, Nickel, Copper, Manganese, Zinc, Chromium, Arsenic, MILLQ		
	Leachate	L01, L01B, L02, L02A, L02B, L03A, L03B, L03R, L04R, L05R, L06R,L07RB, L10R, L11, L15R, L16, L17, L18, L19R, L20, L21R, L22R2, L23R, L25R, L26, L26A, L26B, L27R, L27AR, L27BR, L28, L28A, L28BR, L29, L29A, L29B, L30, L30A, L30B, L31R, L31A, L31BR, L32R2, L32AR, L32BR2, L33R, L33A, L33BR, L24R, L12DR2, L03/2014R, L04/2014R, L07/2014R, L09/10R, L08R, L34, L34A, L34B, L35, L35A, L35B, L36, L36A, L36B, LM01A, LM01B, LM01C, LM01D	DTL, DTB Pulse Counter reading	none		48hr pump suspension
	Leachate	L26, L32R2, L33R, L34, L35, L36	DTL, DTB Pulse Counter reading	Cl, EC, NH4-N, pH, Total Sulphates, Total Alkalinity, COD, BOD, Sodium, Potassium, Calcium, Magnesium, Cd, Iron, Lead, Nickel, Copper, Manganese, Zinc, Chromium, Arsenic MILLQ + Hazerdous Substances		
	ALL Areas	All Temporary and Permenently Capped areas, and installations	Flammable Gas (ppm)			MAY. Observations when readings above 10ppm
2 Yearly	Groundwater	W01R,W02-06, BH12,BH12R, BH16, BH17, BH19, BH20, BH21, BH23, BH30	field log, condition, DTL, DTB, purge vol	Cl, EC, NH4-N, pH, Total Sulphates, Total Alkalinity, Sodium, Potassium, Calcium, Magnesium, Cd, Iron, Lead, Nickel, Copper, Manganese, Zinc, Chromium, MCPP, Xylene, MILGWA2 (with Hazerdous Substances)	June 2020, 2022, 2024	
4 Yearly						
	Leachate wells	L01, L02, L03R, L04r, L06r, L07R, L10R, L11, L15R, L16, L17, L18, L19R, L20, L21R, L22R, L28, L29, L30, L24R, L12DR2, L03/2014R, L04/2014R, L07/2014R, L09/10R, L08R, L23R, L25, L27, L31R	DTL, DTB Pulse Counter reading	Ph, EC, Cl, NH4-N, Total Sulphates, Alkalinity, COD, BOD, TON, TOC, Sodium, Potassium, Calcium, Magnesium, Cd, Iron, Lead, Nickel, Copper, Manganese, Zinc, Chromium, Arsenic, Phenols, MCPP, Toluene, M & P Xylene, Ethylbenzene. MILLA2 (with Hazerdous Substances)	June 2021, 2025, 2029	

Appendix 3



NOTES:

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.

2. DO NOT SCALE FROM THIS DRAWING.

3. ANY ANOMALIES IDENTIFIED WITH THE DETAILS SHOWN ON THIS DRAWING ARE TO BE BROUGHT TO THE ATTENTION OF FCC ENVIRONMENT (UK) LIMITED PRIOR TO CONSTRUCTION WORKS COMMENCING.

LEGEND:

- Landfill Gas Monitoring Borehole
- Landfill Gas Surface Monitoring Point
- Combined Gas/ Groundwater Monitoring Point
- Gas Flare Stack
- Landfill Gas Extraction Point
- Landfill Gas Extraction/ Leachate Monitoring Point
- Condensate Unit (Knock-out Pot)
- Gas Manifold
- Groundwater Monitoring Borehole
- Groundwater Pumping Point
- Surface Water Monitoring Point
- Leachate Collection Point
- Leachate Monitoring Point
- Leachate Recirculation Point
- Leachate Collection Sump
- Leachate Discharge Sampling Point
- Leachate Detection Point
- Underdrainage Monitoring Point
- Settlement Monitoring Point
- Drain/ Dewatering Tank
- Valve
- As-built Cell Footprint
- Dust Points
- Proposed Well

Reference files:
Information taken from plans;
Site Survey: 653W2247
Monitoring Plan: 6373 - Milton - Leachate System - April 2013
Cell Footprint: 653B2190

Revision:	Date:	Description:	By:	Chk:
Q	14.08.20	L34BR, L17R, L17A, L17B, L08R2 & L06R2 proposed wells added	BS	RH
P	13.11.19	Site survey updated	BS	RB
O	08.10.19	Site survey updated. Extraction & discharge labels added. Cell 24B detail added.	BS	RB
N	20.05.19	L12DR2, L32R2 & L32BR2 installed	BS	RB
M	02.04.19	Site survey updated. Proposed wells L12DR2, L32R2 & L32BR2 added	BS	RH
L	11.03.19	L32BR REDRILL, L32R REDRILL & L12DR REDRILL added	BS	RH
K	05.11.18	Plan reviewed	BS	RB
J	03.10.18	Site survey updated & cell 24A added	BS	RB
I	11.06.18	Site survey updated, Peg 1-4 remaned LM01/A-D & L22R2 added	BS	RH

FCC Environment
FCC Environment (UK) Limited
6 Sidings Court, White Rose Way, Doncaster. DN4 5NU

Site: **MILTON** LANDFILL SITE

Drawing Title: **Environmental Monitoring Plan**

Drawn By:	Checked By:	Date:	Scale:	Paper Size:
BS	RH	14.08.20	1:3000	A2

Status:	Revision:	Drawing No:	Plan Number:
FINAL	Q	653M282	Plan 04A

Appendix 4

Method Statement - Monitoring of Landfill Gas

1.0 Introduction

This method statement has been prepared to cover the activity of landfill gas monitoring. It should be read in conjunction with the risk assessment for landfill gas monitoring.

The potential hazards associated with landfill gas include flammability, explosivity and its potential to be an asphyxiant. Therefore regular monitoring to detect its presence is of great importance.

enitial's Method Statements have evolved over recent years and are based on industry best practice, together with legislation and guidance from various sources. Feedback gathered from our customers and the Environment Agency via waste management licence and permit audits has also been incorporated.

The Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) 2002 require operators to have systems in place to reduce or mitigate the risk of an explosive atmosphere forming and where it does to eliminate or reduce the risk of personal injury or harm to an acceptable level. The ESA Industry Codes of Practice (ICoPs) have been reviewed during the writing of this method statement and relevant information has been incorporated where appropriate.

Before work can take place, the DSEAR site zoning plan must be consulted. Be aware of any operational changes that may have taken place since the last visit that may have altered the zoning rating of the working area e.g. contractors on site, changes in the gas well system or if the work being undertaken alters the zoning.

Methane – Flammability and Explosivity

Methane is a flammable gas which forms explosive mixtures with air when present between the concentration limits of 4.4%v/v and 16.5%v/v at 20 Deg C.

These limits are known as the lower explosive limit (LEL) and the upper explosive limit (UEL) of methane.

In order for a methane/air mixture to be explosive, methane must be present in the explosive range (4.4%v/v and 16.5%v/v) along with a minimum oxygen concentration of 14%v/v.

Asphyxiation

Landfill gas can accumulate in enclosed spaces or topographical depressions, especially in sheltered areas where there is little wind. The principle asphyxia risks are associated with depleted oxygen by displacement by a landfill gas mixture and accumulations of carbon dioxide.

Asphyxiation could result if the breathing zones air mixture contains <10%v/v oxygen as a result of admixture with landfill gas. Carbon dioxide gas has a density greater than atmospheric air and therefore can pond in hollows, depressions and confined spaces where conditions allow. Evidence has been collected to suggest that carbon dioxide concentrations exceeding 5%v/v can accumulate in depressions and gullies where there is little wind.

2.0 Description

Landfill gas monitoring is routinely undertaken in order to comply with the relevant PPC/Environment Permit conditions using portable infra-red gas analysers. The readings obtained are verified for accuracy by a competent person before being sent to the client. Verification of results obtained by portable infra-red gas analysers is often undertaken using gas chromatography. This involves the collection of gas samples from individual monitoring wells using Gresham Tubes and/or Tedlar gas sample bags (see Section 4 below).

3.0 Monitoring Procedures

3.1 Pre-site Visit Preparation

- Check to ensure that all the correct personal protective equipment (PPE) is available and is worn as appropriate, also that the PPE is clean and in good order.
- Make sure that the results of any Risk or CoSHH assessments applicable to this activity have been taken into account.
- Ensure that your vehicle is in good and safe working condition and suitably clean and organised to minimise the risk of sample contamination in accordance with the Procedure for prevention of cross contamination. Fuel cans must not be stored next to monitoring/sampling equipment
- Obtain all site specific information from the relevant job file including the location of the site, site inductions and permit to work documents, a list of all gas monitoring points to be visited, site plans and any site specific monitoring protocols that must be adhered to. Refer to previous information on the site relating to best routes for navigating between points, previous readings, and any relevant safety risk assessments.
- Take any necessary keys and equipment to enter the site safely and access all monitoring facilities.
- Ensure that the portable infra-red gas analyser is compliant with the manufacturer's calibration and servicing recommendations. Quarantine any instrument that is beyond its calibration date, faulty or showing erroneous readings. The infra-red gas analyser can only be returned to service when appropriate remedial measures have been undertaken.
- The gas analyser should be fully charged and water/dust filters should be checked for visible signs of moisture/dirt and replaced if necessary. Dirty and/or wet filters can interfere with relative pressure readings and air flow through the instrument, impacting on the validity of the results obtained. Ensure correct site specific GAMS information is contained on the analyser where appropriate.

- It is recommended that all channels are zeroed on a daily basis to limit calibration drift and maximise the accuracy of the equipment (see **gas** gas analyser calibration check method statement for details).
- Gas analysers can be field calibrated if it is believed that the field calibration has drifted significantly (see gas analyser calibration check method statement).
- Ensure that a spare set of gas analyser consumables such as filters inline filters, water trap filters, valve adapters and tubing are carried at all times.
- Where possible, prepare and cut any tubing that may be required during the monitoring prior to starting work on site.
-

3.2 On-Site Pre-Monitoring Checks

- Put on the appropriate personal protective equipment, wearing disposable gloves at all times whilst monitoring/sampling.
- Landfill gas is potentially toxic due to the potential presence of a number of substances including carbon monoxide and hydrogen sulphide, consequently a multi gas alarm should be worn (as close to the wearer's mouth as possible). Refer to enitial's landfill gas and personal gas alarms document for further information.
- Anti-static clothing (particularly footwear, which is enitial standard issue) should be worn when undertaking the monitoring.
- Check the DSEAR site zoning plan to ensure all equipment (including battery powered tools) is suitable for the designated zone. Also note that non-ATEX approved items should not be used in any DSEAR zoned area of a site e.g. cameras, MP3 players etc. (for further information see ESA ICoP 5, Section 5.7).
- Sign in at the site office or weighbridge (operational sites)/inform enitial's point of contact in line with enitial's Lone Worker Policy.
- Check for additional hazards that may be present – on an open site this involves communication with site staff to establish any hazardous waste tipping for example asbestos tipping (refer to enitial's pre-monitoring communication memo for details).
- Take any necessary keys and equipment to enter the site safely and locate the monitoring facilities.
- Familiarise with any site-specific risk assessments including the closed site risk assessment if applicable.
- Ensure that all equipment is carried around the site without causing damage to it.
- Make sure that a mobile phone is readily available, however a phone should ideally not be used within any DSEAR zone except in an emergency – move outside the zone e.g. further than 2.2m away from a gas well in all other situations. ESA ICoP5 (August 2007) states that mobile phones may be used in zone 2 but not in zone 1 or 0.
- Check the field record sheet(s) from previous sampling exercises, and site observation records, for any relevant information that may relate to safe working.

- Plan work to minimise excessive carrying of equipment and/or sampling bottles – liaising with colleagues if work is spread over a month, use of a colleague to help if on site or working near-by or allowing enough time to make more than one journey to minimise the weight being carried.
- Vehicles must remain on the designated roadways whilst being driven on site. Vehicles may only deviate from this when permission is given from the site supervisor/manager.
- Switch on instrument and record the following information.

- Site Name,
- Date,
- Operator Name,
- Equipment Type & Serial Number,
- Calibration Due Date,
- Weather Conditions,
- Atmospheric Temperature,
- Atmospheric Pressure (mb),
- Wind Direction if possible,
- Wind Speed if possible,
- Ground Conditions.

3.3 Equipment List

- Gas analyser (with appropriate site specific GAMS information downloaded if appropriate),
- Associated sample tubing,
- Water trap filter,
- Tefen valve connectors,
- H_2S filter (if appropriate for the monitoring to be undertaken)
- Calibration gas canister,
- Gas canister regulator and associated pipework,
- PDA, Logbook/data template
- External flow pod and associated sample tubing (if required).

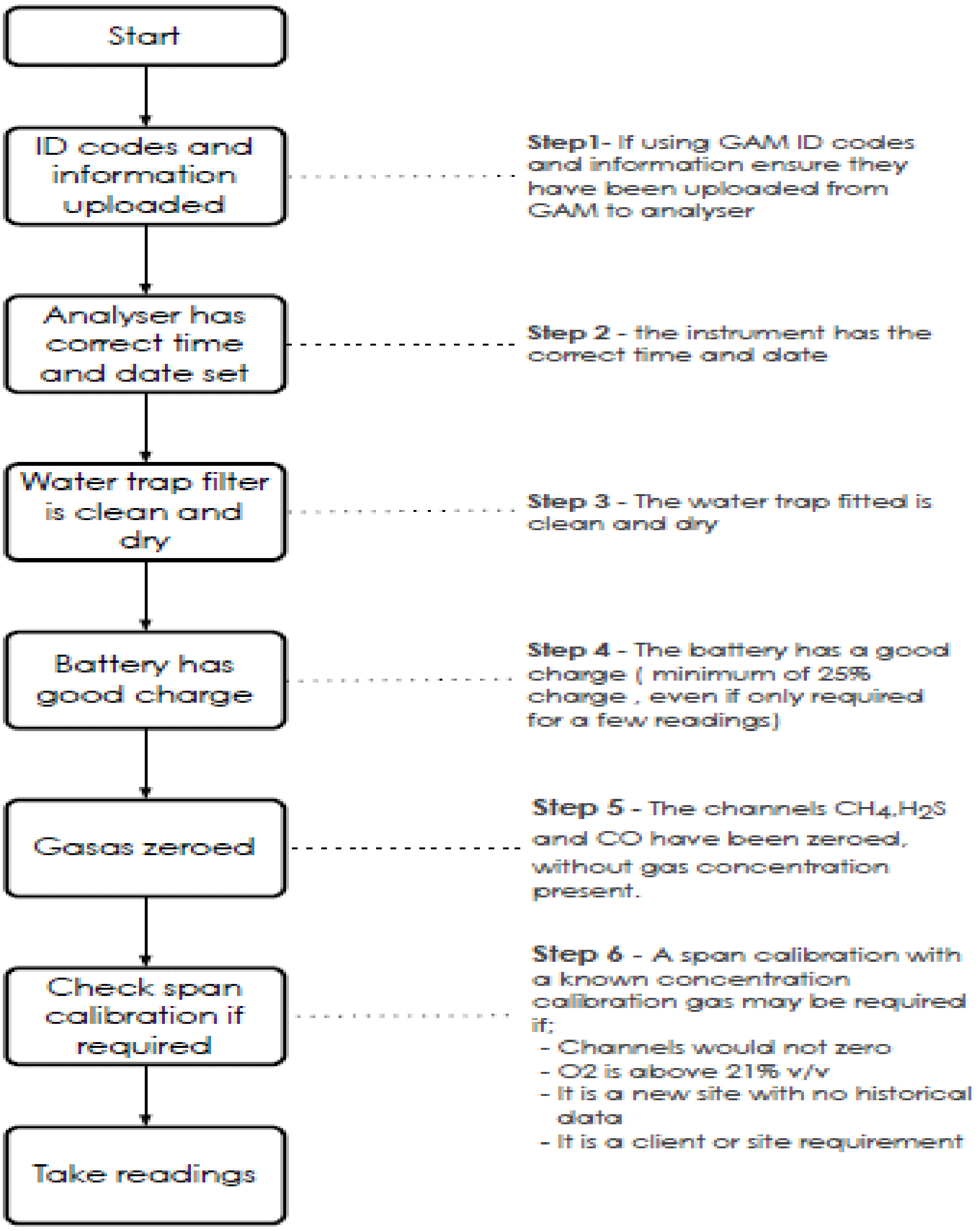
3.4 Monitoring Landfill Gas

- See flow chart below for guidance regarding preliminary GA checks.
- Locate the monitoring points.
- Assess the condition of the monitoring point; this should include an assessment of the integrity of the security cover, padlocks, caps and valves and labelling as well as general access to the monitoring point. Any defects should be reported in sufficient detail to enable repairs to be planned. If any monitoring points cannot be monitored due to the condition of the infrastructure or surrounding area this should be reported in your data against the relevant monitoring point ID. To ensure valid data is collected as a minimum each gas monitoring point should include an airtight lid or bung complete with a gas monitoring valve to ensure borehole gas monitored has not been diluted with

atmospheric air. Check that the gas valve's hose tail is not blocked by dirt/debris. If client specific instructions exist for infrastructure repairs e.g. the replacement of tubing then these should be followed.

- Turn on the infra-red gas analyser and complete a clean air purge for a minimum of 30 seconds to ensure any gas left in the machine from previous use has been removed from the unit. The methane and carbon dioxide readings should read zero after this purge – if they are showing a slight drift away from this then a field calibration is required (see **gas analyser calibration checks method statement for details**). Note that this clean-air purge has taken place within the data if the client requires this.

Preliminary GA Checks:



- If flow readings are required take these in advance of relative pressure and gas readings (see section 5 below). Ensure that all kit for this is available e.g. flow pod if using a GA2000, inlet/outlet push valve connectors, hose etc.
- Where required select the appropriate GAM ID for the sample point being monitored.
- Ensure that the pressure transducer reads zero in order to obtain a valid relative pressure reading. The pressure transducer should be zeroed if required (see manufacturers' instructions).
- Ensuring the sample hose is connected to the 'inlet' port on the infra-red gas analyser (and not the exhaust port); attach the sample hose to the gas monitoring valve installed on the borehole/probe.
- If required, record the relative pressure (it may take a few seconds for the displayed reading to stabilise). If you are using a separate relative pressure meter, close the tap, remove the sample hosing and repeat the above connection procedure for the gas analyser to obtain landfill gas readings.
- Once the relative pressure reading has been recorded, gas monitoring can be commenced by engaging the air pump on the infra-red gas analyser. The pump should be run for a <u>minimum</u> of 30 seconds in order to allow sufficient time for gas within the borehole to be drawn through the analyser before recording a result.
- Readings should be allowed to stabilise before recording methane (% by volume), carbon dioxide (% by volume) and oxygen (% by volume). N.B in some cases CO_2 and O_2 readings can take a number of minutes to stabilise, it is important that all readings settle before recording any data.
- Caution must be taken when monitoring from piezometers and other small diameter facilities that water is not drawn into the instrument. This may be prevented by using a section of transparent hose and observing closely if any water is drawn into and up the sampling hose. Water trap filters are *not* designed to stop water from entering the machine, only to slow the progress of any moisture in the pipework. If you ensure that you have a sufficient length of monitoring hose before the water trap, you should find that this gives you enough time to stop the pump **before** any water reaches the water trap. An audible strain on the instrument pump may also be detected. If water does enter the hose, stop the gas analyser's air pump and record the readings if possible. Check that the filters are not saturated. If they are, replace them appropriately. In the event that it is not possible to obtain a valid reading, record an appropriate comment to explain the failure to obtain a set of readings from the sample point.
- On-site infrastructure such as vents or leachate wells may not always have an air tight lid and/or a dedicated gas monitoring valve. In this instance a piece of extension hose can be fitted to the analyser and lowered into the well/vent to reduce the dilution affect of atmospheric

air at the top of the installation. N.B Ensure that the hose is not lowered into any leachate or water resting within the infrastructure.

- Once valid data has been recorded, remove the sample hose from the gas monitoring valve and **ensure that the valve is closed after use**. Replace the borehole lid and lock if necessary. Allow the air pump on the infra-red gas analyser to run for at least 30 seconds after it has been detached from the sample point in order to purge the unit of all gas from the sample point before monitoring the next sample point (methane and carbon dioxide concentrations should return to zero and the oxygen to atmospheric levels at approximately 20.7%v/v - 21.0%v/v.
- Repeat this procedure at each gas monitoring location.
- Record the atmospheric pressure once all the monitoring has been completed. Compare this with the reading taken at the beginning of the visit. This allows for the atmospheric pressure trend to be recorded i.e. – rising, falling or steady.

Types of valve likely to be encountered during monitoring are:

Tefen Type Quick Release Valves

A red adaptor is required for the attachment of the gas analysers sampling hose to the monitoring point. An audible click signifies satisfactory engagement of the adapter to the Tefen valve. The valve automatically opens upon engagement.

BSP Monitoring Valve with Hose-tail

Securely attach the sampling hose of the gas analyser to the hose-tail of the monitoring valve (tap). There must be a tight seal between the hose-tail and the hose in order to gain an accurate gas reading. Some hose-tails may be too wide for the standard hose fitting, in this instance a small length of larger diameter rubber pipe can be used as an adapter. Once the hose is securely fitted to the hose-tail of the gas monitoring valve, the valve handle can be manually opened.

3.5 Reporting Procedures

- Gas monitoring data obtained from the site is then entered onto the Monitor Pro database, either manually or downloaded directly from the instrument via GAMS where appropriate.
- Ensure data is accurate and correct and if possible, print out copies.
- All data is verified for accuracy by a competent person before being forwarded to the client.

4.0 Sampling Landfill Gas

In order to verify gas readings obtained from portable instruments, gas samples can be taken and subjected to laboratory analysis (gas chromatography). The methods employed to obtain gas samples are outlined in the section below.

The procedures outlined above should be adhered to when undertaking gas sampling.

Gas samples can be collected and transported to a laboratory by either a Gresham sampling tube or a Tedlar bag.

4.1 Pre-Visit Preparation

Check the condition of the sample collection apparatus and the number of sample tubes/bags needed (always take a few spare tubes/bags in case any problems are encountered on site). Use the attached gauge to ensure that the tubes are empty and ensure that the capacity of the sample receptacles is sufficient for the required analysis. Assess the gas bags for signs of damage/perforations.

4.2 On Site Procedures

4.2.1 Gresham Gas Sampler (for hydrogen or helium analysis)

Gresham tubes are re-usable steel cylinders approximately 15cm long, which are designed for the containment of gas samples. Before use, they are filled with an inert gas; this serves the purpose of flushing out the previous sample to avoid cross contamination. Before taking a sample, the inert gas must be removed and flushed out with air.

Application
Gresham Gas Sampling Tubes are not suitable for general GCMS analysis of trace components. It has been proven that the rubber o-seals, that are an integral part of the tube, can hold trace contaminants, thereby having the potential to cross contaminate future samples taken. Gresham Gas Sampling Tubes are only to be used where hydrogen and helium are to be analysed.

Using the Gresham Gas Sampler

1. Unscrew the dust caps and check the sample cylinder is empty by depressing the Schraeder valve at one end of the cylinder against the pump handle retaining bolt head.

2. Plug the filling indicator into the outlet bayonet fitting of the Gresham hand pump. Similarly, fit the sample cylinder into this, checking that they are tightly secured. Fit the purging attachment on to the free end of the sample cylinder.

3. For gas abstraction plant, open the sample valve on the plant wide to clear any moisture in the sample line before a sample is taken. Once the moisture has been cleared, slightly reduce the opening of the valve and connect the hose from the Gresham pump nozzle to the gas-sampling valve.

4. For off-waste monitoring probes and boreholes, first ensure that they have been bunged and capped for 24 hours prior to the sampling

event. Connect the hose from the Gresham pump nozzle and attach to the gas-sampling valve.

5. Connect the pump to the foot stirrup and then draw the gas through the apparatus by using a pump action. Check the gas being expelled from the outlet part of the purging attachment. Ten double strokes should ensure that the sample cylinder has been purged sufficiently with the current gas to be sampled, or until the pressure gauge indicates the tube is full.

6. Remove the Gresham pump hose from the valve or probe. Unplug the sample cylinder from the Gresham pump and screw on the retaining caps to prevent accidental pressure loss.

7. Mark the vessel with the time, date, initials and place of sampling.
8. Record a final gas reading with the portable monitoring instrument.
9. Make out a chain of custody form for all samples to ensure that all the tubes are correctly labelled and the correct analysis is to be undertaken. Package the tubes in an appropriate container for delivery to the laboratory.

4.2.2 Tedlar bags

Application

Tedlar bags are square polythene bags, suitable for the collection of gas samples requiring GCMS analysis. New or used Tedlar bags can be used depending on how critical the results are. The bags come in volume sizes 0.5, 1, 2, 3, 5 and 10 litres. A two litre volume is suitable for GCMS analysis. A 10 litre bag is required for Carbon 14 analysis (at 15% methane conc.)

Tedlar bags should not be used for hydrogen and helium analysis unless analysis is guaranteed to commence on the day of sampling. This is critical because the hydrogen and helium molecules are small enough to pass through the bag membrane over time.

Using a Tedlar bag

When taking a sample from an in-waste gas well, the gas suction should be tapped off for a period of time before sampling to allow a suitable volume of gas to build up. This is to be done in strict accordance with the site gas technician/responsible person, and should not be done alone.

1. For off-waste monitoring probes and boreholes, first ensure that they have been bunged and capped for 24 hours prior to the sampling exercise taking place.
2. A pumped sample can be obtained using an electric pump or the internal pump in the GA/2000 instrument, which is both a quick and easy method. Make sure all pipes and seals are airtight and let the instrument purge through with the gas for one minute before attaching and filling the Tedlar bag.

3. It is important to note that instruments, pumps and tubing can hold contaminants, especially after use on gas/leachate wells where condensate can enter the equipment. This can potentially contaminate a sample and therefore care must be taken in using these methods. Tubing should be replaced after use on in-waste sampling. Ideally, on and off-waste instruments should be kept separate.
4. Mark the bag with the time and date of sampling, site name, sample point name, sampler initials and name of person to receive laboratory analysis results (client or enitial).

5.0 Flow Readings

Gas flow measurements are sometimes required in addition to the routine capture of relative pressure and landfill gas concentrations within a monitoring point. Flow is typically recorded in litres per hour.

Infra-red gas analysers can measure gas flows when fitted with an external flow pod or an internal flow monitoring device. Irrespective of the method of flow measurement it is essential to ensure an air tight seal is maintained from the gas analyser, through the sample hosing to the monitoring points air tight cap and valve assembly. It is not possible to obtain valid flow readings where a cap and valve assembly is absent or poorly fitted. It is also important to measure flow before taking relative pressure and gas readings.

The following information is relevant when using a Geotech GA2000 or GA5000 infra-red gas analyser.

5.1 GA2000 Flow Monitoring (external flow pod)

- Insert the flow pod into the correct communications port on the gas analyser ensuring it is connected the right way round – bear in mind there is an inlet and an outlet port. The analyser will register the flow pod as soon as it is inserted. It is possible to test that the flow pod is working by gently blowing into the hose.
- If flow monitoring has been set up on the gas analyser's GAM ID file you will enter the flow reading screen once landfill gas concentrations have been recorded on the instrument.
- Once at the flow reading screen disconnect the gas sample hose (connected to the inlet port on the gas analyser) from the monitoring point.
- Ensure that the flow display is reading zero before connecting the flow pod's sample hose to the monitoring point. If flow is not reading zero ensure that flow is zeroed before proceeding. As the site is monitored it is important to check that the flow pod remains firmly connected to the GA as it can work loose.
- The flow pod's sample hose should be connected to the inlet port on the flow pod and the monitoring point's gas valve. Once connected open the gas valve.

- Gas flow will be displayed on the analyser's flow reading screen in real-time. Important - wait for the flow readings to stabilise so that a representative flow reading is obtained.
- When flow readings stabilise activate the 'snapshot' flow recording option to store the flow data.
- After recording flow, reconnect the gas sample hose and record relative pressure and landfill gas concentrations as outlined in section 3.4.
- Close the gas valve, disconnect the flow pod sample hose.
- Repeat this procedure where flow data is required.

5.2 GA5000 Flow Monitoring (internal flow device)

- Select the GAM ID for the monitoring point being monitored as normal and conduct a clean air purge.
- Select the 'Relative Pressure' button to begin reading the relative pressure.
- Enter the 'Special Action' menu using the middle soft key.
- Select 'flow' using option 4 (number 4 key).
- Zero the flow transducer (before each monitoring point).
- Attach the gas analyser's gas sample hose to the monitoring point's gas monitoring valve and open the valve. Check the sample hose is connected to the gas analyser via the Blue port and not the exhaust port. At this point it is possible to test that the internal flow pod is working by gently blowing into the hose.
- Gas flow will be displayed on the analyser's flow reading screen in real-time. Important - wait for the flow readings to stabilise so that a representative flow reading is obtained.
- When flow readings stabilise activate the 'snapshot' flow recording option to store the flow data.
- If required continue through the on screen options to record relative pressure and landfill gas concentrations as normal.

6.0 Reporting procedures

- Leave a copy of field data with the Site Manager and highlight any anomalous results. Sign out at the office.
- Comply with the enitial Lone Worker Policy at time of departure from site.
- All field and laboratory data are then entered onto the database/Excel for reference.
- Results obtained are verified for accuracy by a competent person before being sent to the client.

7.0 Site Exit

- Before signing out of the lone worker system or weighbridge/site office as applicable, the operative must ensure that the site is left in a tidy condition. All materials used during the working day (where not specifically meant to be left on site) must be removed prior to leaving. This will include picking up any litter/debris/packing materials arising from the technicians work or associated activities. All H&S related issues noted on site must be reported to the site operator/representative and passed on to the relevant person responsible for H&S within enitial.

Appendix 5

GAS Trigger Limits

		DET	LIMIT
LOCATION	FREQUENCY		TRIGGER
Perimetter BH's	Monthly	CH_4	1%v/v
BH08	Monthly	CH_4	1.7%v/v
BH08, BH10 and BH12	Monthly	CO_2	5.2%v/v

Appendix 6

Method Statement

Flame Ionisation Detection (FID) Surveys of Surface Emissions from Landfills

Preamble

enitial's Method Statements have evolved over recent years and are based on industry best practice, together with legislation and guidance from various sources. Feedback gathered from our customers and the Environment Agency via waste management licence and permit audits has also been incorporated.

The Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) 2002 require operators to have systems in place to reduce or mitigate the risk of an explosive atmosphere forming and where it does, to eliminate or reduce the risk of personal injury or harm to an acceptable level. The ESA Industry Codes of Practice (ICoPs) have been reviewed during the writing of this method statement and relevant information has been incorporated where appropriate.

Before work can take place the DSEAR site zoning plan must be consulted. Be aware of any operational changes that may have taken place since the last visit that may have altered the zoning rating of the working area e.g. contractors on site, changes in the gas well system or if the work being undertaken alters the zoning.

1. Introduction

This method statement has been prepared to cover the activity of FID surveying on landfill sites. It should be read in conjunction with the risk assessment for undertaking FID surveys. Further guidance can be found in the FID walkover survey handbook which is issued during training for this activity.

Due to the sporadic location of landfill gas vents and leachate wells across a site, only a very localised picture of landfill gas emissions can be obtaining by monitoring these facilities. Therefore when environmental aspects such as odour management or fugitive emissions become an issue it may be necessary to undertake a surface emissions survey of the whole area.

2. How Flame Ionisation Detection Works

Unlike all other regulated pollutants, hydrocarbons are a generic term for all chemicals that have molecules formed with hydrogen and carbon atoms. Thus the term represents a whole range of different chemicals from liquids to vapours.

Regulations do not currently require the operator to report the concentrations of these hydrocarbon chemicals individually. They require a report of the total hydrocarbons as a summation of the carbon atoms of the whole range of hydrocarbons present in a sample. An FID is the industry standard instrument which measures all compounds with a hydrogen/carbon bond and summates the carbon numbers into a total hydrocarbon reading by carbon mass.

The FID works by ionising the sample gas through combustion in a hydrogen flame. Ions produced in this process are collected at a polarised electrode outside the combustion zone. The polarising voltage across the detector must be high enough to stop any recombination of the electrons and positive ions produced in the flame. If the voltage is too low, all of the electrons may not reach the collector electrode causing insensitivity and, with larger samples, non-linearity. The resultant electrical current, proportional to the mass of hydrocarbons present in the flame, is then amplified to produce the instrument signal.

All instruments must be routinely checked to ensure they are in good working order and must be calibrated by an appropriate vendor on a frequency specified by the supplier. All certificates of calibration are filed and stored centrally by enitial. They are available to any party wishing to verify them.

3. Information required for FID survey desk study

A large-scale site plan and specific technical drawings are essential for the overall assessment procedure. These help identify particular construction details of features such as gas abstraction pipelines, wells, and capping layer designs. An annotated site plan should be the primary product of the desk study detailing:

- Site: liner and cap, planned life and waste disposal areas.
- Status: capped zones, permanent and temporary, current filling area.
- Inputs: rate and composition.
- Gas control system: abstraction and extent and capacity, temporary controls, monitoring points.
- Leachate management: towers, sumps, risers, monitoring points, presence of former co-disposal systems.

Divide the site into a number of zones where the cap has particular characteristics.

Planning the Survey

The zones must be traversed in a systematic manner to ensure the whole area is surveyed (the intensity of the survey will vary depending on the outcome of the desk study).

- Large uniform, QA caps warrant less detailed inspection.
- Spatially, a permanent cap is likely to be surveyed along regular lines, typically 50m apart and on a temporary cap on lines typically 25m apart. Features where failures in the containment of gas are more likely should be surveyed on a more intense grid that may be adapted to avoid obstructions.

Features that may warrant individual attention will have been identified during the desk study. These should be targeted at 5m spacing for smaller features. Such as:

- Surface fissures
- Stressed vegetation
- Interfaces between caps
- Edges and side-slopes
- Monitoring wells
- Collection pipework
- Liquid disposal points.

4 Monitoring Procedures

4.1 Pre-site Visit Preparation

- Check that the correct PPE is available for use, is in good working order and is fit for purpose.
- Check the calibration date of the instrument, battery charge and hydrogen cylinder. Use only a fully charged instrument and take a spare cylinder if possible.
- Ensure that your vehicle is in good and safe working condition, suitably clean and organised to minimise the risk of sample contamination in accordance with the Procedure for prevention of cross contamination. Fuel cans must not be stored next to monitoring/sampling equipment.
- Check for any site/company specific documentation that may be required for work to begin, such as site inductions and permit to work documents. If this in not in place, contact the client prior to the site monitoring/sampling visit, in order to bring this information up to date, if necessary.
- Make sure that the results of any Risk or CoSHH assessments applicable to this activity have been taken into account.
- Carry out a leak check on the hydrogen cylinder/s prior to transport. If a leak is suspected, do not place it in a vehicle and seek immediate advice from your line manager. Repeat again prior to transport from site.
- Turn the instrument on and after the warm-up procedure check the ignition functions.
- Obtain the current version of the site specific job file, this should contain all information needed to undertake the survey in accordance with the clients requirements.
- Obtain a detailed map of the site to assess the extent of the survey. It may be prudent to have a plan showing all vents, extraction wells and leachate wells as these may be tested during the course of the survey.
- Determine the area of the survey; a small site may be covered in its entirety. However a larger site may take several days and be covered with the use of spot checks, set out on a grid pattern.
- Take all necessary keys to enter the site if it is closed.
- It may be necessary to take an additional gas instrument to quantify hydrocarbon readings detected over 10,000 parts per million (ppm) by the FID. This instrument may also be used to assess carbon dioxide levels.

- Ensure the FID is switched off after the initial checks and use the carrying case associated with the unit to transport it to site, ensure hydrogen cylinder is isolated and disconnected from the FID when in storage and / or transit.
- A robust temperature probe may also be taken to obtain subsurface temperature readings in areas of obvious emissions.

4.2 On-Site Pre-Monitoring Checks

- Put on the appropriate personal protective equipment and familiarise yourself with any relevant site specific risk assessments.
- Landfill gas is potentially toxic due to the potential presence of a number of substances including carbon monoxide and hydrogen sulphide, consequently a multi gas alarm should be worn (as close to the wearer's mouth as possible). Refer to enitial's landfill gas and personal gas alarms document for further information.
- Sign in at the site office or weighbridge / log in to the lone worker system in line with enitial's Lone Worker Policy.
- Check for additional hazards that may be present – on an open site this involves communication with site staff to establish any hazardous waste tipping for example asbestos tipping (refer to enitial's pre-monitoring communication memo for details).
- Ensure that all the tools and equipment necessary to carry out the task are available and in good working order. Take necessary keys and equipment to enter the site safely and locate the monitoring facilities.
- Familiarise with any site-specific risk assessments including the closed site risk assessment if applicable.
- Ensure that all equipment is carried around the site without causing damage to it.
- Make sure that a mobile phone is readily available, however a phone should ideally not be used within any DSEAR zone except in an emergency – move outside the zone e.g. further than 2.2m away from a gas well in all other situations. ESA ICoP5 (August 2007) states that mobile phones may be used in zone 2 but not in zone 1 or 0.
- Plan work to minimise excessive carrying of equipment and/or sampling bottles – liaising with colleagues if work is spread over a month, use of a colleague to help if on site or working near-by or allowing enough time to make more than one journey to minimise the weight being carried.
- Vehicles must remain on the designated roadways whilst being driven on site. Vehicles may only deviate from this when permission is given from the site supervisor/manager.

Switch on the instrument and record the following information:

- Site Name.
- Date.
- Operator Name.
- Equipment Type & Serial Number.
- Calibration Due Date.
- Weather Conditions.
- Atmospheric Temperature.
- Atmospheric Pressure (mb).

- Wind Direction if possible.
- Wind Speed if possible.
- Ground Conditions.

4.3 Equipment List

Any necessary keys.
Monitoring location map/Site map (as required).
FID Unit including:
a) FID main body with full hydrogen canister attached.
b) Full hydrogen canister (spare) where possible.
c) Allen keys.
d) Spare batteries.
e) Sampling probe and associated hosing.
f) Carrying strap.
Leak detection fluid (proprietary or soapy water)
PDA, Logbook or template sheet and pencil/pen.

4.4 FID survey of surface emissions from landfills

- When the FID has run in atmospheric air for 1 minute, zero the scale. Traffic may interfere with this instrument so ensure it is zeroed away for any vehicles.
- Record the wind speed and direction from the weather station. On commencement, a graphical plot of the mean wind direction should be obtained from the site meteorological station. From this, the most appropriate upwind and downwind locations from the active tipping area can be selected. The graphical plot of mean wind direction should be assessed in accordance with a map of surrounding developments to determine the nearest downwind receptor.
- FID instruments cannot be used in heavy precipitation or in winds stronger than 3 on the Beaufort scale, over 11 mph, 19 kph or 10 Knots.
- Ensure that the most sensitive scale is used first. This may be switched to the less sensitive scale if any hydrocarbons are detected.
- Carry the FID instrument securely with the use of the shoulder strap and extend the telescopic measuring probe to just above ground level (no more than10cm high). Be aware of site traffic and uneven ground as the site is traversed.
- To cover a large area, pace out a grid pattern dependant upon the size of the site and sample at specific points at each grid intersection. The telescopic search bar should be swept from side to side as the technician walks. If the FID picks up a reading, the technician should stop and attempt to locate the source. This is often difficult if the gas is from a diffuse source i.e. the tipping area or a remote point source i.e. drilling operations. In this instance, the results should be noted and normal cap surveying should resume.
- The survey can be refined by reducing the grid size in those areas where flammable gas is detected.
- Record the peak and stable readings where the minimum reporting value is breached, noting down any relevant information such as traffic volume, vegetation dieback or suspicious odours.

- If levels of flammable gas exceed the limit of the FID, use an additional gas instrument in the exact position to quantify the levels.
- Proceed to next point when the instrument has zeroed.
- On small sites the entire ground can be covered by slowly sweeping the instrument probe from side to side, just above ground level.
- Extraction well chambers can be surveyed by slowly drawing the probe around the chamber lid. Similarly, vents and leachate wells can be tested by probing around their base as well as their lids or covers.
- Ground temperature should be checked where suspicious issues of warm gas permeate through the surface.
- Areas of vegetation dieback, cracks in the capping surface and areas where 'bubbles' of gas can be seen through ponded surface water must also be checked, in addition to the desired route of the survey.
- Caution must be taken when surveying wet or boggy ground not to draw water into the instrument.
- Once the site has been surveyed, record the atmospheric pressure and compare with the initial reading.
- Sign out at the site office or weighbridge and inform the Site Manager briefly of the findings.

5.0 Reporting Procedures

- FID survey data obtained from site may be entered onto the Monitor Pro database or an Excel spreadsheet and also marked on a survey plan if appropriate.
- Areas of flammable gas detection should be flagged and rechecked at a later date.
- It may be necessary to take further action depending upon the data gathered.
- All data is verified for accuracy by a competent person before being forwarded to the client.

6.0 Site exit

- Before signing out of the lone worker system or weighbridge/site office as applicable, the operative must ensure that the site is left in a tidy condition. All materials used during the working day (where not specifically meant to be left on site) must be removed prior to leaving. This will include picking up any litter/debris/packing materials arising from the technicians work or associated activities. All H&S related issues noted on site must be reported to the site operator/representative and passed on to the relevant person responsible for H&S within enitial.

Appendix 7

Method Statement

MONITORING LANDFILL GAS SURFACE EMISSIONS

1.0 INTRODUCTION

This method statement has been prepared to cover the activity of monitoring landfill gas surface emissions from permitted or licensed landfill sites. The process incorporates the use of flame ionisation detection (FID) and quantitative flux box surveying. This document is intended to be read in conjunction with the enitial Method Statement – 'Flame Ionisation Detection Surveys of Surface Emissions from Landfill Sites' (FID Method Statement), which gives detailed procedural and operational guidance on the use of the FID that is not covered in this method statement but is an essential component of the successful completion of a landfill gas surface emissions survey (emissions survey). It should also be read in conjunction with the risk assessment for flux box surveys.

enitial's Method Statements have evolved over recent years and are based on industry best practice, together with legislation and guidance from various sources. Feedback gathered from our customers and the Environment Agency via waste management licence and permit audits has also been incorporated.

The Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) 2002 require operators to have systems in place to reduce or mitigate the risk of an explosive atmosphere forming and where it does to eliminate or reduce the risk of personal injury or harm to an acceptable level. The ESA Industry Codes of Practice (ICoPs) have been reviewed during the writing of this method statement and relevant information has been incorporated where appropriate.

The Environment Agency Guidance on Monitoring Landfill Gas Surface Emissions LFTGN 07 V2 March 2010 (Environment Agency guidance) was consulted during the production of this document.

Monitoring of landfill gas surface emissions will generally be conducted on filled and restored phases with a permanent cap or temporarily capped area(s), not accepting waste and not expected to do so for a period of at least three months.

The monitoring of landfill gas surface emissions comprises of two stages:

Initially, an FID survey or 'walkover survey' will be conducted. The purpose of the initial walkover survey is to identify any inadequacies in the landfill infrastructure and cap (i.e. gas containment and collection system, leachate installations and other landfill infrastructure). Any deficiencies identified will be remedied such that the 'concentration of gas is low' prior to the commencement of the flux box survey;

Subsequently, the quantitative flux box survey is carried out to measure the flux of methane emitted through the intact cap at a number of representative locations.

2.0 PRE MONITORING PROCEDURES

2.1 Pre-site Visit Preparation

- Check to ensure that all the correct personal protective equipment (PPE) is available and is worn at the appropriate time. The PPE must be in good order, clean and fit for purpose.
- Check the location of the site and the precise location of the flux box survey.
- Ensure that your vehicle is in good and safe working condition and suitably clean and organised.
- Obtain all necessary keys/equipment to enter site safely and to gain safe entry to the survey area.
- Make sure that the results of any risk or CoSHH assessments applicable to this activity have been taken into account.
- Check for any site/company specific documentation that may be required for work to begin, such as site inductions and permit to work documents. If this in not in place, contact the client prior to the site monitoring/sampling visit in order to bring this information up to date, if necessary
- It may be necessary to contact the site prior to the visit to assess the likelihood of access to the sampling points.
- Any instrument that is faulty or showing erroneous readings should be removed from daily use until either repaired or recalibrated.

2.2 On-Site Pre-Monitoring Checks

- Put on the appropriate personal protective equipment, wearing disposable gloves at all times during the work activity.
- Landfill gas is potentially toxic due to the potential presence of a number of substances including carbon monoxide and hydrogen sulphide, consequently a multi gas alarm should be worn (as close to the wearer's mouth as possible). Refer to enitial's landfill gas and personal gas alarms document for further information
- Sign in at the site office or weighbridge/ log in to the lone worker system in line with enitial's Lone Worker Policy.
- Check for additional hazards that may be present – on an open site this involves communication with site staff to establish any hazardous waste tipping for example asbestos tipping (refer to enitial's pre-monitoring communication memo for details).
- Take any necessary keys and equipment required to enter the site safely.
- Familiarise with any site-specific risk assessments including the closed site risk assessment if applicable.
- Make sure that a mobile phone is readily available, however a phone should ideally not be used within any DSEAR zone except in an emergency – move outside the zone e.g. further than 2.2m away from a gas well in all other situations. ESA ICoP5 (August 2007) states that mobile may be used in zone 2 but not in zone 1 or 0.
- Adhere to the safety codes and take caution when crossing haul roads, operational areas and when surveying in operational areas.

- Ensure you have made yourself seen to any mobile plant drivers when monitoring/sampling in operational areas.
- Ensure that all equipment is carried around the site without causing damage to it.
- Check the field record sheet(s) from previous sampling exercises and site observation records for any relevant information that may relate to safe working.
- Plan work to minimise excessive carrying of equipment and/or sampling bottles – liaising with colleagues if work is spread over a month, use of a colleague to help if on site or working near-by or allowing enough time to make more than one journey to minimise the weight being carried.
- Vehicles must remain on the designated roadways whilst being driven on site. Vehicles may only deviate from this when permission is given from the site supervisor/manager.

3.0 WALKOVER SURVEY

The initial walkover survey will be carried out in accordance with the FID Method Statement.

The purpose of the walkover survey is to identify areas of the cap, gas management system and other site infrastructure which require remediation prior to the second stage of the emissions survey.

Prior to undertaking the walkover survey, information relating to the site will be gathered. The operator will provide up to date topographical plans, preferably with contour information (to enable slopes to be identified and gradients calculated), site plans showing landfill and cell areas with all available information in relation to temporarily capped, capped and restored areas and capping construction details (in order to identify junctions of capping areas and types). In addition, information detailing the current gas management system and other site related infrastructure within the area to be considered for the emissions survey will be provided. This will enable an electronic plan with accurate infrastructure locations, cell/capped area boundaries and a list of relevant infrastructure (including co-ordinates) to be produced in order to aid the walkover survey.

The walkover survey will be carried out using a portable FID or similar and will concentrate on the zones, features, frequencies and locations as detailed in the FID Method Statement. Following the identification of any deficiencies and subsequent remediation work, the areas will be retested until it can be demonstrated that the concentration of methane in air is less than 100ppmv for a permanently capped and restored area and less than 1,000ppmv for any discrete feature such as a leachate or gas well.

4.0 FLUX BOX SURVEY

4.1 Survey approach

Flux box surveys on landfill sites are subject to many variants. Unless otherwise instructed by the Client/Operator, the sampling time at each location shall be in accordance with the EA Guidance. If requested by the Client/Operator, the sampling time may be reduced to a set time for each location, this can vary from 5 minutes to 30 minutes per test in order to enable a reasonable time frame in undertaking flux box surveying and data collection on large sites (the sampling period may continue above the set timescale if it is deemed that conclusive data may be obtained in a reasonable time frame – where this is applicable, the Environment Agency guidance will be followed for determining the time over which the location will be assessed/tested). While this method of shorter sampling time may not be a sufficient amount of time or data collection to provide conclusive data for all locations, it will provide conclusive data for a number of locations and identify locations that may require further testing with extended sampling times. The benefit of this method is that indicative results can be obtained in a reasonable time frame, whilst also identifying the possible need and extent of additional sampling. The Environment Agency guidance states that it may be necessary to take measurements over a period of an hour to achieve adequate levels of confidence in the measurement of the rate of flux.

The flux box survey will not normally be undertaken until any identified deficiencies in the landfill infrastructure and cap have been rectified. Only when it can be demonstrated that the concentration of methane in air meets the criteria detailed in Section 3.0 shall the flux box survey commence.

The objective of the flux box survey is to quantify the total releases of methane from the surveyed area. The Environment Agency set standards for gas emissions which are expressed as the average flux of methane from the surface of the cap in each zone. The emissions standards are:

Permanently capped zone: 0.001 mg CH_4/m^2*/second; and*

Temporarily capped zone: 0.1 mg CH_4/m^2*/second*

Where a discrete feature within a zone is identified, this is not included in the main flux box array of the zone and emissions from this feature can be calculated separately.

The flux box survey will be undertaken at a number of sampling locations determined by the use of calculations based on surface areas. The rate of change in methane concentration within each box is measured over a set time period, the flux of methane from that part of the surface is then calculated. If the flux of methane cannot be calculated for a sample location, that location may require a second measurement over a longer period of time. Consultation with the operator will be undertaken to confirm if further sampling will be required.

4.2 Zones and features

Before beginning the flux box survey, all information gathered during the initial walkover survey and subsequent remedial works will be reviewed to enable adequate defining of 'zones' and 'features'.

A zone is an extensive area of landfill surface that will generally be covered uniformly with a single capping system that is intact and has a consistent slope.

A zone does not have to follow any geographical aspect of a landfill and may cover part of or a number of landfill cells together. Two types of zone are relevant to a flux box survey and consist of permanently capped and restored areas and temporarily capped areas that will not accept waste for a period of least three months.

A feature is a smaller, definable area or installation from which methane emissions are higher than in the adjoining surrounding zone.

Examples of features are surface fissures, intrusions (likely to be leachate installations and gas extraction wells), gas pipelines, areas of stressed vegetation, lack of uniformity in the surface, side slopes and junctions in liners or capping materials.

The Environment Agency guidance should be consulted when considering the use of features and detail is given as to what constitutes a feature. In summary, for an area or item to be designated as a feature it must show elevated emissions over several traversed lines in the walkover survey or very high releases for a point source. The key issue is that features should be identified so that, if they do not comply with the emissions standards given above, they could be readily defined and remediated.

4.3 Number of monitoring locations

The number of flux box sample locations required (n) within each zone depends on the surface area of the zone in m^2 (Z) and will be determined using the following calculations:

Zones of area greater than 5,000m^2:

$$n = 6 + 0.15 \sqrt{Z}$$

Example calculation:

Zone area = 10,000m^2

Number of measurements (n) = 6 + 0.15 √ 10,000 = 21

Average monitoring spacing = √ (10,000 / 21) = 22m

Zones of area less than 5,000m^2:

n = (Z / 5,000) x 16 (subject to a minimum of 6 locations)

Example calculation:

Zone area = 4,000m²

Number of measurements (n) = (4,000 / 5,000) x 16 = 13

Average monitoring spacing = √ (4,000 / 13) = 17m

The flux box sample locations will be presented on a site plan, with each location having a unique identity denoting the zone or feature reference and sample location number. The sample locations will be verified by the use of a high sensitivity hand held GPS having an accuracy of 3m. Co-ordinates for each sample location will be provided prior to the survey being undertaken (i.e. proposed) or recorded during the survey process.

4.4 Meteorological factors

Surface emission rates can be affected by factors such as rain, frost and changes in atmospheric pressure. Rain or frost affected soils may be less permeable to gas and reduce the surface flux. Equally, frost may also lead to higher emissions due to the reduction in the rate of biological methane reduction in the soils.

The flux box survey should not be carried out under inappropriate meteorological conditions such as during periods of extreme high or low atmospheric pressure, during and following periods of heavy rainfall and during periods of frost.

4.5 Temporal frequency

Sampling should be undertaken when the emissions are representative of the normal operation of the gas management system. Gas management system data should be checked to confirm that the period of monitoring coincided with normal operating conditions.

5.0 MEASURING EMISSIONS USING THE FLUX BOX

5.1 The flux box

The flux from any zone or feature will be determined using a gas tight receptacle of known volume and basal area. The application used for the flux box will be a white plasterer's bath fitted with two ports at the top. The inlet port is used for pressure equilibration and the outlet port will be connected to the FID by the use of a quick release-monitoring valve. The external and internal components of the flux box will be constructed as recommended in the Environment Agency guidance.

5.2 Sealing against the surface

To give accurate measurement of emitted gas, a temporary seal is required while undertaking each sample to prevent air ingress and gas escape in windy conditions. It is essential that an adequate seal is maintained at all times during the sampling period in order to attain accurate data, otherwise the survey may not reflect the condition of the capped surface accurately. A non adequate seal is one of the most common causes of erroneous and uncertain data.

The seal can be provided simply where there is a suitably level and uniform surface by placing a weight on the flux box (which may include standing or sitting on the flux box). Where there is no established vegetation on the landfill, loose material on the surface can be levelled using a spade to provide an adequate seal on a level and uniform surface, taking care not to excavate any surface as this may affect the pathway of gas through the soil pores.

Other methods of providing or improving the seal may include:

- Using moist plastic clayey materials which are present on site to form a seal around the lip of the flux box;

- Using 100mm diameter geotextile socks filled with wet sand and compacted around the base of the flux box covering the rim. The socks can be transported to each location using 2 ‘flexi tubs’ or a wheelbarrow. (6 socks are required per flux box - each sock being be cut to 75cm in length and filled with approximately 8kg of wet / damp soft building sand, 1 x 25kg bag sand divided between 3 socks, the ends of the socks are be sealed with cable ties, when not in use the socks are to be be stored to ensure the sand doesn’t dry out – e.g. in polythene bags);

- Using a 3:1 sand / bentonite powder mix. The seal area will be prepared prior to positioning and starting the flux box test by using the flux box or a template to determine the foot print, the ground will be prepared and the seal material placed around the footprint in readiness for the positioning of the flux box. Once the flux box test is positioned and started the seal material will be towelled around the rim / base to provide an adequate seal. The seal material can be reclaimed and reused on additional tests and can be transported to each location using a flexi tub.

Where excessive vegetation is present, cutting back (normally with hand tools) may be required so as not to interfere with the seal. It is important to leave the area vacant for a few minutes before sampling to allow any volatile organic compounds that might arise from freshly damaged plants to dissipate.

Some sealing imperfections will stem from the heterogeneity of the surface profiles at the sampling locations. If no other suitable locations are available, monitoring should proceed but you should record any reservations about the effectiveness of sealing.

5.3 Sampling procedure

Each sampling location will be located using the proposed GPS co-ordinates for that particular sample reference. This information will generally be provided following the walkover survey. Each location will be inspected for practicability and safety. If required the exact position may be modified, taking care not to distort the survey. The revised co-ordinates of any modified sampling location will be recorded.

Prior to sampling, the weather, atmospheric pressure, wind direction/speed, ambient temperature and time will be recorded. In addition, information on the current status of the gas management system will be obtained where possible.

The FID will be started and allowed to stabilise. Zeroing of the FID will be undertaken in accordance with the FID Method Statement.

The flux box will be placed open face down and temporarily sealed at each sample location. The FID will then be connected and readings will be recorded over a set time period, taking readings at 15 second to one minute intervals, depending upon the time period. The values for each flux box sample location will be recorded on a field log sheet and where practical, a laptop computer or hand held PDA device may be used to record data during sampling. A hand written copy will also be taken for quality assurance purposes and to aid data accuracy checks.

5.4 Monitoring features and anomalies in the cap

Features and anomalies in the cap include surface fissures, intrusions (likely to be leachate installations and gas extraction wells), gas pipelines, areas of stressed vegetation, lack of uniformity in the surface, side slopes and junctions in liners or capping materials.

Where it is impossible or impractical to use a flux box on features that stand proud of the landfill surface or an adequate seal may not be possible, the feature will be classed as a '*small feature*' (see Sections 6.2.4, 6.3.2 and 6.3.3 of the Environment Agency guidance) and the gas concentration alone will be checked with the use of the FID. If the local concentration (less than 5cm from the point source) of methane in air is <100ppmv with no measurable gas flow, it may be assumed that a feature is not contributing substantially to the overall emissions of methane.

The air in the vicinity of leachate installations, gas extraction wells/pipework and other features will be checked with an FID. If the local methane concentration is >100ppmv, remediation works will be required until it can be demonstrated that the local methane is <100ppmv or the monitoring method will require modifying in order to quantify the flux.

Fissures, where identified, can be divided into three types - small, medium and large. It is unlikely that large fissures will be present at the survey stage. Small (surface crazing) and medium fissures may be surveyed using the FID as a '*small feature*' or using the flux box at the frequencies outlined in the Environment Agency guidance.

6.0 DATA PROCESSING AND REPORTING

6.1 Calculating flux in individual flux boxes

The flux can be calculated for each sample location using the following equation:

$$Q = V / A \times (dc / dt)$$

where:

Q = flux density of the gas (in mg/m^2/second)
V = flux box volume (in m^3)
A = flux box footprint (in m^2)
dc / dt = rate of change of gas concentration in the chamber with time (in mg/m^3*/second).

* to convert methane concentration readings from ppmv into mg/m^3, the ppmv value is multiplied by 0.714 (Environment Agency guidance).

The rate of change of the gas concentration (dc / dt) is determined by plotting the data on charts with the x-axis representing time (in seconds) and the y-axis representing mass concentrations (in mg/m^3).

After a certain period of time, the concentration of methane within the flux box stabilises or can fall. This may be due to factors such as methane saturation in the flux box, back diffusion into the ground, or the effects of methane oxidisation. In other cases, the first few minutes of monitoring may be characterised by steady or even slightly decreasing methane concentration instead of the expected increase. This phenomenon can be the result of wind effects in the period before the box is fully sealed or the effect of the gas abstraction system.

To eliminate these effects, individual data points are removed from the ends of the dataset – first from the last data collected and then the initial readings, until a correlation coefficient (r^2) >0.8 is obtained. The data will then show a correlation coefficient illustrating a high degree of association between time (t) and concentration (c).

The data will be considered acceptable if the following criteria are achieved:

The correlation coefficient r^2 >0.8;
The graph has more than five data points;
The change in concentration is >0.

The initial rate of change is the most representative of the flux in the absence of the enclosure. Therefore, least priority should be given to later samples if eliminating data points.

If these criteria are not satisfied, the methane flux must be reported as being at the lower detection limit of the method (i.e. 5×10^{-5} mg/m^2/second or the limit of detection of the flux box used).

Where data is 'at the limit of detection', i.e. the r^2 value of >0.8 could not be attained, the data with the highest r^2 value or most representative data may be used, subject to the possibility of retesting the location depending on the overall/average Q value for that zone (i.e. if the emission rate is low and not likely to effect the overall average Q value of the zone then retesting is not deemed necessary, conversely if the emissions rate is high, causing the zone to exceed the Environment Agency standards for gas emissions, and the data is not conclusive, the location may be retested. The Client/Operator will be consulted as to the requirement and extent of any retesting).

The flux calculated from each individual flux box sample location and feature location can be calculated as an average flux of methane from the surface of the cap in each zone and can be compared with the emissions standards set by the Environment Agency as detailed in Section 4.0 (Permanently capped zone: 0.001 mg CH^4/m^2/second and temporarily capped zone: 0.1 mg CH^4/m^2/second).

6.2 Reporting of data

The data will be reported to the client in the format of a PDF file report outlining how the survey was conducted, any observations made and recommendations along with a summary of the average flux of each zone or feature. This report will be reviewed by a competent person prior to issue.

Appended to the report will be drawings showing the boundaries of zones and location of samples taken, along with all infrastructure tested on site. A table of results will be included detailing sample identifications, GPS co-ordinates, recorded ppmv values, linear regression calculations, calculated value of V / A, calculated value of dc / dt and final Q value for each sample completed. Comments will also be included in the table of results.

7.0 SITE EXIT

- Before signing out of the lone worker system or weighbridge/site office as applicable, the operative must ensure that the site is left in a tidy condition. All materials used during the working day (where not specifically meant to be left on site) must be removed prior to leaving. This will include picking up any litter/debris/packing materials arising from the technicians work or associated activities. All H&S related issues noted on site must be reported to the site operator/representative and passed on to the relevant person responsible for H&S within enitial.

Appendix 8

1.0 Purpose

To provide clear, focused guidance to Logistics Centre operators on the identification, response and handling of unscheduled, site-based events that will, or have the potential to have, a significant impact on health, safety and / or environmental compliance.

This work instruction also outlines the process for appointing an Event Manager, describes their responsibilities and provides an indication of the threshold of 'seriousness' when this would be appropriate.

2.0 Related Documents

EC4 Notifications Procedure
HSQE 04 Accident, Dangerous Occurrence and Incident Reporting
HSQE 04.5 Emergency Spill Response
HSQE 12 Site Explosion Protection Document
HSQE 17 Emergency Preparation and Response
LC-01 Logistics Centre Fire Line Process Flow

3.0 Overview

During the periods outside of 'normal working hours' the Logistics Centre acts as the central point of contact and will distribute all relevant and necessary updates on the status of significant unscheduled events. Significant events are those which are considered likely to pose a risk to health, safety, environment and / or property. There may be circumstances where emergency services must be called e.g. fire.

It is recognised that under certain circumstances, it may not be appropriate for the Logistics Centre to manage such events. In these circumstances, an appropriate Event Manager should be nominated. The responsibility of the Event Manager is to control the incident and communicate regular updates on progress to the Logistics Centre who will then relay the updates via the correct communication channels to the relevant audience.

Where a mains supply has been lost during normal working hours, the Event Manager shall be the Electrical Engineer for the region.

Outside of normal working hours the Event Manager shall be the On-call Technical Resource.

4.0 Sequence of Response

1. Identify and assess the situation and determine the appropriate course of action.

2. Ensure there is a clear understanding of what has happened or is likely to happen.

3. Send an initial notification e-mail containing the relevant information.

4. Send regular updates throughout the duration of the event, at significant milestones. Examples are (but not limited to); technician on site, suction under control, contractor called with an estimated arrival and if appropriate, who the Event Manager is.

5. Appoint and liaise with the Event Manager and relay their regular updates.

6. Communicate the close out of the event.

5.0 Event Identification

Significant events may be identified and reported by the general public, site personnel, other site users or by alarms received into the Logistics Centre.

5.1.1 Safety, Health and Environmental Events

For all Safety, Health and Environmental Events, the following should also be established:

1. If anyone is hurt and how seriously?
2. If first aid is required? Contact the emergency services if there are no suitably trained personnel available.
3. If the emergency services required? If so ensure that they have been contacted immediately.
4. If there a risk to the environment or nuisance to local population? e.g. flooding, fire, spillage, noise.
5. If the site been made safe and work stopped and cordoned off? Measures should be taken to protect evidence. In the case of engine or equipment failure; **no** clear up work should be undertaken other than necessary to protect the environment.

In all the above an e-mail must be sent to the DL 'area' address together with both the safety, security and compliance addresses.

5.2 Engine and/or Gas Utilisation Plant Failure

Where a total loss of gas extraction occurs (i.e. a gas plant trip or engines/flare are off) then a Compliance Warning must be sent in line with 'EC4 Notifications Procedure'.

Failures of critical plant may result in a complete loss of active gas extraction. A Compliance Warning must be raised where active gas extraction has been lost.

5.3 Loss of Mains Electrical Supply

In the event of a loss of mains electrical supply resulting in the loss of active gas extraction, then a Compliance Warning must be raised in line with the EC4 Notifications Procedure.

During normal working hours: the relevant Electrical Engineer must be contacted to adopt the role of Event Manager. The process described in 5.3.1 and 5.3.2 must be followed.

Outside of normal working hours: 5.3.1 and 5.3.2 must be enacted by the Logistics Centre in consultation with the Duty Engineer.

5.3.1. Initial investigations with the Distribution Network Operator (DNO)

- Explain there has been a loss of mains and enquire;
  - Are there any reported issues/known issues?
  - The likely time of power restoration
- If the DNO is unaware of any loss of mains power, ask them to investigate. Emphasise that power supply is required to maintain environmental control of landfill gas.

5.3.2. If the DNO is unable to confirm an expected time for restoration of mains power or if there is a risk that the Notifiable Duration for the site will be exceeded, then a back-up generator must be provided.

a. Logistics Centre shall consult the Electrical Engineer, or escalate the matter (see escalation table in Section 6.2)
b. Arrangements must be made for the supply of a generator. The generator supplier must be provided with information relevant to the connection between the GUP and generator, i.e. ‘Powerlock’ connection.
c. The generator supplier must provide;
   - The estimated time of arrival for the generator and its engineer
   - How long the fuel supply will last
d. Logistics Centre and the generator supplier will arrange for refuelling of the generator in advance of the fuel levels becoming depleted.
e. Where extraction is dependent on the generator, periodic checks must be made by the Logistics Centre to ensure continued operation of the generator and flare. This may require sending a Technician. A record should be made between shift handovers within the Logistics Centre.

A number of high compliance sites have permanently installed generators. Should a loss of mains occur and there is risk of the Notifiable Duration being exceeded then a Technician can be directed to site to start the backup generator and resume extraction.

- Offham
- Enderby Warren
- Greengairs
- Llanddulas
- Humberfield

- Poplars
- Attlebridge

A technician must be dispatched to site to ensure that the generator is running and to start the GUP and ensure stabile extraction.

Once controlled extraction has been confirmed, the Compliance Warning can be closed. Checks on the generator and its fuel must still be actioned until mains power has been restored.

5.4 Cable strikes or pipe work infrastructure damage

All cable strikes and infrastructure damage however caused must be notified by the EC4 Notifications Procedure.

A reminder to the individual reporting of the event should be given to ensure that an incident report must be completed.

In the case of a cable strike that significantly affects the operational performance of the site then the event should be escalated according to the table in 6.2 and warning e-mails sent.

In both cases, attention should be paid to ensure the safety of all personnel on site and they should be notified as far as possible, whether directly involved or not.

6.0 Communication

It is important that the information being communicated is accurate before being distributed. Please proof read all e-mails.

6.1 Notification of Events

A Compliance Warning should be raised using the Compliance Warning portal through the Citrix application.

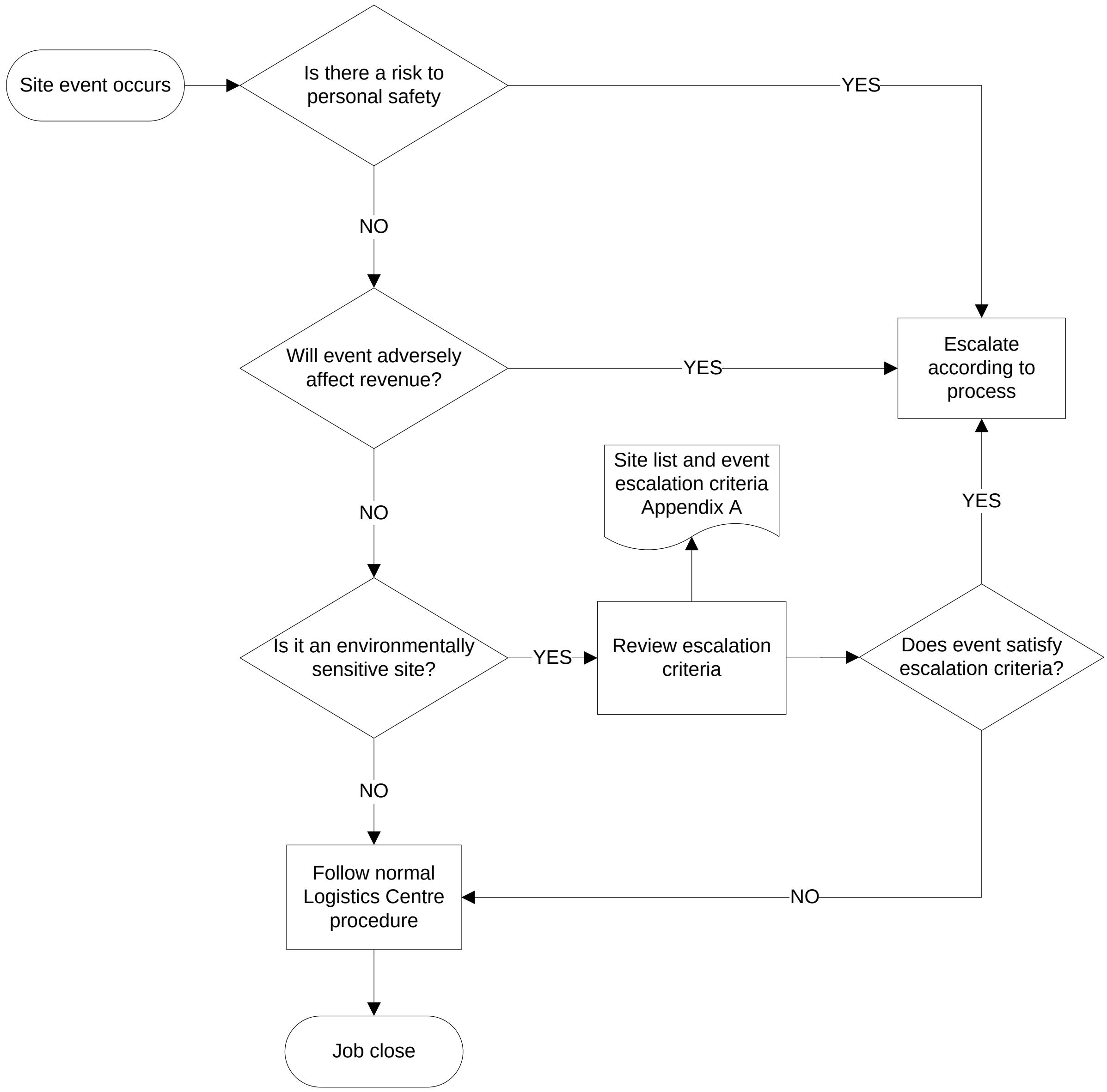
6.2 Escalation by telephone

In the duty technician is non-contactable or further advice is required then the following escalation path should be invoked:

- Whenever a person is unavailable a voice message should be left, and a back-up text sent
- Leave a reasonable time (at least 15 minutes) for a response before moving on to the next stage.
- If you need to contact the land owner (i.e. FCC) in an emergency, please see the Logistics Centre reference information spreadsheet.

Field Services Team	Landfill Gas Team
1. On Call Technician	1. On Call Technician
2. Lead Technician	2. Senior Technician
3. Root Cause Engineer	3. Regional Manger
4. Regional Operations Manager	4. Regional Operations Manager
5. Unscheduled Manager	5. Head of Landfill Operations
6. Chief Executive Officer	6. Chief Executive Officer

7.0 Instructions



Document Training Record

Number:	**EMS-4-13.08-LNF**
Version:	**6**
Site:	**Milton Landfill Site**

This table is deemed to be an official training record and must be kept on file.

Please ensure that all relevant employees are made aware of the contents of the document indicated above.

Print employee name	Employee signature	Date	Trained by:

IRELAND | UK | UAE | BAHRAIN | KSA

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www.byrnelooby.com

Email: info@byrnelooby.com