Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Bryn Posteg

Sundorne Products (Llanidloes) Limited

Landfill Gas Risk Assessment

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DISCLAIMER

EXECUTIVE SUMMARY

This Landfill Gas Risk Assessment for Bryn Posteg Landfill Site has been undertaken to support a Permit Variation Application, proposing new restoration profile for the site. The risk assessment takes into consideration additional waste tonnage proposed to be accepted to create the proposed profile, and updates the phasing of capping and gas extraction infrastructure installation as a result.

The assessment was undertaken using GasSim 2.5 and the associated Tier 1 and Tier 2 screening modules. The existing conceptual model for the site was updated with projected waste inputs and recent monitoring data.

Overall, the predicted gas generation rates are similar to those predicted and assessed previously. Validation against extraction flow rates for the engine and flare suggest that the site is more-accurately modelled by the 'average' scenario. However, the currently available data is not sufficient to conclusively exclude the possibility that gas generation rates may be as high as modelled by the 'wet' scenario. Nevertheless, the risk assessment was carried out on the basis of the more-conservative Scenario 2.

GasSim2.5 was found not to be able to reliably simulate the effect of transient conditions on one part of the site, (such as potentially elevated leachate in Cell 9D). In terms of impact on gas generation and site impact, saturated waste would have low degradation rates (as described in LFTGN03 and the GasSim manual), and any such conditions are likely to have decreased the amount of gas generated and emitted from this part of the site. Therefore, such conditions would likely lower any potential impact from landfill gas on human health or the environment for a cell where gas extraction is not extensive. It is not possible to use the results of the GasSim modelling or validation to comment on the likelihood of such conditions having occurred in Cell 9D.

Tier 1 Risk Screening of the gas emissions from the landfill showed that the majority of emissions are insignificant and do not require further modelling. However, some of the surface and engine emissions were identified as potentially significant and that further modelling was required. The Tier 2 model was therefore run for these compounds.

The Tier 2 atmospheric dispersion module of GasSim2 is an in-built AERMOD Gaussian plume dispersion model which simulates atmospheric dispersion of gases emitted from the engines and flares as well as surface emissions and determines the maximum ground-level concentrations of individual gases for a given year at any defined receptor. The Tier 2 modelling exercise assesses the concentration of those emissions at each defined receptor against short term and long term environmental assessment levels and environmental quality standards.

Tier 2 modelling confirmed that no air quality standards would be exceeded at any of the identified off-site receptors except for As when modelled at the 95th percentile. Since no As has been detected in trace gas analyses at the site, is considered more appropriate to model this at the 50th percentile, when no exceedances at offsite receptors are predicted.

The review of the predicted global impact results indicates that optimised gas extraction and utilisation or flaring is required to minimise the site's global warming potential.

BRYN POSTEG LANDFILL GAS RISK ASSESSMENT

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1.0 INTRODUCTION

1.1 Report Context

1.1.1 Bryn Posteg landfill site is operated by Sundorne Products (Llanidloes) Limited, which is part of the Potters Waste Management group of companies. The associated landfill gas plant is also operated by Sundorne Products (Llanidloes) Limited, although owned by Gwynt Cymru Limited which also is part of the Potters Group. The landfill gas plant currently consists of two 1 MW engines and a 2000 m^3/h flare.

1.1.2 The assessment has been compiled in accordance with the Environment Agency H1 Environmental Risk Assessment for Permits, Annex F Air Emissions (v 2.2 December 2011) [as adopted by Natural Resources Wales].

1.1.3 The assessment was undertaken by Caulmert Ltd using GasSim v2.5 and the incorporated Tier 1 and Tier 2 modules, where the Tier 2 is a simplified AERMOD module. The existing site specific GasSim model submitted with the previous LFGRA for the site in 2009[1] and subsequently amended in 2010 to include a more comprehensive list of trace gases, was updated with recent site data in March 2018 (report number 3428-CAU-XX-XX-RP-V-0302). This model has been amended to reflect the risks associated with additional waste that would be taken as part of completing the site to the proposed restoration contours (as described in document reference 3428-CAU-X-XX-RP-V-0313. The updated GasSim model was used to run the Tier 1 and Tier 2 screens in the Air Quality Assessment modules.

1.1.4 This report presents the site conceptual model, revision to the model input parameters to accurately reflect the proposed activities and uses the GasSim model and the subsequent Tier 1 and Tier 2 (AERMOD) results to assess the impact the site would have on the surrounding area.

1.2 Site Location and Surrounding Land-use

1.2.1 Bryn Posteg Landfill Site is located approximately 2.8 km south east of Llanidloes, Powys, at NGR SN970822. The site is operated by Sundorne Products (trading as Potters Waste Management). The site is accessed via the B4518, the Llanidloes to Tylwch Road. The site location is marked by the red circle in Figure 1 below.

1.2.2 The site is situated amongst predominantly agricultural land. It is bound to the west by the B4518. Few residential properties are situated within close proximity to the site (described in Section 2 below). The site and the surrounding receptors are shown on Drawing 3428-CAU-XX-XX-RP-V-1806.

1.2.3 The landfill has a landfill gas utilisation plant (flare and two engines), and their role in managing the gases generated as a result of the waste decomposition are considered here.

[1] Egniol Consulting Ltd, Report number B/3345: Assessment of Landfill Gas Generation Rates at Bryn Posteg Landfill. March 2009

The site also has a leachate treatment plant, Material Recycling Facility (MRF), a Composting Facility and a Biomass boiler. The potential emissions from these facilities are considered elsewhere and do not form part of this landfill gas risk assessment.

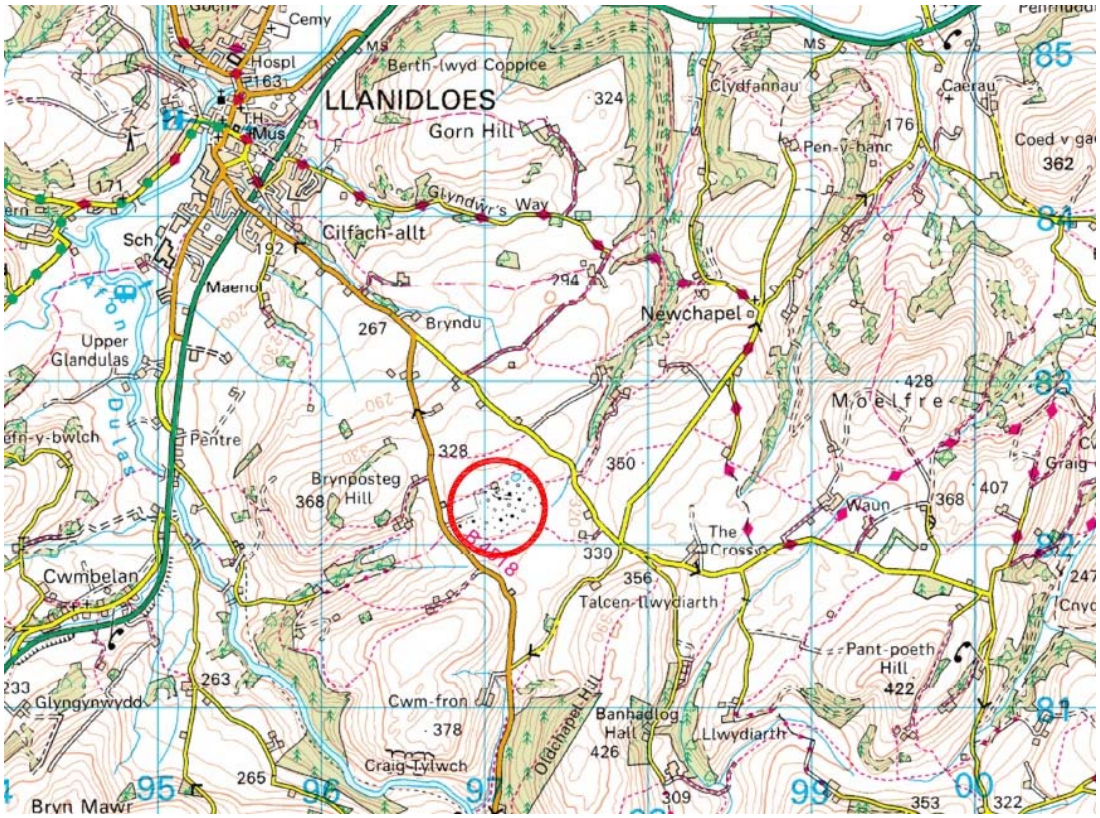


Figure 1: Site Location Plan

2.0 BACKGROUND

2.1 Site History

2.1.1 The landfill site at Bryn Posteg has been developed in the surface void associated with an old lead mine. Approximately 17 hectares of the site have been subject to controlled landfilling since 1982.

2.1.2 Phases 1-5 were operated by Montgomery, later Powys County Council, between 1982 and 1997. Evans Logistics Ltd operated Phases 6 – 8. Potters acquired the site in 2005. Phases 9A – 9D have been developed in the southern part of the site, and waste is currently accepted in Phase 9D. Between 2008 and 2017 additional tipping was also 'piggy-backing' onto the existing site (Phases 3A, 3B, 4A and 4B).

2.2 Landfill Details – Site Conceptual Model

Engineering and Restoration

2.2.1 Phases 1-5 were operated between 1982 and 1997. This part of the site is believed to be lined with a mineral liner (1 m thick re-compacted clay) but no validation of the construction took place. Phases 6 – 8 are lined with a composite liner consisting of a geosynthetic clay liner and a geomembrane. Phases 9A-9D are lined with 0.5 m mineral liner, geosynthetic clay liner and geomembrane.

2.2.2 Phases 1 to 9C are all capped. Phases 1 and 2 are believed to be capped with 1 m re-compacted boulder clay. Phases 3 to 5 (except Phase 4B) have received a 1 mm lap-lay geomembrane liner covered with 0.75 m restoration soils. The final capping on Phase 4B and 6 is welded geomembrane covered by 0.75 m of restoration soils. Phases 7 and 8 are capped with a GCL cap covered with 0.4 m of subsoil, to be extended to a minimum of 1 m. Phases 9A to 9C are capped with geomembrane (welded for cells 9B onwards) and restored with 1 m of soils.

Source Term – Waste Inputs and Properties

2.2.3 The site accepts municipal waste, which is reported to consist of 60-70% household waste and 30-40% commercial trade waste. Some industrial waste is also accepted. As far as in known, this composition has remained similar during the time Evans Logistics and Potters have operated the site, and it is also assumed that it will remain similar until the site's completion, projected to be in 2018.

2.2.4 The waste accepted at the site is processed in a Materials Recycling Facility (MRF). The outputs from the process included metals which are screened out and recycled, oversized fraction (>80 mm) which is landfilled, and fines (<80 mm) which are composted for two weeks and subsequently landfilled.

2.2.5 The materials accepted at the site are putrescible, and as such will generate landfill gas (methane, carbon dioxide and a range of trace gases) upon biodegradation. As such the waste at the site represents a source of landfill gas.

2.2.6 The waste tonnages, waste types and phasing used in this assessment are a combination of historical data from the previous GasSim model (for wastes prior to 2010), and information from Potters including waste returns (for wastes accepted after 2010). The waste breakdown is assumed to remain similar to that in 2017 for the remainder of the site's operational life, until its proposed completion in 2019. A revised version of the default waste composition is used for the site, with an average non-degradable percentage being approximately 30%, rather than the default 46%, which is considered to better reflect site-specific conditions. A breakdown of the GasSim waste input parameters and justifications can be found in Section 4.2.

Landfill Gas Plant

2.2.7 The site has an active gas control system designed for positive collection and combustion of landfill gas in an engine. The gas plant also contains a high-temperature flare stack as back-up should the engine(s) fail. Landfill gas extraction wells are installed in all Phases, and further landfill gas extraction wells are progressively and retrospectively installed as site infilling progresses (the locations of gas extraction wells and the extraction system layout are included on Drawing 3428-CAU-XX-XX-DR-V-1807).

2.2.8 The gas plant is located along the northern boundary of the site, 400 m to the east of the site entrance (Drawing 3428-CAU-XX-XX-DR-V-1807).

2.2.9 A landfill gas flare was initially installed on site in August 2000. The flare was installed by Organics Ltd and had a maximum gas flow rate of 750 m^3/h. The Organics flare was replaced with a GTS flare in 2011. The GTS flare is a modern high-temperature enclosed flare which has a maximum capacity of 2000 m^3/h.

2.2.10 The current landfill gas engines consist of a Caterpillar CAT 3516TA, that was installed at the beginning of 2003 by Finnings UK Ltd and then Gwynt Cymru purchased a second-hand CAT 3516 A+ engine, that was installed in 2011.

Pathways

2.2.11 Gas generated within the waste will travel along preferential pathways and be emitted into the atmosphere or surrounding strata, unless it is collected via a gas extraction system. The site has an active extraction system, which abstracts the gas and routes it to utilisation and treatment plant (two engines and a flare). Therefore, under normal operating conditions of the system, the exhausts of the engines and flare represent point sources of emissions.

2.2.12 Any residual gases not captured by the gas collection system will be emitted as either:

- point source emissions from parts of the gas or leachate extraction system that are not air-tight; or
- diffuse emissions either though the landfill surface, e.g. from uncapped areas.

2.2.13 Emissions through the surface are controlled by the capping of the waste together with active gas extraction. Diffuse emissions away from the waste and into the surrounding strata are controlled by the engineered liner of the waste. If gas escapes through the liner, the migration of the emissions is then controlled by the properties of the surrounding strata, including porosity and moisture content.

2.2.14 According to previous ground investigations (previously reported and not repeated here), the site is underlain by boulder clay. Locally the boulder clay is described as soft grey orange mottled sandy silty clay with mudstone fragments and gravel becoming stiff with depth. These deposits are generally less than 4 m thick, and contain gravel lenses in places (as demonstrated by trial pits within Phase 9).

2.2.15 This overlies the Llandovery Series. The Llandovery Series comprises locally weathered mudstones and shales. The mudstones contain close-spaced fractures with fracture sets reported at 60 and 90 degrees. Fine clays are reported to fill the discontinuities.

2.2.16 Gas flux within the superficial deposits will occur through the un-saturated part of the sand and gravel lenses. The extent of migration may be limited by the spatial distribution and interconnection between these lenses. Migration of gas will be inhibited through the boulder clay due to the low permeability of these deposits.

2.2.17 The perched groundwater reported as being present within the superficial deposits and above the Llandovery Series will act as a barrier to gas fluxes penetrating down to the underlying bedrock. The strata below the site have a negligible permeability and are classified as a non-aquifer (Groundwater Vulnerability Sheet 20), indicating that primary porosity is very low. It is therefore considered unlikely that any gas migration would be occurring through the strata in the Llandovery Series.

Receptors

2.2.18 Bryn Posteg landfill site is situated in a rural area with no close areas of dense population. The nearest town of Llanidloes is situated 2.8 km to the north-west of the site. The closest properties to the site are Valley View, Rhoswen, Pant and Bryn Posteg Farm, within 250 m of the site boundary.

2.2.19 B4518 road is located adjacent to the southwest of the site. To the north, north-east and south-east is predominantly agricultural land. Tylwch Road is located adjacent south-west of the site.

2.2.20 In accordance with the EA H1 Guidance, any Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) or Ramsar sites within 10 km radius of the site should be considered. The guidance also states that Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves within 2 km of the installation should be considered. The nearest European habitat site to Bryn Posteg is 6.5 km away at the nearest point and the nearest SSSIs are 2.5 km away; this is summarised in Table 1 below. In our experience, the emissions from landfill gas plants

are negligible at a distance of 2 km from the site, so these receptors have therefore not been included in the assessment.

Table 1: Residential properties around the site modelled as discrete receptors

Receptor ID	Description	X-coordinate	Y Coordinate	Distance from site (m)	Direction
DR001	Site Office	296887	282199	0	North
DR002	Valley View	296733	282277	100	North-West
DR003	Rhoswen	297587	282244	200	East
DR004	Pant	297632	282322	250	East
DR005	Bryn Posteg Farm	296478	282134	250	West
DR006	Penbryndu	297208	282758	300	North
DR007	Tawelfa	296977	282852	300	North
DR008	Maes-Socyn	296621	281813	350	South-west
DR009	Talcen-Llwydiarth	297680	281909	450	South-east
N/A	River Wye SAC			6500	West/South-West
N/A	Coed Mawr SSSI			2500	West
N/A	Coed Hafofraith SSSI			3500	East
N/A	Coed Craigiar SSSI			2500	South-East

2.3 The Nature of the Landfill Gas Risk Assessment

2.3.1 The presence of a source at the site, which has the potential to affect nearby receptors through emissions either from point sources or as diffuse emissions from the site, indicates that detailed numerical modelling is required to quantify the magnitude of emissions and therefore assess the risks the site poses to nearby receptors.

2.3.2 Further justification for the selected model (GasSim2.5) in the context of its assumptions and required assessment scenarios is included in Section 3 below.

2.4 Lifecycle phases

2.4.1 Currently, the site is almost complete, and under the proposed restoration contours, only approximately 90,500 m^3 of void space remains. The lifecycle stages considered relevant to the performance of the site are:

- Operational phase (until final permanent capping is complete)

- Post closure period – after final capping, but when gas generation rates still require active management
- Completion – no further active management is required. This will occur when the completion criteria is achieved.

2.4.2 The implications in terms of risk assessment and for management relating to the lifecycle phases described above can be derived from the results of the quantitative modelling using GasSim 2.5, undertaken as part of this risk assessment. The results of the model can be used to determine the time required to reach completion.

2.4.3 It is considered that the combination of liner and capping materials means that while the geomembranes may decay over a period of 200 years (LandSim default), the clay and cover soils will continue to contain emissions from the site after this period (particularly if protected from erosion by appropriate vegetation cover. Since the waste at the site represents a declining source in terms of gas, it is considered likely that the completion criteria will be achieved before the geomembrane materials decay. Therefore, no assessment is required of the stage of the site's lifecycle when the containment systems are no longer operating as designed.

2.5 Generated gases to be modelled

2.5.1 The putrescible fraction of the waste accepted at the site will generate landfill gas upon anaerobic biological degradation. Monitoring results show that the bulk gases methane and carbon dioxide are generated at the site. These two gases will be modelled to understand the gas-generation behaviour of the waste and likely periods when trace gas concentrations are likely to be high (typically concurrent with high bulk gas concentrations).

2.5.2 In addition, trace gas monitoring has indicated that a number of trace gases are encountered within the raw gas at Bryn Posteg including hydrogen sulphide, acetone, benzene, carbon disulphide, toluene and xylenes. Therefore, the full list of trace gases included in GasSim V 2.5 (which includes the above gases) will be considered, and the ranges amended to more accurately reflect the conditions onsite based on available trace gas monitoring results.

2.5.3 As detailed above, point source emissions from the installation comprise exhausts from the landfill gas engines and, if/when operational, the flare. There should not be any other point source emissions from the installation under normal operating conditions, however, fugitive emissions from the landfill surface may occur, and are included in the GasSim model.

2.5.4 The primary products from any combustion process, such as the landfill gas engines and the flare, are carbon dioxide and water. Other potentially significant emissions from the identified point sources are oxides of nitrogen and sulphur and carbon monoxide. Unburnt hydrocarbons (as VOCs), particulates and dioxins and furans may be emitted, but are usually not significant in these type of combustion processes.

2.5.5 The most important oxides of nitrogen formed in combustion processes are nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O). They are collectively referred to as NO_x and modelled as NO_2. Generally, NO_x is seen as the main pollutant of concern, and one which could potentially have localised impact on the air quality. This parameter was therefore selected for detailed modelling from both point sources.

2.5.6 Carbon monoxide is a colourless, odourless gas produced by incomplete or inefficient combustion. CO formation may increase if the combustion temperature is too low. Sulphur dioxide is formed in the combustion process by oxidation of sulphur compounds in the feed gas. Carbon monoxide and sulphur dioxide were also chosen as parameters for the detailed assessment.

2.5.7 All the major gases potentially formed and emitted as a result of landfill gas utilisation or flaring are included in the model. The ranges of the gases have been amended to reflect monitoring results of the flare and engines exhausts.

3.0 NUMERICAL MODELLING

3.1 Justification for Modelling Approach and Software

3.1.1 GasSim 2.5 was employed to model the gas generation and likely emissions from the site. The selected modelling programme has been developed by Golders Associates on behalf of the Environment Agency (EA) as a tailor-made tool for landfill gas generation and emission assessments, and incorporates the assessment of both fugitive emissions and combustion emissions. It is undergoing regular updating to reflect a better understanding of the landfill conceptual model and the current environmental policies. GasSim 2.5 is an upgrade from the previous version of GasSim 2 which was used for the previous GasSim model for the site. One of the most important changes is that the smallest time unit is now a month as opposed to a year. The current version allows calculations to be made on a cell-by-cell basis.

3.1.2 The GasSim software was designed to meet the requirements of the EA's *Guidance on the Management of Landfill Gas LFTGN03*. It takes into account the following characteristics:

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

3.1.3 GasSim is a probabilistic model that uses the Monte-Carlo simulation technique to quantify landfill gas generation and emissions distribution for solid waste landfills. This allows for a range of values which describe the parameters at the site, to be entered. Input parameters for the simulation are entered as a Probability Density Functions (PDF) using site specific data to estimate emissions or if this is unavailable, using default values. During each simulation, the parameters are assigned a value from within the user defined range. After the prescribed number of simulations has been carried out, a range of possible outcome values are obtained.

3.1.4 The GasSim model is constructed in a modular structure. Each module simulates the effects of the additional processes. The source term module determines the generation of landfill gas on the basis of the mass of waste deposited and the composition of the waste streams. The waste degradation is simulated using a first-order decay model that then calculates long-term landfill gas generation.

3.1.5 GasSim has the following main assumptions and limitations:

- The model operates as a steady-state with a minimum time-period of one month for generation and emission forecasts;

- There is no modelling of gas migration in the saturated zone (leachate or groundwater);
- The model does not determine the pressure generated by the landfill and to simplify the model pressure has been excluded from all modules;
- Where site-specific data is not available, conservative default values are used; and
- Since the model is a long-term risk assessment model, it does not simulate an acute time frame or low probability events, e.g. the rapid movements of gases into buildings.

3.1.6 The input parameters for the GasSim2.5 model, including site layout, engineering specifications, waste volumes and types, environmental parameters (rainfall, winds and geosphere) and trace gas concentrations are specified and justified.

3.1.7 The Tier 1 screening module of GasSim provides an opportunity to screen out insignificant gas emissions from the gas plant and the landfill surface which do not pose a hazard to local receptors and which can therefore be excluded from further assessment and pollution control.

3.1.8 The Tier 1 risk screening is based on the EA Horizontal Guidance Note H1 - Environmental Risk Assessment for permits[2]. GasSim uses the following criteria to determine whether surface, flare or engine emissions for each modelled gas are insignificant or require further detailed assessment.

- Screen out insignificant emissions by comparing short-term and long-term Process Contributions (PC) of substances emitted to air with the relevant short-term and long-term Environmental Assessment Levels (EAL) or Environmental Quality Standard (EQS):
  $PC_{long\ term} \leq 1\%$ of the long-term EAL or EQS at ground level at the considered receptor
  $PC_{short\ term} \leq 10\%$ of the short-term EAL or EQS
- Identify which emissions warrant further detailed modelling. Further Tier 2 assessment is required, if:
  $PC_{long\text{-}term}$ + background concentration >70% long-term EAL or EQS
  $PC_{short\text{-}term}$ + 0.2 x background concentration >20% short-term EAL

3.1.9 The results of Tier 1 risk screening would determine the choice of gases subsequently assessed by the Tier 2 assessment method. The Tier 2 module assesses the Predicted Environmental Concentration (PEC) – which is the sum of the Process Contribution (PC) and the Background Concentration (BC) – at each receptor location.

3.1.10 The Tier 2 assessment within GasSim 2.5 is based on a simplified version of AERMOD. AERMOD (American Meteorological Society and Environmental Protection Agency Regulatory Model) is a Gaussian plume model. It calculates the atmospheric dispersion on-site and off-site from the surface of the landfill, flare and engine emissions. Ground level concentrations of pollutants are calculated using the AERMOD model algorithms. The Tier 2 assessment process considers various averaging periods for long-term and short-term periods, and the output is compared to relevant Environmental Quality Standards (EQS) and Environmental Assessment Levels (EALs).

[2] H1 Environmental Risk Assessment for Permits, Annex F Air Quality v 2.2 December 2011

3.2 Model set-up

3.2.1 The model input parameters used for the gas generation and emission modelling at Bryn Posteg landfill site and gas plant are based on information received from Potters, historical information, from Construction Quality Assurance (CQA) plans and CQA reports and from trace gas monitoring, emission monitoring and gas field balancing monitoring data. Where site specific data was missing, best estimates or default values were used. A print-out of the GasSim2.5 model (Scenario 1) settings is included in Appendix 1.

3.2.2 The start year was 1982, and the site is projected to be completed in 2019. The operational period was set as 38 years within the GasSim model. The modelling was run for a total of 150 years allowing for the gas extraction system utilisation to be modelled until the end of its predicted lifespan.

3.2.3 All simulations were run for 201 iterations, allowing for greater convergence of the results and increasing the accuracy of the calculated outputs to the required level of confidence required for risk assessment (95th percentile).

Assessment scenarios

3.2.4 Two assessment scenarios were simulated:

- Scenario 1: Waste moisture content modelled as 'average' in all Phases during operation and after closure. This was the previously-assumed typical waste condition at the site, and as such forms a baseline for the assessment;

- Scenario 2: Waste moisture content was modelled as 'wet'. Observations made onsite suggest that due to the relatively high rainfall at the site, the waste is likely to be more accurately modelled as 'wet' rather than 'average' This scenario is proposed to allow comparison with the base scenario 1, and assess the sensitivity of the model to moisture content of the waste.

3.2.5 An attempt was made to quantify the impacts of a reported period of high leachate levels in Phase 9D on gas generation at the site using GasSim 2.5. The moisture content within the model was set to 'saturated' during the operational phase, and to 'wet' after capping. The simulated gas generation rates were significantly higher than the highest generation rate for the remainder of the modelled years. This result is in discord with the lower degradation rate that should be applied when 'saturated' moisture content is set[3] to reflect the inhibited gas generation due to the waste being saturated, and suggests an error within the computational code. The modelling was repeated, with the moisture content set to 'dry' for Phase 9D during operation (since the default degradation rates for saturated waste are equal to those for dry waste). The modelled generation gases once again showed a significant increase at 2018. Therefore, it is considered that GasSim2.5 cannot reliably simulate the effect of such transient

[3] Golder Associates: GasSim2.5 Manual. 2011.

conditions on one part of the site, and so the potential impacts are evaluated qualitatively instead.

Accidents and their consequences

3.2.6 Potential accidents and damage to landfill gas infrastructure could lead to either reduced pumping rates, or in case of flare or engine failure an increased downtime of the plant, which could lead to higher residual emissions. These potential conditions have been taken into account by operating one engine in conjunction with a backup gas flare. The engine and flare are both estimated in the model to have a downtime of 3-5%, which is considered to be sufficient to address potential failure of gas infrastructure, temporary pump breakdown or other accidents.

Sensitivity analysis

3.2.7 As described in section 3.1, The GasSim model is constructed in a modular structure where each module incorporates the effects of the additional processes. The model is probabilistic, using the Monte-Carlo simulation technique to model the uncertainty associated with many of the input parameters. During each simulation the parameters are assigned a value from within the defined ranges. After the prescribed number of simulations has been carried out (e.g. 201), a range of possible outcome values are obtained.

3.2.8 The distribution output is expressed in percentiles. These percentiles (%iles) specify the probability with which a certain value will not be exceeded. If the model shows that the 95%ile gas generation rate for one year is given as 1000 m^3/h, there is a 95% chance that the gas generation would be *below* or *equal to* this value and only a 5% chance that the gas generation would be above this. The 95%ile is used to express the 'worst case' scenario, and therefore used exclusively for risk assessment purposes. At the same time any decision-making such as regarding suitability of the gas plant or in assessing the likely gas generation rates in certain years were made using the predicted 50%ile.

3.2.9 For the key parameter, waste moisture content, a range of values cannot be entered. The sensitivity of the modelled results to different moisture conditions is considered through the proposed assessment scenarios.

Model Validation

3.2.10 The GasSim model was compared and adapted to actual gas abstraction rates. This will allow a comparison between the modelled outputs against field observations. The results have been discussed in section 5 and 6.

3.3 Model Parameterisation

Site Layout, Phasing and engineering

3.3.1 The model was set up to reflect the gas generation within Phases 1 to 9D. A base site plan indicating the layout of these Phases was imported into the software model, and the site

boundary traced out according to this plan. The Phase geometry within the model was defined as being split into 15 Phases (see Drawing 3428-CAU-XX-XX-DR-V-1806).

3.3.2 The years in which each Phase was active and its respective waste inputs were inserted into GasSim. As modelled and justified previously[1], the 9A and 9B piggyback has been inserted into GasSim as over-tipping of Phases 3A, 3B, 4A and 4B respectively, as this was deemed the best representation in GasSim. The final Phase of the site is referred in this report and associated documentation as Phase 9D and includes the areas that in other documentation may have been termed 'Phase 9D and 9E'.

3.3.3 The phasing and engineering parameterisation are summarised in Table 2 below.

Waste tonnages and types

3.3.4 Annual waste inputs were based on site specific data as detailed in; the GasSim model undertaken for the PPC Application for all previous years (1982-2004), and information provided by Potters regarding the waste input tonnages (2005-2010). Waste input volumes for the remaining operational period (2011-2017) are based on waste returns reported by Potters.

3.3.5 The model is updated to reflect the proposed phasing, where wastes accepted in 2018 and 2019 infill the remaining void for waste to the proposed restoration profile. This void is estimated to be 117,500 m^3. At a waste density of 0.83 t/m^3, this is equivalent to 97,110 tonnes of waste. The input tonnage for 2018 and 2019 has therefore been specified to cover a range of waste densities between 0.8 and 1.1 t/m^3, (with 97,110 being the most likely value) with 40% of the waste being accepted in 2018 and 60% in 2019.

3.3.6 The breakdown of the accepted waste streams was defined in the model using waste stream data supplied by the EA and was applied to all operational years. For infilling in cells prior to the installation of the MRF, the following breakdown has been used in the model:

- Domestic (%) TRIANGULAR [55, 65, 70]
- Commercial (%) TRIANGULAR [30, 35, 40]

3.3.7 After installation of the MRF (in 1998) to 2011 the breakdown was parameterised as:

- Domestic (%) UNIFORM [40, 50]
- Commercial (%) UNIFORM [5-10]
- Residual fines (MRF) (%) UNIFORM [40, 50]

3.3.8 The breakdown from 2011 reflects the actual waste breakdown according to the European Waste Codes and descriptions provided in the quarterly waste returns.

3.3.9 GasSim2.5 allows for the site to be entered into the model as separate Phases or phases. It then requires that waste input volumes are defined as total tonnage within each Phase for

every year of landfilling. A summary of the parameterisation of the waste tonnages, the Phases where the waste was accepted and the breakdown are included in Table 3 below.

3.3.10 The waste streams were assumed to be of 'Wales 2000-2010 waste streams', 'Wales 2010-2013 waste streams' and 'Wales 2013-2020' waste streams respectively (as defined in GasSim). The MRF residue waste stream was defined using the results from the waste composition analysis undertaken by SLR during their study into the reduction in biodegradability during the MBT Operations at Bryn Posteg[4]. This study also confirmed that the biological content of the incoming waste to Bryn Posteg is very similar to the Welsh Government assumed average biological content for Wales.

3.3.11 The density of waste within the landfill depends on the initial waste density, the compaction methodology and the maximum depth of waste. The industrially accepted range of waste density within landfills is between 0.8 t/m^3 and 1.2 t/m^3 (reflected in default settings within GasSim2). For Bryn Posteg, site-specific assessment of the waste density using differences between consecutive topographic surveys and waste tonnages accepted during those times give an average waste density of 0.83 t/m^3.

3.3.12 The assumed density impacts on the waste tonnage modelled to be accepted within the remaining void (discussed in paragraph 3.3.5 above). Within GasSim this value is used for calculations if moisture content within the model is set to 'calculate'. Since the moisture content in both assessment scenarios is specified, this value does not affect any of the calculations within GasSim, but has been updated within the model to reflect the estimated site-specific waste density (TRI[0.8, 0.83, 1.1]).

[4] MBT Operations at Bryn Posteg and Reduction in Biodegradability, Making Connections – Bryn Posteg Landfill Site, Llandrindod Wells, Powys, SLR Ref: 406-0485-00003 March 2008

Table 2: Site phasing and engineering parameterisation details

	LINER			TEMPORARY CAP				PERMANENT CAP			
Phase	**Description**	**Thickness (m)**	**Hydraulic conductivity (m/s)**	**Year**	**Description**	**Thickness (m)**	**Hydraulic conductivity (m/s)**	**Year**	**Description**	**Thickness (m)**	**Hydraulic conductivity (m/s)**
1	1m clay	UNI [0.8, 1.2]	LOGUNI [1E-9, 1E-8]	1986	As modelled in 2009 report, LLDPE	SINGLE [1E-3]	LOGUNI [1E-14, 1E-13]	1986	1 m boulder clay	UNI [1, 1.5]	LOGUNI [1E-9, 1E-8]
2				1986				1986			
3A				1988				2009	Geomembrane cap and cover soils	UNI [0.7, 0.9]	LOGUNI [1E-9, 1E-8]
3B				1990				2009			
3C				1992				1992			
4A				1994				2017		SINGLE [0.001]	LOGUNI [1E-14, 1E-11]
4B				1996				2017			
5				1998				1998			
6	GCL and HDPE	SINGLE [0.002] UNI [0.05, 0.1]	LOGUNI [1E-14, 1E-12] LOGUNI [1E-11, 1E-10]	2000				2000			
7				2002				2003	GCL and 1m cover soils	UNI [0.4, 1 UNI [0.05, 0.1]	LOGUNI [1E-9, 1E-8] LOGUNI [1E-12, 1E-10]
8				2006				2006			
9A	0.5 m min liner, GCL and Geomembrane	UNI [0.5, 0.6] SINGLE [0.002]	LOGUNI [1E-10, 1E-9] LOGUNI [1E-14, 1E-12]	2009				2009	Geomembrane cap and cover soils	UNI [1, 1.1] SINGLE [0.001]	LOGUNI [1E-9, 1E-8] LOGUNI [1E-14, 1E-12]
9B				2011				2017			
9C				2013				2017			
9D				2018				2019			

Table 3: Waste inputs – year, phase, parameterisation of accepted tonnages and waste types

Year	Year since start	Operational Cell	Comments	Accepted waste tonnage PDF	Waste breakdown types PDF
1982	1	1&2		TRI[15000,20000,25000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1983	2	1&2		TRI[12500,15000,17500]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1984	3	1&2		TRI[12500,15000,17500]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1985	4	1&2		TRI[12500,15000,17500]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1986	5	3A		TRI[25000,30000,35000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1987	6	3A		TRI[35000,40000,45000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1988	7	3B		TRI[37000,40000,45000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1989	8	3B		TRI[37000,40000,45000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1990	9	3C		TRI[35000,40000,45000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1991	10	3C		TRI[65000,70000,75000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1992	11	4A		TRI[65000,70000,75000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1993	12	4A		TRI[45000,50000,55000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1994	13	4B		TRI[45000,50000,55000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1995	14	4B		TRI[45000,50000,55000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1996	15	5		TRI[65000,70000,75000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1997	16	5		TRI[65000,70000,75000]	Domestic TRI[55, 65, 70], Commercial TRI[30, 35, 40]
1998	17	6		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5,10], RESIDUAL FR MRF [40,50]
1999	18	6		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5,10], RESIDUAL FR MRF [40,50]
2000	19	7		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2001	20	7		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2002	21	8		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2003	22	8		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2004	23	8		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2005	24	8		SINGLE [75081]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]

Year	Year since start	Operational Cell	Comments	Accepted waste tonnage PDF	Waste breakdown types PDF
2006	25	9A		SINGLE [75055]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2007	26	9A		SINGLE [81713]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2008	27	9A	2/3 over 3A, 1/3 over 3B	3A UNI[47500, 52500] 3B TRI[11500, 15000, 27500]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2009	28	9B		TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2010	29	9B	1/2 over Cell 4A	TRI[70000,75000,80000]	Domestic UNI [40, 50]. Commercial UNI[5, 10], RESIDUAL FR MRF [40, 50]
2011	30	9B		SINGLE [64800]	Domestic SINGLE [51.3]. Commercial UNI[5, 10], RESIDUAL FR MRF SINGLE[38.1]
2012	31	9B	1/3 over Cell 4B	SINGLE [40000] Phase 9 SINGLE[9300] Cell 4B	Domestic SINGLE [40.1]. Commercial UNI[8, 12], RESIDUAL FR MRF SINGLE[49.7]
2013	32	9C		SINGLE [61200]	Domestic SINGLE [36.9]. Commercial SINGLE[23.8], RESIDUAL FR MRF SINGLE[39.3]
2014	33	9C		SINGLE [60100]	Domestic SINGLE [36]. Commercial SINGLE[28.2], RESIDUAL FR MRF SINGLE[35.8]
2015	34	9D		SINGLE [103000]	Domestic SINGLE [19]. Commercial SINGLE[17], RESIDUAL FR MRF SINGLE[64]
2016	35	9D		SINGLE [76700]	Domestic SINGLE [25]. Commercial SINGLE[15.5], RESIDUAL FR MRF SINGLE[59.5]
2017	36	9D		TRI[95000,100000, 105000]	Domestic SINGLE [28]. Commercial SINGLE[20], RESIDUAL FR MRF SINGLE[52]
2018	37	9D		TRI[37440,38844, 51480]	Domestic UNI [20, 30]. Commercial UNI[17, 20], RESIDUAL FR MRF [40, 60]
2019	37	9D		TRI[56160,58266, 77220]	Domestic UNI [20, 30]. Commercial UNI[17, 20], RESIDUAL FR MRF [40, 60]

Gas Extraction and Trace Gases

3.3.13 Monitoring of the trace gas components of the raw landfill gas is undertaken regularly and the model has been previously updated to reflect those. The results from the most recent monitoring round were used and the trace gases detected were inserted in the GasSim model. All other gases were left at default concentrations. The trace gas results used for this update are included in Appendix 6 to this report.

3.3.14 While no hydrogen sulphide (H_2S) (an important gas in terms of human health risks and odour nuisance) was detected in any of the trace gas monitoring rounds at the site, in-waste extraction field balancing records collected in 2017 and start of 2018 show that some is detected on occasion. Therefore, the probability density function within GasSim was updated to LOGTRI [0.01, 8.3, 562] to reflect the range of H_2S detected in in-waste boreholes in 2017 (according to data provided by Sundorne Products). The maximum value reflects a reading of 405 ppm recorded in February 2018, while the most likely value reflects the median of all the available readings during this period.

3.3.15 The gas plant settings in the model considered the existing gas plant with two 1 MWe engines and one 2000 m^3/h flare. The 1 MWe engines were set at the nominal capacity of 600 m^3/h (their minimal capacity is 300 m^3/h). The gas composition was defined as 50-57% methane (CH_4), and 32-39% carbon dioxide (CO_2) based on gas field monitoring data.

3.3.16 The flare is used as a back-up during engine down-time periods or potential failures. The flare has a turn down ratio of 1:5 which equates to a minimum capacity of 400 m^3/h. The model was set to run the engines first and then the flare.

3.3.17 The emissions from the Flare and engines were updated to reflect the most recent round of emissions monitoring completed in January 2018. The raw emissions results are included in Appendix 6.

Environmental Setting

3.3.18 The surrounding geology was set in the model as clay based “Geosphere”. The porosity was defined as LOGUNIFORM between 25 % and 40 %, reflecting the likely porosity within the Boulder clay surrounding the site. The moisture content was set to be between 20 % and 30 %.

3.3.19 The average annual uncapped infiltration was modelled as previously[1] as a normal distribution with mean of 236.8 mm per year and standard deviation of 23.6, reflecting typical annual rainfall for the site modified to represent the effective rainfall figures for grassland. As suggested in the GasSim manual, an infiltration rate through the capped areas was assumed by the model as 10% of the annual effective rainfall. It should be noted that infiltration rate forms part of the calculation of the moisture content of the waste if this is set to ‘calculate’. Since the moisture content of the waste is defined in all the assessed scenarios (as ‘wet’ or ‘average’), the model will not be sensitive to variations in rainfall amount/infiltration.

3.3.20 The Tier 2 module uses wind data to disperse the gases generated at the gas compound. Figure 2 shows the windrose used for EA Wales: South West in relation to the 2012 windrose recorded at the Bryn Posteg weather station. It is considered that the default AERMOD windrose for EA Wales: South Wales is representative of the wind pattern at the site and so was used for the Tier 2 assessment.

3.3.21 The background concentrations for the main regulated gases NO_x, NO_2, and PM_{10} were derived from the background maps at National Air Quality Archive hosted under DEFRAs Local Air Quality Management Area archive. This information comes in the form of a table of concentrations for every 1 km x 1 km grid. For this study the values in Powys CC were quoted for the four nearest grid points to the site grid location. (X296777, Y282098). The values used in the assessment were the average values for PM_{10} and NO_x the year 2015.

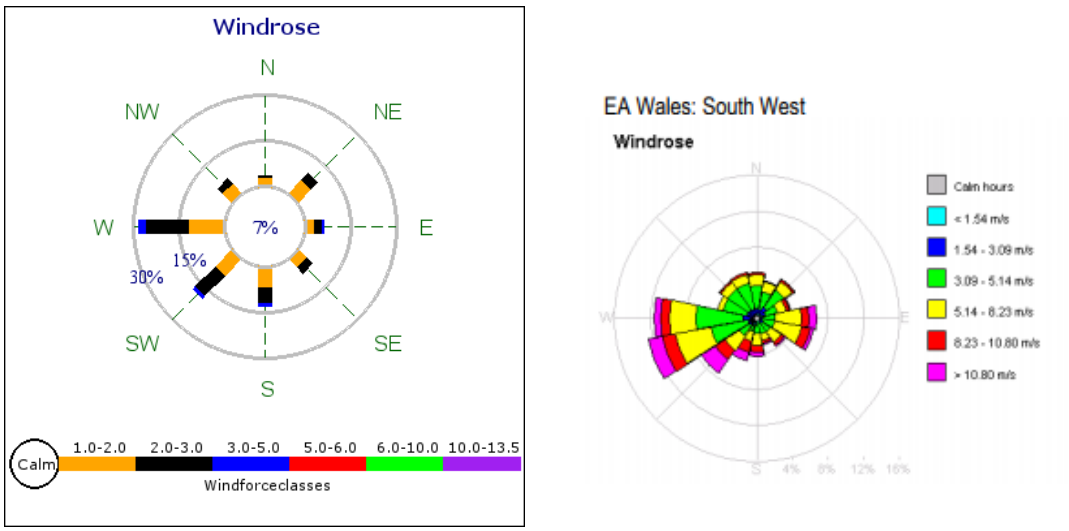


Figure 2: Bryn Posteg Site weather station wind data (Windrose for 2012) compared to the windrose used for the Tier 2 assessment, default for Wales (South West).

4.0 MODELLING RESULTS

4.1 Model sensitivity and validation

4.1.1 Two scenarios were considered as part of this risk assessment. They explored the impact of moisture content on the predicted gas generation rates, and are considered to cover the likely range of conditions at the site. GasSim output graphs of the calculated results are included in Appendix 2.

4.1.2 The uncertainty associated with the calculated gas generation rates due to the combination of ranges of input parameters can be evaluated from the difference between the predicted values at the 5th and 95th percentiles. For Scenario 1 this was 2.6% (1187.5 and 1220.1 m^3/h respectively) in the peak generation year (2018), and for Scenario 2 was 3.9% (1323 and 1381 m^3/h). Waste moisture content (which affects degradation rates and therefore gas generation rates) cannot be set as a range, so the two scenarios provide a measure of the sensitivity of the model to the waste moisture content. The model predict that gas generation rates at the 50th percentile would be 1202.8 m^3/h as 'average' moisture content (scenario 1), and 1355 m^3/h as 'wet' (scenario 2) which constitutes approximately 12.6% difference. This indicates that the predicted gas generation rates are more sensitive to the assumed moisture content than the ranges of values for the other input parameters considered jointly.

4.1.3 Validation of the modelled results was undertaken by comparing actual extraction rates reported by the site, and the predicted results at the 50th %ile (likely value) for both scenarios. Measurements collected at the gas plant in 2015-2017 were used to calculate the amount of gas treated and utilised in those three years. The average annual flow rates quoted for the blower (which supplies gas to all plant and is therefore a measure of the total gas reaching the gas plant) are presented in Table 5 below, alongside the annual MWh outputs and downtime hours for the two engines. No separate operational hours or flow are available for the flare, however, it was noted that the flare is not operational for the majority of the time and is used as a back-up during engine maintenance and repair. The results were corrected to 55% methane (rather than the 50% methane rating used for the theoretical conversion of MWh to m^3/h.

4.1.4 The estimated average combined engine flow rates in m^3/h are comparable to the total figures reported at the blower, confirming that the flare is not operational for the majority of the time, as reported by the site. Some discrepancies observed in the values (such as greater gas utilisation rates estimated for the engines in 2017 than were reported on average at the blower), likely reflect the way the flows are recorded. The blower figure gives an instantaneous measurement at the moment of monitoring, while the average calculated for the combination of the two engines uses the total output figures.

4.1.5 The two GasSim model scenarios both predict generation rates of approximately twice the amount extracted onsite. It should be noted that the total gas generation rates predicted by the model do not represent the maximum gas that can be extracted, as practical inefficiencies of the extraction system are recognised (on average approximately 95% of the generated

gases is expected to be extracted from permanently capped areas). This efficiency is modelled to be lower if the area is temporarily capped (as for example Phase 9D). The figures in Tables 5 indicate that the current extraction rates represent between 69 and 98% extraction efficiency of the simulated gases available for extraction according to Scenario 1, and between 90 and 98% of the available-for-extraction gases for Scenario 2.

4.1.6 Further review of the modelled residual gases (discussed in Section 4.4 below) shows that for 2015-2017, the two models predict utilisation rates comparable to those observed onsite (see Table 5). This means that the available site information can be used to confirm that both models predict the current conditions onsite relatively accurately in terms of the amount of gas being utilised by the gas plant, however, it is not possible to confirm whether the total gases generated by Scenario 1 or 2 are more accurate in reflecting gas generation rates for the site as a whole. The results below are therefore discussed for Scenario 2 ('wet' scenario), as it represents a conservative scenario in terms of risk.

Table 5: Model validation figures – actual extraction rates (blue columns) compared to predicted generation and simulated-as-extracted rates (both orange columns).

Year	Engine 1	Engine 2	Total engines	Blower	Scenario 1 (average moisture content)		Scenario 2 (wet moisture content)	
	MWh total		m^3/h	m^3/h	Simulated total	Simulated extracted	Simulated total	Simulated extracted
					m^3/h	m^3/h	m^3/h	m^3/h
2015	769	8615	**632**	583	1125	**916**	1210	**641**
2016	1374	7161	**522**	625	1165	**630**	1330	**581**
2017	908	7885	**572**	516	1184	**584**	1351	**582**

4.2 Generated gases

4.2.1 The modelled long-term prediction of total bulk landfill gas generation for both scenarios is shown in Figure 3 below. The figure is created using the numerical export of the gas generation data calculated by GasSim and presents the 50th and 95th percentile for both scenarios.

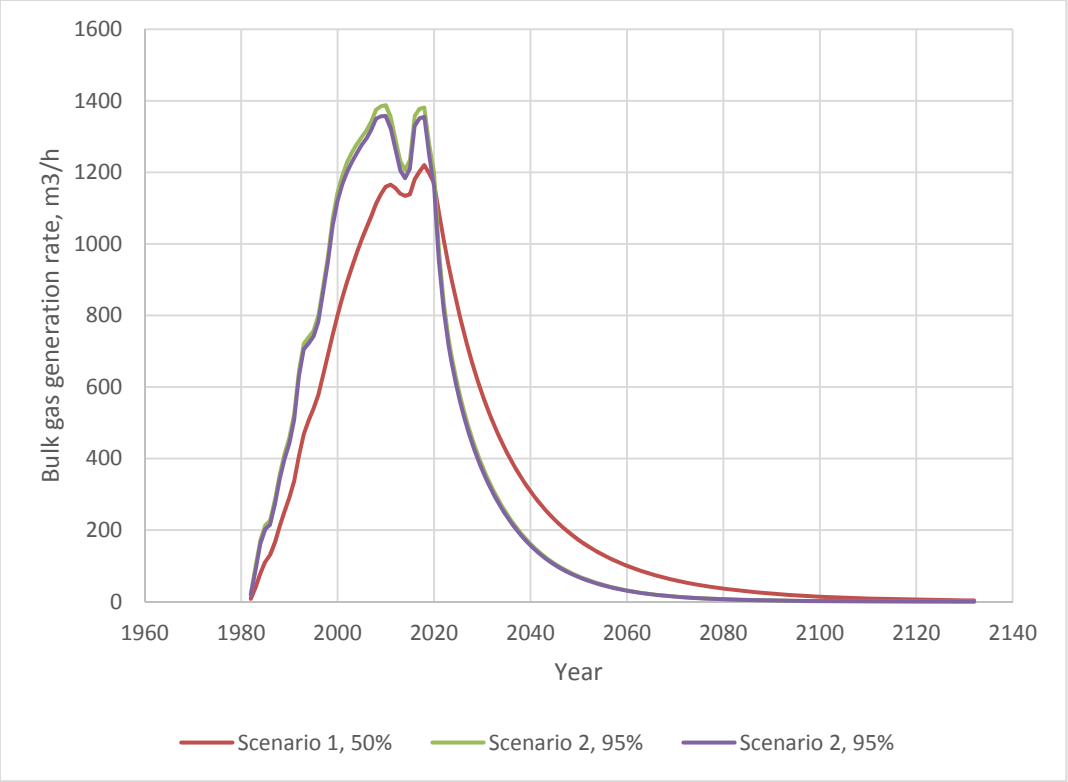


Figure 3: Comparison of total bulk gas generation rates predicted for 'average' and 'wet' moisture content waste.

4.2.2 For both scenarios the gas generation is predicted to be highest in 2018. The predicted maximum gas generation rate for Scenario 1 ('average' moisture content), at the 95th percentile is 1220 m^3/hour while for Scenario 2 ('wet' moisture content), it is 1381 m^3/hour. The greater moisture content specified in Scenario 2 is seen as greater gas generation rates for Scenario 2 until 2020.

4.2.3 The potential impact of a reported period of elevated leachate head in Phase 9D could not be simulated using GasSim 2.5. If waste is waterlogged (saturated), this is likely to inhibit biodegradation and gas generation[3, 5].

4.2.4 After waste is no longer accepted, as the putrescible fraction of the deposited waste is degraded, gas generation decreases exponentially. The faster degradation in the 'wet' Scenario 2 leads to higher gas generation rates and a quicker decay of gas generation once no more waste is accepted. As the biodegradable materials become depleted over time gas generation can become sporadic and localised due to the heterogeneous nature of the waste

[5] Environment Agency LFTGN03: Guidance on the management of landfill gas. 2004.

mass, and only a relatively small percentage of the theoretically-predicted gas generated may be practically recoverable. It is considered that total bulk gas generation rates of 100 m^3/hour represent the practical limit of extraction and flaring control of emissions.

4.2.5 It is predicted that gas generation rates will decrease to below 100 m^3/hour after the year 2045 - 2061 (predicted at the 95th percentile by the 'wet' and 'average' scenarios respectively).

4.3 Utilisation plant

4.3.1 The engines and flare were defined for a hypothetical period of up to year 2050, to estimate their maximum likely lifespan. The predicted gas generation and combusted gases for Scenario 2 at the 50th %ile are shown on Figure 4 below (it should be noted that the overall comments below apply to both scenarios).

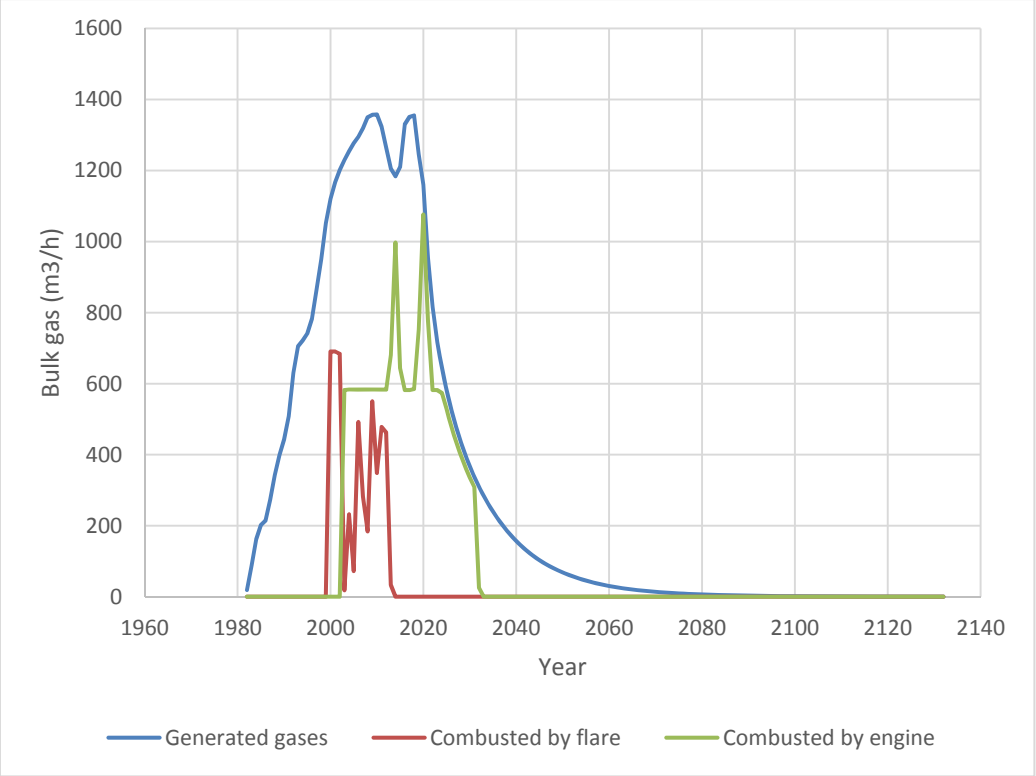


Figure 4: Comparison of total bulk gas generation rates, flare and engine outputs predicted for the 'wet' moisture content waste.

4.3.2 The gas utilisation plant onsite has a maximum combined capacity of 1200 m^3/h, which is appropriate for the gas generation rates predicted for the site. The flare capacity is sufficient to burn all the generated gas should the engines not be operational.

4.3.3 Due to the way the model simulates the initialisation of the gas plant (running each in turn, starting with the engines, before the flare, and each plant to maximum capacity before considering the next), it can be seen that after the year 2014, the flare is not predicted to initialise. This is because the model assumes that the first engine will operate at full capacity before the next engine is considered and at the end the flare. This does not represent the

optimal gas management strategy for the available plant, as it means that as much as 300-400 m^3/h of bulk gases would not be utilised/flared due to the limits of the lower capacities of the engines and flare respectively. Instead, the second engine and flare may be operated intermittently to ensure that the maximum amount of gas is extracted and treated. Both the predicted gas generation rates, and simulated gas plant output results suggest that a smaller flare, which can initiate at a lower gas flow rate, may be more appropriate for the site.

4.3.4 Additionally, as mentioned in Section 4.1 the total generated gases do not reflect the total gas that is available for extraction. The model recognises that extraction from uncapped or temporarily capped areas is less efficient. Extraction rates are likely to increase after 2019 as the active phase is capped and further gas extraction wells are installed.

4.3.5 After 2027 (Scenario 2) – 2035 (Scenario 1) it is predicted that gas generation rates will decrease below the lower capacity of the current flare (the emissions could still be managed by one of the engines currently onsite until 2032 (Scenario 2) -2039 (Scenario 1). To manage emissions long term, the flare onsite will then need to be replaced with a smaller flare to ensure generated gases can continue to be treated.

4.4 Residual Gases

4.4.1 The maximum residual gases are predicted to have been emitted before the installation of the flare in the year 2000. After this year, some spikes are seen in the predicted residual gases (Appendix 2). The majority of those relate to the modelling artefacts discussed above. The predicted residual gases are likely to be higher than actual residual gases onsite when gas plant is managed so as both engines and flare are operational to optimise extraction.

4.4.2 Graphs 4 and 10 in Appendix 1 (Scenario 1 and 2 respectively) show a spike of residual gases between 600 m^3/h and 770 m^3/h respectively for the year 2016-2017. These values exceed the lower limit of the flare and second engine, both of which are predicted not to initialise at this period. This is interpreted as the result of the modelled phasing of the site, as it occurs during a period between phases of capping. The extraction efficiency from the temporarily capped parts of the site is modelled as ~1/3 lower than that of a permanent gas extraction system in a permanently capped part of the site.

4.4.3 The final period when residual gases are predicted to be elevated is when gas generation rates decrease to below the lower capacity of the engine. As discussed above, a change to a smaller flare, would allow continued extraction and therefore decrease the actual residual gases accordingly.

4.4.4 The model predicts that less than 5 % of the residual gases would be emitted as lateral emissions through the geosphere.

4.4.5 Lateral migration is determined within GasSim2 using a conservative one-dimension advection and diffusion equation. The diffusivity is determined for the diffusivity of gas in air, which is corrected for the porosity and moisture content of the medium. Atmospheric mixing is considered as an optional loss term, but methane oxidation is not included in the lateral

migration module. Since lateral emissions are likely to be very low, and the surrounding geology has low porosity, no lateral migration was simulated for this assessment.

4.5 Tier 1 screening

4.5.1 The Tier 1 screening was carried out for both scenarios and included all default trace gases. The Tier 1 screen was run for all years, as diffuse emissions from the surface and combustion emissions from the gas plant would peak at different times.

4.5.2 The results of the Tier 1 screening for all future years for the two scenarios are summarised in Table 4 below. A print out of the Tier 1 screen for both scenarios is included in Appendix 3.

Table 4: Tier 1 screen results – gases requiring further modelling highlighted in orange

		Scenario 1		Scenario 2	
Determinand	**Year**	**Short term**	**Long term**	**Short Term**	**Long Term**
Arsenic	2018	YES	N/A	YES	N/A
Ethylene dichloride	2018	No	No	YES	No
Hydrogen Sulphide	2018	YES	No	YES	No
Nitrous Oxides	2020	YES	YES	YES	YES
Sulphur dioxide	2020	YES	No	YES	No

4.5.3 The trace gases highlighted in orange require further Tier 2 modelling. Arsenic, ethylene chloride and hydrogen sulphide relate to surface emissions from the site and have highest concentrations 2018, when both generation rates and residual gas emissions are predicted to be high. It is noted, that neither As nor H_2S have been detected in the trace gas analyses conducted at the site since 2011, and therefore, predicted concentrations of these at the 95th percentile represent an unrealistic, very conservative worst case scenario.

4.6 Tier 2 Atmospheric Dispersion

4.6.1 In order to assess the risk of significant gas emissions to receptors around the landfill site, the Tier 2 atmospheric dispersion module of GasSim2 was used. The in-built AERMOD Gaussian plume dispersion model simulates atmospheric dispersion of gases emitted from the engines and flares as well as surface emissions and determines the maximum ground-level concentrations of individual gases for a given year.

4.6.2 The impacts of the gases of interest were considered at the boundary (every 50 m), and the defined closest offsite receptors.

4.6.3 The Tier 2 modelling was carried out using the 95th percentile results of the source term and Tier 1 modules. Only the 'wet' scenario was modelled, since it represents a more conservative assessment scenario. The year of modelling was 2018 for As, ethylchloride and H_2S, and 2020 for NO_x SO_2. The combination of both of these conservative approaches to this assessment provides a significant margin of safety in terms of the potential harm that may be caused by the assessed emissions from the site. Where exceedances were noted at the 95th percentile,

the gases were also assessed at the more realistic 50th percentile. Both sets of results are discussed.

4.6.4 All sources were included in the assessment (diffuse from the landfill's surface and point source). The discrete receptors were modelled, to evaluate the potential impact on human health; and boundary receptors to assess the potential impact at the site boundary (worst case).

4.6.5 The detailed modelling of sulphur dioxide at the 95th percentile showed that none of the discrete or boundary receptors would exceed the relevant short term air quality standards in the modelled year (2020). In addition, emissions of nitrous oxides and hydrogen sulphide predicted at the 95th percentile would not exceed their short or long term EALS at any of the discrete receptors in the modelled years. Exceedances of the long term EAL for H_2S are predicted at boundary receptors surrounding the currently-active phase, and the short and long term EAL for NO_x at boundary receptors near the gas compound. Neither of those sets of locations relate to human receptors, and no exceedances were noted at these locations when emissions were modelled at the 50th percentile. Therefore, it is not considered that the site poses a risk to human health from emissions of these compounds.

4.6.6 Emissions of arsenic were predicted to exceed the short term air quality standard at all receptors when modelled at the 95th percentile. When modelled at the 50th percentile, only exceedances were at boundary receptors near Phase 9D and at the discrete receptor DR001, which is the site offices. It is noted that arsenic has not been detected during trace gas monitoring at the site, and these emissions are based on the default arsenic values within GasSim 2.5. The low emissions of PM_{10} particulates will also aid in mitigating any potential risks associated with arsenic emissions from the site[6]. It is recommended that As is included in the trace gas analysis for the site, at a low detection limit to allow verification of the projected results or provide data to allow amending the modelled range for future assessments.

4.6.7 As part of this assessment, odour units (predicted) were modelled, to understand the cumulative impact of emissions from the site in terms of potential nuisance to nearby residents. This assessment was carried out at the 95th percentile, and for the year 2018 (when surface emissions would be highest) to reflect worst case scenario. As there are no thresholds for odour, within GasSim, 1 odour unit is used to denote a potential problem, as this aligns with the definition of the unit (the amount of a mixture of odours present in 1 m^3 that can be detected by 50% of members of an odour panel). The Tier 2 modelling indicated that odour units would not exceed the detectable threshold at any of the offsite residential receptors except for DR008, Maes-Socyn, which is located downwind of the predominant wind direction. The predicted exceedance was marginal (1.05 odour units), and represents a very low likelihood event, as it is based on the 95th percentile results. As would be normal for an active

[6] Environment Agency. H1 Annex F – Air Emissions.V2.2, 2011.

landfill site, exceedances are predicted for DR001 (site office), and some boundary receptors around the site.

4.7 Global Impact

4.7.1 The global impact as a sum of all years was calculated for the more representative Scenario 2. The total global warming potential expressed as tonnes of carbon dioxide is calculated as 2,510,000 tonnes. The gas utilisation at the site is calculated to have decreased the global warming potential contributed by the site by 1,890,000 through decrease of the amount of methane released.

4.7.2 The calculated global impact is subject to the modelling artefacts discussed above, and therefore is considered to overestimate the actual global warming potential contribution of the site. With optimal gas plant operation and replacement with lean flare technology as the gas generation rates decrease, the overall global warming potential contribution of Bryn Posteg will be decreased further.

5.0 LANDFILL GAS MANAGEMENT PLAN

5.1 Appropriateness of the landfill gas control system

5.1.1 As discussed in section 4 above, the modelling results indicate that the utilisation and flaring capacity available at Bryn Posteg at present is sufficient for the amount of gas likely to be generated at the site, even under worst case scenario conditions (if the waste is wet). With efficient management of the extraction system, to maximise extraction, and optimal operation of the available gas plant, the site's gas control infrastructure is appropriate for the site conditions until site completion.

5.1.2 As landfill gas quantity and quality decline, the gas plant will be decommissioned and replaced with plant that can operate at a lower gas flow in line with industry standards.

5.2 Gas Management Plan

5.2.1 The landfill gas management plan for the site (LFGMP) forms a stand-alone document, which has been revised to reflect the findings of this risk assessment. The plan includes details of:

- Management approach, including balancing and utilisation plant operation;
- Operational procedures, responsibilities and record-keeping;
- Emissions monitoring and assessment from various parts of the landfill gas infrastructure including methods of determining collection efficiency.
- Triger and compliance limits for monitoring locations and the actions associated with exceeding those to prevent impact on the environment or human health.

6.0 SUMMARY AND CONCLUSIONS

6.1 Summary

6.1.1 The landfill gas risk assessment for Bryn Posteg landfill site has been revised including an update of the GasSim model for the site, to more accurately reflect the waste inputs and degradation rates for the site, and assess the potential impact of waste acceptance in line with the proposed restoration profile.

6.1.2 Validation of the model suggests that the current gas extraction is represented accurately by the model, however, it could not be confirmed which scenario was more accurate in terms of gas generation at the site. Therefore the 'wet' waste Scenario 2 was used for the basis of the risk assessment, as it represents worst case, conservative scenario. Scenario 2 predicts maximum gas generation rates of 1380 m^3/h at the 95th percentile in 2018. Site records show that in 2015-2017 gas flow at the flare and engines was on average 575 m^3/h. This is likely to reflect amongst other factors, physical limitations to extraction efficiency (e.g. 10% of the total available gas), the limited extraction undertaken from the currently active Cell 9D and the heterogeneity of gas generation in the older parts of the site (such as Phase 1 and 2), where it may not be possible to reach abstraction equilibrium with the remaining pockets of gassing waste. These factors are estimated to account for as much as ~700 m^3/h of flow in 2017 that was not operationally possible to capture.

6.1.3 Faster degradation rates will lead to quicker depletion of gas. The current gas plant on site is sufficient to control the current generated gas volumes, but requires management to ensure that the combination of the engines and flare operate optimally to minimise the residual gases.

6.1.4 The model indicates that by the year 2025 the flare onsite will require replacement with a smaller unit to continue controlling the generated gases as the amount of generated LFG decreases. It is predicted that active extraction is likely to be required till 2060, with landfill gas quality and quantity too poor for extraction after this date.

6.1.5 Tier 1 screening indicated that most gases would remain below their EALs or EQS levels. Tier 2 modelling at the 95th percentile confirmed that no EALs or EQS levels would be exceeded for any parameter at the discrete offsite receptors around the site, except for arsenic. No offsite exceedances are predicted for As at the more representative 50th percentile. Potential exceedances of arsenic, hydrogen sulfide, odour and nitrous oxides were predicted for receptors at the site boundary (or the site office), but this is considered to reflect a very conservative scenario.

6.2 Compliance with the Landfill Directive 1999

6.2.1 The information reviewed here and the results of the GasSim model show that the engineered containment, gas infrastructure and management, utilisation plant and operation are overall compliant with the Landfill Directive (1999).

6.2.2 It is recommended that gas continues to be managed in accordance with the LFGMP for the site, to ensure continued compliance with the Landfill Directive. The requirement for exchange of gas plant to better accommodate the generated gases onsite should be reviewed periodically (e.g. annually), to ensure that greenhouse gas emissions from the site are minimised.

DRAWINGS

3428-CAU-XX-XX-DR-V-1806.A0-C1 – Site Setting and Nearby Receptors plan
3428-CAU-XX-XX-DR-V-1807.A0-C1 –Site layout, gas extraction infrastructure and monitoring locations

APPENDIX 1

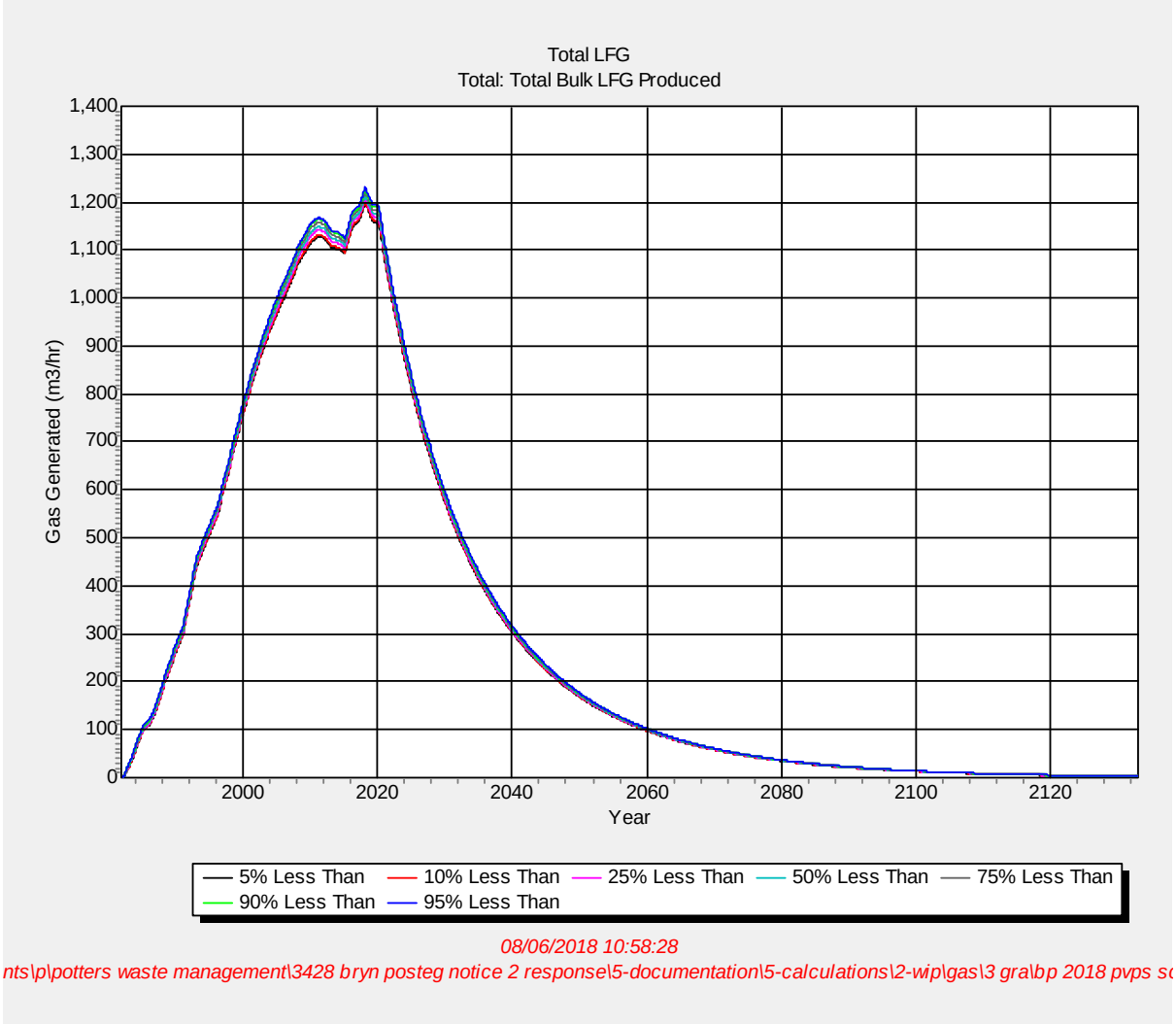
GasSim model set up (Scenario 1 and Scenario 2)

APPENDIX 2

Graphs showing GasSim results

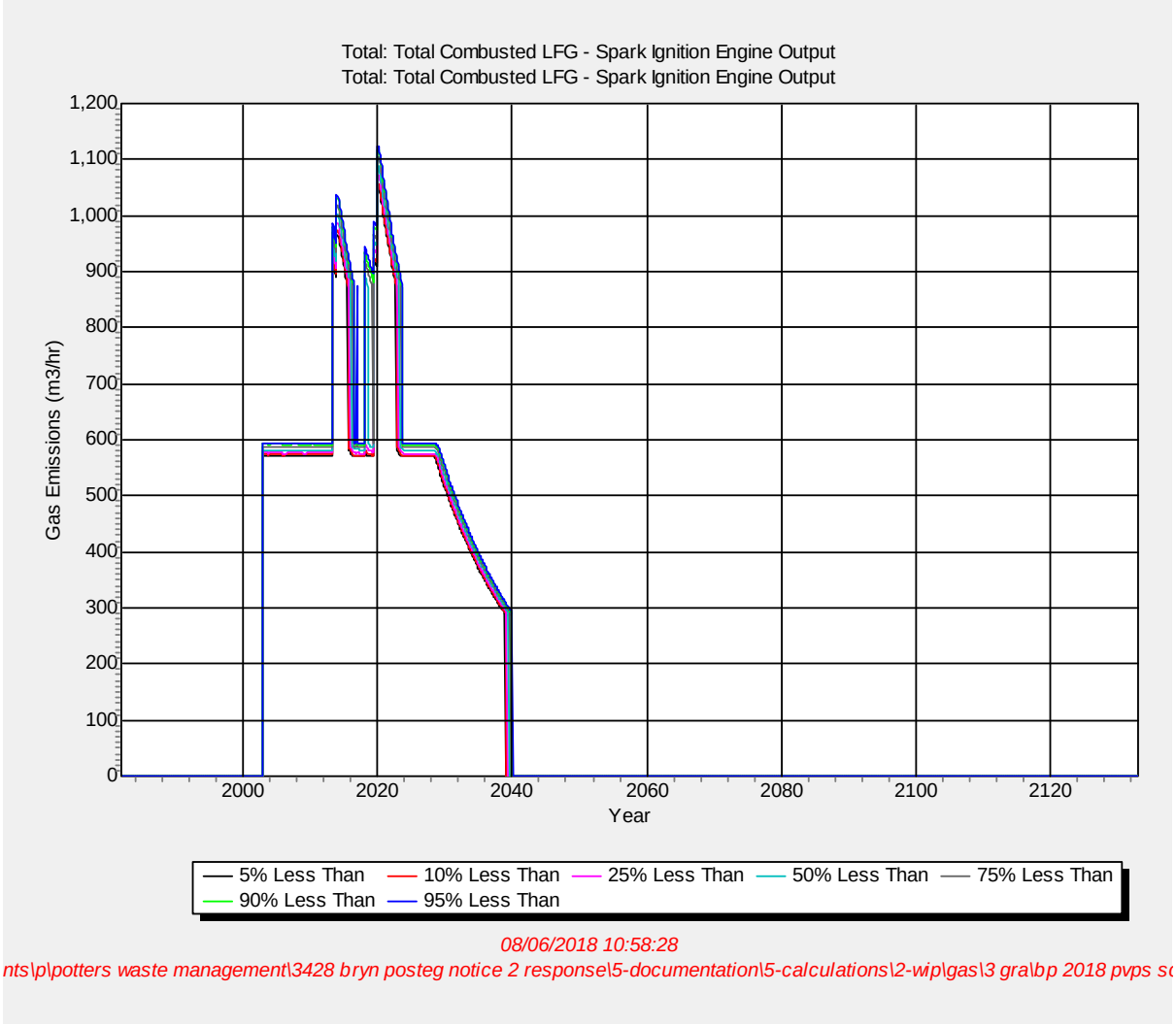
APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS

Scenario 1 Results



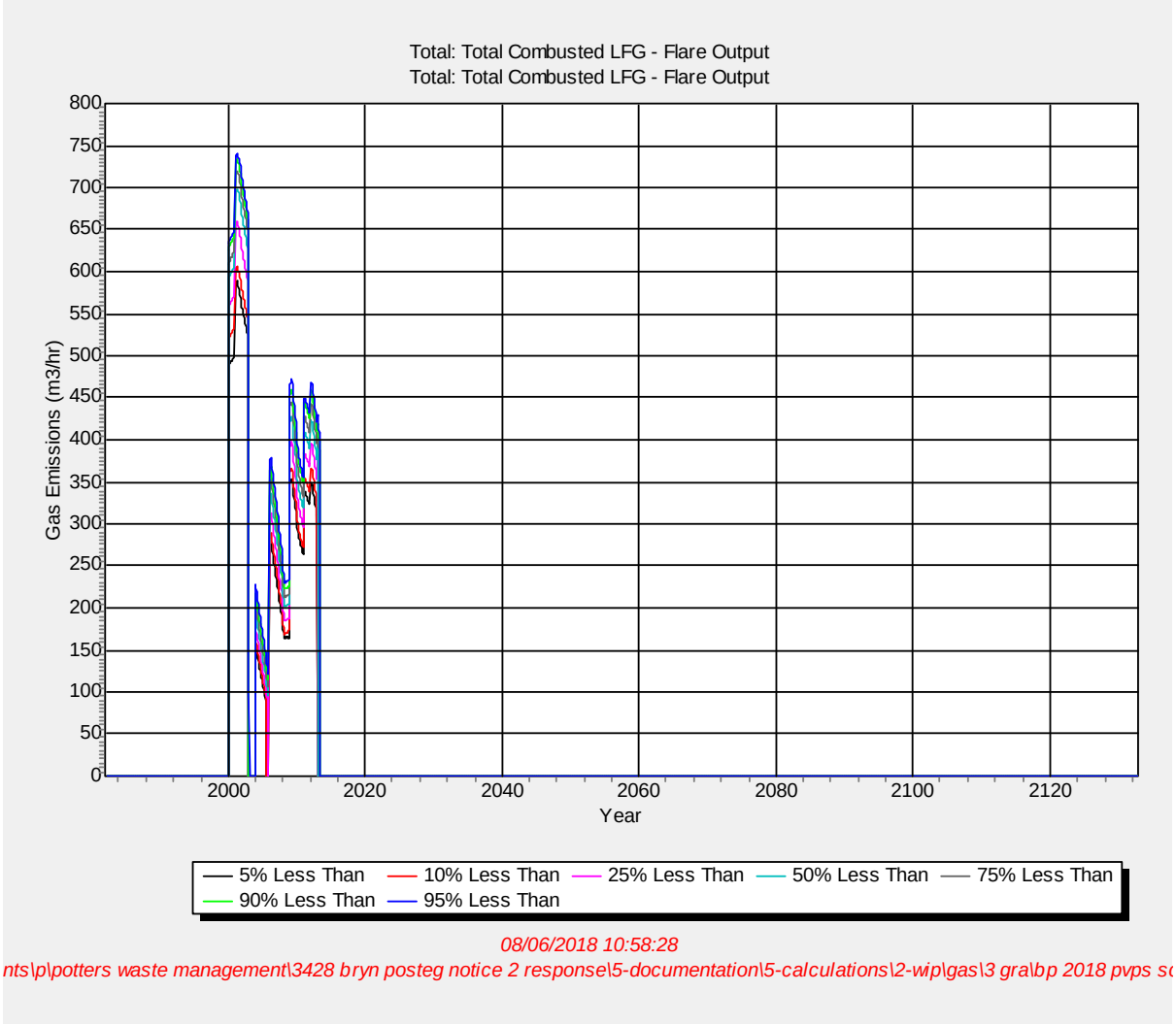
Graph 1: Total bulk landfill gas generation rates

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



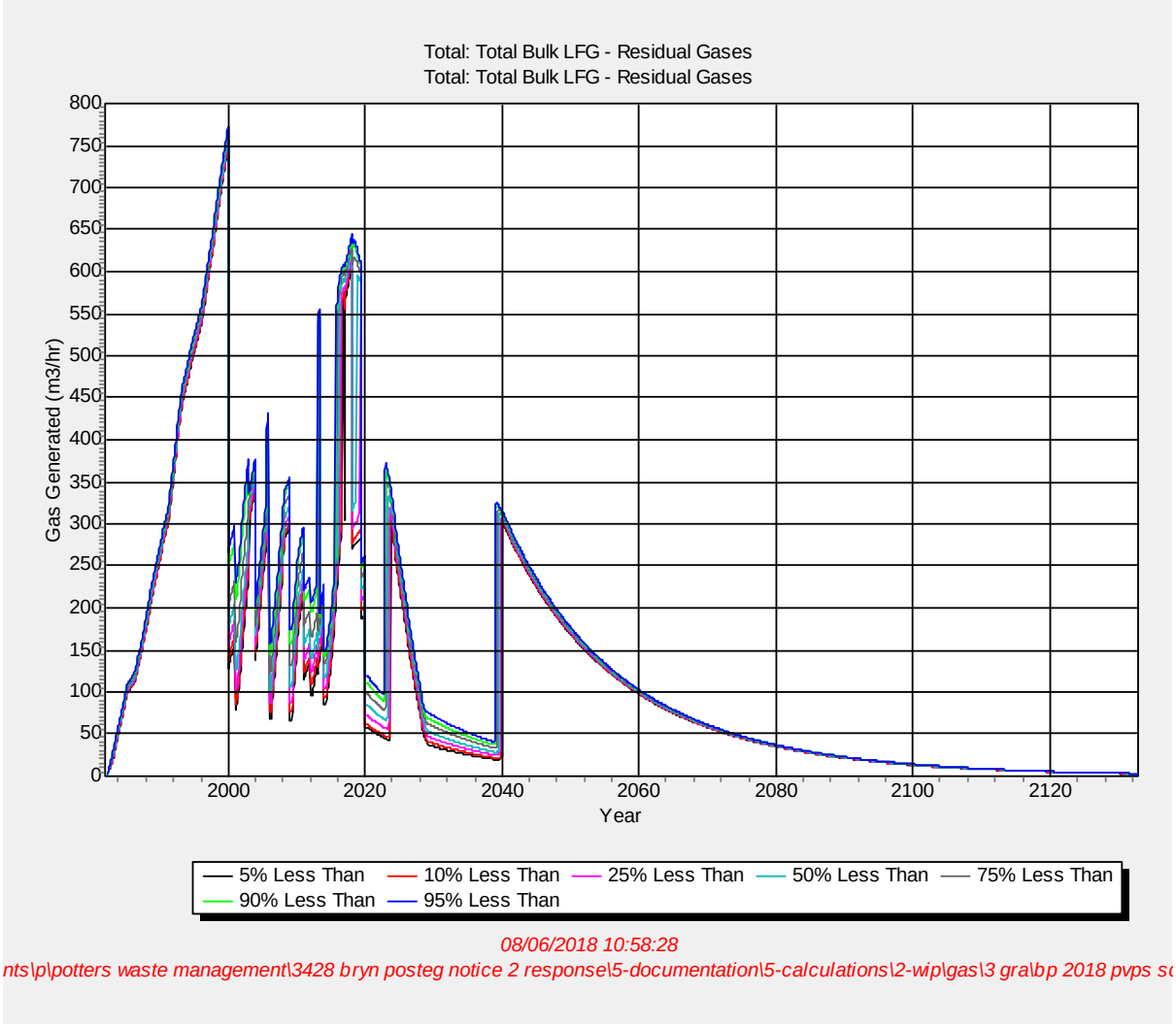
Graph 2: Total bulk landfill gas combusted by the engines

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



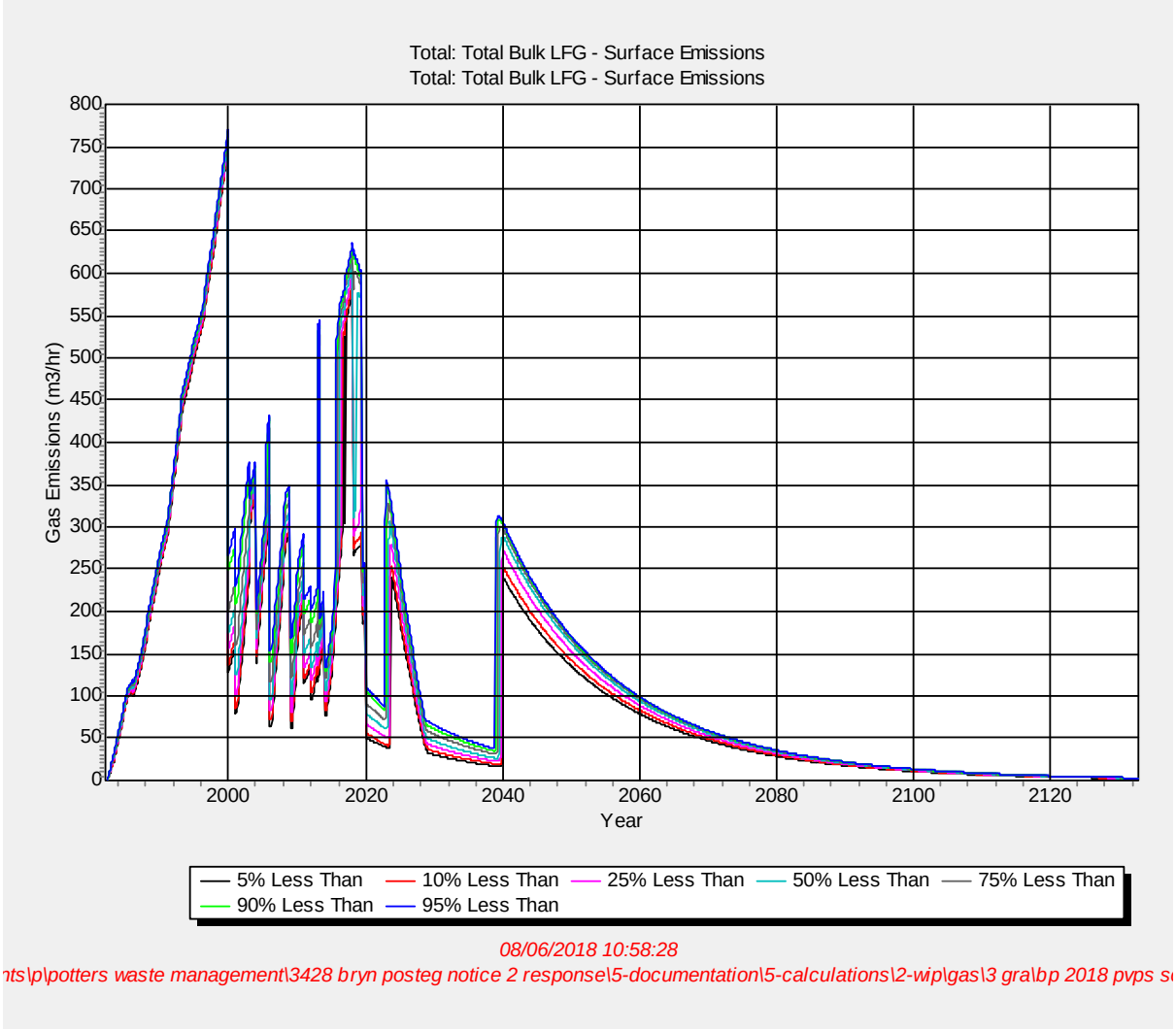
Graph 3: Total bulk landfill gas combusted by the flare

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



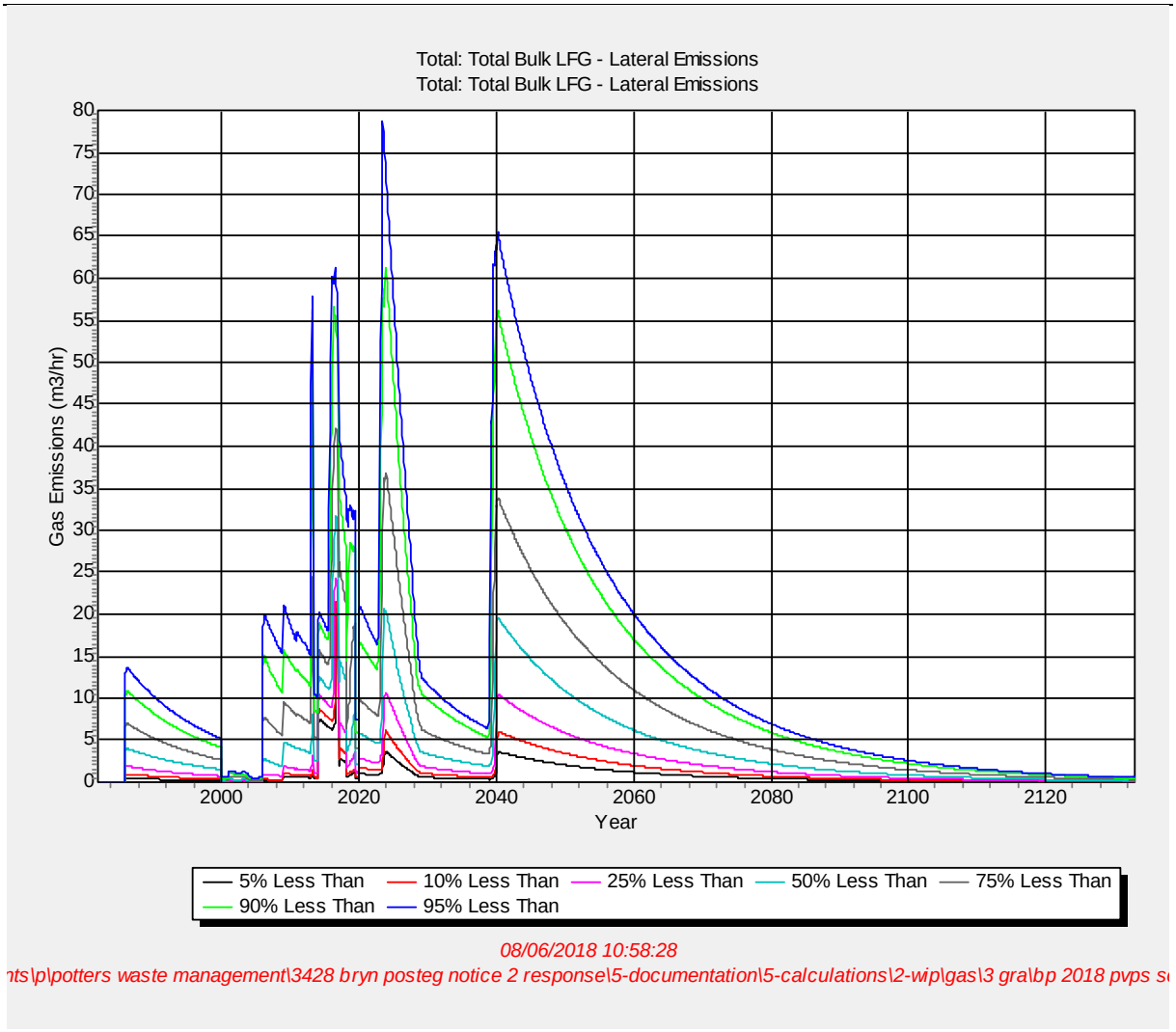
Graph 4: Residual landfill gas (total bulk landfill gas)

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



Graph 5: Surface emissions (total bulk landfill gas)

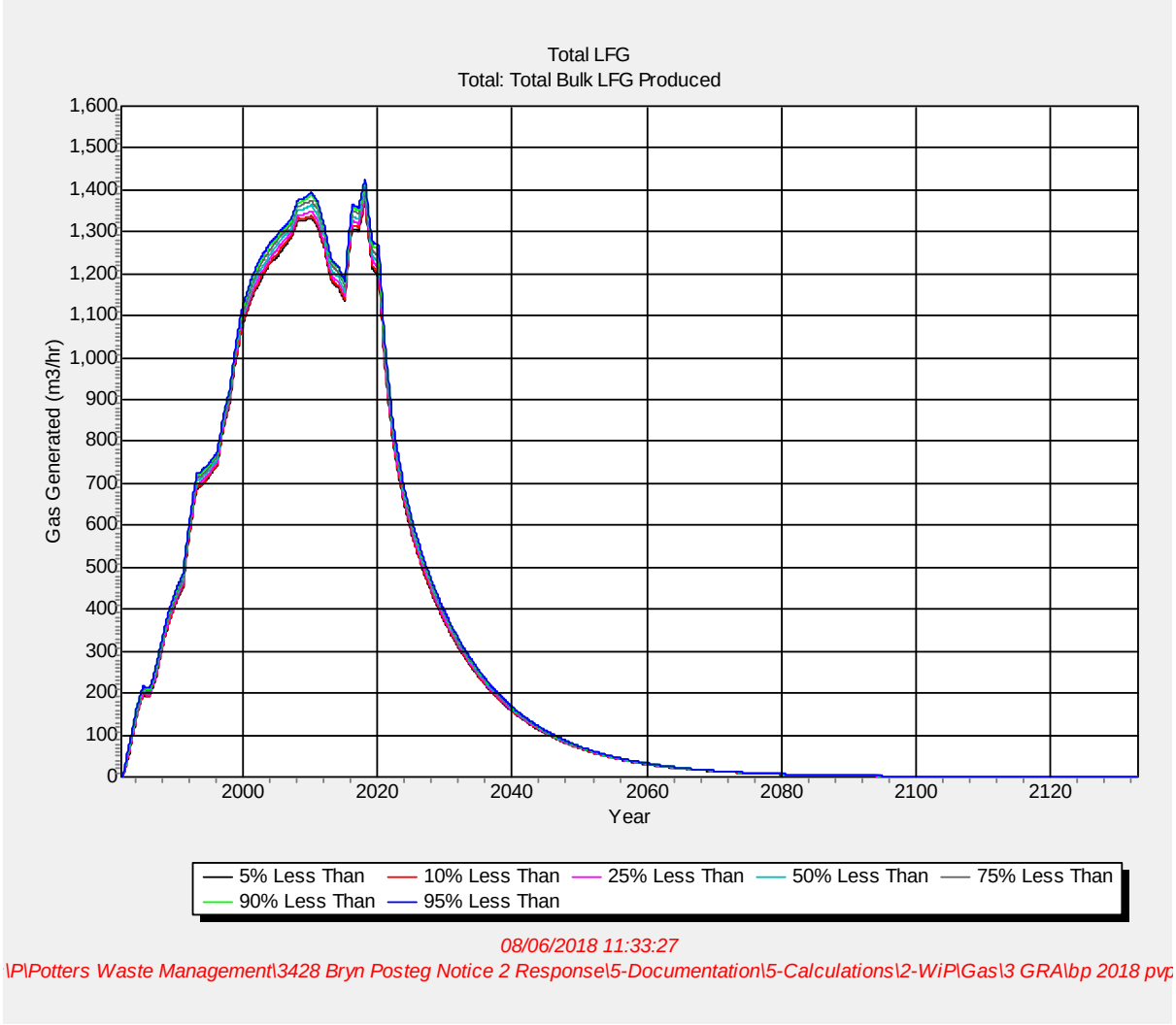
APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



Graph 6: Lateral emissions (total bulk landfill gas)

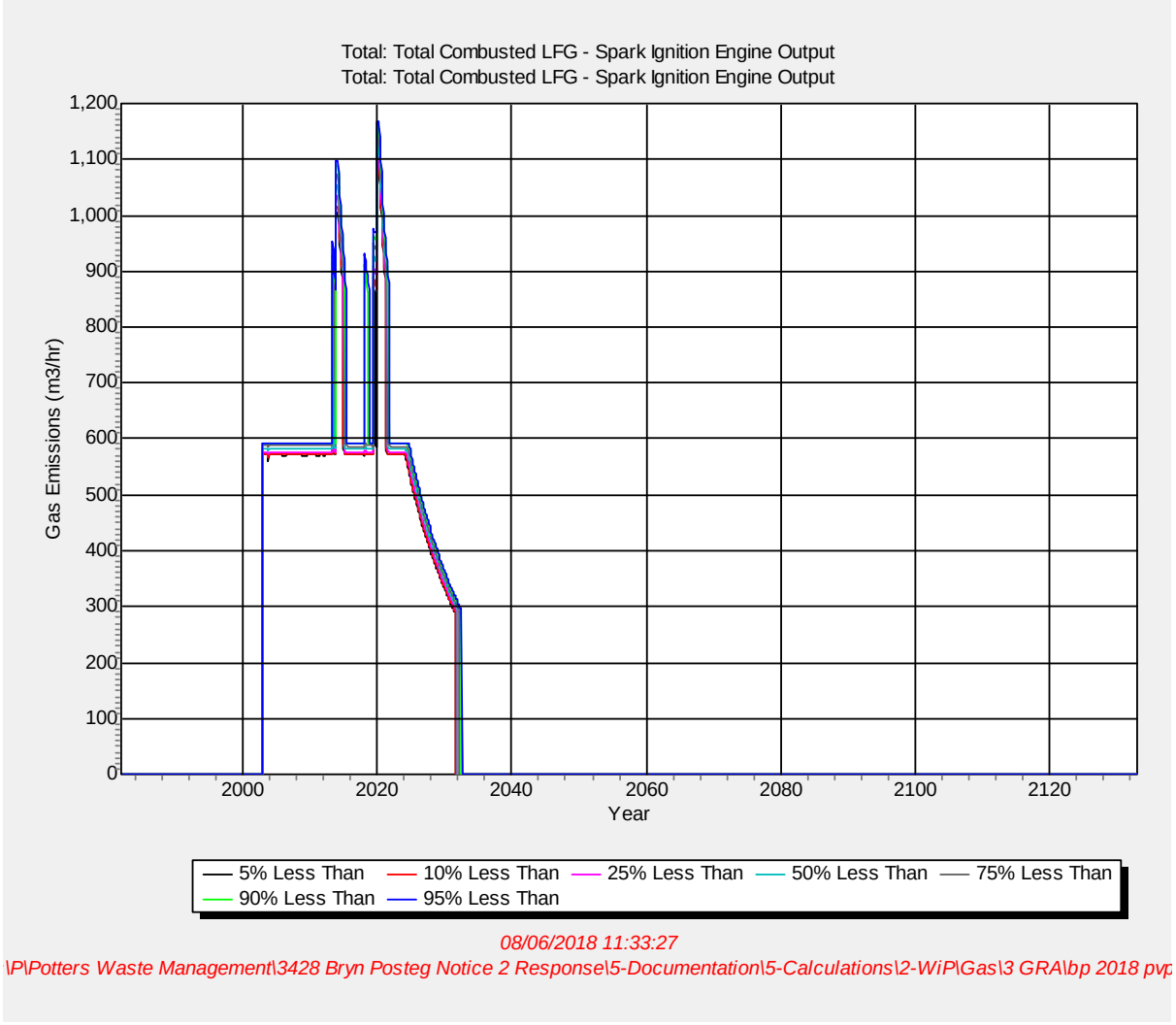
APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS

Scenario 2 Landfill Gas Generation Curve



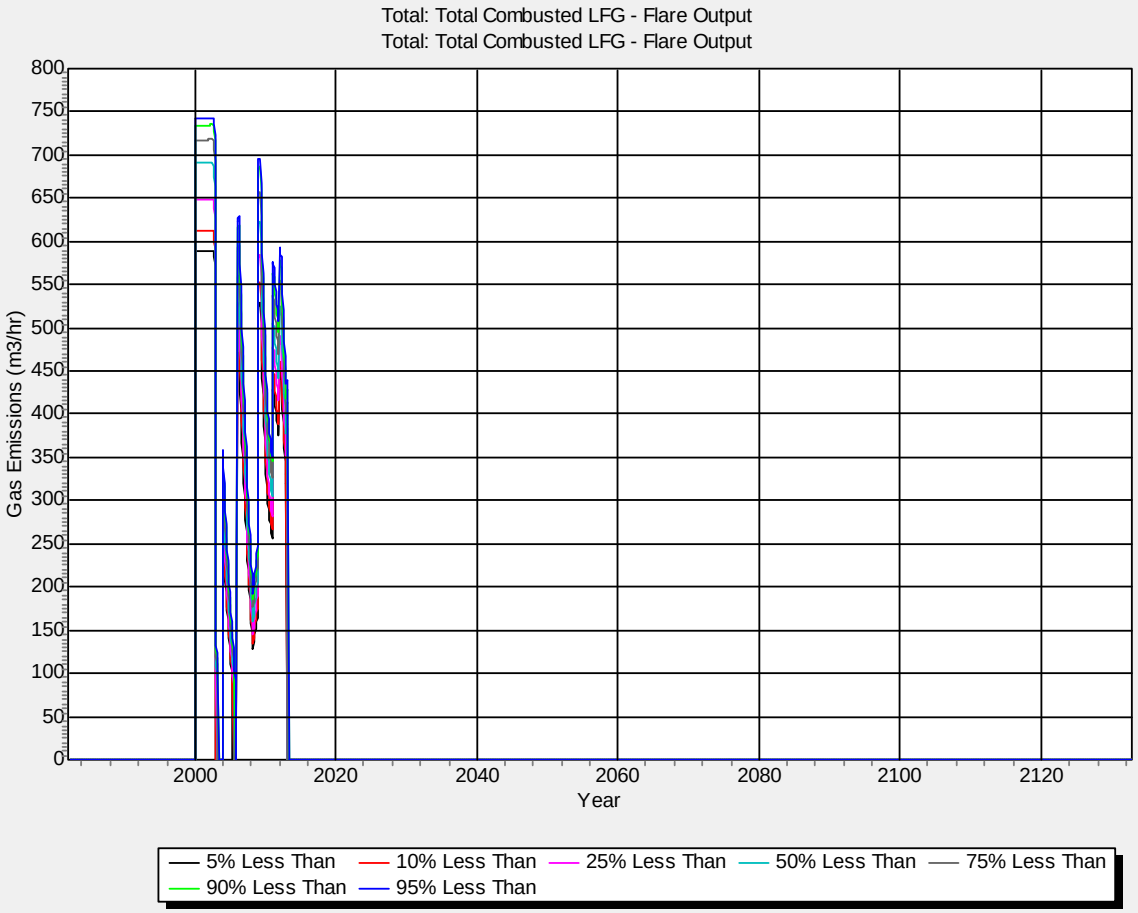
Graph 7: Total bulk landfill gas generation rates

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



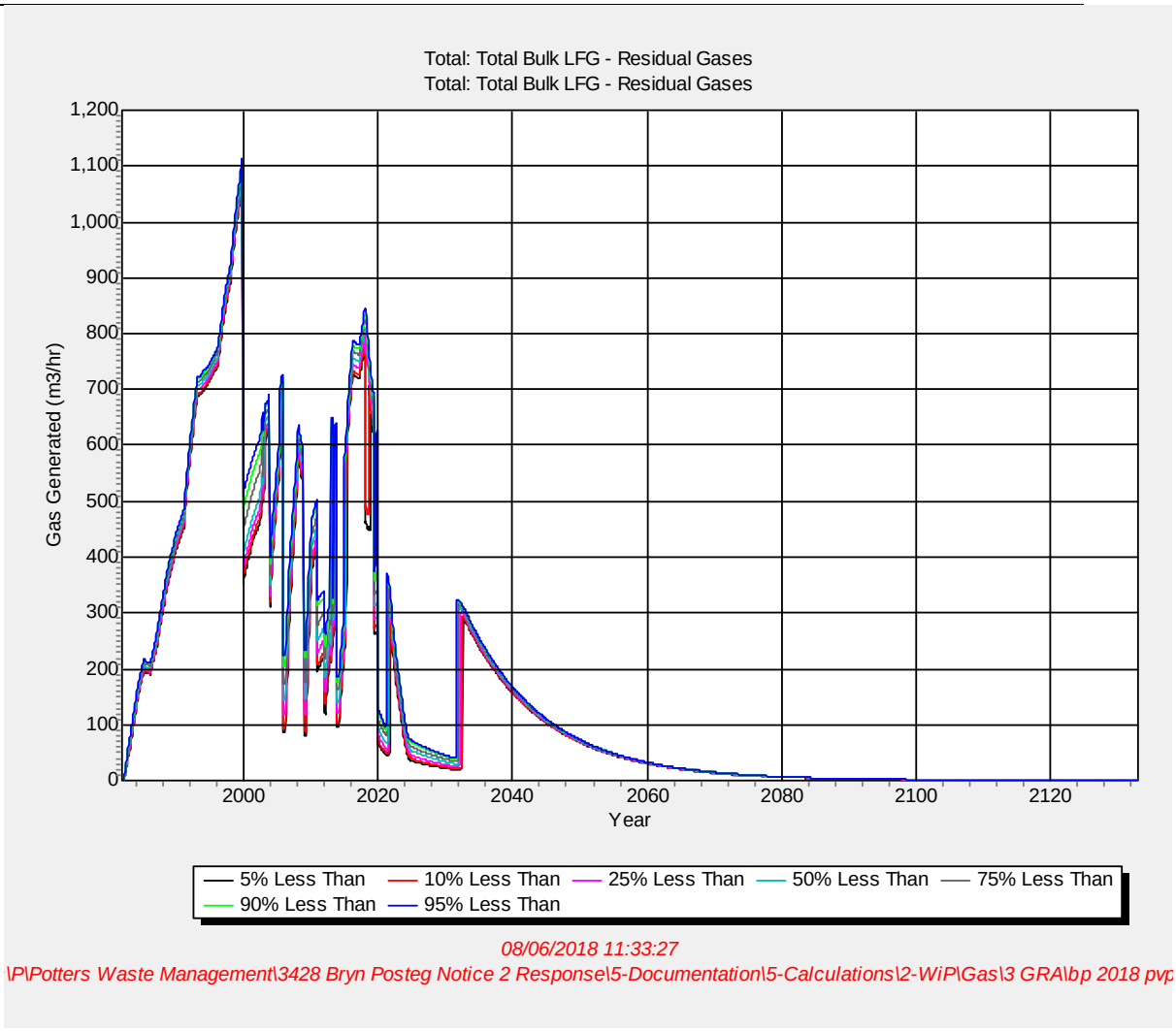
Graph 8: Total bulk landfill gas combusted by the engines

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



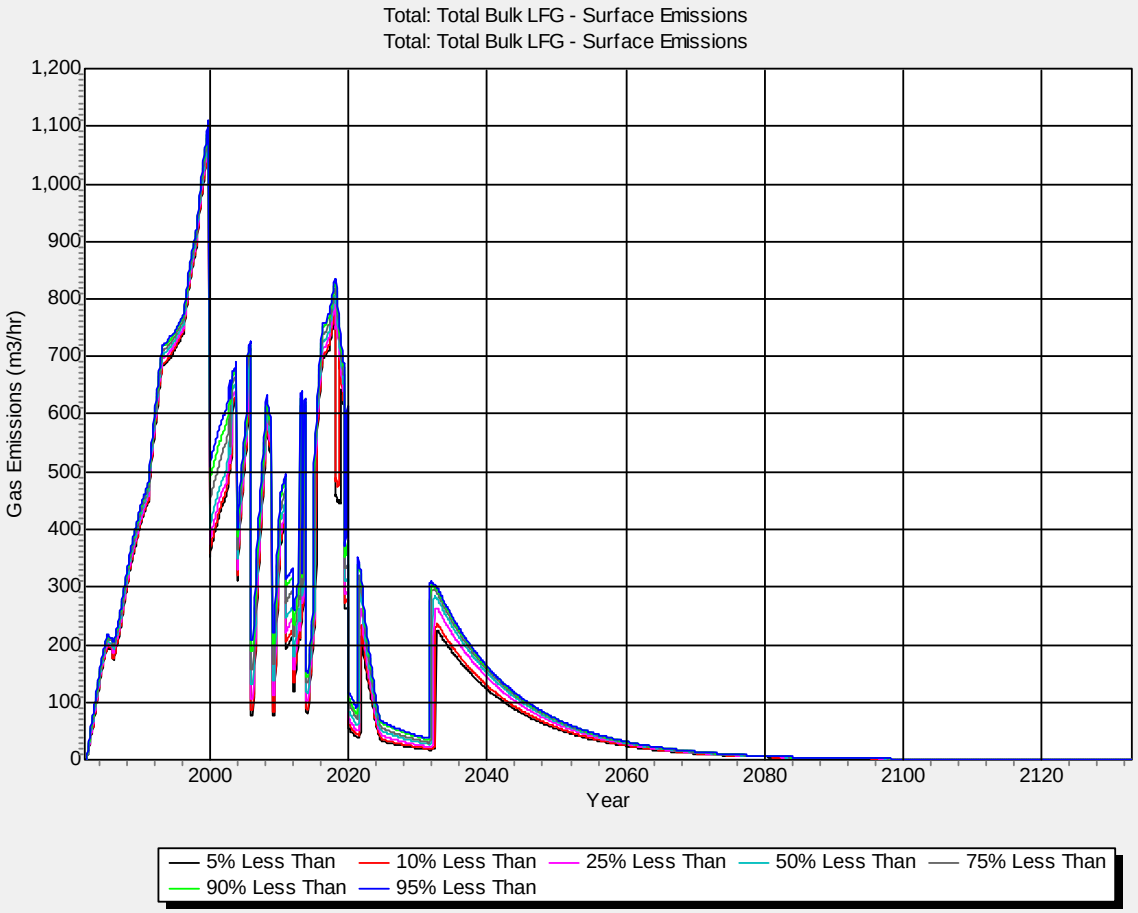
Graph 9: Total bulk landfill gas combusted by the flare

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



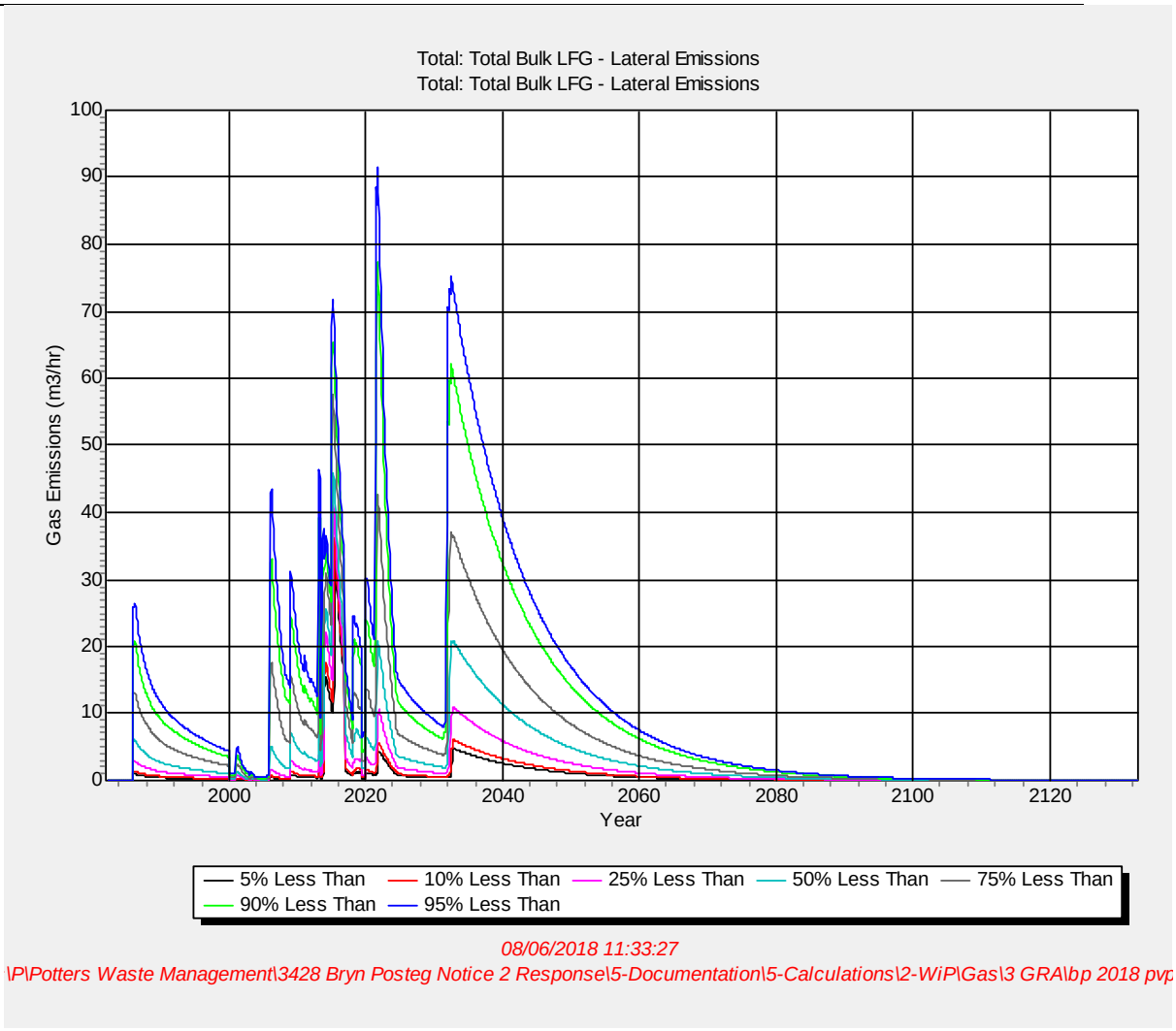
Graph 10: Residual landfill gas (total bulk landfill gas)

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



Graph 11: Surface emissions (total bulk landfill gas)

APPENDIX 2 – LANDFILL GAS GENERATION RATE AND OUTPUTS



Graph 12: Lateral emissions (total bulk landfill gas)

APPENDIX 3

Print out of Tier 1 modelling

Year of Interest: All

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Acrylonitrile - surface	1998	264	8.8	0
Acrylonitrile - surface	1999	264	8.8	0
Acrylonitrile - surface	2003	264	8.8	0
Acrylonitrile - surface	2017	264	8.8	0
Acrylonitrile - surface	2018	264	8.8	0
Arsenic - surface	1982	0.003	0	0
Arsenic - surface	1983	0.003	0	0
Arsenic - surface	1984	0.003	0	0
Arsenic - surface	1985	0.003	0	0
Arsenic - surface	1986	0.003	0	0
Arsenic - surface	1987	0.003	0	0
Arsenic - surface	1988	0.003	0	0
Arsenic - surface	1989	0.003	0	0
Arsenic - surface	1990	0.003	0	0
Arsenic - surface	1991	0.003	0	0
Arsenic - surface	1992	0.003	0	0
Arsenic - surface	1993	0.003	0	0
Arsenic - surface	1994	0.003	0	0
Arsenic - surface	1995	0.003	0	0
Arsenic - surface	1996	0.003	0	0
Arsenic - surface	1997	0.003	0	0
Arsenic - surface	1998	0.003	0	0
Arsenic - surface	1999	0.003	0	0
Arsenic - surface	2000	0.003	0	0
Arsenic - surface	2001	0.003	0	0
Arsenic - surface	2002	0.003	0	0
Arsenic - surface	2003	0.003	0	0
Arsenic - surface	2004	0.003	0	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Arsenic - surface	2005	0.003	0	0
Arsenic - surface	2006	0.003	0	0
Arsenic - surface	2007	0.003	0	0
Arsenic - surface	2008	0.003	0	0
Arsenic - surface	2009	0.003	0	0
Arsenic - surface	2010	0.003	0	0
Arsenic - surface	2011	0.003	0	0
Arsenic - surface	2012	0.003	0	0
Arsenic - surface	2013	0.003	0	0
Arsenic - surface	2014	0.003	0	0
Arsenic - surface	2015	0.003	0	0
Arsenic - surface	2016	0.003	0	0
Arsenic - surface	2017	0.003	0	0
Arsenic - surface	2018	0.003	0	0
Arsenic - surface	2019	0.003	0	0
Arsenic - surface	2020	0.003	0	0
Arsenic - surface	2021	0.003	0	0
Arsenic - surface	2022	0.003	0	0
Arsenic - surface	2023	0.003	0	0
Arsenic - surface	2024	0.003	0	0
Arsenic - surface	2025	0.003	0	0
Arsenic - surface	2026	0.003	0	0
Arsenic - surface	2027	0.003	0	0
Arsenic - surface	2028	0.003	0	0
Arsenic - surface	2029	0.003	0	0
Arsenic - surface	2030	0.003	0	0
Arsenic - surface	2031	0.003	0	0
Arsenic - surface	2032	0.003	0	0
Arsenic - surface	2039	0.003	0	0
Arsenic - surface	2040	0.003	0	0
Arsenic - surface	2041	0.003	0	0
Arsenic - surface	2042	0.003	0	0
Arsenic - surface	2043	0.003	0	0
Arsenic - surface	2044	0.003	0	0
Benzene - surface	1983	0	5	0
Benzene - surface	1984	0	5	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
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
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	2023	0	5	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Benzene - surface	2024	0	5	0
Benzene - surface	2025	0	5	0
Benzo(a)pyrene - flare	2000	0	0.00025	0
Benzo(a)pyrene - flare	2001	0	0.00025	0
Benzo(a)pyrene - flare	2002	0	0.00025	0
Benzo(a)pyrene - flare	2004	0	0.00025	0
Benzo(a)pyrene - flare	2006	0	0.00025	0
Benzo(a)pyrene - flare	2007	0	0.00025	0
Benzo(a)pyrene - flare	2008	0	0.00025	0
Benzo(a)pyrene - flare	2009	0	0.00025	0
Benzo(a)pyrene - flare	2010	0	0.00025	0
Benzo(a)pyrene - flare	2011	0	0.00025	0
Benzo(a)pyrene - flare	2012	0	0.00025	0
Carbon monoxide - engine	2014	10000	0	0
Carbon monoxide - engine	2015	10000	0	0
Carbon monoxide - engine	2020	10000	0	0
Carbon monoxide - engine	2021	10000	0	0
Carbon monoxide - engine	2022	10000	0	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	1998	700	42	0
Ethylene dichloride - surface	1999	700	42	0
Ethylene dichloride - surface	2000	700	42	0
Ethylene dichloride - surface	2001	700	42	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Ethylene dichloride - surface	2002	700	42	0
Ethylene dichloride - surface	2003	700	42	0
Ethylene dichloride - surface	2004	700	42	0
Ethylene dichloride - surface	2005	700	42	0
Ethylene dichloride - surface	2008	700	42	0
Ethylene dichloride - surface	2010	700	42	0
Ethylene dichloride - surface	2015	700	42	0
Ethylene dichloride - surface	2016	700	42	0
Ethylene dichloride - surface	2017	700	42	0
Ethylene dichloride - surface	2018	700	42	0
Ethylene dichloride - surface	2019	700	42	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare	2000	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare	2001	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare	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)) - flare	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)) - flare	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)) - flare	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)) - flare	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)) - flare	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

		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	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
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 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	1994	150	140	0
Hydrogen sulphide - surface	1995	150	140	0
Hydrogen sulphide - surface	1996	150	140	0
Hydrogen sulphide - surface	1997	150	140	0
Hydrogen sulphide - surface	1998	150	140	0
Hydrogen sulphide - surface	1999	150	140	0
Hydrogen sulphide - surface	2000	150	140	0
Hydrogen sulphide - surface	2001	150	140	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Hydrogen sulphide - surface	2002	150	140	0
Hydrogen sulphide - surface	2003	150	140	0
Hydrogen sulphide - surface	2004	150	140	0
Hydrogen sulphide - surface	2005	150	140	0
Hydrogen sulphide - surface	2007	150	140	0
Hydrogen sulphide - surface	2008	150	140	0
Hydrogen sulphide - surface	2010	150	140	0
Hydrogen sulphide - surface	2011	150	140	0
Hydrogen sulphide - surface	2013	150	140	0
Hydrogen sulphide - surface	2015	150	140	0
Hydrogen sulphide - surface	2016	150	140	0
Hydrogen sulphide - surface	2017	150	140	0
Hydrogen sulphide - surface	2018	150	140	0
Hydrogen sulphide - surface	2019	150	140	0
Nitrogen oxides (NOx) - flare	2000	200	40	4.30145
Nitrogen oxides (NOx) - flare	2001	200	40	4.30145
Nitrogen oxides (NOx) - flare	2002	200	40	4.30145
Nitrogen oxides (NOx) - engine	2003	200	40	4.30145
Nitrogen oxides (NOx) - engine	2004	200	40	4.30145
Nitrogen oxides (NOx) - flare	2004	200	40	4.30145
Nitrogen oxides (NOx) - engine	2005	200	40	4.30145
Nitrogen oxides (NOx) - engine	2006	200	40	4.30145
Nitrogen oxides (NOx) - flare	2006	200	40	4.30145
Nitrogen oxides (NOx) - engine	2007	200	40	4.30145
Nitrogen oxides (NOx) - flare	2007	200	40	4.30145
Nitrogen oxides (NOx) - engine	2008	200	40	4.30145
Nitrogen oxides (NOx) - flare	2008	200	40	4.30145
Nitrogen oxides (NOx) - engine	2009	200	40	4.30145
Nitrogen oxides (NOx) - flare	2009	200	40	4.30145
Nitrogen oxides (NOx) - engine	2010	200	40	4.30145
Nitrogen oxides (NOx) - flare	2010	200	40	4.30145
Nitrogen oxides (NOx) - engine	2011	200	40	4.30145
Nitrogen oxides (NOx) - flare	2011	200	40	4.30145
Nitrogen oxides (NOx) - engine	2012	200	40	4.30145
Nitrogen oxides (NOx) - flare	2012	200	40	4.30145
Nitrogen oxides (NOx) - engine	2013	200	40	4.30145

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Nitrogen oxides (NOx) - engine	2014	200	40	4.30145
Nitrogen oxides (NOx) - engine	2015	200	40	4.30145
Nitrogen oxides (NOx) - engine	2016	200	40	4.30145
Nitrogen oxides (NOx) - engine	2017	200	40	4.30145
Nitrogen oxides (NOx) - engine	2018	200	40	4.30145
Nitrogen oxides (NOx) - engine	2019	200	40	4.30145
Nitrogen oxides (NOx) - engine	2020	200	40	4.30145
Nitrogen oxides (NOx) - engine	2021	200	40	4.30145
Nitrogen oxides (NOx) - engine	2022	200	40	4.30145
Nitrogen oxides (NOx) - engine	2023	200	40	4.30145
Nitrogen oxides (NOx) - engine	2024	200	40	4.30145
Nitrogen oxides (NOx) - engine	2025	200	40	4.30145
Nitrogen oxides (NOx) - engine	2026	200	40	4.30145
Nitrogen oxides (NOx) - engine	2027	200	40	4.30145
Nitrogen oxides (NOx) - engine	2028	200	40	4.30145
Nitrogen oxides (NOx) - engine	2029	200	40	4.30145
Nitrogen oxides (NOx) - engine	2030	200	40	4.30145
Nitrogen oxides (NOx) - engine	2031	200	40	4.30145
Nitrogen oxides (NOx) - engine	2032	200	40	4.30145
Nitrogen oxides (NOx) - engine	2033	200	40	4.30145
Nitrogen oxides (NOx) - engine	2034	200	40	4.30145
Nitrogen oxides (NOx) - engine	2035	200	40	4.30145
Nitrogen oxides (NOx) - engine	2036	200	40	4.30145
Nitrogen oxides (NOx) - engine	2037	200	40	4.30145
Nitrogen oxides (NOx) - engine	2038	200	40	4.30145
Nitrogen oxides (NOx) - engine	2039	200	40	4.30145
Nitrogen oxides (NOx) - engine	2040	200	40	4.30145
PM10s 24 hour - flare	2000	50		8.56818
PM10s 24 hour - flare	2001	50		8.56818
PM10s 24 hour - flare	2002	50		8.56818
PM10s 24 hour - flare	2009	50		8.56818
PM10s 24 hour - flare	2011	50		8.56818
PM10s 24 hour - flare	2012	50		8.56818
PM10s - engine	2020	0	40	8.56818
PM10s 24 hour - engine	2020	50		8.56818
PM10s 24 hour - engine	2021	50		8.56818

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

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	2009	266		0
Sulphur dioxide 24 hour - engine	2009	125		0
Sulphur dioxide - flare	2009	350	0	0
Sulphur dioxide 15 min - flare	2009	266		0
Sulphur dioxide 24 hour - flare	2009	125		0
Sulphur dioxide - engine	2010	350	0	0
Sulphur dioxide 15 min - engine	2010	266		0
Sulphur dioxide 24 hour - engine	2010	125		0
Sulphur dioxide - flare	2010	350	0	0
Sulphur dioxide 15 min - flare	2010	266		0
Sulphur dioxide 24 hour - flare	2010	125		0
Sulphur dioxide - engine	2011	350	0	0
Sulphur dioxide 15 min - engine	2011	266		0
Sulphur dioxide 24 hour - engine	2011	125		0
Sulphur dioxide - flare	2011	350	0	0
Sulphur dioxide 15 min - flare	2011	266		0
Sulphur dioxide 24 hour - flare	2011	125		0
Sulphur dioxide - engine	2012	350	0	0
Sulphur dioxide 15 min - engine	2012	266		0
Sulphur dioxide 24 hour - engine	2012	125		0
Sulphur dioxide - flare	2012	350	0	0
Sulphur dioxide 15 min - flare	2012	266		0
Sulphur dioxide 24 hour - flare	2012	125		0
Sulphur dioxide - engine	2013	350	0	0
Sulphur dioxide 15 min - engine	2013	266		0
Sulphur dioxide 24 hour - engine	2013	125		0
Sulphur dioxide - engine	2014	350	0	0
Sulphur dioxide 15 min - engine	2014	266		0
Sulphur dioxide 24 hour - engine	2014	125		0
Sulphur dioxide - engine	2015	350	0	0
Sulphur dioxide 15 min - engine	2015	266		0
Sulphur dioxide 24 hour - engine	2015	125		0
Sulphur dioxide - engine	2016	350	0	0
Sulphur dioxide 15 min - engine	2016	266		0
Sulphur dioxide 24 hour - engine	2016	125		0
Sulphur dioxide - engine	2017	350	0	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	2017	266		0
Sulphur dioxide 24 hour - engine	2017	125		0
Sulphur dioxide - engine	2018	350	0	0
Sulphur dioxide 15 min - engine	2018	266		0
Sulphur dioxide 24 hour - engine	2018	125		0
Sulphur dioxide - engine	2019	350	0	0
Sulphur dioxide 15 min - engine	2019	266		0
Sulphur dioxide 24 hour - engine	2019	125		0
Sulphur dioxide - engine	2020	350	0	0
Sulphur dioxide 15 min - engine	2020	266		0
Sulphur dioxide 24 hour - engine	2020	125		0
Sulphur dioxide - engine	2021	350	0	0
Sulphur dioxide 15 min - engine	2021	266		0
Sulphur dioxide 24 hour - engine	2021	125		0
Sulphur dioxide - engine	2022	350	0	0
Sulphur dioxide 15 min - engine	2022	266		0
Sulphur dioxide 24 hour - engine	2022	125		0
Sulphur dioxide - engine	2023	350	0	0
Sulphur dioxide 15 min - engine	2023	266		0
Sulphur dioxide 24 hour - engine	2023	125		0
Sulphur dioxide - engine	2024	350	0	0
Sulphur dioxide 15 min - engine	2024	266		0
Sulphur dioxide 24 hour - engine	2024	125		0
Sulphur dioxide - engine	2025	350	0	0
Sulphur dioxide 15 min - engine	2025	266		0
Sulphur dioxide 24 hour - engine	2025	125		0
Sulphur dioxide - engine	2026	350	0	0
Sulphur dioxide 15 min - engine	2026	266		0
Sulphur dioxide 24 hour - engine	2026	125		0
Sulphur dioxide - engine	2027	350	0	0
Sulphur dioxide 15 min - engine	2027	266		0
Sulphur dioxide 24 hour - engine	2027	125		0
Sulphur dioxide - engine	2028	350	0	0
Sulphur dioxide 15 min - engine	2028	266		0
Sulphur dioxide 24 hour - engine	2028	125		0
Sulphur dioxide - engine	2029	350	0	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide 15 min - engine	2029	266		0
Sulphur dioxide 24 hour - engine	2029	125		0
Sulphur dioxide - engine	2030	350	0	0
Sulphur dioxide 15 min - engine	2030	266		0
Sulphur dioxide 24 hour - engine	2030	125		0
Sulphur dioxide - engine	2031	350	0	0
Sulphur dioxide 15 min - engine	2031	266		0
Sulphur dioxide 24 hour - engine	2031	125		0
Sulphur dioxide - engine	2032	350	0	0
Sulphur dioxide 15 min - engine	2032	266		0
Sulphur dioxide 24 hour - engine	2032	125		0
Sulphur dioxide - engine	2033	350	0	0
Sulphur dioxide 15 min - engine	2033	266		0
Sulphur dioxide 24 hour - engine	2033	125		0
Sulphur dioxide - engine	2034	350	0	0
Sulphur dioxide 15 min - engine	2034	266		0
Sulphur dioxide 24 hour - engine	2034	125		0
Sulphur dioxide - engine	2035	350	0	0
Sulphur dioxide 15 min - engine	2035	266		0
Sulphur dioxide 24 hour - engine	2035	125		0
Sulphur dioxide - engine	2036	350	0	0
Sulphur dioxide 15 min - engine	2036	266		0
Sulphur dioxide 24 hour - engine	2036	125		0
Sulphur dioxide - engine	2037	350	0	0
Sulphur dioxide 15 min - engine	2037	266		0
Sulphur dioxide 24 hour - engine	2037	125		0
Sulphur dioxide - engine	2038	350	0	0
Sulphur dioxide 15 min - engine	2038	266		0
Sulphur dioxide 24 hour - engine	2038	125		0
Sulphur dioxide - engine	2039	350	0	0
Sulphur dioxide 15 min - engine	2039	266		0
Sulphur dioxide 24 hour - engine	2039	125		0
Vinyl chloride (chloroethene, chloroethylene) - surface	1990	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	1994	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	1995	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1996	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1997	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1998	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1999	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2003	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2005	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2008	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2016	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2017	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2018	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2019	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 - 1998	4.67379(5m)	3.97711(79.8123m)	Yes	No	0.0963969(5m)	0.0667879(79.8123m)	Yes (at receptor)	No
Acrylonitrile - surface - 1999	4.59252(5m)	3.90795(79.8123m)	Yes	No	0.0947207(5m)	0.0656266(79.8123m)	Yes (at receptor)	No
Acrylonitrile - surface - 2003	4.55663(5m)	4.55663(28.3019m)	Yes	No	0.0939804(5m)	0.0939804(28.3019m)	No	No
Acrylonitrile - surface - 2017	5.34532(5m)	5.34532(28.3019m)	Yes	No	0.110247(5m)	0.110247(28.3019m)	No	No
Acrylonitrile - surface - 2018	4.85868(5m)	4.85868(28.3019m)	Yes	No	0.10021(5m)	0.10021(28.3019m)	No	No
Arsenic - surface - 1982	0.00142825(5m)	0.000696271(210m)	No	Yes	2.94576e-005(5m)	5.89152e-006(210m)	No EAL	No EAL
Arsenic - surface - 1983	0.00619782(5m)	0.00302144(210m)	No	Yes	0.00012783(5m)	2.5566e-005(210m)	No EAL	No EAL
Arsenic - surface - 1984	0.011257(5m)	0.00548778(210m)	No	Yes	0.000232175(5m)	4.64351e-005(210m)	No EAL	No EAL
Arsenic - surface - 1985	0.0145625(5m)	0.00709923(210m)	No	Yes	0.000300352(5m)	6.00704e-005(210m)	No EAL	No EAL
Arsenic - surface - 1986	0.0123649(5m)	0.00602789(210m)	No	Yes	0.000255026(5m)	5.10052e-005(210m)	No EAL	No EAL
Arsenic - surface - 1987	0.0177132(5m)	0.0086352(210m)	No	Yes	0.000365335(5m)	7.3067e-005(210m)	No EAL	No EAL
Arsenic - surface - 1988	0.0259288(5m)	0.0126403(210m)	No	Yes	0.000534782(5m)	0.000106956(210m)	No EAL	No EAL
Arsenic - surface - 1989	0.0250244(5m)	0.0121994(210m)	No	Yes	0.000516128(5m)	0.000103226(210m)	No EAL	No EAL
Arsenic - surface - 1990	0.0251909(5m)	0.0122806(210m)	No	Yes	0.000519562(5m)	0.000103912(210m)	No EAL	No EAL
Arsenic - surface - 1991	0.0259186(5m)	0.0126353(210m)	No	Yes	0.000534572(5m)	0.000106914(210m)	No EAL	No EAL
Arsenic - surface - 1992	0.0335363(5m)	0.0174787(191.525m)	No	Yes	0.000691686(5m)	0.000153826(191.525m)	No EAL	No EAL
Arsenic - surface - 1993	0.0456883(5m)	0.0238121(191.525m)	No	Yes	0.000942321(5m)	0.000209566(191.525m)	No EAL	No EAL
Arsenic - surface - 1994	0.0484417(5m)	0.028968(160.801m)	No	Yes	0.000999111(5m)	0.000259404(160.801m)	No EAL	No EAL
Arsenic - surface - 1995	0.0395095(5m)	0.0236266(160.801m)	No	Yes	0.000814883(5m)	0.000211572(160.801m)	No EAL	No EAL
Arsenic - surface - 1996	0.0379819(5m)	0.0227131(160.801m)	No	Yes	0.000783377(5m)	0.000203392(160.801m)	No EAL	No EAL
Arsenic - surface - 1997	0.044722(5m)	0.0267436(160.801m)	No	Yes	0.000922391(5m)	0.000239485(160.801m)	No EAL	No EAL
Arsenic - surface - 1998	0.0525622(5m)	0.0447272(79.8123m)	No	Yes	0.00108409(5m)	0.000751108(79.8123m)	No EAL	No EAL
Arsenic - surface - 1999	0.0726336(5m)	0.0618067(79.8123m)	No	Yes	0.00149807(5m)	0.00103793(79.8123m)	No EAL	No EAL
Arsenic - surface - 2000	0.0310189(5m)	0.0263952(79.8123m)	No	Yes	0.000639765(5m)	0.000443257(79.8123m)	No EAL	No EAL
Arsenic - surface - 2001	0.0162153(5m)	0.0137982(79.8123m)	No	Yes	0.00033444(5m)	0.000231714(79.8123m)	No EAL	No EAL
Arsenic - surface - 2002	0.0408562(5m)	0.0347661(79.8123m)	No	Yes	0.00084266(5m)	0.000583831(79.8123m)	No EAL	No EAL
Arsenic - surface - 2003	0.0526766(5m)	0.0526766(28.3019m)	No	Yes	0.00108646(5m)	0.00108646(28.3019m)	No EAL	No EAL
Arsenic - surface - 2004	0.0309556(5m)	0.0309556(28.3019m)	No	Yes	0.00063846(5m)	0.00063846(28.3019m)	No EAL	No EAL
Arsenic - surface - 2005	0.0452699(5m)	0.0452699(28.3019m)	No	Yes	0.000933692(5m)	0.000933692(28.3019m)	No EAL	No EAL
Arsenic - surface - 2006	0.00999217(5m)	0.00999217(28.3019m)	No	Yes	0.000206089(5m)	0.000206089(28.3019m)	No EAL	No EAL
Arsenic - surface - 2007	0.0306212(5m)	0.0306212(28.3019m)	No	Yes	0.000631562(5m)	0.000631562(28.3019m)	No EAL	No EAL
Arsenic - surface - 2008	0.0434111(5m)	0.0434111(28.3019m)	No	Yes	0.000895353(5m)	0.000895353(28.3019m)	No EAL	No EAL
Arsenic - surface - 2009	0.0104425(5m)	0.0104425(28.3019m)	No	Yes	0.000215377(5m)	0.000215377(28.3019m)	No EAL	No EAL
Arsenic - surface - 2010	0.0275858(5m)	0.0275858(28.3019m)	No	Yes	0.000568958(5m)	0.000568958(28.3019m)	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?
Arsenic - surface - 2011	0.0162493(5m)	0.0162493(28.3019m)	No	Yes	0.000335143(5m)	0.000335143(28.3019m)	No EAL	No EAL
Arsenic - surface - 2012	0.0102797(5m)	0.0102797(28.3019m)	No	Yes	0.000212019(5m)	0.000212019(28.3019m)	No EAL	No EAL
Arsenic - surface - 2013	0.020765(5m)	0.020765(28.3019m)	No	Yes	0.000428278(5m)	0.000428278(28.3019m)	No EAL	No EAL
Arsenic - surface - 2014	0.00699793(5m)	0.00699793(28.3019m)	No	Yes	0.000144332(5m)	0.000144332(28.3019m)	No EAL	No EAL
Arsenic - surface - 2015	0.0215637(5m)	0.0215637(28.3019m)	No	Yes	0.000444752(5m)	0.000444752(28.3019m)	No EAL	No EAL
Arsenic - surface - 2016	0.0413482(5m)	0.0413482(28.3019m)	No	Yes	0.000852806(5m)	0.000852806(28.3019m)	No EAL	No EAL
Arsenic - surface - 2017	0.0542545(5m)	0.0542545(28.3019m)	No	Yes	0.001119(5m)	0.001119(28.3019m)	No EAL	No EAL
Arsenic - surface - 2018	0.0455345(5m)	0.0455345(28.3019m)	No	Yes	0.000939148(5m)	0.000939148(28.3019m)	No EAL	No EAL
Arsenic - surface - 2019	0.0348212(5m)	0.0348212(28.3019m)	No	Yes	0.000718187(5m)	0.000718187(28.3019m)	No EAL	No EAL
Arsenic - surface - 2020	0.00387725(5m)	0.00387725(28.3019m)	No	Yes	7.99683e-005(5m)	7.99683e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2021	0.00283821(5m)	0.00283821(28.3019m)	No	Yes	5.85381e-005(5m)	5.85381e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2022	0.00272967(5m)	0.00272967(28.3019m)	No	Yes	5.62993e-005(5m)	5.62993e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2023	0.00740819(5m)	0.00740819(28.3019m)	No	Yes	0.000152794(5m)	0.000152794(28.3019m)	No EAL	No EAL
Arsenic - surface - 2024	0.00719786(5m)	0.00719786(28.3019m)	No	Yes	0.000148456(5m)	0.000148456(28.3019m)	No EAL	No EAL
Arsenic - surface - 2025	0.00496016(5m)	0.00496016(28.3019m)	No	Yes	0.000102303(5m)	0.000102303(28.3019m)	No EAL	No EAL
Arsenic - surface - 2026	0.00332058(5m)	0.00332058(28.3019m)	No	Yes	6.84871e-005(5m)	6.84871e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2027	0.00203524(5m)	0.00203524(28.3019m)	No	Yes	4.19768e-005(5m)	4.19768e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2028	0.00107869(5m)	0.00107869(28.3019m)	No	Yes	2.2248e-005(5m)	2.2248e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2029	0.000634162(5m)	0.000634162(28.3019m)	No	Yes	1.30796e-005(5m)	1.30796e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2030	0.000486385(5m)	0.000486385(28.3019m)	No	No	1.00317e-005(5m)	1.00317e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2031	0.000392141(5m)	0.000392141(28.3019m)	No	No	8.08791e-006(5m)	8.08791e-006(28.3019m)	No EAL	No EAL
Arsenic - surface - 2032	0.000316491(5m)	0.000316491(28.3019m)	No	No	6.52762e-006(5m)	6.52762e-006(28.3019m)	No EAL	No EAL
Arsenic - surface - 2039	0.000450473(5m)	0.000450473(28.3019m)	No	No	9.29101e-006(5m)	9.29101e-006(28.3019m)	No EAL	No EAL
Arsenic - surface - 2040	0.000722892(5m)	0.000722892(28.3019m)	No	Yes	1.49096e-005(5m)	1.49096e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2041	0.000663039(5m)	0.000663039(28.3019m)	No	Yes	1.36752e-005(5m)	1.36752e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2042	0.000543276(5m)	0.000543276(28.3019m)	No	No	1.12051e-005(5m)	1.12051e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2043	0.000445488(5m)	0.000445488(28.3019m)	No	No	9.18819e-006(5m)	9.18819e-006(28.3019m)	No EAL	No EAL
Arsenic - surface - 2044	0.000363801(5m)	0.000363801(28.3019m)	No	No	7.5034e-006(5m)	7.5034e-006(28.3019m)	No EAL	No EAL
Benzene - surface - 1983	3.16145(5m)	1.5412(210m)	No EAL	No EAL	0.0652048(5m)	0.013041(210m)	Yes (at receptor)	No
Benzene - surface - 1984	5.41574(5m)	2.64017(210m)	No EAL	No EAL	0.1117(5m)	0.0223399(210m)	Yes (at receptor)	No
Benzene - surface - 1985	6.87759(5m)	3.35282(210m)	No EAL	No EAL	0.14185(5m)	0.02837(210m)	Yes (at receptor)	No
Benzene - surface - 1986	6.74587(5m)	3.28861(210m)	No EAL	No EAL	0.139134(5m)	0.0278267(210m)	Yes (at receptor)	No
Benzene - surface - 1987	8.41729(5m)	4.10343(210m)	No EAL	No EAL	0.173607(5m)	0.0347213(210m)	Yes (at receptor)	No
Benzene - surface - 1988	10.8502(5m)	5.28945(210m)	No EAL	No EAL	0.223785(5m)	0.0447569(210m)	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?
Benzene - surface - 1989	12.1933(5m)	5.94424(210m)	No EAL	No EAL	0.251487(5m)	0.0502974(210m)	No	No
Benzene - surface - 1990	13.7637(5m)	6.70982(210m)	No EAL	No EAL	0.283877(5m)	0.0567754(210m)	No	No
Benzene - surface - 1991	15.3668(5m)	7.49132(210m)	No EAL	No EAL	0.31694(5m)	0.0633881(210m)	No	No
Benzene - surface - 1992	18.9222(5m)	9.86199(191.525m)	No EAL	No EAL	0.39027(5m)	0.0867935(191.525m)	No	No
Benzene - surface - 1993	19.0596(5m)	9.93358(191.525m)	No EAL	No EAL	0.393103(5m)	0.0874236(191.525m)	No	No
Benzene - surface - 1994	20.0533(5m)	11.9918(160.801m)	No EAL	No EAL	0.413599(5m)	0.107385(160.801m)	No	No
Benzene - surface - 1995	19.9917(5m)	11.955(160.801m)	No EAL	No EAL	0.412328(5m)	0.107055(160.801m)	No	No
Benzene - surface - 1996	20.5934(5m)	12.3148(160.801m)	No EAL	No EAL	0.424739(5m)	0.110277(160.801m)	No	No
Benzene - surface - 1997	22.1294(5m)	13.2333(160.801m)	No EAL	No EAL	0.45642(5m)	0.118503(160.801m)	No	No
Benzene - surface - 1998	25.7925(5m)	21.9478(79.8123m)	No EAL	No EAL	0.53197(5m)	0.368571(79.8123m)	No	No
Benzene - surface - 1999	25.8092(5m)	21.962(79.8123m)	No EAL	No EAL	0.532314(5m)	0.36881(79.8123m)	No	No
Benzene - surface - 2000	10.2019(5m)	8.68123(79.8123m)	No EAL	No EAL	0.210415(5m)	0.145785(79.8123m)	No	No
Benzene - surface - 2001	6.81964(5m)	5.80309(79.8123m)	No EAL	No EAL	0.140655(5m)	0.0974519(79.8123m)	No	No
Benzene - surface - 2002	15.6847(5m)	13.3467(79.8123m)	No EAL	No EAL	0.323497(5m)	0.224133(79.8123m)	No	No
Benzene - surface - 2003	21.487(5m)	21.487(28.3019m)	No EAL	No EAL	0.443169(5m)	0.443169(28.3019m)	No	No
Benzene - surface - 2004	14.3176(5m)	14.3176(28.3019m)	No EAL	No EAL	0.295301(5m)	0.295301(28.3019m)	No	No
Benzene - surface - 2005	22.3158(5m)	22.3158(28.3019m)	No EAL	No EAL	0.460263(5m)	0.460263(28.3019m)	No	No
Benzene - surface - 2006	4.7974(5m)	4.7974(28.3019m)	No EAL	No EAL	0.0989463(5m)	0.0989463(28.3019m)	No	No
Benzene - surface - 2007	14.4493(5m)	14.4493(28.3019m)	No EAL	No EAL	0.298017(5m)	0.298017(28.3019m)	No	No
Benzene - surface - 2008	20.4474(5m)	20.4474(28.3019m)	No EAL	No EAL	0.421728(5m)	0.421728(28.3019m)	No	No
Benzene - surface - 2009	4.91789(5m)	4.91789(28.3019m)	No EAL	No EAL	0.101431(5m)	0.101431(28.3019m)	No	No
Benzene - surface - 2010	12.5398(5m)	12.5398(28.3019m)	No EAL	No EAL	0.258634(5m)	0.258634(28.3019m)	No	No
Benzene - surface - 2011	7.37863(5m)	7.37863(28.3019m)	No EAL	No EAL	0.152184(5m)	0.152184(28.3019m)	No	No
Benzene - surface - 2012	5.18957(5m)	5.18957(28.3019m)	No EAL	No EAL	0.107035(5m)	0.107035(28.3019m)	No	No
Benzene - surface - 2013	9.96714(5m)	9.96714(28.3019m)	No EAL	No EAL	0.205572(5m)	0.205572(28.3019m)	No	No
Benzene - surface - 2014	4.16792(5m)	4.16792(28.3019m)	No EAL	No EAL	0.0859634(5m)	0.0859634(28.3019m)	No	No
Benzene - surface - 2015	11.459(5m)	11.459(28.3019m)	No EAL	No EAL	0.236341(5m)	0.236341(28.3019m)	No	No
Benzene - surface - 2016	22.186(5m)	22.186(28.3019m)	No EAL	No EAL	0.457587(5m)	0.457587(28.3019m)	No	No
Benzene - surface - 2017	27.6103(5m)	27.6103(28.3019m)	No EAL	No EAL	0.569461(5m)	0.569461(28.3019m)	No	No
Benzene - surface - 2018	26.0018(5m)	26.0018(28.3019m)	No EAL	No EAL	0.536287(5m)	0.536287(28.3019m)	No	No
Benzene - surface - 2019	18.9821(5m)	18.9821(28.3019m)	No EAL	No EAL	0.391505(5m)	0.391505(28.3019m)	No	No
Benzene - surface - 2023	4.35607(5m)	4.35607(28.3019m)	No EAL	No EAL	0.089844(5m)	0.089844(28.3019m)	No	No
Benzene - surface - 2024	4.15808(5m)	4.15808(28.3019m)	No EAL	No EAL	0.0857604(5m)	0.0857604(28.3019m)	No	No
Benzene - surface - 2025	2.90189(5m)	2.90189(28.3019m)	No EAL	No EAL	0.0598515(5m)	0.0598515(28.3019m)	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?
Benzo(a)pyrene - flare - 2000	0.00067178(8.60233m)	4.34724e-005(229.103m)	No EAL	No EAL	9.86531e-006(8.60233m)	3.68112e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2001	0.000763437(8.60233m)	4.94037e-005(229.103m)	No EAL	No EAL	1.12113e-005(8.60233m)	4.18336e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2002	0.000715518(8.60233m)	4.63027e-005(229.103m)	No EAL	No EAL	1.05076e-005(8.60233m)	3.92078e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2004	0.000194023(8.60233m)	1.25556e-005(229.103m)	No EAL	No EAL	2.84929e-006(8.60233m)	1.06318e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2006	0.000366839(8.60233m)	2.3739e-005(229.103m)	No EAL	No EAL	5.38715e-006(8.60233m)	2.01015e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2007	0.000300992(8.60233m)	1.94778e-005(229.103m)	No EAL	No EAL	4.42016e-006(8.60233m)	1.64933e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2008	0.000239835(8.60233m)	1.55202e-005(229.103m)	No EAL	No EAL	3.52205e-006(8.60233m)	1.31421e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2009	0.000472388(8.60233m)	3.05693e-005(229.103m)	No EAL	No EAL	6.93717e-006(8.60233m)	2.58852e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2010	0.000393687(8.60233m)	2.54764e-005(229.103m)	No EAL	No EAL	5.78142e-006(8.60233m)	2.15727e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2011	0.000459917(8.60233m)	2.97623e-005(229.103m)	No EAL	No EAL	6.75403e-006(8.60233m)	2.52018e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2012	0.000464249(8.60233m)	3.00426e-005(229.103m)	No EAL	No EAL	6.81765e-006(8.60233m)	2.54392e-006(229.103m)	No	No
Carbon monoxide - engine - 2014	1078.35(7.2111m)	191.202(208.741m)	Yes (at receptor)	No	48.242(7.2111m)	19.1202(208.741m)	No EAL	No EAL
Carbon monoxide - engine - 2015	1005.01(7.2111m)	178.197(208.741m)	Yes (at receptor)	No	44.9609(7.2111m)	17.8197(208.741m)	No EAL	No EAL
Carbon monoxide - engine - 2020	1169.8(7.2111m)	207.417(208.741m)	Yes (at receptor)	No	52.3332(7.2111m)	20.7417(208.741m)	No EAL	No EAL
Carbon monoxide - engine - 2021	1090.04(7.2111m)	193.274(208.741m)	Yes (at receptor)	No	48.765(7.2111m)	19.3274(208.741m)	No EAL	No EAL
Carbon monoxide - engine - 2022	1013.18(7.2111m)	179.646(208.741m)	Yes (at receptor)	No	45.3264(7.2111m)	17.9646(208.741m)	No EAL	No EAL
Ethylene dichloride - surface - 1984	30.2114(5m)	14.7281(210m)	Yes	No	0.623111(5m)	0.124622(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1985	35.6582(5m)	17.3834(210m)	Yes	No	0.735451(5m)	0.14709(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1986	30.2287(5m)	14.7365(210m)	Yes	No	0.623467(5m)	0.124693(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1987	42.843(5m)	20.8859(210m)	Yes	No	0.883636(5m)	0.176727(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1988	53.9774(5m)	26.314(210m)	Yes	No	1.11328(5m)	0.222657(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1989	45.499(5m)	22.1808(210m)	Yes	No	0.938417(5m)	0.187683(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1990	41.6208(5m)	20.2902(210m)	Yes	No	0.85843(5m)	0.171686(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1991	40.7423(5m)	19.8618(210m)	Yes	No	0.840309(5m)	0.168062(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1992	55.2956(5m)	28.8193(191.525m)	Yes	No	1.14047(5m)	0.253633(191.525m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1993	48.4627(5m)	25.2581(191.525m)	Yes	No	0.999543(5m)	0.222292(191.525m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1994	42.1908(5m)	25.23(160.801m)	Yes	No	0.870186(5m)	0.225931(160.801m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1995	65.8974(5m)	39.4065(160.801m)	Yes	No	1.35913(5m)	0.352879(160.801m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1996	67.4802(5m)	40.353(160.801m)	Yes	No	1.39178(5m)	0.361354(160.801m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1997	73.1332(5m)	43.7334(160.801m)	Yes (at receptor)	No	1.50837(5m)	0.391626(160.801m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1998	80.4596(5m)	68.4662(79.8123m)	Yes (at receptor)	No	1.65948(5m)	1.14976(79.8123m)	No	No
Ethylene dichloride - surface - 1999	93.2434(5m)	79.3444(79.8123m)	No	No	1.92315(5m)	1.33244(79.8123m)	No	No
Ethylene dichloride - surface - 2000	40.3802(5m)	34.361(79.8123m)	Yes	No	0.832841(5m)	0.577028(79.8123m)	No	No
Ethylene dichloride - surface - 2001	20.9695(5m)	17.8438(79.8123m)	Yes	No	0.432496(5m)	0.299652(79.8123m)	Yes (at receptor)	No

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	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 - 2002	49.2986(5m)	41.9501(79.8123m)	Yes	No	1.01678(5m)	0.704472(79.8123m)	No	No
Ethylene dichloride - surface - 2003	66.3235(5m)	66.3235(28.3019m)	Yes	No	1.36792(5m)	1.36792(28.3019m)	No	No
Ethylene dichloride - surface - 2004	23.6228(5m)	23.6228(28.3019m)	Yes	No	0.48722(5m)	0.48722(28.3019m)	No	No
Ethylene dichloride - surface - 2005	36.3449(5m)	36.3449(28.3019m)	Yes	No	0.749614(5m)	0.749614(28.3019m)	No	No
Ethylene dichloride - surface - 2008	24.1714(5m)	24.1714(28.3019m)	Yes	No	0.498535(5m)	0.498535(28.3019m)	No	No
Ethylene dichloride - surface - 2010	31.3498(5m)	31.3498(28.3019m)	Yes	No	0.646589(5m)	0.646589(28.3019m)	No	No
Ethylene dichloride - surface - 2015	24.4202(5m)	24.4202(28.3019m)	Yes	No	0.503666(5m)	0.503666(28.3019m)	No	No
Ethylene dichloride - surface - 2016	47.9563(5m)	47.9563(28.3019m)	Yes	No	0.989098(5m)	0.989098(28.3019m)	No	No
Ethylene dichloride - surface - 2017	52.2014(5m)	52.2014(28.3019m)	Yes	No	1.07665(5m)	1.07665(28.3019m)	No	No
Ethylene dichloride - surface - 2018	50.8134(5m)	50.8134(28.3019m)	Yes	No	1.04803(5m)	1.04803(28.3019m)	No	No
Ethylene dichloride - surface - 2019	30.5581(5m)	30.5581(28.3019m)	Yes	No	0.63026(5m)	0.63026(28.3019m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2000	23.8956(8.60233m)	1.54633(229.103m)	Yes (at receptor)	No	0.350914(8.60233m)	0.130939(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2001	27.1698(8.60233m)	1.75822(229.103m)	Yes (at receptor)	No	0.398997(8.60233m)	0.148881(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2002	25.5763(8.60233m)	1.6551(229.103m)	Yes (at receptor)	No	0.375595(8.60233m)	0.140149(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2003	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2004	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2005	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2006	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2006	12.8754(8.60233m)	0.833196(229.103m)	Yes	No	0.189079(8.60233m)	0.0705527(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2007	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2008	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2009	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2009	16.5693(8.60233m)	1.07224(229.103m)	Yes (at receptor)	No	0.243326(8.60233m)	0.0907941(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2010	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2010	13.9891(8.60233m)	0.905265(229.103m)	Yes	No	0.205434(8.60233m)	0.0766553(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2011	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2011	16.8203(8.60233m)	1.08848(229.103m)	Yes (at receptor)	No	0.247011(8.60233m)	0.0921691(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2012	6.45116(11.6619m)	1.09416(218.497m)	Yes	No	0.288604(11.6619m)	0.109416(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2012	16.5241(8.60233m)	1.06931(229.103m)	Yes (at receptor)	No	0.242662(8.60233m)	0.0905463(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2013	8.82083(7.2111m)	1.56402(208.741m)	Yes	No	0.394616(7.2111m)	0.156402(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2014	11.0333(7.2111m)	1.9563(208.741m)	Yes	No	0.493594(7.2111m)	0.19563(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2015	10.2847(7.2111m)	1.82357(208.741m)	Yes	No	0.460104(7.2111m)	0.182357(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2016	6.84264(7.2111m)	1.21326(208.741m)	Yes	No	0.306118(7.2111m)	0.121326(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2017	6.56599(7.2111m)	1.16421(208.741m)	Yes	No	0.293742(7.2111m)	0.116421(208.741m)	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 - 2018	8.24766(7.2111m)	1.46239(208.741m)	Yes	No	0.368974(7.2111m)	0.146239(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2019	8.58108(7.2111m)	1.52151(208.741m)	Yes	No	0.383891(7.2111m)	0.152151(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2020	11.889(7.2111m)	2.10804(208.741m)	Yes	No	0.531878(7.2111m)	0.210804(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2021	11.0861(7.2111m)	1.96567(208.741m)	Yes	No	0.495957(7.2111m)	0.196567(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2022	10.3154(7.2111m)	1.82901(208.741m)	Yes	No	0.461477(7.2111m)	0.182901(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2023	7.16243(7.2111m)	1.26997(208.741m)	Yes	No	0.320425(7.2111m)	0.126997(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2024	6.56599(7.2111m)	1.16421(208.741m)	Yes	No	0.293742(7.2111m)	0.116421(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2025	6.56599(7.2111m)	1.16421(208.741m)	Yes	No	0.293742(7.2111m)	0.116421(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2026	6.56599(7.2111m)	1.16421(208.741m)	Yes	No	0.293742(7.2111m)	0.116421(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2027	6.56599(7.2111m)	1.16421(208.741m)	Yes	No	0.293742(7.2111m)	0.116421(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2028	6.54573(7.2111m)	1.16062(208.741m)	Yes	No	0.292835(7.2111m)	0.116062(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2029	6.21789(7.2111m)	1.10249(208.741m)	Yes	No	0.278169(7.2111m)	0.110249(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2030	5.81241(7.2111m)	1.03059(208.741m)	Yes	No	0.260029(7.2111m)	0.103059(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2031	5.43734(7.2111m)	0.964091(208.741m)	Yes	No	0.243249(7.2111m)	0.0964091(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2032	5.09011(7.2111m)	0.902524(208.741m)	Yes	No	0.227715(7.2111m)	0.0902524(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2033	4.76837(7.2111m)	0.845477(208.741m)	Yes	No	0.213322(7.2111m)	0.0845477(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2034	4.46999(7.2111m)	0.792572(208.741m)	Yes	No	0.199973(7.2111m)	0.0792572(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2035	4.19305(7.2111m)	0.743467(208.741m)	Yes	No	0.187584(7.2111m)	0.0743467(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2036	3.93578(7.2111m)	0.697851(208.741m)	Yes	No	0.176075(7.2111m)	0.0697851(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2037	3.6966(7.2111m)	0.655441(208.741m)	Yes	No	0.165374(7.2111m)	0.0655441(208.741m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1984	15.1087(5m)	7.36549(210m)	Yes (at receptor)	No	0.311617(5m)	0.0623234(210m)	Yes	No
Hydrogen sulphide - surface - 1985	21.073(5m)	10.2731(210m)	Yes (at receptor)	No	0.434631(5m)	0.0869263(210m)	Yes	No
Hydrogen sulphide - surface - 1986	20.033(5m)	9.76611(210m)	Yes (at receptor)	No	0.413181(5m)	0.0826363(210m)	Yes	No
Hydrogen sulphide - surface - 1987	19.1401(5m)	9.33078(210m)	Yes (at receptor)	No	0.394764(5m)	0.0789528(210m)	Yes	No
Hydrogen sulphide - surface - 1988	21.7957(5m)	10.6254(210m)	Yes (at receptor)	No	0.449537(5m)	0.0899074(210m)	Yes	No
Hydrogen sulphide - surface - 1989	26.6778(5m)	13.0054(210m)	Yes (at receptor)	No	0.550229(5m)	0.110046(210m)	Yes	No
Hydrogen sulphide - surface - 1990	27.9662(5m)	13.6335(210m)	Yes (at receptor)	No	0.576802(5m)	0.11536(210m)	Yes	No
Hydrogen sulphide - surface - 1991	35.1378(5m)	17.1297(210m)	No	Yes	0.724718(5m)	0.144944(210m)	Yes	No
Hydrogen sulphide - surface - 1992	46.4615(5m)	24.2151(191.525m)	No	Yes	0.958269(5m)	0.213113(191.525m)	Yes	No
Hydrogen sulphide - surface - 1993	44.4515(5m)	23.1675(191.525m)	No	Yes	0.916811(5m)	0.203893(191.525m)	Yes	No
Hydrogen sulphide - surface - 1994	42.6931(5m)	25.5303(160.801m)	No	Yes	0.880545(5m)	0.22862(160.801m)	Yes	No
Hydrogen sulphide - surface - 1995	42.7855(5m)	25.5856(160.801m)	No	Yes	0.88245(5m)	0.229115(160.801m)	Yes	No
Hydrogen sulphide - surface - 1996	38.4743(5m)	23.0075(160.801m)	No	Yes	0.793532(5m)	0.206029(160.801m)	Yes	No
Hydrogen sulphide - surface - 1997	36.2675(5m)	21.6878(160.801m)	No	Yes	0.748017(5m)	0.194211(160.801m)	Yes	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 sulphide - surface - 1998	46.1667(5m)	39.285(79.8123m)	No	Yes	0.952188(5m)	0.659717(79.8123m)	Yes	No
Hydrogen sulphide - surface - 1999	55.0069(5m)	46.8075(79.8123m)	No	Yes	1.13452(5m)	0.786043(79.8123m)	Yes	No
Hydrogen sulphide - surface - 2000	29.5797(5m)	25.1705(79.8123m)	No	No	0.610081(5m)	0.422691(79.8123m)	Yes	No
Hydrogen sulphide - surface - 2001	15.3834(5m)	13.0903(79.8123m)	Yes (at receptor)	No	0.317282(5m)	0.219827(79.8123m)	Yes	No
Hydrogen sulphide - surface - 2002	26.0879(5m)	22.1992(79.8123m)	No	No	0.538063(5m)	0.372794(79.8123m)	Yes	No
Hydrogen sulphide - surface - 2003	31.089(5m)	31.089(28.3019m)	No	Yes	0.641211(5m)	0.641211(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2004	38.1883(5m)	38.1883(28.3019m)	No	Yes	0.787633(5m)	0.787633(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2005	61.4443(5m)	61.4443(28.3019m)	No	Yes	1.26729(5m)	1.26729(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2007	23.3144(5m)	23.3144(28.3019m)	No	No	0.48086(5m)	0.48086(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2008	28.7343(5m)	28.7343(28.3019m)	No	No	0.592645(5m)	0.592645(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2010	28.3653(5m)	28.3653(28.3019m)	No	No	0.585034(5m)	0.585034(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2011	15.6625(5m)	15.6625(28.3019m)	No	No	0.32304(5m)	0.32304(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2013	21.2533(5m)	21.2533(28.3019m)	No	No	0.438349(5m)	0.438349(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2015	31.826(5m)	31.826(28.3019m)	No	Yes	0.656411(5m)	0.656411(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2016	56.023(5m)	56.023(28.3019m)	No	Yes	1.15547(5m)	1.15547(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2017	62.1015(5m)	62.1015(28.3019m)	No	Yes	1.28084(5m)	1.28084(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2018	53.3679(5m)	53.3679(28.3019m)	No	Yes	1.10071(5m)	1.10071(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2019	43.3452(5m)	43.3452(28.3019m)	No	Yes	0.893995(5m)	0.893995(28.3019m)	Yes	No
Nitrogen oxides (NOx) - flare - 2000	44.9168(8.60233m)	2.90667(229.103m)	Yes (at receptor)	Yes	1.31924(8.60233m)	0.492257(229.103m)	No	No
Nitrogen oxides (NOx) - flare - 2001	51.2521(8.60233m)	3.31664(229.103m)	Yes (at receptor)	Yes	1.50531(8.60233m)	0.561687(229.103m)	No	No
Nitrogen oxides (NOx) - flare - 2002	48.2829(8.60233m)	3.12449(229.103m)	Yes (at receptor)	Yes	1.4181(8.60233m)	0.529146(229.103m)	No	No
Nitrogen oxides (NOx) - engine - 2003	168.648(11.6619m)	28.604(218.497m)	No	Yes	15.0896(11.6619m)	5.72079(218.497m)	No	No
Nitrogen oxides (NOx) - engine - 2004	168.642(11.6619m)	28.603(218.497m)	No	Yes	15.089(11.6619m)	5.7206(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2004	14.0908(8.60233m)	0.911845(229.103m)	Yes	No	0.413855(8.60233m)	0.154425(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2005	168.648(11.6619m)	28.604(218.497m)	No	Yes	15.0896(11.6619m)	5.72079(218.497m)	No	No
Nitrogen oxides (NOx) - engine - 2006	168.559(11.6619m)	28.5889(218.497m)	No	Yes	15.0816(11.6619m)	5.71778(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2006	25.1426(8.60233m)	1.62703(229.103m)	Yes (at receptor)	No	0.738455(8.60233m)	0.275545(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2007	168.643(11.6619m)	28.6031(218.497m)	No	Yes	15.0891(11.6619m)	5.72062(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2007	20.6854(8.60233m)	1.33859(229.103m)	Yes (at receptor)	No	0.607542(8.60233m)	0.226697(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2008	168.628(11.6619m)	28.6006(218.497m)	No	Yes	15.0878(11.6619m)	5.72013(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2008	16.3769(8.60233m)	1.05979(229.103m)	Yes	No	0.481(8.60233m)	0.179479(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2009	168.57(11.6619m)	28.5908(218.497m)	No	Yes	15.0826(11.6619m)	5.71816(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2009	31.6756(8.60233m)	2.0498(229.103m)	Yes (at receptor)	No	0.930334(8.60233m)	0.347143(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2010	168.636(11.6619m)	28.6019(218.497m)	No	Yes	15.0884(11.6619m)	5.72037(218.497m)	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?
Nitrogen oxides (NOx) - flare - 2010	26.2847(8.60233m)	1.70094(229.103m)	Yes (at receptor)	No	0.771997(8.60233m)	0.288061(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2011	168.583(11.6619m)	28.5929(218.497m)	No	Yes	15.0837(11.6619m)	5.71858(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2011	31.0177(8.60233m)	2.00722(229.103m)	Yes (at receptor)	No	0.91101(8.60233m)	0.339932(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2012	168.592(11.6619m)	28.5944(218.497m)	No	Yes	15.0845(11.6619m)	5.71889(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2012	31.4847(8.60233m)	2.03744(229.103m)	Yes (at receptor)	No	0.924725(8.60233m)	0.34505(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2013	230.593(7.2111m)	40.8863(208.741m)	No	Yes	20.632(7.2111m)	8.17725(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2014	288.916(7.2111m)	51.2275(208.741m)	No	Yes	25.8504(7.2111m)	10.2455(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2015	269.266(7.2111m)	47.7433(208.741m)	No	Yes	24.0922(7.2111m)	9.54866(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2016	224.117(7.2111m)	39.7381(208.741m)	No	Yes	20.0526(7.2111m)	7.94761(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2017	177.42(7.2111m)	31.4582(208.741m)	No	Yes	15.8744(7.2111m)	6.29164(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2018	248.425(7.2111m)	44.0482(208.741m)	No	Yes	22.2275(7.2111m)	8.80963(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2019	265.618(7.2111m)	47.0966(208.741m)	No	Yes	23.7658(7.2111m)	9.41932(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2020	313.418(7.2111m)	55.5719(208.741m)	No	Yes	28.0426(7.2111m)	11.1144(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2021	292.048(7.2111m)	51.7828(208.741m)	No	Yes	26.1306(7.2111m)	10.3566(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2022	271.455(7.2111m)	48.1315(208.741m)	No	Yes	24.2881(7.2111m)	9.6263(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2023	234.101(7.2111m)	41.5083(208.741m)	No	Yes	20.9459(7.2111m)	8.30165(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2024	168.655(7.2111m)	29.9041(208.741m)	No	Yes	15.0902(7.2111m)	5.98082(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2025	168.655(7.2111m)	29.9041(208.741m)	No	Yes	15.0902(7.2111m)	5.98082(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2026	168.655(7.2111m)	29.9041(208.741m)	No	Yes	15.0902(7.2111m)	5.98082(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2027	168.655(7.2111m)	29.9041(208.741m)	No	Yes	15.0902(7.2111m)	5.98082(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2028	168.436(7.2111m)	29.8653(208.741m)	No	Yes	15.0706(7.2111m)	5.97307(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2029	163.243(7.2111m)	28.9445(208.741m)	No	Yes	14.6059(7.2111m)	5.78889(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2030	152.931(7.2111m)	27.116(208.741m)	No	Yes	13.6833(7.2111m)	5.42321(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2031	143.11(7.2111m)	25.3748(208.741m)	No	Yes	12.8046(7.2111m)	5.07495(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2032	134.009(7.2111m)	23.7611(208.741m)	No	Yes	11.9903(7.2111m)	4.75223(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2033	125.572(7.2111m)	22.2651(208.741m)	No	Yes	11.2354(7.2111m)	4.45303(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2034	117.743(7.2111m)	20.877(208.741m)	No	Yes	10.5349(7.2111m)	4.1754(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2035	110.46(7.2111m)	19.5855(208.741m)	Yes (at receptor)	Yes	9.88323(7.2111m)	3.91711(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2036	103.665(7.2111m)	18.3807(208.741m)	Yes (at receptor)	Yes	9.27525(7.2111m)	3.67614(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2037	97.3489(7.2111m)	17.2609(208.741m)	Yes (at receptor)	Yes	8.71016(7.2111m)	3.45217(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2038	91.4741(7.2111m)	16.2192(208.741m)	Yes (at receptor)	Yes	8.18453(7.2111m)	3.24384(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2039	85.9484(7.2111m)	15.2395(208.741m)	Yes (at receptor)	Yes	7.69012(7.2111m)	3.04789(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2040	6.96188(7.2111m)	1.23441(208.741m)	Yes	No	0.622905(7.2111m)	0.246881(208.741m)	Yes (at receptor)	No
PM10s 24 hour - flare - 2000	8.23911(8.60233m)	0.533171(229.103m)	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?
PM10s 24 hour - flare - 2001	9.4033(8.60233m)	0.608508(229.103m)	Yes (at receptor)	Yes				
PM10s 24 hour - flare - 2002	8.80395(8.60233m)	0.569723(229.103m)	Yes (at receptor)	Yes				
PM10s 24 hour - flare - 2009	5.64459(8.60233m)	0.365274(229.103m)	Yes (at receptor)	No				
PM10s 24 hour - flare - 2011	5.57894(8.60233m)	0.361026(229.103m)	Yes (at receptor)	No				
PM10s 24 hour - flare - 2012	5.64537(8.60233m)	0.365324(229.103m)	Yes (at receptor)	No				
PM10s - engine - 2020	9.14159(7.2111m)	1.62089(208.741m)	No EAL	No EAL	0.408966(7.2111m)	0.162089(208.741m)	Yes (at receptor)	No
PM10s 24 hour - engine - 2020	5.39354(7.2111m)	0.956324(208.741m)	Yes (at receptor)	No				
PM10s 24 hour - engine - 2021	5.02962(7.2111m)	0.891799(208.741m)	Yes (at receptor)	No				
Sulphur dioxide - flare - 2000	63.5923(8.60233m)	4.1152(229.103m)	Yes (at receptor)	No	0.933873(8.60233m)	0.348463(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2000	85.2137(8.60233m)	5.51436(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2000	37.5195(8.60233m)	2.42797(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2001	72.5617(8.60233m)	4.69563(229.103m)	Yes (at receptor)	Yes	1.06559(8.60233m)	0.397613(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2001	97.2327(8.60233m)	6.29214(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2001	42.8114(8.60233m)	2.77042(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2002	68.3579(8.60233m)	4.42359(229.103m)	Yes (at receptor)	No	1.00386(8.60233m)	0.374577(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2002	91.5995(8.60233m)	5.92761(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2002	40.3311(8.60233m)	2.60992(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2003	92.2842(11.6619m)	15.6521(218.497m)	Yes (at receptor)	Yes	4.1285(11.6619m)	1.56521(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2003	123.661(11.6619m)	20.9738(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2003	54.4477(11.6619m)	9.23473(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2004	92.281(11.6619m)	15.6516(218.497m)	Yes (at receptor)	Yes	4.12836(11.6619m)	1.56516(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2004	123.657(11.6619m)	20.9731(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2004	54.4458(11.6619m)	9.23442(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 15 min - flare - 2004	26.7322(8.60233m)	1.7299(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2005	92.2842(11.6619m)	15.6521(218.497m)	Yes (at receptor)	Yes	4.1285(11.6619m)	1.56521(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2005	123.661(11.6619m)	20.9738(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2005	54.4477(11.6619m)	9.23473(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2006	92.2355(11.6619m)	15.6438(218.497m)	Yes (at receptor)	Yes	4.12633(11.6619m)	1.56438(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2006	123.596(11.6619m)	20.9627(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2006	54.419(11.6619m)	9.22986(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2006	35.5964(8.60233m)	2.30352(229.103m)	Yes (at receptor)	No	0.522744(8.60233m)	0.195056(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2006	47.6992(8.60233m)	3.08672(229.103m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - flare - 2006	21.0019(8.60233m)	1.35908(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2007	92.2814(11.6619m)	15.6516(218.497m)	Yes (at receptor)	Yes	4.12838(11.6619m)	1.56516(218.497m)	No EAL	No EAL

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Sulphur dioxide 15 min - engine - 2007	123.657(11.6619m)	20.9732(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2007	54.446(11.6619m)	9.23446(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 15 min - flare - 2007	39.2431(8.60233m)	2.53951(229.103m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - flare - 2007	17.2787(8.60233m)	1.11814(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2008	92.2734(11.6619m)	15.6503(218.497m)	Yes (at receptor)	Yes	4.12802(11.6619m)	1.56503(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2008	123.646(11.6619m)	20.9713(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2008	54.4413(11.6619m)	9.23365(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 15 min - flare - 2008	31.0693(8.60233m)	2.01057(229.103m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - flare - 2008	13.6798(8.60233m)	0.885249(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2009	92.2417(11.6619m)	15.6449(218.497m)	Yes (at receptor)	Yes	4.1266(11.6619m)	1.56449(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2009	123.604(11.6619m)	20.9642(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2009	54.4226(11.6619m)	9.23049(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2009	44.8457(8.60233m)	2.90206(229.103m)	Yes (at receptor)	No	0.658573(8.60233m)	0.245739(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2009	60.0933(8.60233m)	3.88877(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2009	26.459(8.60233m)	1.71222(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2010	92.2773(11.6619m)	15.6509(218.497m)	Yes (at receptor)	Yes	4.1282(11.6619m)	1.56509(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2010	123.652(11.6619m)	20.9722(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2010	54.4436(11.6619m)	9.23405(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2010	37.2133(8.60233m)	2.40815(229.103m)	Yes (at receptor)	No	0.546489(8.60233m)	0.203916(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2010	49.8658(8.60233m)	3.22692(229.103m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - flare - 2010	21.9558(8.60233m)	1.42081(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2011	92.2485(11.6619m)	15.646(218.497m)	Yes (at receptor)	Yes	4.1269(11.6619m)	1.5646(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2011	123.613(11.6619m)	20.9657(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2011	54.4266(11.6619m)	9.23116(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2011	43.9142(8.60233m)	2.84179(229.103m)	Yes (at receptor)	No	0.644894(8.60233m)	0.240634(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2011	58.845(8.60233m)	3.80799(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2011	25.9094(8.60233m)	1.67665(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2012	92.2534(11.6619m)	15.6469(218.497m)	Yes (at receptor)	Yes	4.12713(11.6619m)	1.56469(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2012	123.62(11.6619m)	20.9668(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2012	54.4295(11.6619m)	9.23165(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2012	44.5754(8.60233m)	2.88457(229.103m)	Yes (at receptor)	No	0.654603(8.60233m)	0.244257(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2012	59.731(8.60233m)	3.86532(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2012	26.2995(8.60233m)	1.7019(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2013	126.18(7.2111m)	22.373(208.741m)	Yes (at receptor)	Yes	5.64491(7.2111m)	2.2373(208.741m)	No EAL	No EAL

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Sulphur dioxide 15 min - engine - 2013	169.082(7.2111m)	29.9798(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2013	74.4464(7.2111m)	13.2(208.741m)	No	Yes				
Sulphur dioxide - engine - 2014	158.095(7.2111m)	28.0317(208.741m)	Yes (at receptor)	Yes	7.07266(7.2111m)	2.80317(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2014	211.847(7.2111m)	37.5624(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2014	93.2759(7.2111m)	16.5387(208.741m)	No	Yes				
Sulphur dioxide - engine - 2015	147.342(7.2111m)	26.1251(208.741m)	Yes (at receptor)	Yes	6.59162(7.2111m)	2.61251(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2015	197.438(7.2111m)	35.0077(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2015	86.9318(7.2111m)	15.4138(208.741m)	No	Yes				
Sulphur dioxide - engine - 2016	122.637(7.2111m)	21.7447(208.741m)	Yes (at receptor)	Yes	5.48639(7.2111m)	2.17447(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2016	164.333(7.2111m)	29.1378(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2016	72.3557(7.2111m)	12.8294(208.741m)	No	Yes				
Sulphur dioxide - engine - 2017	97.0841(7.2111m)	17.2139(208.741m)	Yes (at receptor)	Yes	4.34324(7.2111m)	1.72139(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2017	130.093(7.2111m)	23.0667(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2017	57.2796(7.2111m)	10.1562(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2018	135.938(7.2111m)	24.1031(208.741m)	Yes (at receptor)	Yes	6.08145(7.2111m)	2.41031(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2018	182.157(7.2111m)	32.2982(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2018	80.2036(7.2111m)	14.2209(208.741m)	No	Yes				
Sulphur dioxide - engine - 2019	145.346(7.2111m)	25.7712(208.741m)	Yes (at receptor)	Yes	6.50233(7.2111m)	2.57712(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2019	194.764(7.2111m)	34.5335(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2019	85.7543(7.2111m)	15.205(208.741m)	No	Yes				
Sulphur dioxide - engine - 2020	171.502(7.2111m)	30.4089(208.741m)	Yes (at receptor)	Yes	7.67246(7.2111m)	3.04089(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2020	229.813(7.2111m)	40.748(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2020	101.186(7.2111m)	17.9413(208.741m)	No	Yes				
Sulphur dioxide - engine - 2021	159.809(7.2111m)	28.3356(208.741m)	Yes (at receptor)	Yes	7.14933(7.2111m)	2.83356(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2021	214.144(7.2111m)	37.9697(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2021	94.2871(7.2111m)	16.718(208.741m)	No	Yes				
Sulphur dioxide - engine - 2022	148.54(7.2111m)	26.3376(208.741m)	Yes (at receptor)	Yes	6.64522(7.2111m)	2.63376(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2022	199.044(7.2111m)	35.2923(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2022	87.6387(7.2111m)	15.5392(208.741m)	No	Yes				
Sulphur dioxide - engine - 2023	128.1(7.2111m)	22.7133(208.741m)	Yes (at receptor)	Yes	5.73079(7.2111m)	2.27133(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2023	171.654(7.2111m)	30.4358(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2023	75.579(7.2111m)	13.4009(208.741m)	No	Yes				
Sulphur dioxide - engine - 2024	92.2879(7.2111m)	16.3635(208.741m)	Yes (at receptor)	Yes	4.12867(7.2111m)	1.63635(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2024	123.666(7.2111m)	21.9271(208.741m)	Yes (at receptor)	Yes				

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Sulphur dioxide 24 hour - engine - 2024	54.4499(7.2111m)	9.65447(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2025	92.2879(7.2111m)	16.3635(208.741m)	Yes (at receptor)	Yes	4.12867(7.2111m)	1.63635(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2025	123.666(7.2111m)	21.9271(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2025	54.4499(7.2111m)	9.65447(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2026	92.2879(7.2111m)	16.3635(208.741m)	Yes (at receptor)	Yes	4.12867(7.2111m)	1.63635(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2026	123.666(7.2111m)	21.9271(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2026	54.4499(7.2111m)	9.65447(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2027	92.2879(7.2111m)	16.3635(208.741m)	Yes (at receptor)	Yes	4.12867(7.2111m)	1.63635(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2027	123.666(7.2111m)	21.9271(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2027	54.4499(7.2111m)	9.65447(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2028	92.1683(7.2111m)	16.3423(208.741m)	Yes (at receptor)	Yes	4.12332(7.2111m)	1.63423(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2028	123.506(7.2111m)	21.8987(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2028	54.3793(7.2111m)	9.64196(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2029	89.3264(7.2111m)	15.8384(208.741m)	Yes (at receptor)	Yes	3.99618(7.2111m)	1.58384(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2029	119.697(7.2111m)	21.2235(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2029	52.7026(7.2111m)	9.34466(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2030	83.6836(7.2111m)	14.8379(208.741m)	Yes (at receptor)	Yes	3.74374(7.2111m)	1.48379(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2030	112.136(7.2111m)	19.8828(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2030	49.3733(7.2111m)	8.75436(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2031	78.3099(7.2111m)	13.8851(208.741m)	Yes (at receptor)	Yes	3.50334(7.2111m)	1.38851(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2031	104.935(7.2111m)	18.606(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2031	46.2028(7.2111m)	8.19219(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2032	73.33(7.2111m)	13.0021(208.741m)	Yes (at receptor)	Yes	3.28055(7.2111m)	1.30021(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2032	98.2622(7.2111m)	17.4228(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2032	43.2647(7.2111m)	7.67123(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2033	68.7131(7.2111m)	12.1835(208.741m)	Yes (at receptor)	No	3.07401(7.2111m)	1.21835(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2033	92.0755(7.2111m)	16.3259(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2033	40.5407(7.2111m)	7.18825(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2034	64.4292(7.2111m)	11.4239(208.741m)	Yes (at receptor)	No	2.88236(7.2111m)	1.14239(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2034	86.3351(7.2111m)	15.308(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2034	38.0132(7.2111m)	6.7401(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2035	60.4435(7.2111m)	10.7172(208.741m)	Yes (at receptor)	No	2.70405(7.2111m)	1.07172(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2035	80.9943(7.2111m)	14.3611(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2035	35.6617(7.2111m)	6.32315(208.741m)	Yes (at receptor)	Yes				

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Sulphur dioxide - engine - 2036	56.7252(7.2111m)	10.0579(208.741m)	Yes (at receptor)	No	2.53771(7.2111m)	1.00579(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2036	76.0118(7.2111m)	13.4776(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2036	33.4679(7.2111m)	5.93417(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2037	53.2693(7.2111m)	9.44515(208.741m)	Yes (at receptor)	No	2.3831(7.2111m)	0.944515(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2037	71.3809(7.2111m)	12.6565(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2037	31.4289(7.2111m)	5.57264(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2038	50.0546(7.2111m)	8.87516(208.741m)	Yes (at receptor)	No	2.23929(7.2111m)	0.887516(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2038	67.0732(7.2111m)	11.8927(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2038	29.5322(7.2111m)	5.23634(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2039	47.0309(7.2111m)	8.33903(208.741m)	Yes (at receptor)	No	2.10402(7.2111m)	0.833903(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2039	63.0215(7.2111m)	11.1743(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2039	27.7483(7.2111m)	4.92003(208.741m)	Yes (at receptor)	Yes				
Vinyl chloride (chloroethene, chloroethylene) - surface - 1990	79.0856(5m)	38.5542(210m)	Yes	No	1.63114(5m)	0.326228(210m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1992	89.4118(5m)	46.6002(191.525m)	Yes	No	1.84412(5m)	0.41012(191.525m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1993	108.136(5m)	56.3589(191.525m)	Yes	No	2.2303(5m)	0.496004(191.525m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1994	124.145(5m)	74.2385(160.801m)	Yes	No	2.56049(5m)	0.664794(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1995	110.248(5m)	65.9282(160.801m)	Yes	No	2.27387(5m)	0.590377(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1996	101.585(5m)	60.7478(160.801m)	Yes	No	2.0952(5m)	0.543987(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1997	115.828(5m)	69.2651(160.801m)	Yes	No	2.38896(5m)	0.620258(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1998	128.255(5m)	109.137(79.8123m)	Yes	No	2.64525(5m)	1.83274(79.8123m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1999	144.912(5m)	123.311(79.8123m)	Yes	No	2.98881(5m)	2.07078(79.8123m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2003	80.0845(5m)	80.0845(28.3019m)	Yes	No	1.65174(5m)	1.65174(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2005	106.819(5m)	106.819(28.3019m)	Yes	No	2.20314(5m)	2.20314(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2008	108.598(5m)	108.598(28.3019m)	Yes	No	2.23983(5m)	2.23983(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2016	141.066(5m)	141.066(28.3019m)	Yes	No	2.90948(5m)	2.90948(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2017	176.662(5m)	176.662(28.3019m)	Yes	No	3.64364(5m)	3.64364(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2018	156.759(5m)	156.759(28.3019m)	Yes	No	3.23315(5m)	3.23315(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2019	113.467(5m)	113.467(28.3019m)	Yes	No	2.34026(5m)	2.34026(28.3019m)	No	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

Year of Interest: All

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
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
Acrylonitrile - surface	1993	264	8.8	0
Acrylonitrile - surface	1994	264	8.8	0
Acrylonitrile - surface	1995	264	8.8	0
Acrylonitrile - surface	1996	264	8.8	0
Acrylonitrile - surface	1997	264	8.8	0
Acrylonitrile - surface	1998	264	8.8	0
Acrylonitrile - surface	1999	264	8.8	0
Acrylonitrile - surface	2000	264	8.8	0
Acrylonitrile - surface	2001	264	8.8	0
Acrylonitrile - surface	2002	264	8.8	0
Acrylonitrile - surface	2003	264	8.8	0
Acrylonitrile - surface	2004	264	8.8	0
Acrylonitrile - surface	2005	264	8.8	0
Acrylonitrile - surface	2007	264	8.8	0
Acrylonitrile - surface	2008	264	8.8	0
Acrylonitrile - surface	2010	264	8.8	0
Acrylonitrile - surface	2015	264	8.8	0
Acrylonitrile - surface	2016	264	8.8	0
Acrylonitrile - surface	2017	264	8.8	0
Acrylonitrile - surface	2018	264	8.8	0
Acrylonitrile - surface	2019	264	8.8	0
Arsenic - surface	1982	0.003	0	0
Arsenic - surface	1983	0.003	0	0
Arsenic - surface	1984	0.003	0	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Arsenic - surface	1985	0.003	0	0
Arsenic - surface	1986	0.003	0	0
Arsenic - surface	1987	0.003	0	0
Arsenic - surface	1988	0.003	0	0
Arsenic - surface	1989	0.003	0	0
Arsenic - surface	1990	0.003	0	0
Arsenic - surface	1991	0.003	0	0
Arsenic - surface	1992	0.003	0	0
Arsenic - surface	1993	0.003	0	0
Arsenic - surface	1994	0.003	0	0
Arsenic - surface	1995	0.003	0	0
Arsenic - surface	1996	0.003	0	0
Arsenic - surface	1997	0.003	0	0
Arsenic - surface	1998	0.003	0	0
Arsenic - surface	1999	0.003	0	0
Arsenic - surface	2000	0.003	0	0
Arsenic - surface	2001	0.003	0	0
Arsenic - surface	2002	0.003	0	0
Arsenic - surface	2003	0.003	0	0
Arsenic - surface	2004	0.003	0	0
Arsenic - surface	2005	0.003	0	0
Arsenic - surface	2006	0.003	0	0
Arsenic - surface	2007	0.003	0	0
Arsenic - surface	2008	0.003	0	0
Arsenic - surface	2009	0.003	0	0
Arsenic - surface	2010	0.003	0	0
Arsenic - surface	2011	0.003	0	0
Arsenic - surface	2012	0.003	0	0
Arsenic - surface	2013	0.003	0	0
Arsenic - surface	2014	0.003	0	0
Arsenic - surface	2015	0.003	0	0
Arsenic - surface	2016	0.003	0	0
Arsenic - surface	2017	0.003	0	0
Arsenic - surface	2018	0.003	0	0
Arsenic - surface	2019	0.003	0	0
Arsenic - surface	2020	0.003	0	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Arsenic - surface	2021	0.003	0	0
Arsenic - surface	2022	0.003	0	0
Arsenic - surface	2023	0.003	0	0
Arsenic - surface	2024	0.003	0	0
Arsenic - surface	2025	0.003	0	0
Arsenic - surface	2026	0.003	0	0
Arsenic - surface	2027	0.003	0	0
Arsenic - surface	2028	0.003	0	0
Arsenic - surface	2029	0.003	0	0
Arsenic - surface	2030	0.003	0	0
Arsenic - surface	2031	0.003	0	0
Arsenic - surface	2032	0.003	0	0
Arsenic - surface	2033	0.003	0	0
Arsenic - surface	2034	0.003	0	0
Arsenic - surface	2035	0.003	0	0
Arsenic - surface	2036	0.003	0	0
Arsenic - surface	2037	0.003	0	0
Arsenic - surface	2038	0.003	0	0
Arsenic - surface	2039	0.003	0	0
Arsenic - surface	2040	0.003	0	0
Arsenic - surface	2041	0.003	0	0
Arsenic - surface	2042	0.003	0	0
Arsenic - surface	2043	0.003	0	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
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

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
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
Benzo(a)pyrene - flare	2000	0	0.00025	0
Benzo(a)pyrene - flare	2001	0	0.00025	0
Benzo(a)pyrene - flare	2002	0	0.00025	0
Benzo(a)pyrene - flare	2004	0	0.00025	0
Benzo(a)pyrene - flare	2006	0	0.00025	0
Benzo(a)pyrene - flare	2007	0	0.00025	0
Benzo(a)pyrene - flare	2008	0	0.00025	0
Benzo(a)pyrene - flare	2009	0	0.00025	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Benzo(a)pyrene - flare	2010	0	0.00025	0
Benzo(a)pyrene - flare	2011	0	0.00025	0
Benzo(a)pyrene - flare	2012	0	0.00025	0
Carbon monoxide - engine	2014	10000	0	0
Carbon monoxide - engine	2020	10000	0	0
Dichloromethane (methylene chloride) - surface	1992	3000	700	0
Dichloromethane (methylene chloride) - surface	1999	3000	700	0
Dichloromethane (methylene chloride) - surface	2005	3000	700	0
Dichloromethane (methylene chloride) - surface	2017	3000	700	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	1998	700	42	0
Ethylene dichloride - surface	1999	700	42	0
Ethylene dichloride - surface	2000	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	2004	700	42	0
Ethylene dichloride - surface	2005	700	42	0
Ethylene dichloride - surface	2006	700	42	0
Ethylene dichloride - surface	2007	700	42	0
Ethylene dichloride - surface	2008	700	42	0
Ethylene dichloride - surface	2009	700	42	0
Ethylene dichloride - surface	2010	700	42	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Ethylene dichloride - surface	2011	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
Ethylene dichloride - surface	2016	700	42	0
Ethylene dichloride - surface	2017	700	42	0
Ethylene dichloride - surface	2018	700	42	0
Ethylene dichloride - surface	2019	700	42	0
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine	2013	750	0	0
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine	2014	750	0	0
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine	2019	750	0	0
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine	2020	750	0	0
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine	2021	750	0	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare	2000	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare	2001	160	16	0
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare	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)) - flare	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)) - flare	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)) - flare	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)) - flare	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)) - flare	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)) - flare	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

		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	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 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	1994	150	140	0
Hydrogen sulphide - surface	1995	150	140	0
Hydrogen sulphide - surface	1996	150	140	0
Hydrogen sulphide - surface	1997	150	140	0
Hydrogen sulphide - surface	1998	150	140	0
Hydrogen sulphide - surface	1999	150	140	0
Hydrogen sulphide - surface	2000	150	140	0
Hydrogen sulphide - surface	2001	150	140	0
Hydrogen sulphide - surface	2002	150	140	0
Hydrogen sulphide - surface	2003	150	140	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Hydrogen sulphide - surface	2004	150	140	0
Hydrogen sulphide - surface	2005	150	140	0
Hydrogen sulphide - surface	2006	150	140	0
Hydrogen sulphide - surface	2007	150	140	0
Hydrogen sulphide - surface	2008	150	140	0
Hydrogen sulphide - surface	2009	150	140	0
Hydrogen sulphide - surface	2010	150	140	0
Hydrogen sulphide - surface	2011	150	140	0
Hydrogen sulphide - surface	2012	150	140	0
Hydrogen sulphide - surface	2013	150	140	0
Hydrogen sulphide - surface	2014	150	140	0
Hydrogen sulphide - surface	2015	150	140	0
Hydrogen sulphide - surface	2016	150	140	0
Hydrogen sulphide - surface	2017	150	140	0
Hydrogen sulphide - surface	2018	150	140	0
Hydrogen sulphide - surface	2019	150	140	0
Nitrogen oxides (NOx) - flare	2000	200	40	4.30145
Nitrogen oxides (NOx) - flare	2001	200	40	4.30145
Nitrogen oxides (NOx) - flare	2002	200	40	4.30145
Nitrogen oxides (NOx) - engine	2003	200	40	4.30145
Nitrogen oxides (NOx) - engine	2004	200	40	4.30145
Nitrogen oxides (NOx) - flare	2004	200	40	4.30145
Nitrogen oxides (NOx) - engine	2005	200	40	4.30145
Nitrogen oxides (NOx) - engine	2006	200	40	4.30145
Nitrogen oxides (NOx) - flare	2006	200	40	4.30145
Nitrogen oxides (NOx) - engine	2007	200	40	4.30145
Nitrogen oxides (NOx) - flare	2007	200	40	4.30145
Nitrogen oxides (NOx) - engine	2008	200	40	4.30145
Nitrogen oxides (NOx) - flare	2008	200	40	4.30145
Nitrogen oxides (NOx) - engine	2009	200	40	4.30145
Nitrogen oxides (NOx) - flare	2009	200	40	4.30145
Nitrogen oxides (NOx) - engine	2010	200	40	4.30145
Nitrogen oxides (NOx) - flare	2010	200	40	4.30145
Nitrogen oxides (NOx) - engine	2011	200	40	4.30145
Nitrogen oxides (NOx) - flare	2011	200	40	4.30145
Nitrogen oxides (NOx) - engine	2012	200	40	4.30145

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Nitrogen oxides (NOx) - flare	2012	200	40	4.30145
Nitrogen oxides (NOx) - engine	2013	200	40	4.30145
Nitrogen oxides (NOx) - engine	2014	200	40	4.30145
Nitrogen oxides (NOx) - engine	2015	200	40	4.30145
Nitrogen oxides (NOx) - engine	2016	200	40	4.30145
Nitrogen oxides (NOx) - engine	2017	200	40	4.30145
Nitrogen oxides (NOx) - engine	2018	200	40	4.30145
Nitrogen oxides (NOx) - engine	2019	200	40	4.30145
Nitrogen oxides (NOx) - engine	2020	200	40	4.30145
Nitrogen oxides (NOx) - engine	2021	200	40	4.30145
Nitrogen oxides (NOx) - engine	2022	200	40	4.30145
Nitrogen oxides (NOx) - engine	2023	200	40	4.30145
Nitrogen oxides (NOx) - engine	2024	200	40	4.30145
Nitrogen oxides (NOx) - engine	2025	200	40	4.30145
Nitrogen oxides (NOx) - engine	2026	200	40	4.30145
Nitrogen oxides (NOx) - engine	2027	200	40	4.30145
Nitrogen oxides (NOx) - engine	2028	200	40	4.30145
Nitrogen oxides (NOx) - engine	2029	200	40	4.30145
Nitrogen oxides (NOx) - engine	2030	200	40	4.30145
Nitrogen oxides (NOx) - engine	2031	200	40	4.30145
Nitrogen oxides (NOx) - engine	2032	200	40	4.30145
PM10s 24 hour - flare	2000	50		8.56818
PM10s 24 hour - flare	2001	50		8.56818
PM10s 24 hour - flare	2002	50		8.56818
PM10s 24 hour - flare	2006	50		8.56818
PM10s 24 hour - flare	2009	50		8.56818
PM10s 24 hour - flare	2011	50		8.56818
PM10s 24 hour - flare	2012	50		8.56818
PM10s - engine	2020	0	40	8.56818
PM10s 24 hour - engine	2020	50		8.56818
Sulphur dioxide - flare	2000	350	0	0
Sulphur dioxide 15 min - flare	2000	266		0
Sulphur dioxide 24 hour - flare	2000	125		0
Sulphur dioxide - flare	2001	350	0	0
Sulphur dioxide 15 min - flare	2001	266		0
Sulphur dioxide 24 hour - flare	2001	125		0

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

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

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide - engine	2019	350	0	0
Sulphur dioxide 15 min - engine	2019	266		0
Sulphur dioxide 24 hour - engine	2019	125		0
Sulphur dioxide - engine	2020	350	0	0
Sulphur dioxide 15 min - engine	2020	266		0
Sulphur dioxide 24 hour - engine	2020	125		0
Sulphur dioxide - engine	2021	350	0	0
Sulphur dioxide 15 min - engine	2021	266		0
Sulphur dioxide 24 hour - engine	2021	125		0
Sulphur dioxide - engine	2022	350	0	0
Sulphur dioxide 15 min - engine	2022	266		0
Sulphur dioxide 24 hour - engine	2022	125		0
Sulphur dioxide - engine	2023	350	0	0
Sulphur dioxide 15 min - engine	2023	266		0
Sulphur dioxide 24 hour - engine	2023	125		0
Sulphur dioxide - engine	2024	350	0	0
Sulphur dioxide 15 min - engine	2024	266		0
Sulphur dioxide 24 hour - engine	2024	125		0
Sulphur dioxide - engine	2025	350	0	0
Sulphur dioxide 15 min - engine	2025	266		0
Sulphur dioxide 24 hour - engine	2025	125		0
Sulphur dioxide - engine	2026	350	0	0
Sulphur dioxide 15 min - engine	2026	266		0
Sulphur dioxide 24 hour - engine	2026	125		0
Sulphur dioxide - engine	2027	350	0	0
Sulphur dioxide 15 min - engine	2027	266		0
Sulphur dioxide 24 hour - engine	2027	125		0
Sulphur dioxide - engine	2028	350	0	0
Sulphur dioxide 15 min - engine	2028	266		0
Sulphur dioxide 24 hour - engine	2028	125		0
Sulphur dioxide - engine	2029	350	0	0
Sulphur dioxide 15 min - engine	2029	266		0
Sulphur dioxide 24 hour - engine	2029	125		0
Sulphur dioxide - engine	2030	350	0	0
Sulphur dioxide 15 min - engine	2030	266		0
Sulphur dioxide 24 hour - engine	2030	125		0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Sulphur dioxide - engine	2031	350	0	0
Sulphur dioxide 15 min - engine	2031	266		0
Sulphur dioxide 24 hour - engine	2031	125		0
Sulphur dioxide 15 min - engine	2032	266		0
Sulphur dioxide 24 hour - engine	2032	125		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
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	1994	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1995	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1996	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1997	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1998	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	1999	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2000	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2001	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2002	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2003	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2004	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2005	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2007	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2008	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2010	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2011	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2013	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2015	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2016	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2017	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2018	1851	159	0
Vinyl chloride (chloroethene, chloroethylene) - surface	2019	1851	159	0
Xylene (all isomers) - surface	1991	66200	4410	0
Xylene (all isomers) - surface	1996	66200	4410	0

		Short Term EQS or EAL µg/m3	Long Term EQS or EAL µg/m3	Background Concentration µg/m3
Xylene (all isomers) - surface	1997	66200	4410	0
Xylene (all isomers) - surface	1998	66200	4410	0
Xylene (all isomers) - surface	1999	66200	4410	0
Xylene (all isomers) - surface	2016	66200	4410	0
Xylene (all isomers) - surface	2017	66200	4410	0
Xylene (all isomers) - surface	2018	66200	4410	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 - 1989	5.16415(5m)	2.51752(210m)	Yes	No	0.10651(5m)	0.0213021(210m)	Yes (at receptor)	No
Acrylonitrile - surface - 1990	5.74322(5m)	2.79982(210m)	Yes	No	0.118454(5m)	0.0236908(210m)	Yes (at receptor)	No
Acrylonitrile - surface - 1991	5.54957(5m)	2.70541(210m)	Yes	No	0.11446(5m)	0.022892(210m)	Yes (at receptor)	No
Acrylonitrile - surface - 1992	7.08866(5m)	3.69451(191.525m)	Yes	No	0.146204(5m)	0.0325147(191.525m)	Yes (at receptor)	No
Acrylonitrile - surface - 1993	6.54179(5m)	3.40949(191.525m)	Yes	No	0.134924(5m)	0.0300063(191.525m)	Yes (at receptor)	No
Acrylonitrile - surface - 1994	6.52047(5m)	3.89922(160.801m)	Yes	No	0.134485(5m)	0.0349169(160.801m)	Yes (at receptor)	No
Acrylonitrile - surface - 1995	5.70689(5m)	3.41271(160.801m)	Yes	No	0.117705(5m)	0.0305602(160.801m)	Yes (at receptor)	No
Acrylonitrile - surface - 1996	6.10695(5m)	3.65194(160.801m)	Yes	No	0.125956(5m)	0.0327025(160.801m)	Yes (at receptor)	No
Acrylonitrile - surface - 1997	7.55341(5m)	4.51692(160.801m)	Yes	No	0.155789(5m)	0.0404483(160.801m)	Yes (at receptor)	No
Acrylonitrile - surface - 1998	8.25679(5m)	7.02602(79.8123m)	Yes	No	0.170296(5m)	0.117989(79.8123m)	No	No
Acrylonitrile - surface - 1999	11.5841(5m)	9.85733(79.8123m)	Yes	No	0.238921(5m)	0.165535(79.8123m)	No	No
Acrylonitrile - surface - 2000	6.37048(5m)	5.42088(79.8123m)	Yes	No	0.131391(5m)	0.0910334(79.8123m)	No	No
Acrylonitrile - surface - 2001	5.77475(5m)	4.91396(79.8123m)	Yes	No	0.119104(5m)	0.0825206(79.8123m)	Yes (at receptor)	No
Acrylonitrile - surface - 2002	7.2388(5m)	6.15978(79.8123m)	Yes	No	0.1493(5m)	0.103442(79.8123m)	No	No
Acrylonitrile - surface - 2003	8.17068(5m)	8.17068(28.3019m)	Yes	No	0.16852(5m)	0.16852(28.3019m)	No	No
Acrylonitrile - surface - 2004	4.62489(5m)	4.62489(28.3019m)	Yes	No	0.0953883(5m)	0.0953883(28.3019m)	No	No
Acrylonitrile - surface - 2005	6.49886(5m)	6.49886(28.3019m)	Yes	No	0.134039(5m)	0.134039(28.3019m)	No	No
Acrylonitrile - surface - 2007	7.99256(5m)	7.99256(28.3019m)	Yes	No	0.164846(5m)	0.164846(28.3019m)	No	No
Acrylonitrile - surface - 2008	9.25351(5m)	9.25351(28.3019m)	Yes	No	0.190854(5m)	0.190854(28.3019m)	No	No
Acrylonitrile - surface - 2010	4.87894(5m)	4.87894(28.3019m)	Yes	No	0.100628(5m)	0.100628(28.3019m)	No	No
Acrylonitrile - surface - 2015	6.88069(5m)	6.88069(28.3019m)	Yes	No	0.141914(5m)	0.141914(28.3019m)	No	No
Acrylonitrile - surface - 2016	12.2598(5m)	12.2598(28.3019m)	Yes	No	0.252858(5m)	0.252858(28.3019m)	No	No
Acrylonitrile - surface - 2017	14.0555(5m)	14.0555(28.3019m)	Yes	No	0.289894(5m)	0.289894(28.3019m)	No	No
Acrylonitrile - surface - 2018	11.8602(5m)	11.8602(28.3019m)	Yes	No	0.244617(5m)	0.244617(28.3019m)	No	No
Acrylonitrile - surface - 2019	7.68406(5m)	7.68406(28.3019m)	Yes	No	0.158484(5m)	0.158484(28.3019m)	No	No
Arsenic - surface - 1982	0.00511665(5m)	0.00249437(210m)	No	Yes	0.000105531(5m)	2.11062e-005(210m)	No EAL	No EAL
Arsenic - surface - 1983	0.0213178(5m)	0.0103924(210m)	No	Yes	0.000439679(5m)	8.79357e-005(210m)	No EAL	No EAL
Arsenic - surface - 1984	0.0340822(5m)	0.0166151(210m)	No	Yes	0.000702945(5m)	0.000140589(210m)	No EAL	No EAL
Arsenic - surface - 1985	0.0389092(5m)	0.0189682(210m)	No	Yes	0.000802503(5m)	0.000160501(210m)	No EAL	No EAL
Arsenic - surface - 1986	0.0316573(5m)	0.0154329(210m)	No	Yes	0.000652931(5m)	0.000130586(210m)	No EAL	No EAL
Arsenic - surface - 1987	0.0419537(5m)	0.0204524(210m)	No	Yes	0.000865296(5m)	0.000173059(210m)	No EAL	No EAL
Arsenic - surface - 1988	0.0545302(5m)	0.0265835(210m)	No	Yes	0.00112469(5m)	0.000224937(210m)	No EAL	No EAL
Arsenic - surface - 1989	0.0561412(5m)	0.0273689(210m)	No	Yes	0.00115791(5m)	0.000231583(210m)	No EAL	No EAL
Arsenic - surface - 1990	0.0561619(5m)	0.0273789(210m)	No	Yes	0.00115834(5m)	0.000231668(210m)	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?
Arsenic - surface - 1991	0.0672549(5m)	0.0327868(210m)	No	Yes	0.00138713(5m)	0.000277426(210m)	No EAL	No EAL
Arsenic - surface - 1992	0.0862147(5m)	0.0449339(191.525m)	No	Yes	0.00177818(5m)	0.000395455(191.525m)	No EAL	No EAL
Arsenic - surface - 1993	0.107205(5m)	0.0558736(191.525m)	No	Yes	0.0022111(5m)	0.000491733(191.525m)	No EAL	No EAL
Arsenic - surface - 1994	0.105779(5m)	0.0632557(160.801m)	No	Yes	0.0021817(5m)	0.000566445(160.801m)	No EAL	No EAL
Arsenic - surface - 1995	0.0927712(5m)	0.0554769(160.801m)	No	Yes	0.00191341(5m)	0.000496787(160.801m)	No EAL	No EAL
Arsenic - surface - 1996	0.0959835(5m)	0.0573979(160.801m)	No	Yes	0.00197966(5m)	0.000513989(160.801m)	No EAL	No EAL
Arsenic - surface - 1997	0.0970202(5m)	0.0580178(160.801m)	No	Yes	0.00200104(5m)	0.00051954(160.801m)	No EAL	No EAL
Arsenic - surface - 1998	0.0949396(5m)	0.0807877(79.8123m)	No	Yes	0.00195813(5m)	0.00135668(79.8123m)	No EAL	No EAL
Arsenic - surface - 1999	0.10049(5m)	0.0855108(79.8123m)	No	Yes	0.00207261(5m)	0.00143599(79.8123m)	No EAL	No EAL
Arsenic - surface - 2000	0.0627826(5m)	0.0534241(79.8123m)	No	Yes	0.00129489(5m)	0.000897156(79.8123m)	No EAL	No EAL
Arsenic - surface - 2001	0.0515031(5m)	0.043826(79.8123m)	No	Yes	0.00106225(5m)	0.000735974(79.8123m)	No EAL	No EAL
Arsenic - surface - 2002	0.0753113(5m)	0.0640853(79.8123m)	No	Yes	0.0015533(5m)	0.00107619(79.8123m)	No EAL	No EAL
Arsenic - surface - 2003	0.0814747(5m)	0.0814747(28.3019m)	No	Yes	0.00168042(5m)	0.00168042(28.3019m)	No EAL	No EAL
Arsenic - surface - 2004	0.0730731(5m)	0.0730731(28.3019m)	No	Yes	0.00150713(5m)	0.00150713(28.3019m)	No EAL	No EAL
Arsenic - surface - 2005	0.102921(5m)	0.102921(28.3019m)	No	Yes	0.00212275(5m)	0.00212275(28.3019m)	No EAL	No EAL
Arsenic - surface - 2006	0.0220219(5m)	0.0220219(28.3019m)	No	Yes	0.000454201(5m)	0.000454201(28.3019m)	No EAL	No EAL
Arsenic - surface - 2007	0.055379(5m)	0.055379(28.3019m)	No	Yes	0.00114219(5m)	0.00114219(28.3019m)	No EAL	No EAL
Arsenic - surface - 2008	0.0627269(5m)	0.0627269(28.3019m)	No	Yes	0.00129374(5m)	0.00129374(28.3019m)	No EAL	No EAL
Arsenic - surface - 2009	0.0218755(5m)	0.0218755(28.3019m)	No	Yes	0.000451183(5m)	0.000451183(28.3019m)	No EAL	No EAL
Arsenic - surface - 2010	0.0612253(5m)	0.0612253(28.3019m)	No	Yes	0.00126277(5m)	0.00126277(28.3019m)	No EAL	No EAL
Arsenic - surface - 2011	0.0284849(5m)	0.0284849(28.3019m)	No	Yes	0.000587502(5m)	0.000587502(28.3019m)	No EAL	No EAL
Arsenic - surface - 2012	0.0228086(5m)	0.0228086(28.3019m)	No	Yes	0.000470427(5m)	0.000470427(28.3019m)	No EAL	No EAL
Arsenic - surface - 2013	0.0528272(5m)	0.0528272(28.3019m)	No	Yes	0.00108956(5m)	0.00108956(28.3019m)	No EAL	No EAL
Arsenic - surface - 2014	0.023946(5m)	0.023946(28.3019m)	No	Yes	0.000493885(5m)	0.000493885(28.3019m)	No EAL	No EAL
Arsenic - surface - 2015	0.0925577(5m)	0.0925577(28.3019m)	No	Yes	0.001909(5m)	0.001909(28.3019m)	No EAL	No EAL
Arsenic - surface - 2016	0.168944(5m)	0.168944(28.3019m)	No	Yes	0.00348448(5m)	0.00348448(28.3019m)	No EAL	No EAL
Arsenic - surface - 2017	0.185461(5m)	0.185461(28.3019m)	No	Yes	0.00382513(5m)	0.00382513(28.3019m)	No EAL	No EAL
Arsenic - surface - 2018	0.164742(5m)	0.164742(28.3019m)	No	Yes	0.0033978(5m)	0.0033978(28.3019m)	No EAL	No EAL
Arsenic - surface - 2019	0.112409(5m)	0.112409(28.3019m)	No	Yes	0.00231845(5m)	0.00231845(28.3019m)	No EAL	No EAL
Arsenic - surface - 2020	0.0110986(5m)	0.0110986(28.3019m)	No	Yes	0.000228908(5m)	0.000228908(28.3019m)	No EAL	No EAL
Arsenic - surface - 2021	0.0117803(5m)	0.0117803(28.3019m)	No	Yes	0.000242969(5m)	0.000242969(28.3019m)	No EAL	No EAL
Arsenic - surface - 2022	0.0184094(5m)	0.0184094(28.3019m)	No	Yes	0.000379694(5m)	0.000379694(28.3019m)	No EAL	No EAL
Arsenic - surface - 2023	0.00858628(5m)	0.00858628(28.3019m)	No	Yes	0.000177092(5m)	0.000177092(28.3019m)	No EAL	No EAL
Arsenic - surface - 2024	0.00285824(5m)	0.00285824(28.3019m)	No	Yes	5.89512e-005(5m)	5.89512e-005(28.3019m)	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?
Arsenic - surface - 2025	0.00196944(5m)	0.00196944(28.3019m)	No	Yes	4.06198e-005(5m)	4.06198e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2026	0.00158371(5m)	0.00158371(28.3019m)	No	Yes	3.2664e-005(5m)	3.2664e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2027	0.00128341(5m)	0.00128341(28.3019m)	No	Yes	2.64704e-005(5m)	2.64704e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2028	0.00103999(5m)	0.00103999(28.3019m)	No	Yes	2.14498e-005(5m)	2.14498e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2029	0.000815646(5m)	0.000815646(28.3019m)	No	Yes	1.68227e-005(5m)	1.68227e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2030	0.000640974(5m)	0.000640974(28.3019m)	No	Yes	1.32201e-005(5m)	1.32201e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2031	0.000724444(5m)	0.000724444(28.3019m)	No	Yes	1.49417e-005(5m)	1.49417e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2032	0.00288632(5m)	0.00288632(28.3019m)	No	Yes	5.95304e-005(5m)	5.95304e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2033	0.0038523(5m)	0.0038523(28.3019m)	No	Yes	7.94537e-005(5m)	7.94537e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2034	0.0030371(5m)	0.0030371(28.3019m)	No	Yes	6.26403e-005(5m)	6.26403e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2035	0.00239543(5m)	0.00239543(28.3019m)	No	Yes	4.94057e-005(5m)	4.94057e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2036	0.00189005(5m)	0.00189005(28.3019m)	No	Yes	3.89822e-005(5m)	3.89822e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2037	0.00149182(5m)	0.00149182(28.3019m)	No	Yes	3.07688e-005(5m)	3.07688e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2038	0.0011779(5m)	0.0011779(28.3019m)	No	Yes	2.42941e-005(5m)	2.42941e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2039	0.000930334(5m)	0.000930334(28.3019m)	No	Yes	1.91881e-005(5m)	1.91881e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2040	0.000735037(5m)	0.000735037(28.3019m)	No	Yes	1.51601e-005(5m)	1.51601e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2041	0.000580917(5m)	0.000580917(28.3019m)	No	No	1.19814e-005(5m)	1.19814e-005(28.3019m)	No EAL	No EAL
Arsenic - surface - 2042	0.00045925(5m)	0.00045925(28.3019m)	No	No	9.47204e-006(5m)	9.47204e-006(28.3019m)	No EAL	No EAL
Arsenic - surface - 2043	0.000363173(5m)	0.000363173(28.3019m)	No	No	7.49044e-006(5m)	7.49044e-006(28.3019m)	No EAL	No EAL
Benzene - surface - 1983	7.92573(5m)	3.86379(210m)	No EAL	No EAL	0.163468(5m)	0.0326936(210m)	Yes (at receptor)	No
Benzene - surface - 1984	12.6093(5m)	6.14705(210m)	No EAL	No EAL	0.260067(5m)	0.0520135(210m)	No	No
Benzene - surface - 1985	14.1249(5m)	6.88589(210m)	No EAL	No EAL	0.291326(5m)	0.0582653(210m)	No	No
Benzene - surface - 1986	12.518(5m)	6.1025(210m)	No EAL	No EAL	0.258183(5m)	0.0516366(210m)	No	No
Benzene - surface - 1987	16.9494(5m)	8.26281(210m)	No EAL	No EAL	0.34958(5m)	0.0699161(210m)	No	No
Benzene - surface - 1988	22.4806(5m)	10.9593(210m)	No EAL	No EAL	0.463663(5m)	0.0927326(210m)	No	No
Benzene - surface - 1989	22.4936(5m)	10.9656(210m)	No EAL	No EAL	0.463931(5m)	0.0927862(210m)	No	No
Benzene - surface - 1990	24.759(5m)	12.07(210m)	No EAL	No EAL	0.510655(5m)	0.102131(210m)	No	No
Benzene - surface - 1991	27.1049(5m)	13.2136(210m)	No EAL	No EAL	0.559039(5m)	0.111808(210m)	No	No
Benzene - surface - 1992	33.7806(5m)	17.606(191.525m)	No EAL	No EAL	0.696726(5m)	0.154947(191.525m)	No	No
Benzene - surface - 1993	38.4804(5m)	20.0554(191.525m)	No EAL	No EAL	0.793658(5m)	0.176504(191.525m)	No	No
Benzene - surface - 1994	37.6603(5m)	22.5207(160.801m)	No EAL	No EAL	0.776743(5m)	0.20167(160.801m)	No	No
Benzene - surface - 1995	34.3421(5m)	20.5365(160.801m)	No EAL	No EAL	0.708305(5m)	0.183901(160.801m)	No	No
Benzene - surface - 1996	35.669(5m)	21.33(160.801m)	No EAL	No EAL	0.735673(5m)	0.191006(160.801m)	No	No
Benzene - surface - 1997	39.5222(5m)	23.6342(160.801m)	No EAL	No EAL	0.815146(5m)	0.21164(160.801m)	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 - 1998	43.7956(5m)	37.2674(79.8123m)	No EAL	No EAL	0.903285(5m)	0.625835(79.8123m)	No	No
Benzene - surface - 1999	52.2837(5m)	44.4902(79.8123m)	No EAL	No EAL	1.07835(5m)	0.747129(79.8123m)	No	No
Benzene - surface - 2000	29.3308(5m)	24.9587(79.8123m)	No EAL	No EAL	0.604947(5m)	0.419133(79.8123m)	No	No
Benzene - surface - 2001	24.4828(5m)	20.8333(79.8123m)	No EAL	No EAL	0.504957(5m)	0.349856(79.8123m)	No	No
Benzene - surface - 2002	35.385(5m)	30.1105(79.8123m)	No EAL	No EAL	0.729816(5m)	0.505648(79.8123m)	No	No
Benzene - surface - 2003	40.653(5m)	40.653(28.3019m)	No EAL	No EAL	0.838469(5m)	0.838469(28.3019m)	No	No
Benzene - surface - 2004	35.0716(5m)	35.0716(28.3019m)	No EAL	No EAL	0.723352(5m)	0.723352(28.3019m)	No	No
Benzene - surface - 2005	47.412(5m)	47.412(28.3019m)	No EAL	No EAL	0.977872(5m)	0.977872(28.3019m)	No	No
Benzene - surface - 2006	11.9143(5m)	11.9143(28.3019m)	No EAL	No EAL	0.245733(5m)	0.245733(28.3019m)	No	No
Benzene - surface - 2007	38.5045(5m)	38.5045(28.3019m)	No EAL	No EAL	0.794156(5m)	0.794156(28.3019m)	No	No
Benzene - surface - 2008	45.2886(5m)	45.2886(28.3019m)	No EAL	No EAL	0.934078(5m)	0.934078(28.3019m)	No	No
Benzene - surface - 2009	12.6693(5m)	12.6693(28.3019m)	No EAL	No EAL	0.261304(5m)	0.261304(28.3019m)	No	No
Benzene - surface - 2010	33.1298(5m)	33.1298(28.3019m)	No EAL	No EAL	0.683301(5m)	0.683301(28.3019m)	No	No
Benzene - surface - 2011	17.1079(5m)	17.1079(28.3019m)	No EAL	No EAL	0.35285(5m)	0.35285(28.3019m)	No	No
Benzene - surface - 2012	10.8635(5m)	10.8635(28.3019m)	No EAL	No EAL	0.22406(5m)	0.22406(28.3019m)	No	No
Benzene - surface - 2013	23.0696(5m)	23.0696(28.3019m)	No EAL	No EAL	0.47581(5m)	0.47581(28.3019m)	No	No
Benzene - surface - 2014	8.04263(5m)	8.04263(28.3019m)	No EAL	No EAL	0.165879(5m)	0.165879(28.3019m)	No	No
Benzene - surface - 2015	30.591(5m)	30.591(28.3019m)	No EAL	No EAL	0.63094(5m)	0.63094(28.3019m)	No	No
Benzene - surface - 2016	50.818(5m)	50.818(28.3019m)	No EAL	No EAL	1.04812(5m)	1.04812(28.3019m)	No	No
Benzene - surface - 2017	56.4241(5m)	56.4241(28.3019m)	No EAL	No EAL	1.16375(5m)	1.16375(28.3019m)	No	No
Benzene - surface - 2018	50.1265(5m)	50.1265(28.3019m)	No EAL	No EAL	1.03386(5m)	1.03386(28.3019m)	No	No
Benzene - surface - 2019	30.7168(5m)	30.7168(28.3019m)	No EAL	No EAL	0.633534(5m)	0.633534(28.3019m)	No	No
Benzene - surface - 2020	3.19349(5m)	3.19349(28.3019m)	No EAL	No EAL	0.0658658(5m)	0.0658658(28.3019m)	No	No
Benzene - surface - 2021	4.80234(5m)	4.80234(28.3019m)	No EAL	No EAL	0.0990483(5m)	0.0990483(28.3019m)	No	No
Benzene - surface - 2022	5.24128(5m)	5.24128(28.3019m)	No EAL	No EAL	0.108101(5m)	0.108101(28.3019m)	No	No
Benzene - surface - 2023	2.49607(5m)	2.49607(28.3019m)	No EAL	No EAL	0.0514815(5m)	0.0514815(28.3019m)	No	No
Benzo(a)pyrene - flare - 2000	0.000677504(8.60233m)	4.38428e-005(229.103m)	No EAL	No EAL	9.94936e-006(8.60233m)	3.71248e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2001	0.000677504(8.60233m)	4.38428e-005(229.103m)	No EAL	No EAL	9.94936e-006(8.60233m)	3.71248e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2002	0.000672528(8.60233m)	4.35207e-005(229.103m)	No EAL	No EAL	9.87628e-006(8.60233m)	3.68521e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2004	0.000230822(8.60233m)	1.4937e-005(229.103m)	No EAL	No EAL	3.38969e-006(8.60233m)	1.26482e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2006	0.0005026(8.60233m)	3.25243e-005(229.103m)	No EAL	No EAL	7.38084e-006(8.60233m)	2.75407e-006(229.103m)	No	No
Benzo(a)pyrene - flare - 2007	0.000286252(8.60233m)	1.8524e-005(229.103m)	No EAL	No EAL	4.20369e-006(8.60233m)	1.56856e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2008	0.000185254(8.60233m)	1.19882e-005(229.103m)	No EAL	No EAL	2.72051e-006(8.60233m)	1.01513e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2009	0.000562663(8.60233m)	3.64111e-005(229.103m)	No EAL	No EAL	8.26288e-006(8.60233m)	3.08319e-006(229.103m)	No	No

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	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?
Benzo(a)pyrene - flare - 2010	0.0003495(8.60233m)	2.26169e-005(229.103m)	No EAL	No EAL	5.13252e-006(8.60233m)	1.91514e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2011	0.000456134(8.60233m)	2.95175e-005(229.103m)	No EAL	No EAL	6.69848e-006(8.60233m)	2.49946e-006(229.103m)	Yes (at receptor)	No
Benzo(a)pyrene - flare - 2012	0.000450593(8.60233m)	2.91588e-005(229.103m)	No EAL	No EAL	6.6171e-006(8.60233m)	2.46909e-006(229.103m)	Yes (at receptor)	No
Carbon monoxide - engine - 2014	1113.13(7.2111m)	197.369(208.741m)	Yes (at receptor)	No	49.798(7.2111m)	19.7369(208.741m)	No EAL	No EAL
Carbon monoxide - engine - 2020	1194.46(7.2111m)	211.789(208.741m)	Yes (at receptor)	No	53.4363(7.2111m)	21.1789(208.741m)	No EAL	No EAL
Dichloromethane (methylene chloride) - surface - 1992	306.788(5m)	159.894(191.525m)	Yes (at receptor)	No	6.32751(5m)	1.4072(191.525m)	Yes	No
Dichloromethane (methylene chloride) - surface - 1999	339.826(5m)	289.171(79.8123m)	Yes (at receptor)	No	7.00892(5m)	4.85608(79.8123m)	Yes (at receptor)	No
Dichloromethane (methylene chloride) - surface - 2005	389.179(5m)	389.179(28.3019m)	No	No	8.02682(5m)	8.02682(28.3019m)	No	No
Dichloromethane (methylene chloride) - surface - 2017	312.216(5m)	312.216(28.3019m)	No	No	6.43946(5m)	6.43946(28.3019m)	Yes	No
Ethylene dichloride - surface - 1984	26.6694(5m)	13.0013(210m)	Yes	No	0.550056(5m)	0.110011(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1985	30.975(5m)	15.1003(210m)	Yes	No	0.638859(5m)	0.127772(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1986	25.458(5m)	12.4108(210m)	Yes	No	0.525071(5m)	0.105014(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1987	34.4847(5m)	16.8113(210m)	Yes	No	0.711246(5m)	0.142249(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1988	35.699(5m)	17.4033(210m)	Yes	No	0.736292(5m)	0.147258(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1989	53.8627(5m)	26.2581(210m)	Yes	No	1.11092(5m)	0.222184(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1990	50.6063(5m)	24.6706(210m)	Yes	No	1.04375(5m)	0.208751(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1991	65.0058(5m)	31.6903(210m)	Yes	No	1.34075(5m)	0.268149(210m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1992	84.9293(5m)	44.264(191.525m)	Yes (at receptor)	No	1.75167(5m)	0.389559(191.525m)	Yes (at receptor)	No
Ethylene dichloride - surface - 1993	131.684(5m)	68.6319(191.525m)	Yes (at receptor)	No	2.71598(5m)	0.604016(191.525m)	No	No
Ethylene dichloride - surface - 1994	111.86(5m)	66.8918(160.801m)	Yes (at receptor)	No	2.30711(5m)	0.599006(160.801m)	No	No
Ethylene dichloride - surface - 1995	160.081(5m)	95.7279(160.801m)	No	Yes	3.30167(5m)	0.857228(160.801m)	No	No
Ethylene dichloride - surface - 1996	117.828(5m)	70.4611(160.801m)	No	No	2.43021(5m)	0.630968(160.801m)	No	No
Ethylene dichloride - surface - 1997	132.634(5m)	79.3145(160.801m)	No	No	2.73557(5m)	0.710249(160.801m)	No	No
Ethylene dichloride - surface - 1998	164.147(5m)	139.679(79.8123m)	No	Yes	3.38553(5m)	2.34564(79.8123m)	No	No
Ethylene dichloride - surface - 1999	167.401(5m)	142.448(79.8123m)	No	Yes	3.45265(5m)	2.39214(79.8123m)	No	No
Ethylene dichloride - surface - 2000	101.063(5m)	85.9983(79.8123m)	No	No	2.08442(5m)	1.44418(79.8123m)	No	No
Ethylene dichloride - surface - 2001	91.1063(5m)	77.5258(79.8123m)	No	No	1.87907(5m)	1.3019(79.8123m)	No	No
Ethylene dichloride - surface - 2002	129.093(5m)	109.851(79.8123m)	No	No	2.66255(5m)	1.84473(79.8123m)	No	No
Ethylene dichloride - surface - 2003	159.027(5m)	159.027(28.3019m)	No	Yes	3.27992(5m)	3.27992(28.3019m)	No	No
Ethylene dichloride - surface - 2004	55.2156(5m)	55.2156(28.3019m)	Yes	No	1.13882(5m)	1.13882(28.3019m)	No	No
Ethylene dichloride - surface - 2005	76.9068(5m)	76.9068(28.3019m)	No	No	1.5862(5m)	1.5862(28.3019m)	No	No
Ethylene dichloride - surface - 2006	25.5853(5m)	25.5853(28.3019m)	Yes	No	0.527697(5m)	0.527697(28.3019m)	No	No
Ethylene dichloride - surface - 2007	63.7172(5m)	63.7172(28.3019m)	Yes	No	1.31417(5m)	1.31417(28.3019m)	No	No
Ethylene dichloride - surface - 2008	81.7395(5m)	81.7395(28.3019m)	No	No	1.68588(5m)	1.68588(28.3019m)	No	No

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Ethylene dichloride - surface - 2009	27.4466(5m)	27.4466(28.3019m)	Yes	No	0.566087(5m)	0.566087(28.3019m)	No	No
Ethylene dichloride - surface - 2010	62.7715(5m)	62.7715(28.3019m)	Yes	No	1.29466(5m)	1.29466(28.3019m)	No	No
Ethylene dichloride - surface - 2011	30.4014(5m)	30.4014(28.3019m)	Yes	No	0.627029(5m)	0.627029(28.3019m)	No	No
Ethylene dichloride - surface - 2012	23.0993(5m)	23.0993(28.3019m)	Yes	No	0.476424(5m)	0.476424(28.3019m)	No	No
Ethylene dichloride - surface - 2013	47.0074(5m)	47.0074(28.3019m)	Yes	No	0.969527(5m)	0.969527(28.3019m)	No	No
Ethylene dichloride - surface - 2014	23.8742(5m)	23.8742(28.3019m)	Yes	No	0.492405(5m)	0.492405(28.3019m)	No	No
Ethylene dichloride - surface - 2015	80.8166(5m)	80.8166(28.3019m)	No	No	1.66684(5m)	1.66684(28.3019m)	No	No
Ethylene dichloride - surface - 2016	137.945(5m)	137.945(28.3019m)	No	No	2.84511(5m)	2.84511(28.3019m)	No	No
Ethylene dichloride - surface - 2017	156.791(5m)	156.791(28.3019m)	No	Yes	3.23381(5m)	3.23381(28.3019m)	No	No
Ethylene dichloride - surface - 2018	143.329(5m)	143.329(28.3019m)	No	Yes	2.95616(5m)	2.95616(28.3019m)	No	No
Ethylene dichloride - surface - 2019	85.2681(5m)	85.2681(28.3019m)	No	No	1.75865(5m)	1.75865(28.3019m)	No	No
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine - 2013	76.9113(7.2111m)	13.6371(208.741m)	Yes (at receptor)	No	3.44077(7.2111m)	1.36371(208.741m)	No EAL	No EAL
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine - 2014	111.111(7.2111m)	19.701(208.741m)	Yes (at receptor)	No	4.97076(7.2111m)	1.9701(208.741m)	No EAL	No EAL
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine - 2019	85.6551(7.2111m)	15.1874(208.741m)	Yes (at receptor)	No	3.83194(7.2111m)	1.51874(208.741m)	No EAL	No EAL
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine - 2020	123.639(7.2111m)	21.9224(208.741m)	Yes (at receptor)	No	5.53123(7.2111m)	2.19224(208.741m)	No EAL	No EAL
Hydrogen chloride, or (Total chloride (reported as HCl)) - engine - 2021	86.7933(7.2111m)	15.3893(208.741m)	Yes (at receptor)	No	3.88286(7.2111m)	1.53893(208.741m)	No EAL	No EAL
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2000	27.0564(8.60233m)	1.75088(229.103m)	Yes (at receptor)	No	0.397332(8.60233m)	0.14826(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2001	27.0564(8.60233m)	1.75088(229.103m)	Yes (at receptor)	No	0.397332(8.60233m)	0.14826(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2002	26.6501(8.60233m)	1.72459(229.103m)	Yes (at receptor)	No	0.391365(8.60233m)	0.146033(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2003	6.96327(11.6619m)	1.18102(218.497m)	Yes	No	0.311515(11.6619m)	0.118102(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2004	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2005	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2006	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2006	19.8252(8.60233m)	1.28293(229.103m)	Yes (at receptor)	No	0.29114(8.60233m)	0.108635(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2007	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2007	11.5311(8.60233m)	0.746205(229.103m)	Yes	No	0.169338(8.60233m)	0.0631866(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2008	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2009	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2009	21.8522(8.60233m)	1.4141(229.103m)	Yes (at receptor)	No	0.320906(8.60233m)	0.119742(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2010	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2010	13.7511(8.60233m)	0.889862(229.103m)	Yes	No	0.201939(8.60233m)	0.075351(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2011	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - flare - 2011	19.2043(8.60233m)	1.24275(229.103m)	Yes (at receptor)	No	0.282021(8.60233m)	0.105233(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2012	6.97911(11.6619m)	1.18371(218.497m)	Yes	No	0.312223(11.6619m)	0.118371(218.497m)	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)) - flare - 2012	18.7745(8.60233m)	1.21494(229.103m)	Yes (at receptor)	No	0.275709(8.60233m)	0.102878(229.103m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2013	8.06668(7.2111m)	1.4303(208.741m)	Yes	No	0.360878(7.2111m)	0.14303(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2014	11.7484(7.2111m)	2.0831(208.741m)	Yes	No	0.525586(7.2111m)	0.20831(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2015	7.75339(7.2111m)	1.37475(208.741m)	Yes	No	0.346862(7.2111m)	0.137475(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2016	7.18678(7.2111m)	1.27428(208.741m)	Yes	No	0.321514(7.2111m)	0.127428(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2017	7.18678(7.2111m)	1.27428(208.741m)	Yes	No	0.321514(7.2111m)	0.127428(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2018	7.43524(7.2111m)	1.31834(208.741m)	Yes	No	0.332629(7.2111m)	0.131834(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2019	9.47155(7.2111m)	1.67939(208.741m)	Yes	No	0.423727(7.2111m)	0.167939(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2020	13.1134(7.2111m)	2.32512(208.741m)	Yes	No	0.586651(7.2111m)	0.232512(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2021	9.28613(7.2111m)	1.64652(208.741m)	Yes	No	0.415432(7.2111m)	0.164652(208.741m)	No	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2022	7.18678(7.2111m)	1.27428(208.741m)	Yes	No	0.321514(7.2111m)	0.127428(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2023	7.18678(7.2111m)	1.27428(208.741m)	Yes	No	0.321514(7.2111m)	0.127428(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2024	7.17632(7.2111m)	1.27243(208.741m)	Yes	No	0.321046(7.2111m)	0.127243(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2025	6.52607(7.2111m)	1.15713(208.741m)	Yes	No	0.291956(7.2111m)	0.115713(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2026	5.93654(7.2111m)	1.0526(208.741m)	Yes	No	0.265582(7.2111m)	0.10526(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2027	5.4173(7.2111m)	0.960538(208.741m)	Yes	No	0.242353(7.2111m)	0.0960538(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2028	4.95277(7.2111m)	0.878173(208.741m)	Yes	No	0.221571(7.2111m)	0.0878173(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2029	4.53342(7.2111m)	0.803817(208.741m)	Yes	No	0.202811(7.2111m)	0.0803817(208.741m)	Yes (at receptor)	No
Hydrogen fluoride, or (Total fluoride (reported as HF)) - engine - 2030	4.15283(7.2111m)	0.736336(208.741m)	Yes	No	0.185785(7.2111m)	0.0736336(208.741m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1983	18.032(5m)	8.79058(210m)	Yes (at receptor)	No	0.371909(5m)	0.0743818(210m)	Yes	No
Hydrogen sulphide - surface - 1984	33.7573(5m)	16.4567(210m)	No	Yes	0.696245(5m)	0.139249(210m)	Yes	No
Hydrogen sulphide - surface - 1985	40.9213(5m)	19.9491(210m)	No	Yes	0.844001(5m)	0.1688(210m)	Yes	No
Hydrogen sulphide - surface - 1986	31.6795(5m)	15.4438(210m)	No	Yes	0.65339(5m)	0.130678(210m)	Yes	No
Hydrogen sulphide - surface - 1987	44.2346(5m)	21.5644(210m)	No	Yes	0.912338(5m)	0.182468(210m)	Yes	No
Hydrogen sulphide - surface - 1988	49.8822(5m)	24.3176(210m)	No	Yes	1.02882(5m)	0.205764(210m)	Yes	No
Hydrogen sulphide - surface - 1989	50.8931(5m)	24.8104(210m)	No	Yes	1.04967(5m)	0.209934(210m)	Yes	No
Hydrogen sulphide - surface - 1990	53.4322(5m)	26.0482(210m)	No	Yes	1.10204(5m)	0.220408(210m)	Yes	No
Hydrogen sulphide - surface - 1991	71.3237(5m)	34.7703(210m)	No	Yes	1.47105(5m)	0.29421(210m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1992	92.6167(5m)	48.2706(191.525m)	No	Yes	1.91022(5m)	0.42482(191.525m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1993	105.835(5m)	55.1598(191.525m)	No	Yes	2.18285(5m)	0.485451(191.525m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1994	92.5701(5m)	55.3567(160.801m)	No	Yes	1.90926(5m)	0.49571(160.801m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1995	90.1176(5m)	53.8901(160.801m)	No	Yes	1.85868(5m)	0.482577(160.801m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1996	85.4232(5m)	51.0828(160.801m)	No	Yes	1.76185(5m)	0.457439(160.801m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 1997	100.116(5m)	59.8693(160.801m)	No	Yes	2.0649(5m)	0.53612(160.801m)	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 sulphide - surface - 1998	114.901(5m)	97.774(79.8123m)	No	Yes	2.36984(5m)	1.64193(79.8123m)	No	No
Hydrogen sulphide - surface - 1999	119.641(5m)	101.807(79.8123m)	No	Yes	2.46759(5m)	1.70966(79.8123m)	No	No
Hydrogen sulphide - surface - 2000	78.7807(5m)	67.0376(79.8123m)	No	Yes	1.62485(5m)	1.12577(79.8123m)	Yes (at receptor)	No
Hydrogen sulphide - surface - 2001	66.0707(5m)	56.2221(79.8123m)	No	Yes	1.36271(5m)	0.944143(79.8123m)	Yes	No
Hydrogen sulphide - surface - 2002	62.6322(5m)	53.2961(79.8123m)	No	Yes	1.29179(5m)	0.895007(79.8123m)	Yes	No
Hydrogen sulphide - surface - 2003	83.2973(5m)	83.2973(28.3019m)	No	Yes	1.71801(5m)	1.71801(28.3019m)	No	No
Hydrogen sulphide - surface - 2004	84.4609(5m)	84.4609(28.3019m)	No	Yes	1.74201(5m)	1.74201(28.3019m)	No	No
Hydrogen sulphide - surface - 2005	116.187(5m)	116.187(28.3019m)	No	Yes	2.39635(5m)	2.39635(28.3019m)	No	No
Hydrogen sulphide - surface - 2006	26.5171(5m)	26.5171(28.3019m)	No	No	0.546915(5m)	0.546915(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2007	74.0879(5m)	74.0879(28.3019m)	No	Yes	1.52806(5m)	1.52806(28.3019m)	No	No
Hydrogen sulphide - surface - 2008	87.8997(5m)	87.8997(28.3019m)	No	Yes	1.81293(5m)	1.81293(28.3019m)	No	No
Hydrogen sulphide - surface - 2009	37.2117(5m)	37.2117(28.3019m)	No	Yes	0.767492(5m)	0.767492(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2010	122.443(5m)	122.443(28.3019m)	No	Yes	2.52538(5m)	2.52538(28.3019m)	No	No
Hydrogen sulphide - surface - 2011	47.0129(5m)	47.0129(28.3019m)	No	Yes	0.969642(5m)	0.969642(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2012	31.8091(5m)	31.8091(28.3019m)	No	Yes	0.656062(5m)	0.656062(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2013	77.2774(5m)	77.2774(28.3019m)	No	Yes	1.59385(5m)	1.59385(28.3019m)	No	No
Hydrogen sulphide - surface - 2014	20.9208(5m)	20.9208(28.3019m)	No	No	0.431492(5m)	0.431492(28.3019m)	Yes	No
Hydrogen sulphide - surface - 2015	68.4114(5m)	68.4114(28.3019m)	No	Yes	1.41098(5m)	1.41098(28.3019m)	No	No
Hydrogen sulphide - surface - 2016	123.251(5m)	123.251(28.3019m)	No	Yes	2.54205(5m)	2.54205(28.3019m)	No	No
Hydrogen sulphide - surface - 2017	135.733(5m)	135.733(28.3019m)	No	Yes	2.79949(5m)	2.79949(28.3019m)	No	No
Hydrogen sulphide - surface - 2018	112.822(5m)	112.822(28.3019m)	No	Yes	2.32695(5m)	2.32695(28.3019m)	No	No
Hydrogen sulphide - surface - 2019	71.1748(5m)	71.1748(28.3019m)	No	Yes	1.46798(5m)	1.46798(28.3019m)	No	No
Nitrogen oxides (NOx) - flare - 2000	53.3125(8.60233m)	3.44997(229.103m)	Yes (at receptor)	Yes	1.56582(8.60233m)	0.584267(229.103m)	No	No
Nitrogen oxides (NOx) - flare - 2001	53.3118(8.60233m)	3.44993(229.103m)	Yes (at receptor)	Yes	1.5658(8.60233m)	0.58426(229.103m)	No	No
Nitrogen oxides (NOx) - flare - 2002	52.995(8.60233m)	3.42942(229.103m)	Yes (at receptor)	Yes	1.5565(8.60233m)	0.580788(229.103m)	No	No
Nitrogen oxides (NOx) - engine - 2003	171.179(11.6619m)	29.0332(218.497m)	No	Yes	15.316(11.6619m)	5.80664(218.497m)	No	No
Nitrogen oxides (NOx) - engine - 2004	171.265(11.6619m)	29.0478(218.497m)	No	Yes	15.3237(11.6619m)	5.80956(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2004	19.2725(8.60233m)	1.24716(229.103m)	Yes	No	0.566045(8.60233m)	0.211213(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2005	171.277(11.6619m)	29.0499(218.497m)	No	Yes	15.3248(11.6619m)	5.80998(218.497m)	No	No
Nitrogen oxides (NOx) - engine - 2006	171.077(11.6619m)	29.0159(218.497m)	No	Yes	15.3068(11.6619m)	5.80317(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2006	39.6114(8.60233m)	2.56334(229.103m)	Yes (at receptor)	Yes	1.16341(8.60233m)	0.434113(229.103m)	No	No
Nitrogen oxides (NOx) - engine - 2007	171.266(11.6619m)	29.048(218.497m)	No	Yes	15.3238(11.6619m)	5.8096(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2007	23.4729(8.60233m)	1.51898(229.103m)	Yes (at receptor)	No	0.689414(8.60233m)	0.257246(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2008	171.205(11.6619m)	29.0376(218.497m)	No	Yes	15.3183(11.6619m)	5.80752(218.497m)	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?
Nitrogen oxides (NOx) - flare - 2008	15.7842(8.60233m)	1.02143(229.103m)	Yes	No	0.463591(8.60233m)	0.172984(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2009	171.083(11.6619m)	29.017(218.497m)	No	Yes	15.3075(11.6619m)	5.8034(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2009	44.3671(8.60233m)	2.87109(229.103m)	Yes (at receptor)	Yes	1.30309(8.60233m)	0.486232(229.103m)	No	No
Nitrogen oxides (NOx) - engine - 2010	171.241(11.6619m)	29.0438(218.497m)	No	Yes	15.3216(11.6619m)	5.80875(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2010	28.5233(8.60233m)	1.84581(229.103m)	Yes (at receptor)	No	0.837747(8.60233m)	0.312595(229.103m)	Yes (at receptor)	No
Nitrogen oxides (NOx) - engine - 2011	171.106(11.6619m)	29.0208(218.497m)	No	Yes	15.3095(11.6619m)	5.80417(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2011	39.1579(8.60233m)	2.53399(229.103m)	Yes (at receptor)	Yes	1.15009(8.60233m)	0.429143(229.103m)	No	No
Nitrogen oxides (NOx) - engine - 2012	171.132(11.6619m)	29.0253(218.497m)	No	Yes	15.3118(11.6619m)	5.80505(218.497m)	No	No
Nitrogen oxides (NOx) - flare - 2012	37.7901(8.60233m)	2.44548(229.103m)	Yes (at receptor)	No	1.10992(8.60233m)	0.414153(229.103m)	No	No
Nitrogen oxides (NOx) - engine - 2013	222.437(7.2111m)	39.4402(208.741m)	No	Yes	19.9023(7.2111m)	7.88804(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2014	300.422(7.2111m)	53.2676(208.741m)	No	Yes	26.8798(7.2111m)	10.6535(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2015	212.505(7.2111m)	37.6791(208.741m)	No	Yes	19.0136(7.2111m)	7.53582(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2016	171.318(7.2111m)	30.3763(208.741m)	No	Yes	15.3285(7.2111m)	6.07527(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2017	171.318(7.2111m)	30.3763(208.741m)	No	Yes	15.3285(7.2111m)	6.07527(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2018	236.237(7.2111m)	41.887(208.741m)	No	Yes	21.137(7.2111m)	8.37739(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2019	226.701(7.2111m)	40.1963(208.741m)	No	Yes	20.2838(7.2111m)	8.03925(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2020	322.371(7.2111m)	57.1593(208.741m)	No	Yes	28.8437(7.2111m)	11.4319(208.741m)	No	Yes
Nitrogen oxides (NOx) - engine - 2021	255.118(7.2111m)	45.2349(208.741m)	No	Yes	22.8264(7.2111m)	9.04697(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2022	171.318(7.2111m)	30.3763(208.741m)	No	Yes	15.3285(7.2111m)	6.07527(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2023	171.318(7.2111m)	30.3763(208.741m)	No	Yes	15.3285(7.2111m)	6.07527(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2024	170.297(7.2111m)	30.1953(208.741m)	No	Yes	15.2371(7.2111m)	6.03906(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2025	159.688(7.2111m)	28.3141(208.741m)	No	Yes	14.2878(7.2111m)	5.66282(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2026	145.249(7.2111m)	25.754(208.741m)	No	Yes	12.996(7.2111m)	5.1508(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2027	132.548(7.2111m)	23.5021(208.741m)	No	Yes	11.8596(7.2111m)	4.70042(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2028	121.194(7.2111m)	21.4888(208.741m)	No	Yes	10.8437(7.2111m)	4.29776(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2029	110.946(7.2111m)	19.6718(208.741m)	Yes (at receptor)	Yes	9.92678(7.2111m)	3.93437(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2030	101.647(7.2111m)	18.023(208.741m)	Yes (at receptor)	Yes	9.09474(7.2111m)	3.60459(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2031	93.1812(7.2111m)	16.5219(208.741m)	Yes (at receptor)	Yes	8.33726(7.2111m)	3.30438(208.741m)	No	No
Nitrogen oxides (NOx) - engine - 2032	56.8931(7.2111m)	10.0877(208.741m)	Yes (at receptor)	Yes	5.09044(7.2111m)	2.01754(208.741m)	No	No
PM10s 24 hour - flare - 2000	9.31354(8.60233m)	0.6027(229.103m)	Yes (at receptor)	Yes				
PM10s 24 hour - flare - 2001	9.31354(8.60233m)	0.6027(229.103m)	Yes (at receptor)	Yes				
PM10s 24 hour - flare - 2002	9.2533(8.60233m)	0.598802(229.103m)	Yes (at receptor)	Yes				
PM10s 24 hour - flare - 2006	6.73843(8.60233m)	0.436059(229.103m)	Yes (at receptor)	Yes				
PM10s 24 hour - flare - 2009	7.67321(8.60233m)	0.49655(229.103m)	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?
PM10s 24 hour - flare - 2011	6.55994(8.60233m)	0.424508(229.103m)	Yes (at receptor)	No				
PM10s 24 hour - flare - 2012	6.48494(8.60233m)	0.419655(229.103m)	Yes (at receptor)	No				
PM10s - engine - 2020	9.17816(7.2111m)	1.62737(208.741m)	No EAL	No EAL	0.410602(7.2111m)	0.162737(208.741m)	Yes (at receptor)	No
PM10s 24 hour - engine - 2020	5.41511(7.2111m)	0.96015(208.741m)	Yes (at receptor)	No				
Sulphur dioxide - flare - 2000	77.6318(8.60233m)	5.02373(229.103m)	Yes (at receptor)	Yes	1.14005(8.60233m)	0.425395(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2000	104.027(8.60233m)	6.73179(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2000	45.8028(8.60233m)	2.964(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2001	77.6309(8.60233m)	5.02367(229.103m)	Yes (at receptor)	Yes	1.14003(8.60233m)	0.42539(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2001	104.025(8.60233m)	6.73171(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2001	45.8022(8.60233m)	2.96396(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2002	77.1695(8.60233m)	4.99381(229.103m)	Yes (at receptor)	Yes	1.13326(8.60233m)	0.422862(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2002	103.407(8.60233m)	6.6917(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2002	45.53(8.60233m)	2.94635(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2003	101.6(11.6619m)	17.2322(218.497m)	Yes (at receptor)	Yes	4.54527(11.6619m)	1.72322(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2003	136.144(11.6619m)	23.0911(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2003	59.9441(11.6619m)	10.167(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2004	101.651(11.6619m)	17.2408(218.497m)	Yes (at receptor)	Yes	4.54756(11.6619m)	1.72408(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2004	136.213(11.6619m)	23.1027(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2004	59.9743(11.6619m)	10.1721(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 15 min - flare - 2004	37.6057(8.60233m)	2.43354(229.103m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - flare - 2004	16.5577(8.60233m)	1.07149(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2005	101.659(11.6619m)	17.2421(218.497m)	Yes (at receptor)	Yes	4.54789(11.6619m)	1.72421(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2005	136.223(11.6619m)	23.1044(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2005	59.9787(11.6619m)	10.1728(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2006	101.54(11.6619m)	17.2219(218.497m)	Yes (at receptor)	Yes	4.54256(11.6619m)	1.72219(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2006	136.063(11.6619m)	23.0773(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2006	59.9084(11.6619m)	10.1609(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2006	57.6808(8.60233m)	3.73265(229.103m)	Yes (at receptor)	No	0.84706(8.60233m)	0.31607(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2006	77.2922(8.60233m)	5.00175(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2006	34.0316(8.60233m)	2.20226(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2007	101.652(11.6619m)	17.241(218.497m)	Yes (at receptor)	Yes	4.5476(11.6619m)	1.7241(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2007	136.214(11.6619m)	23.1029(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2007	59.9748(11.6619m)	10.1722(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 15 min - flare - 2007	45.8018(8.60233m)	2.96393(229.103m)	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?
Sulphur dioxide 24 hour - flare - 2007	20.1665(8.60233m)	1.30502(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2008	101.616(11.6619m)	17.2348(218.497m)	Yes (at receptor)	Yes	4.54597(11.6619m)	1.72348(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2008	136.165(11.6619m)	23.0946(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2008	59.9533(11.6619m)	10.1685(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 15 min - flare - 2008	30.7991(8.60233m)	1.99308(229.103m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - flare - 2008	13.5608(8.60233m)	0.877549(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2009	101.544(11.6619m)	17.2226(218.497m)	Yes (at receptor)	Yes	4.54274(11.6619m)	1.72226(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2009	136.069(11.6619m)	23.0782(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2009	59.9108(11.6619m)	10.1613(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2009	64.6058(8.60233m)	4.18078(229.103m)	Yes (at receptor)	No	0.948757(8.60233m)	0.354017(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2009	86.5718(8.60233m)	5.60225(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2009	38.1174(8.60233m)	2.46666(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2010	101.637(11.6619m)	17.2384(218.497m)	Yes (at receptor)	Yes	4.54693(11.6619m)	1.72384(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2010	136.194(11.6619m)	23.0995(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2010	59.966(11.6619m)	10.1707(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2010	41.5347(8.60233m)	2.6878(229.103m)	Yes (at receptor)	No	0.60995(8.60233m)	0.227595(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2010	55.6564(8.60233m)	3.60165(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2010	24.5054(8.60233m)	1.5858(229.103m)	Yes (at receptor)	No				
Sulphur dioxide - engine - 2011	101.557(11.6619m)	17.2248(218.497m)	Yes (at receptor)	Yes	4.54334(11.6619m)	1.72248(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2011	136.086(11.6619m)	23.0813(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2011	59.9187(11.6619m)	10.1627(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2011	57.0204(8.60233m)	3.68991(229.103m)	Yes (at receptor)	No	0.837362(8.60233m)	0.312452(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2011	76.4073(8.60233m)	4.94449(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2011	33.642(8.60233m)	2.17705(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2012	101.573(11.6619m)	17.2275(218.497m)	Yes (at receptor)	Yes	4.54403(11.6619m)	1.72275(218.497m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2012	136.107(11.6619m)	23.0848(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2012	59.9278(11.6619m)	10.1642(218.497m)	Yes (at receptor)	Yes				
Sulphur dioxide - flare - 2012	55.0287(8.60233m)	3.56103(229.103m)	Yes (at receptor)	No	0.808114(8.60233m)	0.301538(229.103m)	No EAL	No EAL
Sulphur dioxide 15 min - flare - 2012	73.7385(8.60233m)	4.77178(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - flare - 2012	32.4669(8.60233m)	2.10101(229.103m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2013	132.024(7.2111m)	23.4091(208.741m)	Yes (at receptor)	Yes	5.90633(7.2111m)	2.34091(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2013	176.912(7.2111m)	31.3682(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2013	77.8941(7.2111m)	13.8114(208.741m)	No	Yes				
Sulphur dioxide - engine - 2014	178.31(7.2111m)	31.6161(208.741m)	Yes (at receptor)	Yes	7.97704(7.2111m)	3.16161(208.741m)	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 - 2014	238.936(7.2111m)	42.3655(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2014	105.203(7.2111m)	18.6535(208.741m)	No	Yes				
Sulphur dioxide - engine - 2015	126.129(7.2111m)	22.3638(208.741m)	Yes (at receptor)	Yes	5.64261(7.2111m)	2.23638(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2015	169.013(7.2111m)	29.9675(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2015	74.416(7.2111m)	13.1947(208.741m)	No	Yes				
Sulphur dioxide - engine - 2016	101.683(7.2111m)	18.0294(208.741m)	Yes (at receptor)	Yes	4.54898(7.2111m)	1.80294(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2016	136.255(7.2111m)	24.1594(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2016	59.9931(7.2111m)	10.6373(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2017	101.683(7.2111m)	18.0294(208.741m)	Yes (at receptor)	Yes	4.54898(7.2111m)	1.80294(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2017	136.255(7.2111m)	24.1594(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2017	59.9931(7.2111m)	10.6373(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2018	140.214(7.2111m)	24.8613(208.741m)	Yes (at receptor)	Yes	6.27275(7.2111m)	2.48613(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2018	187.887(7.2111m)	33.3142(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2018	82.7265(7.2111m)	14.6682(208.741m)	No	Yes				
Sulphur dioxide - engine - 2019	134.555(7.2111m)	23.8578(208.741m)	Yes (at receptor)	Yes	6.01956(7.2111m)	2.38578(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2019	180.304(7.2111m)	31.9695(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2019	79.3874(7.2111m)	14.0761(208.741m)	No	Yes				
Sulphur dioxide - engine - 2020	191.338(7.2111m)	33.926(208.741m)	Yes (at receptor)	Yes	8.55985(7.2111m)	3.3926(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2020	256.393(7.2111m)	45.4608(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2020	112.889(7.2111m)	20.0163(208.741m)	No	Yes				
Sulphur dioxide - engine - 2021	151.421(7.2111m)	26.8484(208.741m)	Yes (at receptor)	Yes	6.77411(7.2111m)	2.68484(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2021	202.905(7.2111m)	35.9769(208.741m)	No	Yes				
Sulphur dioxide 24 hour - engine - 2021	89.3386(7.2111m)	15.8406(208.741m)	No	Yes				
Sulphur dioxide - engine - 2022	101.683(7.2111m)	18.0294(208.741m)	Yes (at receptor)	Yes	4.54898(7.2111m)	1.80294(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2022	136.255(7.2111m)	24.1594(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2022	59.9931(7.2111m)	10.6373(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2023	101.683(7.2111m)	18.0294(208.741m)	Yes (at receptor)	Yes	4.54898(7.2111m)	1.80294(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2023	136.255(7.2111m)	24.1594(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2023	59.9931(7.2111m)	10.6373(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2024	101.077(7.2111m)	17.9219(208.741m)	Yes (at receptor)	Yes	4.52187(7.2111m)	1.79219(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2024	135.443(7.2111m)	24.0154(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2024	59.6356(7.2111m)	10.5739(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2025	94.7799(7.2111m)	16.8054(208.741m)	Yes (at receptor)	Yes	4.24015(7.2111m)	1.68054(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2025	127.005(7.2111m)	22.5192(208.741m)	Yes (at receptor)	Yes				

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	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 24 hour - engine - 2025	55.9202(7.2111m)	9.91517(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2026	86.2102(7.2111m)	15.2859(208.741m)	Yes (at receptor)	Yes	3.85677(7.2111m)	1.52859(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2026	115.522(7.2111m)	20.4831(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2026	50.864(7.2111m)	9.01866(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2027	78.6719(7.2111m)	13.9493(208.741m)	Yes (at receptor)	Yes	3.51953(7.2111m)	1.39493(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2027	105.42(7.2111m)	18.692(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2027	46.4164(7.2111m)	8.23007(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2028	71.9327(7.2111m)	12.7543(208.741m)	Yes (at receptor)	Yes	3.21804(7.2111m)	1.27543(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2028	96.3898(7.2111m)	17.0908(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2028	42.4403(7.2111m)	7.52506(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2029	65.8504(7.2111m)	11.6759(208.741m)	Yes (at receptor)	No	2.94594(7.2111m)	1.16759(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2029	88.2395(7.2111m)	15.6457(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2029	38.8517(7.2111m)	6.88878(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2030	60.3309(7.2111m)	10.6972(208.741m)	Yes (at receptor)	No	2.69902(7.2111m)	1.06972(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2030	80.8435(7.2111m)	14.3343(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2030	35.5953(7.2111m)	6.31137(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide - engine - 2031	55.3062(7.2111m)	9.8063(208.741m)	Yes (at receptor)	No	2.47422(7.2111m)	0.98063(208.741m)	No EAL	No EAL
Sulphur dioxide 15 min - engine - 2031	74.1103(7.2111m)	13.1404(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 24 hour - engine - 2031	32.6306(7.2111m)	5.78572(208.741m)	Yes (at receptor)	Yes				
Sulphur dioxide 15 min - engine - 2032	45.2491(7.2111m)	8.02309(208.741m)	Yes (at receptor)	No				
Sulphur dioxide 24 hour - engine - 2032	19.9231(7.2111m)	3.53255(208.741m)	Yes (at receptor)	No				
Vinyl chloride (chloroethene, chloroethylene) - surface - 1987	82.8236(5m)	40.3765(210m)	Yes	No	1.70824(5m)	0.341648(210m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1988	121.205(5m)	59.0876(210m)	Yes	No	2.49986(5m)	0.499972(210m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1989	101.792(5m)	49.6238(210m)	Yes	No	2.09947(5m)	0.419893(210m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1990	102.723(5m)	50.0774(210m)	Yes	No	2.11866(5m)	0.423732(210m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1991	169.731(5m)	82.7441(210m)	Yes	No	3.50071(5m)	0.700142(210m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1992	234.282(5m)	122.104(191.525m)	Yes (at receptor)	No	4.83206(5m)	1.07462(191.525m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1993	203.074(5m)	105.839(191.525m)	Yes (at receptor)	No	4.1884(5m)	0.931473(191.525m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1994	203.372(5m)	121.616(160.801m)	Yes (at receptor)	No	4.19455(5m)	1.08905(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1995	172.718(5m)	103.285(160.801m)	Yes	No	3.56231(5m)	0.9249(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1996	174.244(5m)	104.197(160.801m)	Yes	No	3.59378(5m)	0.933072(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1997	196.396(5m)	117.444(160.801m)	Yes (at receptor)	No	4.05066(5m)	1.05169(160.801m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1998	193.847(5m)	164.952(79.8123m)	Yes (at receptor)	No	3.99809(5m)	2.77005(79.8123m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 1999	189.062(5m)	160.88(79.8123m)	Yes (at receptor)	No	3.89941(5m)	2.70168(79.8123m)	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?
Vinyl chloride (chloroethene, chloroethylene) - surface - 2000	95.2471(5m)	81.0494(79.8123m)	Yes	No	1.96447(5m)	1.36107(79.8123m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2001	83.4837(5m)	71.0395(79.8123m)	Yes	No	1.72185(5m)	1.19297(79.8123m)	Yes (at receptor)	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2002	169.875(5m)	144.553(79.8123m)	Yes	No	3.50368(5m)	2.4275(79.8123m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2003	190.078(5m)	190.078(28.3019m)	No	No	3.92036(5m)	3.92036(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2004	173.674(5m)	173.674(28.3019m)	Yes	No	3.58202(5m)	3.58202(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2005	239.072(5m)	239.072(28.3019m)	No	No	4.93085(5m)	4.93085(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2007	226.399(5m)	226.399(28.3019m)	No	No	4.66948(5m)	4.66948(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2008	276.026(5m)	276.026(28.3019m)	No	No	5.69304(5m)	5.69304(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2010	151.666(5m)	151.666(28.3019m)	Yes	No	3.12812(5m)	3.12812(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2011	78.8047(5m)	78.8047(28.3019m)	Yes	No	1.62535(5m)	1.62535(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2013	109.745(5m)	109.745(28.3019m)	Yes	No	2.2635(5m)	2.2635(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2015	167.159(5m)	167.159(28.3019m)	Yes	No	3.44765(5m)	3.44765(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2016	292.687(5m)	292.687(28.3019m)	No	No	6.03667(5m)	6.03667(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2017	334.954(5m)	334.954(28.3019m)	No	No	6.90842(5m)	6.90842(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2018	309.878(5m)	309.878(28.3019m)	No	No	6.39124(5m)	6.39124(28.3019m)	No	No
Vinyl chloride (chloroethene, chloroethylene) - surface - 2019	190.441(5m)	190.441(28.3019m)	No	No	3.92785(5m)	3.92785(28.3019m)	No	No
Xylene (all isomers) - surface - 1991	2299.23(5m)	1120.88(210m)	Yes	No	47.4217(5m)	9.48434(210m)	Yes (at receptor)	No
Xylene (all isomers) - surface - 1996	2510.78(5m)	1501.44(160.801m)	Yes	No	51.7849(5m)	13.4452(160.801m)	Yes (at receptor)	No
Xylene (all isomers) - surface - 1997	2710.47(5m)	1620.86(160.801m)	Yes	No	55.9035(5m)	14.5145(160.801m)	Yes (at receptor)	No
Xylene (all isomers) - surface - 1998	2822.22(5m)	2401.53(79.8123m)	Yes	No	58.2082(5m)	40.3292(79.8123m)	Yes (at receptor)	No
Xylene (all isomers) - surface - 1999	3846.42(5m)	3273.07(79.8123m)	Yes	No	79.3325(5m)	54.965(79.8123m)	No	No
Xylene (all isomers) - surface - 2016	2905.29(5m)	2905.29(28.3019m)	Yes	No	59.9215(5m)	59.9215(28.3019m)	No	No
Xylene (all isomers) - surface - 2017	3095.07(5m)	3095.07(28.3019m)	Yes	No	63.8358(5m)	63.8358(28.3019m)	No	No
Xylene (all isomers) - surface - 2018	2556.81(5m)	2556.81(28.3019m)	Yes	No	52.7342(5m)	52.7342(28.3019m)	No	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

APPENDIX 4

Tier 2 results

	Averaging p	Air quality	percentile	receptor	x coordinat	y coordinat	PC	PEC
Long term EAL	1 year	140 µg/m³.	100	BR001	296918	281990	2.38	2.38
Short term EAL	1 hour	150 µg/m³.	100	BR001	296952	281958	221.9	221.9

Discrete re	x coordinat	y coordinat	PC annual r	PC worst h	PEC annual	PEC worst hour
DR001	296887	282199	0.09	25.59	0.09	25.59
DR002	296733	282277	0.03	16.8	0.03	16.8
DR003	297587	282244	0.03	7.65	0.03	7.65
DR004	297632	282322	0.02	9.06	0.02	9.06
DR005	296478	282134	0.02	7.53	0.02	7.53
DR006	297208	282758	0.00722	4.12	0.00722	4.12
DR007	296977	282852	0.00598	5.07	0.00598	5.07
DR008	296621	281813	0.04	14.18	0.04	14.18
DR009	297680	281909	0.03	6.82	0.03	6.82
BR001	296897	282178	0.12	29.77	0.12	29.77
BR001	296943	282196	0.14	28	0.14	28
BR001	296957	282229	0.1	24.36	0.1	24.36
BR001	296942	282277	0.07	16.25	0.07	16.25
BR001	296946	282316	0.05	14.86	0.05	14.86
BR001	296990	282340	0.04	16.13	0.04	16.13
BR001	297034	282363	0.04	12.52	0.04	12.52
BR001	297079	282387	0.03	10.17	0.03	10.17
BR001	297123	282410	0.03	12.58	0.03	12.58
BR001	297167	282434	0.02	11.63	0.02	11.63
BR001	297209	282445	0.02	10.53	0.02	10.53
BR001	297241	282407	0.03	9.55	0.03	9.55
BR001	297274	282369	0.03	11.74	0.03	11.74
BR001	297306	282331	0.04	13.42	0.04	13.42
BR001	297339	282293	0.04	10.85	0.04	10.85
BR001	297371	282255	0.05	11.78	0.05	11.78
BR001	297364	282217	0.06	13.97	0.06	13.97
BR001	297331	282179	0.08	16.29	0.08	16.29
BR001	297299	282140	0.11	16.51	0.11	16.51
BR001	297267	282102	0.18	30.19	0.18	30.19
BR001	297235	282064	0.29	44.39	0.29	44.39
BR001	297200	282029	0.34	49.85	0.34	49.85
BR001	297164	281994	0.4	52.64	0.4	52.64
BR001	297128	281959	0.42	69.75	0.42	69.75
BR001	297092	281924	0.38	36.36	0.38	36.36
BR001	297047	281927	0.55	61.25	0.55	61.25
BR001	296999	281942	1.03	122.61	1.03	122.61
BR001	296952	281958	2.26	221.9	2.26	221.9
BR001	296918	281990	2.38	205.8	2.38	205.8
BR001	296905	282038	1.68	118.74	1.68	118.74
BR001	296898	282088	0.53	66.83	0.53	66.83
BR001	296897	282137	0.21	39.8	0.21	39.8

AS 2018 95th percentile

	averaging per	air quality standard	percentile	receptor	x coordinate	y coordinate	process contr	predicted environmental concentration
Worst annual mean	1 year		100	BR001	296918	281990	0.00663	0.00663
Short term EAL	1 hour	0.003 µg/m³.	100	BR001	296952	281958	0.62	0.62

Discrete receptor	x cooridnat	y coordinate	PC annual	PC worst h	PEC annual	PEC worst hour
DR001	296887	282199	0.000193	0.07	0.000193	0.07
DR002	296733	282277	0.0000666	0.05	0.0000666	0.05
DR003	297587	282244	0.0000575	0.02	0.0000575	0.02
DR004	297632	282322	0.000044	0.02	0.000044	0.02
DR005	296478	282134	0.0000472	0.02	0.0000472	0.02
DR006	297208	282758	0.0000161	0.01	0.0000161	0.01
DR007	296977	282852	0.0000139	0.01	0.0000139	0.01
DR008	296621	281813	0.000103	0.04	0.000103	0.04
DR009	297680	281909	0.0000649	0.02	0.0000649	0.02
BR001	296897	282178	0.000258	0.08	0.000258	0.08
BR001	296943	282196	0.000256	0.07	0.000256	0.07
BR001	296957	282229	0.000188	0.07	0.000188	0.07
BR001	296942	282277	0.000123	0.04	0.000123	0.04
BR001	296946	282316	0.0000931	0.04	0.0000931	0.04
BR001	296990	282340	0.0000831	0.04	0.0000831	0.04
BR001	297034	282363	0.0000702	0.03	0.0000702	0.03
BR001	297079	282387	0.000064	0.03	0.000064	0.03
BR001	297123	282410	0.0000577	0.03	0.0000577	0.03
BR001	297167	282434	0.0000513	0.03	0.0000513	0.03
BR001	297209	282445	0.0000465	0.03	0.0000465	0.03
BR001	297241	282407	0.0000531	0.02	0.0000531	0.02
BR001	297274	282369	0.0000668	0.03	0.0000668	0.03
BR001	297306	282331	0.0000772	0.03	0.0000772	0.03
BR001	297339	282293	0.00008	0.03	0.00008	0.03
BR001	297371	282255	0.0000873	0.03	0.0000873	0.03
BR001	297364	282217	0.000106	0.04	0.000106	0.04
BR001	297331	282179	0.00014	0.04	0.00014	0.04
BR001	297299	282140	0.000191	0.04	0.000191	0.04
BR001	297267	282102	0.000269	0.06	0.000269	0.06
BR001	297235	282064	0.000385	0.1	0.000385	0.1
BR001	297200	282029	0.00052	0.11	0.00052	0.11
BR001	297164	281994	0.000666	0.12	0.000666	0.12
BR001	297128	281959	0.000745	0.17	0.000745	0.17
BR001	297092	281924	0.000751	0.09	0.000751	0.09
BR001	297047	281927	0.00116	0.15	0.00116	0.15
BR001	296999	281942	0.00251	0.33	0.00251	0.33
BR001	296952	281958	0.00625	0.62	0.00625	0.62
BR001	296918	281990	0.00663	0.57	0.00663	0.57
BR001	296905	282038	0.00467	0.33	0.00467	0.33
BR001	296898	282088	0.00138	0.19	0.00138	0.19
BR001	296897	282137	0.000454	0.11	0.000454	0.11

Ethylcdichloride 2018 95%

	averaging per	air quality standard	percentile	receptor	x coordinalte	y coordinate	PC	PEC
Long term EAL	1 year	42 µg/m³.	100	BR001	296918	281990	5.89	5.89
Short term EAL	1 hour	700 µg/m³.	100	BR001	296952	281958	552.01	552.01
Discrete receptor	x cooridnat	y coordinate	PC annual	PC worst h	PEC annual	PEC worst hour		
DR001	296887	282199	0.17	60.91	0.17	60.91		
DR002	296733	282277	0.06	40.35	0.06	40.35		
DR003	297587	282244	0.05	15.87	0.05	15.87		
DR004	297632	282322	0.04	19.95	0.04	19.95		
DR005	296478	282134	0.04	17.57	0.04	17.57		
DR006	297208	282758	0.01	9.52	0.01	9.52		
DR007	296977	282852	0.01	11.98	0.01	11.98		
DR008	296621	281813	0.09	32.9	0.09	32.9		
DR009	297680	281909	0.06	15.16	0.06	15.16		
BR001	296897	282178	0.23	70.68	0.23	70.68		
BR001	296943	282196	0.22	64.49	0.22	64.49		
BR001	296957	282229	0.17	58.32	0.17	58.32		
BR001	296942	282277	0.11	39.04	0.11	39.04		
BR001	296946	282316	0.08	35.33	0.08	35.33		
BR001	296990	282340	0.07	37.31	0.07	37.31		
BR001	297034	282363	0.06	29.05	0.06	29.05		
BR001	297079	282387	0.06	22.9	0.06	22.9		
BR001	297123	282410	0.05	30.13	0.05	30.13		
BR001	297167	282434	0.05	27.39	0.05	27.39		
BR001	297209	282445	0.04	25.01	0.04	25.01		
BR001	297241	282407	0.05	21.31	0.05	21.31		
BR001	297274	282369	0.06	26.75	0.06	26.75		
BR001	297306	282331	0.07	30.28	0.07	30.28		
BR001	297339	282293	0.07	23.67	0.07	23.67		
BR001	297371	282255	0.08	26.19	0.08	26.19		
BR001	297364	282217	0.09	31.52	0.09	31.52		
BR001	297331	282179	0.12	34.67	0.12	34.67		
BR001	297299	282140	0.17	32.56	0.17	32.56		
BR001	297267	282102	0.24	55.56	0.24	55.56		
BR001	297235	282064	0.35	84.83	0.35	84.83		
BR001	297200	282029	0.46	98.6	0.46	98.6		
BR001	297164	281994	0.57	105.14	0.57	105.14		
BR001	297128	281959	0.64	152.21	0.64	152.21		
BR001	297092	281924	0.65	81.81	0.65	81.81		
BR001	297047	281927	1	127.05	1	127.05		
BR001	296999	281942	2.19	289.83	2.19	289.83		
BR001	296952	281958	5.54	552.01	5.54	552.01		
BR001	296918	281990	5.89	510.04	5.89	510.04		
BR001	296905	282038	4.15	292.24	4.15	292.24		
BR001	296898	282088	1.22	165.26	1.22	165.26		
BR001	296897	282137	0.4	95.72	0.4	95.72		

	Averaging p	Air quality	percentile	receptor	x coordinat	y coordinat	PC	PEC	
Long term EAL	1 year	140 µg/m³.	100	BR001	296918	281990	4.67	4.67	
Short term EAL	1 hour	150 µg/m³.	100	BR001	296952	281958	436.43	436.43	
Discrete re	x coordinat	y coordinat	PC annual r	PC worst h	PEC annual	PEC worst hour			
DR001	296887	282199	0.14	48.72	0.14	48.72			
DR002	296733	282277	0.05	32.29	0.05	32.29			
DR003	297587	282244	0.04	13.23	0.04	13.23			
DR004	297632	282322	0.03	16.29	0.03	16.29			
DR005	296478	282134	0.03	14.2	0.03	14.2			
DR006	297208	282758	0.01	7.65	0.01	7.65			
DR007	296977	282852	0.01	9.57	0.01	9.57			
DR008	296621	281813	0.07	26.51	0.07	26.51			
DR009	297680	281909	0.05	12.45	0.05	12.45			
BR001	296897	282178	0.19	56.27	0.19	56.27			
BR001	296943	282196	0.19	51.9	0.19	51.9			
BR001	296957	282229	0.14	46.48	0.14	46.48			
BR001	296942	282277	0.09	31.09	0.09	31.09			
BR001	296946	282316	0.07	28.12	0.07	28.12			
BR001	296990	282340	0.06	29.74	0.06	29.74			
BR001	297034	282363	0.05	23.15	0.05	23.15			
BR001	297079	282387	0.05	18.48	0.05	18.48			
BR001	297123	282410	0.04	23.9	0.04	23.9			
BR001	297167	282434	0.04	21.87	0.04	21.87			
BR001	297209	282445	0.03	19.89	0.03	19.89			
BR001	297241	282407	0.04	17.18	0.04	17.18			
BR001	297274	282369	0.05	21.45	0.05	21.45			
BR001	297306	282331	0.06	24.41	0.06	24.41			
BR001	297339	282293	0.06	19.33	0.06	19.33			
BR001	297371	282255	0.07	21.31	0.07	21.31			
BR001	297364	282217	0.08	25.53	0.08	25.53			
BR001	297331	282179	0.11	28.57	0.11	28.57			
BR001	297299	282140	0.15	26.98	0.15	26.98			
BR001	297267	282102	0.22	47.1	0.22	47.1			
BR001	297235	282064	0.33	72.11	0.33	72.11			
BR001	297200	282029	0.43	83.93	0.43	83.93			
BR001	297164	281994	0.55	89.93	0.55	89.93			
BR001	297128	281959	0.61	126.04	0.61	126.04			
BR001	297092	281924	0.58	66.99	0.58	66.99			
BR001	297047	281927	0.88	106.66	0.88	106.66			
BR001	296999	281942	1.82	232.83	1.82	232.83			
BR001	296952	281958	4.41	436.43	4.41	436.43			
BR001	296918	281990	4.67	403.64	4.67	403.64			
BR001	296905	282038	3.29	231.29	3.29	231.29			
BR001	296898	282088	0.98	131.11	0.98	131.11			
BR001	296897	282137	0.33	76.41	0.33	76.41			

	Averaging per	Air quality sta	Percentile	Receptor	x coordinate	y coordinate	PC	
Worst Hour	1 hour	42 µg/m³.	100	BR001	296952	281958	899.84	
176th Worst Hour	1 hour	98th percentile	98	BR001	296952	281958	58.3	
Discrete rece	x coordinate	y coordinate	worst hour	98th %ile hour				
DR001	296887	282199	100.77	2.38				
DR002	296733	282277	66.4	0.8				
DR003	297587	282244	26.93	0.55				
DR004	297632	282322	33.38	0.4				
DR005	296478	282134	29.09	0.61				
DR006	297208	282758	15.81	0.18				
DR007	296977	282852	19.81	0.16				
DR008	296621	281813	54.46	1.05				
DR009	297680	281909	25.4	0.93				
BR001	296897	282178	116.63	3.08				
BR001	296943	282196	108.07	3.07				
BR001	296957	282229	96.45	2.16				
BR001	296942	282277	64.49	1.41				
BR001	296946	282316	58.41	1.11				
BR001	296990	282340	61.86	1.03				
BR001	297034	282363	48.17	0.84				
BR001	297079	282387	38.26	0.69				
BR001	297123	282410	49.56	0.58				
BR001	297167	282434	45.22	0.47				
BR001	297209	282445	41.2	0.42				
BR001	297241	282407	35.59	0.46				
BR001	297274	282369	44.42	0.52				
BR001	297306	282331	50.43	0.63				
BR001	297339	282293	39.78	0.68				
BR001	297371	282255	43.78	0.8				
BR001	297364	282217	52.44	0.97				
BR001	297331	282179	58.37	1.28				
BR001	297299	282140	55.16	1.66				
BR001	297267	282102	96.37	2.6				
BR001	297235	282064	146.35	4.1				
BR001	297200	282029	169.52	6				
BR001	297164	281994	181.04	7.59				
BR001	297128	281959	256.25	9.1				
BR001	297092	281924	136.74	8.93				
BR001	297047	281927	218.24	13.32				
BR001	296999	281942	479.35	26.58				
BR001	296952	281958	899.84	58.3				
BR001	296918	281990	831.65	56.93				
BR001	296905	282038	477.7	37.73				
BR001	296898	282088	269.76	13.93				
BR001	296897	282137	157.78	5.17				

	averaging per	air quality standard	percentile	receptor	x coordinate	y coordinate	process contr	predicted env
Worst annual mean	1 year		100	BR001	296918	281990	0.000294	0.000294
Short term EAL	1 hour	0.003 µg/m³.	100	BR001	296952	281958	0.03	0.03
Discrete receptor	x cooridnat	y coordinate	PC annual	PC worst h	PEC annual	PEC worst hour		
DR001	296887	282199	0.0000085	0.00304	0.0000085	0.00304		
DR002	296733	282277	0.00000295	0.00202	0.00000295	0.00202		
DR003	297587	282244	0.00000256	0.000802	0.00000256	0.000802		
DR004	297632	282322	0.00000196	0.001	0.00000196	0.001		
DR005	296478	282134	0.00000209	0.000881	0.00000209	0.000881		
DR006	297208	282758	7.18E-07	0.000476	7.18E-07	0.000476		
DR007	296977	282852	6.18E-07	0.000597	6.18E-07	0.000597		
DR008	296621	281813	0.00000458	0.00165	0.00000458	0.00165		
DR009	297680	281909	0.00000289	0.000764	0.00000289	0.000764		
BR001	296897	282178	0.0000113	0.00352	0.0000113	0.00352		
BR001	296943	282196	0.0000112	0.00322	0.0000112	0.00322		
BR001	296957	282229	0.00000827	0.0029	0.00000827	0.0029		
BR001	296942	282277	0.00000542	0.00194	0.00000542	0.00194		
BR001	296946	282316	0.00000414	0.00176	0.00000414	0.00176		
BR001	296990	282340	0.00000373	0.00186	0.00000373	0.00186		
BR001	297034	282363	0.0000031	0.00144	0.0000031	0.00144		
BR001	297079	282387	0.00000296	0.00114	0.00000296	0.00114		
BR001	297123	282410	0.00000263	0.0015	0.00000263	0.0015		
BR001	297167	282434	0.00000232	0.00137	0.00000232	0.00137		
BR001	297209	282445	0.00000209	0.00124	0.00000209	0.00124		
BR001	297241	282407	0.00000238	0.00107	0.00000238	0.00107		
BR001	297274	282369	0.00000298	0.00134	0.00000298	0.00134		
BR001	297306	282331	0.00000343	0.00152	0.00000343	0.00152		
BR001	297339	282293	0.00000355	0.00119	0.00000355	0.00119		
BR001	297371	282255	0.00000388	0.00132	0.00000388	0.00132		
BR001	297364	282217	0.00000472	0.00158	0.00000472	0.00158		
BR001	297331	282179	0.00000624	0.00174	0.00000624	0.00174		
BR001	297299	282140	0.00000857	0.00164	0.00000857	0.00164		
BR001	297267	282102	0.0000123	0.0028	0.0000123	0.0028		
BR001	297235	282064	0.0000178	0.0043	0.0000178	0.0043		
BR001	297200	282029	0.0000238	0.00502	0.0000238	0.00502		
BR001	297164	281994	0.0000304	0.00537	0.0000304	0.00537		
BR001	297128	281959	0.0000338	0.0077	0.0000338	0.0077		
BR001	297092	281924	0.0000337	0.00412	0.0000337	0.00412		
BR001	297047	281927	0.0000516	0.00647	0.0000516	0.00647		
BR001	296999	281942	0.000111	0.01	0.000111	0.01		
BR001	296952	281958	0.000276	0.03	0.000276	0.03		
BR001	296918	281990	0.000294	0.03	0.000294	0.03		
BR001	296905	282038	0.000207	0.01	0.000207	0.01		
BR001	296898	282088	0.0000608	0.00823	0.0000608	0.00823		
BR001	296897	282137	0.0000199	0.00477	0.0000199	0.00477		

	Averaging p	Air quality s	percentile	receptor	x coordinat	y coordinat	PC	PEC
Long term EAL	1 year	140 µg/m³.	100	BR001	296918	281990	0.16	0.16
Short term EAL	1 hour	150 µg/m³.	100	BR001	296952	281958	15.03	15.03
Discrete re	x coordinat	y coordinat	PC annual r	PC worst h	PEC annual	PEC worst hour		
DR001	296887	282199	0.00471	1.67	0.00471	1.67		
DR002	296733	282277	0.00164	1.11	0.00164	1.11		
DR003	297587	282244	0.00143	0.45	0.00143	0.45		
DR004	297632	282322	0.00109	0.55	0.00109	0.55		
DR005	296478	282134	0.00116	0.49	0.00116	0.49		
DR006	297208	282758	0.000402	0.26	0.000402	0.26		
DR007	296977	282852	0.000344	0.33	0.000344	0.33		
DR008	296621	281813	0.00253	0.91	0.00253	0.91		
DR009	297680	281909	0.00161	0.42	0.00161	0.42		
BR001	296897	282178	0.0063	1.93	0.0063	1.93		
BR001	296943	282196	0.00626	1.77	0.00626	1.77		
BR001	296957	282229	0.00457	1.59	0.00457	1.59		
BR001	296942	282277	0.003	1.07	0.003	1.07		
BR001	296946	282316	0.00231	0.96	0.00231	0.96		
BR001	296990	282340	0.0021	1.02	0.0021	1.02		
BR001	297034	282363	0.00171	0.79	0.00171	0.79		
BR001	297079	282387	0.00172	0.63	0.00172	0.63		
BR001	297123	282410	0.0015	0.82	0.0015	0.82		
BR001	297167	282434	0.00131	0.75	0.00131	0.75		
BR001	297209	282445	0.00119	0.68	0.00119	0.68		
BR001	297241	282407	0.00135	0.59	0.00135	0.59		
BR001	297274	282369	0.00168	0.74	0.00168	0.74		
BR001	297306	282331	0.00192	0.84	0.00192	0.84		
BR001	297339	282293	0.002	0.66	0.002	0.66		
BR001	297371	282255	0.00218	0.73	0.00218	0.73		
BR001	297364	282217	0.00265	0.87	0.00265	0.87		
BR001	297331	282179	0.00351	0.96	0.00351	0.96		
BR001	297299	282140	0.00481	0.9	0.00481	0.9		
BR001	297267	282102	0.00688	1.55	0.00688	1.55		
BR001	297235	282064	0.01	2.39	0.01	2.39		
BR001	297200	282029	0.01	2.81	0.01	2.81		
BR001	297164	281994	0.02	3.02	0.02	3.02		
BR001	297128	281959	0.02	4.28	0.02	4.28		
BR001	297092	281924	0.02	2.28	0.02	2.28		
BR001	297047	281927	0.03	3.61	0.03	3.61		
BR001	296999	281942	0.06	7.98	0.06	7.98		
BR001	296952	281958	0.15	15.03	0.15	15.03		
BR001	296918	281990	0.16	13.9	0.16	13.9		
BR001	296905	282038	0.11	7.96	0.11	7.96		
BR001	296898	282088	0.03	4.51	0.03	4.51		
BR001	296897	282137	0.01	2.62	0.01	2.62		

NOx

	averaging p	air quality s	percentile	receptor	x coordinat	y coordinat	PC	PEC	
Annual Objective	1 year	40 µg/m³.	100	BR001	297079	282387	47.28	51.58	
Hourly Objective	1 hour	200 µg/m³. 18 exceedances	99.79	BR001	296990	282340	328.13	336.74	
Discrete re	x coordinat	y coordinat	PC annual r	PC worst h	PC 19th wo	PEC annual	PEC worst	PEC 19th Worst Hour	
DR001	296887	282199	5.93	75.75	68.74	10.23	84.35	77.34	
DR002	296733	282277	3.18	44.15	37.57	7.48	52.75	46.17	
DR003	297587	282244	2.33	24.83	23.11	6.63	33.43	31.71	
DR004	297632	282322	2.7	23.21	21.28	7	31.81	29.88	
DR005	296478	282134	1.06	21.47	17.1	5.36	30.07	25.71	
DR006	297208	282758	1.68	29.83	18.87	5.98	38.43	27.47	
DR007	296977	282852	1.11	25.94	17.46	5.41	34.55	26.06	
DR008	296621	281813	1.26	20.8	17.93	5.56	29.4	26.53	
DR009	297680	281909	0.91	18.01	14.99	5.21	26.61	23.59	
BR001	296897	282178	5.74	72.09	66.43	10.05	80.7	75.03	
BR001	296943	282196	7.13	89.55	82.95	11.43	98.15	91.55	
BR001	296957	282229	9.25	114.54	103.28	13.55	123.14	111.88	
BR001	296942	282277	11.28	142.32	129.67	15.58	150.92	138.28	
BR001	296946	282316	15.12	183.98	165.52	19.42	192.58	174.13	
BR001	296990	282340	27.2	341.98	328.13	31.5	350.58	336.74	
BR001	297034	282363	0.54	37.43	25.79	4.84	46.04	34.4	
BR001	297079	282387	47.28	300.16	293.17	51.58	308.76	301.77	
BR001	297123	282410	28.16	164.68	154.38	32.46	173.28	162.99	
BR001	297167	282434	17.03	108.53	99.23	21.33	117.14	107.83	
BR001	297209	282445	12.8	78.78	71.6	17.1	87.39	80.21	
BR001	297241	282407	13.29	75.24	68.16	17.59	83.85	76.77	
BR001	297274	282369	10.55	65.77	61.04	14.86	74.37	69.64	
BR001	297306	282331	7.33	55.61	53.08	11.63	64.21	61.69	
BR001	297339	282293	4.96	48.95	44.53	9.26	57.55	53.13	
BR001	297371	282255	3.53	43.3	37.01	7.83	51.9	45.61	
BR001	297364	282217	2.86	42.71	36.84	7.16	51.32	45.44	
BR001	297331	282179	2.66	44.26	39.18	6.96	52.86	47.78	
BR001	297299	282140	2.69	44.63	39.41	6.99	53.23	48.02	
BR001	297267	282102	2.74	44.5	36.8	7.04	53.1	45.4	
BR001	297235	282064	2.77	43.1	36.61	7.07	51.71	45.21	
BR001	297200	282029	2.85	41.48	36.56	7.15	50.09	45.16	
BR001	297164	281994	2.87	39.46	34.23	7.18	48.06	42.83	
BR001	297128	281959	2.74	36.88	32.65	7.04	45.48	41.26	
BR001	297092	281924	2.43	34.34	30.14	6.73	42.94	38.75	
BR001	297047	281927	2.28	34.98	30.44	6.58	43.58	39.04	
BR001	296999	281942	2.12	35.4	30.48	6.42	44	39.08	
BR001	296952	281958	2.03	34.04	29.93	6.33	42.64	38.53	
BR001	296918	281990	2.26	39.75	33.33	6.56	48.35	41.94	
BR001	296905	282038	2.82	44.68	39.18	7.12	53.29	47.79	
BR001	296898	282088	3.65	50.92	47.95	7.95	59.52	56.55	
BR001	296897	282137	4.72	61.14	56.98	9.02	69.74	65.58	

	averaging	air quality standard	percentile	receptor	x coordina	y coordina	PV	PEC			
Worst annual mean	1 year		100	BR001	297079	282387	14.03	14.03			
Hourly Objective	1 hour	350 µg/m³. 24 exceedances	99.73	BR001	296990	282340	188.54	188.54			
15 minute mean objective	15 minutes	266 µg/m³. 35 exceedances	99.9	BR001	296990	282340	242.26	242.26			
24 hour mean objective	24 hours	125 µg/m³. 3 exceedances	99.18	BR001	296990	282340	102.4	102.4			
Discrete receptor	x coordinate	y coordinate	pc annual mean	PC worst hour	PC 25th worst hour	PEC annua	PEC worst	PEC 25th w	PC 4th wor	PC 36th worst 15 min	
DR001	296887	282199	1.76	44.96	39.95	1.76	44.96	39.95	14.86	51.49	
DR002	296733	282277	0.94	26.21	20.66	0.94	26.21	20.66	7.24	26.1	
DR003	297587	282244	0.69	14.74	13.43	0.69	14.74	13.43	4.46	16.34	
DR004	297632	282322	0.8	13.78	12.44	0.8	13.78	12.44	3.76	15.79	
DR005	296478	282134	0.31	12.74	9.76	0.31	12.74	9.76	2.51	11.79	
DR006	297208	282758	0.5	17.71	10.93	0.5	17.71	10.93	3.69	13.36	
DR007	296977	282852	0.33	15.4	9.51	0.33	15.4	9.51	2.69	11.07	
DR008	296621	281813	0.37	12.34	10.31	0.37	12.34	10.31	2.84	13.1	
DR009	297680	281909	0.27	10.69	8.64	0.27	10.69	8.64	2.45	11.19	
BR001	296897	282178	1.7	42.79	38.52	1.7	42.79	38.52	15.89	50.55	
BR001	296943	282196	2.11	53.15	48.73	2.11	53.15	48.73	18.65	62.71	
BR001	296957	282229	2.75	67.98	60.34	2.75	67.98	60.34	27.65	78.73	
BR001	296942	282277	3.35	84.47	75.1	3.35	84.47	75.1	35.39	96.27	
BR001	296946	282316	4.49	109.2	94.98	4.49	109.2	94.98	47.85	123.77	
BR001	296990	282340	8.07	202.98	188.54	8.07	202.98	188.54	102.4	242.26	
BR001	297034	282363	0.16	22.22	14.17	0.16	22.22	14.17	2.19	15.54	
BR001	297079	282387	14.03	178.16	173.07	14.03	178.16	173.07	85.48	229.36	
BR001	297123	282410	8.36	97.74	90.79	8.36	97.74	90.79	42.69	115.54	
BR001	297167	282434	5.05	64.42	56.89	5.05	64.42	56.89	24.35	70.58	
BR001	297209	282445	3.8	46.76	41.43	3.8	46.76	41.43	17.97	53.61	
BR001	297241	282407	3.94	44.66	39.96	3.94	44.66	39.96	17.87	53.08	
BR001	297274	282369	3.13	39.04	35.66	3.13	39.04	35.66	15.4	46.49	
BR001	297306	282331	2.18	33	30.69	2.18	33	30.69	11.97	39.93	
BR001	297339	282293	1.47	29.05	25.31	1.47	29.05	25.31	8.45	32.2	
BR001	297371	282255	1.05	25.7	21.02	1.05	25.7	21.02	6.9	27.04	
BR001	297364	282217	0.85	25.35	20.5	0.85	25.35	20.5	6.66	25.66	
BR001	297331	282179	0.79	26.27	22.05	0.79	26.27	22.05	5.85	28.47	
BR001	297299	282140	0.8	26.49	22.63	0.8	26.49	22.63	6.15	28.09	
BR001	297267	282102	0.81	26.41	21.53	0.81	26.41	21.53	5.88	26.98	
BR001	297235	282064	0.82	25.58	20.77	0.82	25.58	20.77	5.4	26.4	
BR001	297200	282029	0.85	24.62	20.77	0.85	24.62	20.77	4.92	26.7	
BR001	297164	281994	0.85	23.42	19.83	0.85	23.42	19.83	6.33	25.57	
BR001	297128	281959	0.81	21.89	19.07	0.81	21.89	19.07	6.84	24.84	
BR001	297092	281924	0.72	20.38	17.77	0.72	20.38	17.77	5.5	23.36	
BR001	297047	281927	0.68	20.76	17.7	0.68	20.76	17.7	4.62	22.63	
BR001	296999	281942	0.63	21.01	17.43	0.63	21.01	17.43	4.12	22.13	
BR001	296952	281958	0.6	20.2	17.07	0.6	20.2	17.07	3.75	21.51	
BR001	296918	281990	0.67	23.59	18.39	0.67	23.59	18.39	5.22	22.99	
BR001	296905	282038	0.84	26.52	22.43	0.84	26.52	22.43	6.2	28.76	
BR001	296898	282088	1.08	30.22	27.27	1.08	30.22	27.27	8.6	35.31	
BR001	296897	282137	1.4	36.29	32.98	1.4	36.29	32.98	11.31	43.06	

APPENDIX 5

Global Impact

GasSim Version 2.05
Project Name : Bryn Posteg 2018
Client Name : Potters Waste Management

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'	61500	1540000	0
Methane - 'Engine'	840	21000	0
Methane - 'Flare'	175	4370	0
Carbon Dioxide - 'Surface'	143000	143000	0
Carbon Dioxide - 'Engine'	380000	380000	0
Carbon Dioxide - 'Flare'	79200	79200	0
Chloroform (trichloromethane)	0.0964	2.89	0
Dichloromethane (methylene chloride)	2.35	21.2	0
Hydrofluorocarbons (HFCs) (Total)	0	0	0
Perfluorocarbons (PFCs) (Total)	0	0	0
Total CH4	62500	1560000	0
Total CO2	601000	601000	0
Trace Gases	2.43	24.6	0
Total	664000	2160000	0
	Engines	Flares	Total
CH4 Burned (t)	84000	17500	101000
GWP Reduction (t CO2)	1870000	389000	2260000
Bulk LFG CH4 percentage	60.4		
Bulk LFG CO2 percentage	39.6		
Lo (t CH4)	173000		

GasSim Version 2.05
Project Name : Bryn Posteg 2018
Client Name : Potters Waste Management

Global Impact Results: 50th percentile [2018]			
Species	Gas released (tonnes)	Global warming potential (tonnes of Carbon Dioxide)	Ozone depletion potential (tonnes of trichlorofluoromethane)
Methane - 'Surface' Methane - 'Engine' Methane - 'Flare' Carbon Dioxide - 'Surface' Carbon Dioxide - 'Engine' Carbon Dioxide - 'Flare' Chloroform (trichloromethane) Dichloromethane (methylene chloride) Hydrofluorocarbons (HFCs) (Total) Perfluorocarbons (PFCs) (Total)	1530 28 0 3500 12800 0 0.000958 0.026 0 0	38200 701 0 3500 12800 0 0.0288 0.234 0 0	0 0 0 0 0 0 0 0 0 0
Total CH4 Total CO2 Trace Gases Total	1560 16300 0.0337 17800	38900 16300 0.366 55100	0 0 0 0
	Engines	Flares	Total
CH4 Burned (t) GWP Reduction (t CO2)	2800 62400	0 0	2800 62400
Bulk LFG CH4 percentage Bulk LFG CO2 percentage Lo (t CH4)	60.4 39.6 70900		

Global Impact Results: 50th percentile [2020]			
Species	Gas released (tonnes)	Global warming potential (tonnes of Carbon Dioxide)	Ozone depletion potential (tonnes of trichlorofluoromethane)
Methane - 'Surface'	258	6460	0
Methane - 'Engine'	40.4	1010	0
Methane - 'Flare'	0	0	0
Carbon Dioxide - 'Surface'	599	599	0
Carbon Dioxide - 'Engine'	18300	18300	0
Carbon Dioxide - 'Flare'	0	0	0
Chloroform (trichloromethane)	0.000151	0.00453	0
Dichloromethane (methylene chloride)	0.00466	0.0419	0
Hydrofluorocarbons (HFCs) (Total)	0	0	0
Perfluorocarbons (PFCs) (Total)	0	0	0
Total CH4	298	7450	0
Total CO2	18900	18900	0
Trace Gases	0.005	0.0531	0
Total	19200	26300	0
	Engines	Flares	Total
CH4 Burned (t)	4040	0	4040
GWP Reduction (t CO2)	89800	0	89800
Bulk LFG CH4 percentage	60.4		
Bulk LFG CO2 percentage	39.6		
Lo (t CH4)	67600		

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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'	77000	1920000	0
Methane - 'Engine'	648	16200	0
Methane - 'Flare'	197	4920	0
Carbon Dioxide - 'Surface'	178000	178000	0
Carbon Dioxide - 'Engine'	293000	293000	0
Carbon Dioxide - 'Flare'	89300	89300	0
Chloroform (trichloromethane)	0.17	5.11	0
Dichloromethane (methylene chloride)	4.91	44.2	0
Hydrofluorocarbons (HFCs) (Total)	0	0	0
Perfluorocarbons (PFCs) (Total)	0	0	0
Total CH4	77800	1950000	0
Total CO2	561000	561000	0
Trace Gases	5.14	51.7	0
Total	640000	2510000	0
	Engines	Flares	Total
CH4 Burned (t)	64800	19700	84700
GWP Reduction (t CO2)	1440000	438000	1890000
Bulk LFG CH4 percentage	60.4		
Bulk LFG CO2 percentage	39.6		
Lo (t CH4)	173000		
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Global Impact Results: 50th percentile [2018]

Species	Gas released (tonnes)	Global warming potential (tonnes of Carbon Dioxide)	Ozone depletion potential (tonnes of trichlorofluoromethane)
Methane - 'Surface'	2550	63700	0
Methane - 'Engine'	22.2	555	0
Methane - 'Flare'	0	0	0
Carbon Dioxide - 'Surface'	5880	5880	0
Carbon Dioxide - 'Engine'	10000	10000	0
Carbon Dioxide - 'Flare'	0	0	0
Chloroform (trichloromethane)	0.00134	0.0403	0
Dichloromethane (methylene chloride)	0.0405	0.365	0
Hydrofluorocarbons (HFCs) (Total)	0	0	0
Perfluorocarbons (PFCs) (Total)	0	0	0
Total CH4	2570	64300	0
Total CO2	16000	16000	0
Trace Gases	0.0447	0.542	0
Total	18600	80100	0
	Engines	Flares	Total
CH4 Burned (t)	2220	0	2220
GWP Reduction (t CO2)	49400	0	49400
Bulk LFG CH4 percentage	60.4		
Bulk LFG CO2 percentage	39.6		
Lo (t CH4)	44200		

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GasSim Version 2.05
Project Name : Bryn Posteg 2018
Client Name : Potters Waste Management

Global Impact Results: 50th percentile [2020]			
Species	Gas released (tonnes)	Global warming potential (tonnes of Carbon Dioxide)	Ozone depletion potential (tonnes of trichlorofluoromethane)
Methane - 'Surface' Methane - 'Engine' Methane - 'Flare' Carbon Dioxide - 'Surface' Carbon Dioxide - 'Engine' Carbon Dioxide - 'Flare' Chloroform (trichloromethane) Dichloromethane (methylene chloride) Hydrofluorocarbons (HFCs) (Total) Perfluorocarbons (PFCs) (Total)	257 40.7 0 595 18400 0 0.000139 0.00462 0 0	6440 1020 0 595 18400 0 0.00417 0.0416 0 0	0 0 0 0 0 0 0 0 0 0
Total CH4 Total CO2 Trace Gases Total	299 19000 0.00545 19200	7460 19000 0.0561 26400	0 0 0 0
	Engines	Flares	Total
CH4 Burned (t) GWP Reduction (t CO2)	4070 90500	0 0	4070 90500
Bulk LFG CH4 percentage Bulk LFG CO2 percentage Lo (t CH4)	60.4 39.6 40300		
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APPENDIX 6

Trace gas and emissions monitoring results

Caulmert
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