Application to Vary environmental Permit Reference EPR/BN7109IH

Meggitt Aerospace Limited

Environmental Risk Assessment

JER8395
Application to Vary Environmental Permit EPR/BN7109IH Environmental Risk Assessment
3
0
01 March 2021

rpsgroup.com

Quality Management

Version	Revision	Authored by	Reviewed by	Approved by	Date
1	0	Tim Colebrook	n/a	n/a	2 March 2020
1	1	Tim Colebrook	Jennifer Stringer	n/a	5 February 2021
2	1	Tim Colebrook	Oliver Tomkinson	Jennifer Stringer	17 February 2021
3	0	Tim Colebrook	Jennifer Stringer	Jennifer Stringer	01 March 2021

Approval for issue

Jennifer Stringer	Technical Director		1 March 2021

File Name

210301_R_JER8395_TC_Environmental Risk Assessment_V3R0.docx

Prepared by:

RPS

Tim Colebrook

Senior Consultant

260 Park Avenue
Almondsbury
Bristol
BS32 4SY
T 01454 853 000

E tim.colebrook@rpsgroup.com

Prepared for:

Meggitt Aerospace Limited

Contents

Tables

Figures

Appendices

1 INTRODUCTION

1.1.1 This environmental risk assessment (ERA) has been carried out in support of an application to vary an Environmental Permit for Meggitt Aerospace Limited (MAL) production facility near Coventry. It includes an assessment of the risk to the environment and human health from the proposed activities at the site. The Environment Agency (EA) Risk Assessments for your environmental permit[1] covers a range of environmental risks. Those aspects relevant to the production activities at the MAL facility are covered within the following sections.

1.1.2 This document provides the nearby sensitive receptors at the site and relevant risk assessments covering the following aspects:

- Amenity and Accidents;
- Emissions to Air;
- Photochemical Ozone Creation Impacts; and
- Global Warming Potential Impacts

[1] https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

2 SENSITIVE RECEPTORS

2.1.1 The site is located at Holbrook Lane, Holbrook, Coventry, West Midlands, CV6 4AA approximately 3km to the north of Coventry city centre. The site is centred at the approximate national grid reference SP 3303 8233.

2.1.2 The main land use surrounding the area in which the facility is sited is identified as residential. The current surrounding land uses are:

- North – Monks Park residential area;
- East – Land sold off for residential development
- South – Whitmore Park residential area
- West – Meggitt buildings immediately adjacent with residential areas beyond site boundary. Whitmore Park primary school is located ~0.5km.

2.1.3 The Environment Agency air quality risk assessment guidance[2] advises to check if there are any of the following within 10 km of the site:

- special protection areas (SPAs)
- special areas of conservation (SACs)
- Ramsar sites (protected wetlands)

2.1.4 It also advises to check if there are any of the following within 2 km of the site:

- sites of special scientific interest (SSSIs)
- local nature sites (ancient woods, local wildlife sites and national and local nature reserves)

2.1.5 Based on the above criteria, the nature conservation sites shown in Tables 2.1 and 2.2 below have been identified as requiring consideration for impacts from the site:

Table 2-1: Receptors within 10 km requiring consideration

Site Type	Site Name
SAC	Ensor's Pool

Table 2-2: Receptors within 2 km requiring consideration

Site Type	Site Name
Local Wildlife Sites (LWS)	Prologis Country Park
	Greenwood Farm Pastures
	Bassford Bridge Meadow
	Foleshill Gasworks and Three Spires Sidings
	Longford Nature Park
	Former Bell Green Goods Yard
	North Brook Lane
	Sandpits Lane Meadow
	Houldsworth Crescent Corridor

[2] https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screening-for-protected-conservation-areas

2.1.6 A nature and heritage conservation screening report has been provided by the EA, this can be found in Appendix A.

2.1.7 The site is located within the River Avon catchment area (avon urban rivers and lakes / sowe – confluence breach brook to confluence withy brook) which has an overall classification of poor as shown in the Environment Agency catchment data explorer3.

2.1.8 The site is located within the River Avon (to confluence with River Severn) nitrate vulnerable zone (NVZ). The nearest watercourse is the Breach Brook which is situated approximately 0.64 km to the north. The site is located within a Zone III source protection zone (SPZ).

2.1.9 The site is located on a principal aquifer (bedrock) and secondary (undifferentiated) aquifer (superficial deposit). The groundwater vulnerability classification for the site is medium-high.

2.1.10 The British Geological Survey Geology of Britain Viewer4 has been reviewed and it shows that the site is located on the following geology:

- Bedrock geology: Keresley Member - Argillaceous rocks and [subordinate/subequal] sandstone and conglomerate, Interbedded. Sedimentary bedrock formed approximately 302 to 310 million years ago in the Carboniferous Period. Local environment previously dominated by rivers.
  - Setting: rivers. These sedimentary rocks are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).
- Superficial deposits: Thrussington member - diamicton. Superficial deposits formed up to 2 million years ago in the quaternary period. Local environment previously dominated by ice age conditions.
  - Setting: ice age conditions. These sedimentary deposits are glacigenic in origin. They are detrital, created by the action of ice and meltwater, they can form a wide range of deposits and geomorphologies associated with glacial and inter-glacial periods during the Quaternary.

2.1.11 Locations of the sensitive receptors identified above can be seen in Appendix A. Site plans are included as Appendix B to the main application document.

[3] https://environment.data.gov.uk/catchment-planning/WaterBody/GB109054044660

[4] http://mapapps.bgs.ac.uk/geologyofbritain/home.html

3 ENVIRONMENTAL RISKS AND EFFECTS: AMENITY AND ACCIDENTS

3.1.1 This section provides an assessment of risks to environmental amenity and from potential accidents/incidents that could arise from the production activities. The assessment has been completed in accordance with the EA's Risk Assessments for your environmental permit.

3.1.2 The scope of the assessment has covered the following aspects:

- odour;
- noise and vibration;
- fugitive emissions;
- visible emissions; and
- accidents.

3.1.3 Point source emissions are considered separately.

3.1.4 For each of the above, the approach to the assessment has followed the following six stage process:

a. identify and consider the risks for the site;
b. identify the receptors at risk;
c. identify the possible pathways from the sources of the risks to the receptors;
d. assess the risks and check they're acceptable and can be screened out;
e. state appropriate control measures if the risks are too high; and
f. present the assessment of overall risk.

3.1.5 Results of the assessment are provided in the following tables.

- Table 3-2 Assessment of odour risks
- Table 3-3 Assessment of noise and vibration risks
- Table 3-4 Assessment of fugitive emission risks
- Table 3-5 Visible emissions
- Table 3-6 Accidents risk assessment and management plan

3.1.6 The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:

- the likelihood of the hazard occurring; and
- the consequence of the hazard to the environment or human health.

3.1.7 Scores are assigned as very low, low, medium or high.

3.1.8 The risk assessment has been completed by scoring the hazard areas outlined above using a risk matrix as shown in Table 3-1 below:

Table 3-1: Risk Matrix

Consequence	Probability			
	High	Medium	Low	Very Low
High	High	Medium	Low	Low
Medium	Medium	Medium	Low	Very Low
Low	Low	Low	Low	Very Low
Very Low	Low	Very Low	Very Low	Very Low

3.1.9 In completing the assessment, prevention and control measures proposed by MAL are assumed to be in place. Where relevant, details of these measures are identified within the assessment.

3.1.10 The environmental risk assessment for the site is set out below:

Table 3-2: Odour risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Odorous emissions from the permitted activities (storage, delivery and use of chemicals)	Local residents (nearest receptors approx. 100 m from the proposed extension area; 15 m from the MAL site boundary). Industrial units located immediately adjacent to the installation.	Air	There are no significant sources of odour associated with the permitted activities and the proposed variation does not introduce any new materials or processes with the potential for significant odour. No odour complaints have been received by the site. . In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.	Very Low	Very Low - Minor odour annoyance (at worst) due to low volume of raw materials/chemicals used.	Very Low – subject to correct management systems being used.

Table 3-3: Noise and vibration risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Noise from vehicle movements onsite and offloading (such as reverse warnings)	Local residents (nearest receptors approx. 100 m from the proposed extension area; 15 m from the MAL site). Industrial units located immediately adjacent to the installation.	Air	There is no significant increase in traffic movements linked to the permitted activities that are changing as a result of this variation. There will only be the additional traffic associated with raw materials delivery which will be periodic and therefore not significant. In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.	Very low	Low	Very Low
Noise from the installation (interior)	Operatives working within the installation building. Local residents (nearest receptors approx. 100 m from the proposed extension area; 15 m from the MAL site). Industrial units located immediately adjacent to the installation.	Air	The main plant will be located within suitably constructed and clad buildings. Plant machinery is fitted with appropriate noise suppression as far as is practicable and all operatives are supplied with appropriate hearing protection where required. Noise level monitoring is undertaken periodically as a management control measure for all plant, at operative positions and within the noise hazard areas. The site has not received any noise complaints and there is not expected to be any significant increase in noise as a result of the proposed variation as the new plant is situated within a building. In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.	Low	Low	Low
Noise from installation (exterior)	Local residents (nearest receptors approx. 100 m from the proposed extension area; 15 m from the MAL site). Industrial units located immediately adjacent to the installation.	Air	The only new plant outside will be the argon storage tank which is not anticipated to increase noise from the site. Daily inspections and scheduled maintenance, with additional noise assessments undertaken periodically to determine fluctuations and identify if any further controls are necessary. In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.	Low	Low	Low

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Vibration from the plant	Local residents (nearest receptors approx. 100 m from the proposed extension area; 15 m from the MAL site). Industrial units located immediately adjacent to the installation.	Land	Significant vibration effects are not anticipated from the proposed changes subject to this variation. In the event that vibration issues were identified when the plant is installed this will be resolved during the commissioning process. In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.	Low	Low	Low

Table 3-4: Fugitive emissions risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Storage, handling and use of chemicals – leaks and spillages	Local water course (River Sowe / Breach Brook)	Water / Drainage	The chemicals are stored within bunds in a building with impermeable floors and spillage kits. The volumes stored are in detailed in the main application. The site has a spillage procedure to ensure that any risk from spillages is minimised and they are cleaned up as soon as detected.	Low	Low	Low – subject to correct management systems being used
Litter from onsite waste storage areas.	Local residents (nearest receptors approx. 100 m from the proposed extension area; 15 m from the MAL site). Industrial units located immediately adjacent to the installation.	Windblown to air	Good housekeeping procedures ensure all waste is contained within the appropriate bins or skips. Any unexpected spillage would be cleaned up immediately. There shall be an increase in waste from the process due to the increase in capacity however, the above procedures shall ensure there is no increase risk as a result of the proposal contained in this variation.	Low	Very low - Nuisance to local receptors	Very Low

Table 3-5: Visible emissions

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Visible plume - new stacks	Local residents (nearest receptors approx. 100 m from the proposed extension area; 15 m from the MAL site). Industrial units located immediately adjacent to the installation.	Visual	Under normal operation visible plumes are not anticipated to occur at any time.	Very Low	Very Low – minor visual disturbance	Very Low

Table 3-6: Accidents risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Operator error	Air/land/ groundwater	Various – dependent on nature of error	Maintenance checks are carried out every day for key plant and equipment and will identify any operator error incidents. This will include checks on the new equipment proposed as part of this variation. All operational staff will be fully trained against the site operating procedures and what procedures to follow in the event of an operator error. Training will include raising awareness of key plant parameters and the potential implications of failure to control operations as designed and the associated potential impact on the environment. Emerson DeltaV will be used to monitor all the major pieces of equipment. The Emerson DeltaV is a computer software system that allows automatic monitoring of process parameters such as temperature, pressure and other control measures. This will minimise risk of operator error.	Low	Low however could be variable depending upon nature of incident.	Low - provided operating procedures are followed.
Loss of containment during storage or transfer of reagents, chemicals, fuels and oil	Water and land	Site drainage system via sewage treatment works or direct contact with land.	An emergency spillage management plan has been produced. The new bunds for the cooling towers will be visually checked each day to ensure that they are empty. All associated storage tank will be built of suitable materials which are resistant to the vessel content. All pipework will be raised above ground for visual inspection. All storage tanks and pipework shall be included in the maintenance programme. Bulk deliveries are overseen by a trained member of staff who will be responsible for checking that there is sufficient capacity in the storage vessel to receive the delivery. Staff shall be trained for delivery of LNG. OPAN stored in sealed boxes within a building. Movement around site only permitted by trained forklift drivers. DAIPC building/containers locked when not in use and offer protection from impact (e.g. from movement of unauthorised vehicles), therefore emissions of dust are unlikely. In the unlikely event that OPAN is washed into surface water drainage or foul sewer, it is an inert substance with low environmental impact. The site spill procedure shall be followed in the event of a spillage. Spill kits are available to contain and clean up the spill. Solid raw materials (OPAN) will be cleaned using dry techniques.	Very Low – requires multiple failure events	Medium Contamination of local water course - dependent on quantity and material released	Very Low as long as delivery procedures are adhered to, and in the event of a spillage, the spill management plan is followed.

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
			Incidents will be recorded and investigated appropriately according to the site incident procedure. Significant incidents will be reported to the EA in accordance with the requirements of the permit.			
Loss of power	None	N/A	Maintenance checks are carried out every day for key plant and equipment and will identify any loss of power. In the event of a loss of power to the site during non-operational periods the plant may not be able to start-up and therefore no operations can commence. Plant have safe automatic shutdown procedures. There are specified shut down procedures for furnace and high temperature facilities when a site wide loss of power occurs. The control room has a generator for backup / electrical blackout to enable control of the furnaces until power is restored.	N/A	N/A	N/A
Fire / Explosion	Air	Direct release of emissions to air	All key areas have had a fire risk assessment and suitable firefighting equipment is located at suitable areas within buildings Emergency response and evacuation procedures are in place on the site. Dialling 555 alerts the on-site security and fire station who will attend the scene quickly to assess the fire. They will then call for external firefighting assistance if required. Key processes will be shut down if required. Two people will monitor/control plant through the control room, which is fireproof. The appropriate MSDSs for chemicals used and stored on site will be attached to the AMP and kept in an accessible location. Site plans and a master inventory of the substances used and stored on site will also be kept in an accessible location on site. Following the event, the cause will be investigated, and the EA notified if necessary. Any spillages resulting from the fire will be dealt with as per the site spillage procedure.	Low	Low /Medium Uncontrolled release of emissions to air – impacts likely to be short term	Low
Failure to contain firewater	Local water course (River Sowe / Breach Brook)	Surface water drainage system	Measures are in place to protect against a fire. Fire response systems should ensure a rapid response thereby addressing the fire at the earliest point to avoid fire spread and therefore minimising the potential volumes of fire waters. Firewater shall be contained on site where possible through the use of bunded areas and blocking drains etc. Site procedures will be updated once the relevant containment is in place.	Low	Medium – firewater would be discharged to surface water	Low

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Control of contractors	Air/water/land	Various	When on site, contractors are required to provide work method statements before being approved. This will include the contractors installing the new plant and equipment proposed as part of this variation. New contractors attend a company-wide site induction. New contractors are provided with a complete set of MAL's 'Site Code of Practice and Regulations'. This covers the use of gas cylinders, waste storage and disposal, correct disposal of trade effluent, oil and chemical spillages. The contractor induction will be regularly reviewed and updated if deemed necessary. Contractors will also be routinely audited against their method statements and MAL's requirements for contractors.	Low	Medium	Low
Flooding	Local water course, structures on site; neighbouring land	Surface water drainage system	The EA indicative flood map shows that the site is within Flood Risk Zone 1, with 'low probability of flooding'. For this reason, a flood risk assessment is not deemed necessary. The plant layout and storage facilities for reagents and fuels are designed to ensure all materials are contained and in the event of a flood, materials would not be released. As part of the site's emergency procedures, the appropriate procedures for responding to, reporting and investigation in the event of a flood will be assessed.	Very Low	Medium Potential contamination of flood waters.	Low
Breach of site security, vandalism etc	Variable - dependent on nature of the theft/vandalism	Air, land, water	Site has secure controlled entry for pedestrians and vehicles. Out of hours, there is on site security and closed-circuit television surveillance.	Low	Low - Release of hazardous vapours, dust etc, contamination of water course or land	Very Low – subject to correct management systems being used.

4 EMISSIONS TO WATER

4.1 Surface Water Runoff

4.1.1 There are no changes to emissions to water from the site. Clean surface water shall continue to be emitted at emission point W1. There is no increased risk of contamination as a result of the changes detailed in this variation application.

4.2 Discharge to Sewer

4.2.1 There are no changes to the release from site to emission point S1. Emissions will continue to be released under the terms of the trade effluent agreement.

5 EMISSIONS TO AIR

5.1 Introduction

5.1.1 This section provides a screening assessment of point source emissions to air from the scrubber stack at the installation. The assessment has been completed in accordance with the EA's Risk Assessments for your environmental permit using the EA's H1 software and in accordance with the Environment Agency's Risk Assessments for your environmental permit.

5.1.2 The scope of the assessment has covered the following aspects:

- Release point characteristics;
- Air emissions inventory and mass flows;
- Emissions screening for further assessment;

5.1.3 During pre-application discussions the EA has provided a habitats screening assessment which identifies a number of conservation sites within the relevant screening distances and therefore a screening assessment has been carried out on the emissions from the facility.

5.2 Emission Sources

5.2.1 The current permitted point source emissions to air from the facility are as follows:

- A1 – Lesni Thermal Oxidiser
- A4 – Gas flare from CVD furnace no.9
- A5, A6, A7, A8 and A9 – Emergency relief vents from carbon vapour deposition (CVD) furnaces
- A10, A11, A12 and A13 – Boilers (individual stacks)
- A14 – Cloth cell dust extraction
- A15 and A16 – Heat treatment facility I & II
- A17 and A18 - Heat treatment facility I & II (cooling)
- A19, A20 and A21 - Machine room dust extraction units
- A22 – New Lesni thermal oxidiser
- A23 - Mazak dust extraction unit
- A24 and A25 - Chiron dust extraction unit
- A26 – Paint spraying booth

5.2.2 As a result of the new plant to be installed at the facility, the following new emissions points from the facility will be included:

- A31 DMG Dust Extractors
- A32 DMG Dust Extractors
- A33 DMG Dust Extractors
- A34 DMG Dust Extractors
- A35 DMG Dust Extractors
- A36 Spray Booth Extraction
- A37 SECO Oven
- A38 Nu Carb Furnaces

- A39 Nu Carb Furnaces

5.2.3 The above emissions have been assessed using the Environment Agency H1 screening tool.

5.3 H1 Screening Assessment

5.3.1 Emissions have been screened for significance against appropriate environmental standards for long-term and short-term exposure. Emissions standards are based on statutory air quality limits where available, and upon human health protection environmental assessment levels (EALs) as given in H1 guidance.

5.3.2 Modelled concentrations have been included based on the data presented in the Air Quality Assessment (Appendix D of the main application supporting information).

5.3.3 Process contributions (PCs) have been calculated using atmospheric dispersion modelling, details of which are given in Appendix D of the main application supporting information. EA guidance states that emissions can be screened out as insignificant where:

- Long term PC < 1% of EAL
- Short term PC <10% of EAL

5.3.4 Figure 5.1 below shows the output of the emissions screening using H1 and identifies that nitrogen dioxide and particulates (PM_{10}) are potentially significant.

Figure 5.1: Air Impact Screening Stage One Assessment

Air Impact Screening Stage One

Screen out Insignificant Emissions to Air

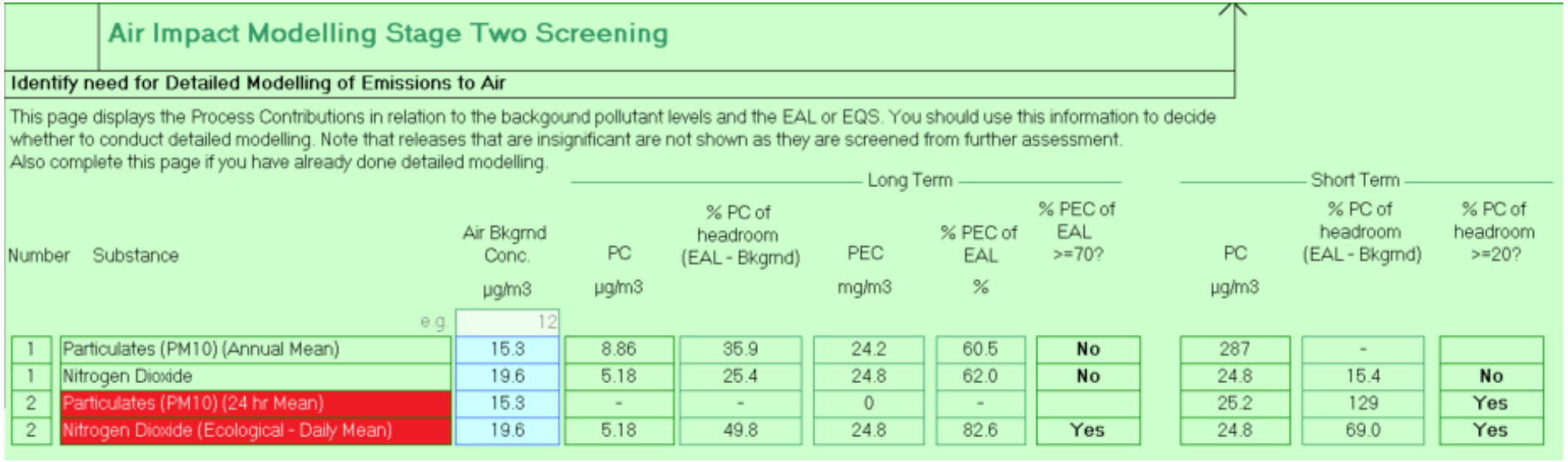
This page displays the Process Contribution as a proportion of the EAL or EQS. Emissions with PCs that are less than the criteria indicated may be screened from further assessment as they are likely to have an insignificant impact.

Number	Substance	Long Term EAL µg/m3	Short Term EAL µg/m3	Long Term PC µg/m3	Long Term % PC of EAL %	Long Term > 1% of EAL?	Short Term PC µg/m3	Short Term % PC of EAL %	Short Term > 10% of EAL?
1	Particulates (PM10) (	40.0	-	8.86	22.2	**Yes**	287	-	
1	Nitrogen Dioxide	40.0	200	5.18	13.0	**Yes**	24.8	12.4	**Yes**
1	Acetic acid	250	3,700	0.322	0.129	**No**	23.2	0.625	**No**
2	Particulates (PM10) (	-	50.0	-	-		25.2	50.3	**Yes**
2	Nitrogen Dioxide (Ecc	30.0	75.0	5.18	17.3	**Yes**	24.8	33.0	**Yes**
4	P2O5	40.0	40.0	0.0180	0.0451	**No**	1.34	3.33	**No**
5	Benzene	5.00	195	0.0401	0.801	**No**	1.80	0.918	**No**

5.3.5 A second stage of screening assesses the predicted environmental concentration (PEC) against emissions limits. Assumed background concentrations are taken from the air quality modelling, details of which are given in Appendix 4 of the main application supporting information. PECs which are lower than 70% of the relevant long-term emissions standard and lower than 20% of the relevant short-term standard minus 2 * the background concentration are screened out as insignificant, as shown in Figure 5.2 below. Those not screened out as insignificant are recommended for further detailed assessment.

5.3.6 The results suggest there is a need for further assessment of the following pollutants: Nitrogen Dioxide and Particulates (PM_{10}). Detailed modelling has been carried out for all expected emissions, and the results are given in Appendix D of the main application supporting information.

Figure 5.2: Air Impact Modelling Screening Stage Two Screening



Air Impact Modelling Stage Two Screening

Identify need for Detailed Modelling of Emissions to Air

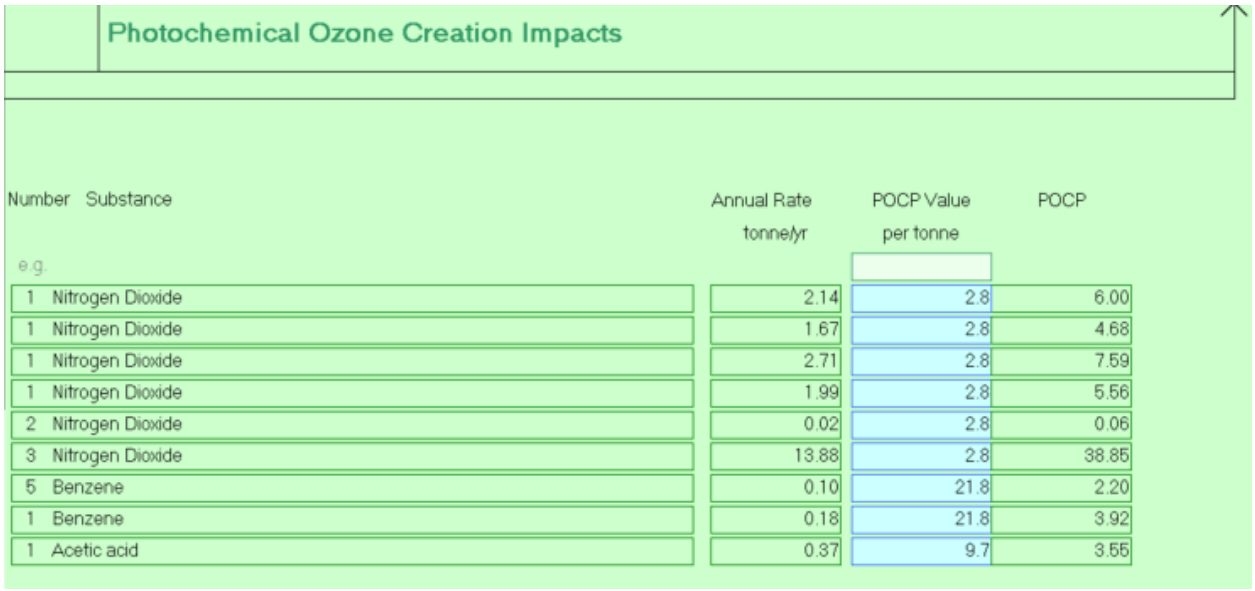
This page displays the Process Contributions in relation to the backgound pollutant levels and the EAL or EQS. You should use this information to decide whether to conduct detailed modelling. Note that releases that are insignificant are not shown as they are screened from further assessment.
Also complete this page if you have already done detailed modelling.

			Long Term					Short Term		
Number	Substance	Air Bkgrnd Conc. µg/m3	PC µg/m3	% PC of headroom (EAL - Bkgrnd)	PEC mg/m3	% PEC of EAL %	% PEC of EAL >=70?	PC µg/m3	% PC of headroom (EAL - Bkgrnd)	% PC of headroom >=20?
	e.g.	12								
1	Particulates (PM10) (Annual Mean)	15.3	8.86	35.9	24.2	60.5	**No**	287	-	
1	Nitrogen Dioxide	19.6	5.18	25.4	24.8	62.0	**No**	24.8	15.4	**No**
2	Particulates (PM10) (24 hr Mean)	15.3	-	-	0	-		25.2	129	**Yes**
2	Nitrogen Dioxide (Ecological - Daily Mean)	19.6	5.18	49.8	24.8	82.6	**Yes**	24.8	69.0	**Yes**

5.4 Photochemical Ozone Creation Potential

5.4.1 The photochemical ozone creation potential (POCP) has been calculated in accordance with the H1 guidance. There are a number of substances potentially emitted from the facility identified as having the potential to form ozone. These are shown in Figure 5.3 below:

Figure 5.3: Photochemical Ozone Creation Potential



Photochemical Ozone Creation Impacts

Number	Substance	Annual Rate tonne/yr	POCP Value per tonne	POCP
e.g.				
1	Nitrogen Dioxide	2.14	2.8	6.00
1	Nitrogen Dioxide	1.67	2.8	4.68
1	Nitrogen Dioxide	2.71	2.8	7.59
1	Nitrogen Dioxide	1.99	2.8	5.56
2	Nitrogen Dioxide	0.02	2.8	0.06
3	Nitrogen Dioxide	13.88	2.8	38.85
5	Benzene	0.10	21.8	2.20
1	Benzene	0.18	21.8	3.92
1	Acetic acid	0.37	9.7	3.55

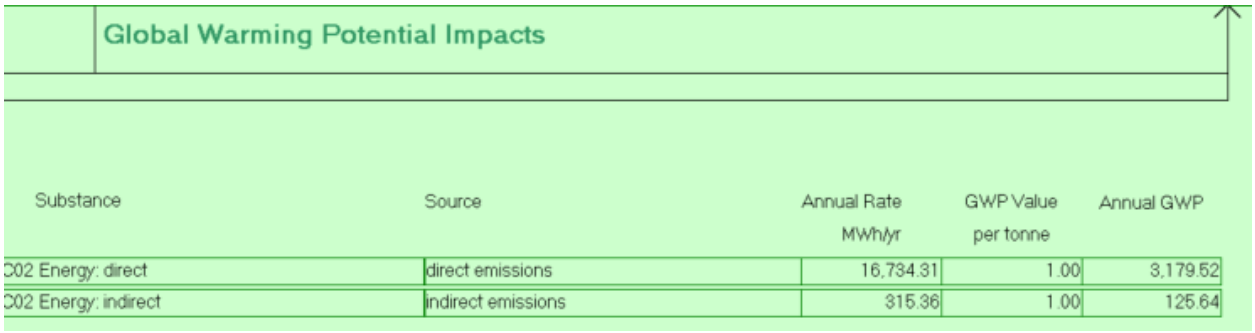
5.4.2 The total POCP score for the facility is calculated as 72.42.

5.4.3 The facility will be controlled to ensure that IED limits for the POCP pollutants are met; Section 4 of the main application details the proposed measures for preventing and minimising the release of these pollutants and concludes that the proposed measures are BAT.

5.5 Global Warming Potential

5.5.1 The global warming potential (GWP) has been calculated in accordance with the H1 guidance. These are shown in Figure 5.4 below:

Figure 5.4: Global Warming Potential



Global Warming Potential Impacts

Substance	Source	Annual Rate MWh/yr	GWP Value per tonne	Annual GWP
C02 Energy: direct	direct emissions	16,734.31	1.00	3,179.52
C02 Energy: indirect	indirect emissions	315.36	1.00	125.64

5.5.2 The total GWP score of 13,774.97 comprised two main sources: Carbon Dioxide emissions from combustion of natural gas in the boilers; and electricity used by the boilers. It is worth noting that the boilers and CVD furnaces are not changing as a result of this variation application.

5.5.3 Of these sources, Carbon Dioxide emissions from the combustion of natural gas are by far the most significant, accounting for over 96% of the total GWP score calculated.

5.5.4 The direct releases of Carbon Dioxide assume that only natural gas is burned, although the site is permitted to burn waste gas from the production process in the boiler plant. There is currently no data available in order to include burning of waste gas in the H1 assessment for inclusion in the permit variation.

5.5.5 Only a small percentage of the GWP is associated with emissions from import of electricity from the National Grid. This is essential to power the furnaces and boilers; and to ensure that the facility meets IED limits for emissions at all stages of operation.

6 CONCLUSIONS

6.1.1 The ERA report has been undertaken to assess the likelihood of risk from amenity and accidents, air emissions and global warming potential associated with the proposed variation to the MAL facility.

6.1.2 The results of the ERA have shown that the risk of odour, noise and vibration, fugitive emissions, visible plumes, and accidents ranges from ‘very low’ to ‘low’.

6.1.3 Stack emissions to air for VOC’s, acetic acid and phosphorous pentoxide (P_2O_5) have been screened out to be insignificant. Nitrogen dioxide and particulate matter could not be screened out in the H1 assessment and further air quality dispersion modelling has been undertaken. The air quality assessment is included as Appendix D to the main permit variation application.

6.1.4 The POCP for the facility is calculated as 72.42. The use of BAT minimises the POCP from the facility.

6.1.5 The total GWP score of 13,774.97 and is contributed from indirect emissions from the use of electricity from the National Grid and carbon dioxide emissions from the combustion of natural gas.

REFERENCES

1. Environment Agency's (EA's) Risk Assessments for your environmental permit - https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

2. Environment Agency air quality risk assessment guidance - https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screening-for-protected-conservation-areas

3. British Geological Survey Geology of Britain Viewer - http://mapapps.bgs.ac.uk/geologyofbritain/home.html

GLOSSARY

BAT	Best Available Techniques
CVD	Carbon Vapour Deposition
EA	Environment Agency
EAL	Environmental Assessment Level
ELV	Emission Limit Value
EMS	Environmental Management System
ERA	Environmental Risk Assessment
GWP	Global Warming Potential
IED	Industrial Emissions Directive
LNG	Liquefied Natural Gas
LWS	Local Wildlife Site
MAL	Meggitt Aerospace Limited
NVZ	Nitrate Vulnerable Zone
OPAN	Oxidised Polyacrylonitrile
PC	Process Contribution
PEC	Predicted Environmental Concentration
POCP	Photochemical Ozone Creation Potential
SAC	Special Areas of Conservation
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest

Appendices

Appendix A

H1 Assessment

Appendix B

Noise Management Plan

Appendix C

Conservation Screening Report and Maps