APPLICATION TO VARY ENVIRONMENTAL PERMIT REFERENCE EPR/BN7109IH

Meggitt Aerospace Limited

Site Condition and Baseline Report

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IED Baseline & Site Condition Report
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Contents

1 INTRODUCTION 1
1.1 Introduction 1
1.2 Key Objectives 1
1.3 Description of Permitted Activities 2
1.4 Non-permitted activities undertaken 4

2 APPLICATION SITE CONDITION REPORT 5
2.1 Application Phase 5
2.2 Site Condition Report Summary 5

3 STAGE 1 - IDENTIFY WHICH HAZARDOUS SUBSTANCES ARE USED, PRODUCED OR RELEASED AT THE INSTALLATION AND PRODUCE A LIST OF THESE SUBSTANCES 8

4 STAGE 2 – IDENTIFYING THE RELEVANT HAZARDOUS SUBSTANCES' 13

5 STAGE 3 – ASSESSMENT OF THE SITE-SPECIFIC POLLUTION POSSIBILITY 14
5.1 Site-Specific Pollution Possibility 14
5.2 Risk Matrix for Determining Site-Specific Pollution Potential 14
5.3 Site Specific Pollution Possibility 16
5.4 Cooling Water Chemicals (CSP7 / 1.5% CMI/MI / STREAMLINE 202, 208 & 250) 19
5.5 Antioxidant Paints - DMS 744/745/815/819/859/860 & CS1800D – Silicone resin-based paint 19
5.6 Low Sulphur Diesel 19

6 STAGE 4 – PROVIDE A SITE HISTORY 20
6.2 General Site History 20
6.3 Previous Ground Investigation 20
6.4 Potential Historic Contaminants 21
6.5 Pollution History 22
6.6 Operational History 23

7 STAGE 5 – IDENTIFY THE SITE'S ENVIRONMENTAL SETTING 24
7.1 Site Location 24
7.2 Site Reconnaissance (February 2018) 24
7.3 Surrounding area and sensitive receptors 24
7.4 Site Drainage 25
7.5 Environmental Setting 25
Geology and Topography 25
Hydrology 28
Environmental Data 28

8 STAGE 6 – SITE CHARACTERISATION 32
8.1 Introduction 32
8.2 Potential Contamination Sources 32
8.3 Identified Receptors 32

9 STAGE 7 – SITE INVESTIGATION 33
9.2 Conceptual Model 33

10 STAGE 8 – PRODUCE A BASELINE REPORT 35
10.1 Introduction 35
10.2 Condition of the extension area 35
10.3 Baseline Soil Quality 35
Heavy metals 35
Water soluble sulphate 36
Total Petroleum Hydrocarbons 36

Trichloroethene (TCE) 36
Polycyclic Aromatic Hydrocarbons (PAHs) 36
Asbestos 36
10.4 Baseline Groundwater Quality 37
10.5 Baseline Gas Assessment 37
11 OPERATIONAL SITE CONDITION REPORT 38
11.1 Operational Phase 38
11.2 Site Condition Report Summary 38
12 SURRENDER SITE CONDITION REPORT 40
13 CONCLUSIONS 41

Tables

Table 3-1 Material Inventory 9
Table 3.2 Hazardous Materials Inventory 11
Table 5.1: Risk Matrix for Determining Site-Specific Pollution Potential 15
Table 5-2 Chemical Inventory and Assessment of Actual Pollution Risk 17
Table 7-2 Summary of Discharge Consents within 2 km of CV6 4AA 29
Table 7-3 Summary of Historic Landfills 29
Table 7-4 Summary of Waste Operations Sites within 2 km 29
Table 7-5 Summary of Installation Sites within 3 km of CV6 4AA 30
Table 8.1: Conceptual Site Model – Controlled Water Receptor 32
Table 9-1 Conceptual site model and preliminary risk assessment 33

Appendices

Appendix A ..... Application SCR & SPMP
Appendix B ..... Site Condition Report – December 2018
Appendix C ..... Site Investigation Report 2012
Appendix D ..... Site Investigation Report 2018
Appendix E ..... CAR Forms
Appendix F ..... Site Plans
Appendix G ..... SDS
Appendix H ..... Envirocheck Report

1 INTRODUCTION

1.1 Introduction

1.1.1 RPS was requested by Meggitt Aerospace Limited (MAL) to produce a Site Condition Report (SCR) to support their application to vary environmental permit EPR/BN7109IH for their site at Holbrook, Coventry.

1.1.2 RPS has previously produced a site condition report for the permit application for this site (RPS, 2006) and for the permit variation (RPS, 2018) which are appended to this document in ***Appendix A*** and ***Appendix B*** respectively. This previous report has been used to support Section 2 of this document, the Application Site Condition Report to update into the current SCR format as set out by the Environment Agency (EA). The most recent Site Investigation Report (SIR) (WYG, 2018), which includes the new area, has been used to inform Section 6 of this document and can be found in ***Appendix B*** to this document.

1.1.3 Under the Environmental Permitting Regulations 2016, the MAL facility is regulated as a Part A1 installation. Part A1 installations are required to submit a Site Condition Report (SCR) setting out both the qualitative and quantitative condition of the site at permit application (in this case a variation application) to allow comparison of site conditions after cessation of operations at the site. The 'initial condition' for the purposes of this report, refers to the condition of the site at the time of the permit application and uses the information provided from the application site condition report at the time (RPS, 2006). Section 7 of this report will be updated upon cessation of activities to compare the condition of the site to the initial report to establish if contamination of land has occurred during site occupancy and whether or not remediation will be required at permit surrender.

1.1.4 This SCR establishes the condition at point of varying the permit for the areas of the site within the proposed extension area (Buildings A3 and B3) and is based on the most recent SIR by WYG in June 2018 and that by Merebrook Consulting in 2012.

1.2 Key Objectives

1.2.1 The key objectives of this report are to:

- Establish the environmental setting of the site and determine its environmental sensitivity;
- Identify activities that are currently undertaken at the site, including the identification of Relevant Hazardous Substances and preventative measures implemented to protect land and groundwater;
- Establish the extent of historical contamination in the soil and groundwater in areas where current and/or future processes may include similar potentially contaminating substances;
- To identify the Site Conditions at the site at the point of varying the permit for the facility (baseline condition) such that they may be used as a point of reference to determine whether the site has been contaminated during the site's permitted operation in line with IED and Environmental Permitting Regulations requirements; and
- To provide conclusions on whether land quality has been impacted from historical activities.

1.2.2 With respect to the IED eight stage process, a summary of each stage is outlined below along with where it is addressed within this report:

- Stage 1 - Identify hazardous substances used, produced or released at the installation. This is addressed within Section 3 of this report;

- Stage 2 - Identify relevant hazardous substances used, produced or released at the installation from the list of hazardous substances identified in Stage 1. This is addressed within Section 4 of this report;
- Stage 3 – Undertake an assessment of site-specific pollution possibility for relevant hazardous substances. This is addressed within Section 5 of this report;
- Stage 4 – Evaluation of Site History and potential for relevant hazardous substances to be present in soils and groundwater. This is addressed within Section 6 of this report;
- Stage 5 – Evaluation of Environmental Setting to determine the fate of potential emissions of relevant hazardous substances This is addressed within Section 7 of this report;
- Stage 6 – Site Characterisation that synthesises findings of Stage 5 and 6 on the basis of a Conceptual Site Model. This is addressed within Section 8 of this report;
- Stage 7 – Site Investigation (including sampling strategy). This is addressed within Section 9 of this report; and
- Stage 8 – Production of Baseline Report. This is addressed within Section 10 of this report.

1.3 Description of Permitted Activities

1.3.1 MAL operates the Carbon Brake Facility, Coventry. The site is located to the north of Coventry City centre, in the Whitmore Park area. The main purpose of the activity is the production of brake discs for aircraft through the vapour deposition of carbon through the cracking of natural gas or other hydrocarbons onto material formers. The process takes oxidised polyacrylonitrile (OPAN) fibre and converts it into a carbon fibre through mechanical and heat treatment (carbonisation process). OPAN fibre is fed through a carding machine and 2 needle punch machines to manufacture an OPAN non-woven cloth. The OPAN is continuously fed through a furnace heated to 1030^{o}C to convert it to a carbon fibre cloth. As the cloth is carbonised, emissions are given off which are destroyed by passing through a thermal oxidiser.

1.3.2 The carbon cloth is then cut into circles and laid up into carbon disc preforms. The preforms are jigged using graphite jog plates, steel studs and graphite distance pieces for support during the carbon vapour deposition (CVD) process. The jigged preforms are then loaded into large CVD furnaces. These furnaces are induction heated and work at reduced pressure. Natural gas is fed into the CVD furnaces, which then cracks approximately 50% of the methane in the natural gas to carbon and hydrogen. The carbon is deposited onto the jogged preforms and the hydrogen and uncracked methane are recycled to the boiler house. When the boilers are not using recycled gas, they are natural gas fired.

1.3.3 The boilers are used to create steam, which is used in steam ejector towers to create the vacuum to reduce the pressure in the CVD furnaces. Circulating water is used to cool the furnace induction coils and certain parts of the CVD furnaces.

1.3.4 When a CVD furnace run is completed and unloaded the jogs are broken apart. The preforms are now discs, the carbon cloth layers bonded together by the carbon deposited. Discs are then reloaded in the CVD furnaces and subjected to a second CVD cycle to deposit more carbon and achieve a minimum carbon ‘pick up’.

1.3.5 Once a disc has achieved a minimum carbon ‘pick up’, it is heat treated converting the carbon structures into graphite. Circulating water is used to cool the furnace induction coils of the heat treatment furnaces. Passing the water through heat exchangers located in the heat treatment facilities cools this water.

1.3.6 After heat treatment, the discs are machine finished in the CVD machine shop. The finished discs are coated with antioxidant paint, and oven heated to stove the paint.

1.3.7 The installation also contains the boiler house where four boiler units are used to generate steam. The partially cracked gas from the chemical vapour deposition furnaces is used as fuel with natural gas makeup. Furnace No. 9 is the only exception to this where the gas is flared. In addition, there are indirect discharges to sewer and one indirect discharge to surface water. The site does not have an effluent treatment plant.

1.3.8 In December 2019, a permit variation included the following:

- The installation of an additional carbonisation furnace operated in parallel to the existing carbonisation furnace.
- Due to the additional capacity of the carbonisation process, the installation of a new thermal oxidiser unit (new 'Lesni thermal oxidiser') to abate pollutants in the carbonisation exhaust gas, primarily consisting of volatile organic compounds (VOC), hydrogen cyanide and ammonia, generated from the two carbonisation furnaces operating in parallel under the new permitted configuration.
- The abated flue gases from the new thermal oxidiser are emitted from a new emission point (A22). Upon completion of the commissioning activities for the new thermal oxidiser, this will replace the existing thermal oxidiser (existing emission point A1). The main pollutants emitted by the new thermal oxidiser (emission point A22) are oxides of nitrogen, carbon monoxide and hydrogen cyanide.
- The inclusion of three new emission points to air consisting of air extractors fitted with cartridge filters for abetment of dust from the manufacturing activities (emission points A23, A24 and A25).
- The installation of two new cooling towers to replace the existing units which have reached the end of their economic life and associated new discharge point to sewer (S3) for the cooling towers blow-down effluent stream.
- The installation of a storage system for liquefied natural gas (LNG) which is used during the start-up period in the existing carbon vapour deposition (CVD) furnaces.
- The inclusion of an existing building (DAIPC building) used for indoor storage of the installation main raw material (oxidised polyacrylonitrile fibre) in the permit boundary.
- The expansion of the permitted boundary the north of the installation to include the yard allocating the new cooling towers and LNG tank and the abovementioned DAIPC building.

1.3.9 The following activities are permitted at the MAL Site:

- Section 1.2 A(1)(f) – Activities involving carbonisation of carbonaceous materials: Preparation and Carbonisation of material using carbon vapour deposition in electrically powered furnaces; and,
- Section 6.2 A(1)(a) – Producing carbon by means of graphitisation: Preparation and heat treatment of carbon brake discs.

1.3.10 The following directly associated activities are permitted at the MAL Site:

- Burning of waste as a fuel – boiler plant operating on waste gas from production process in addition to virgin fuels;
- Thermal oxidiser abatement plant; and
- Propane in the furnaces – storage and use of propane in the furnaces.

1.3.11 This permit variation application is being submitted in order to incorporate the following changes and improvements at the site:

- Install four electrically powered high temperature furnaces;

- install an electrically powered controlled atmosphere elevator furnace;
- install two spray booths for the antioxidant coating;
- move the dust control extraction units to another area of the site;
- install additional dust control exaction units to the machining area of the site; and
- install an argon tank for storing gas to be used with the new furnaces

1.3.12 These variations are intended to increase the production capacity at the facility, enhance the efficiency of the site and the operational processes taking place on it.

1.4 Non-permitted activities undertaken

1.4.1 All activities that are currently undertaken on the site are permitted.

2 APPLICATION SITE CONDITION REPORT

2.1 Application Phase

2.1.1 This SCR, prepared in accordance with the EA Horizontal Guidance Note H5, contains information on the condition of the operational area from 2006, when the site was first permitted (RPS, 2006). This section references the information that was available at the time of permitting for the operational area.

2.1.2 Key information regarding historical and current land use can be found in in the Landmark Envirocheck Report in ***Appendix H***.

2.1.3 The site-specific pollution potential is dependent on the CSM developed on for the facility using the concept of Pollutant (Source-Pathway-Receptor) Linkages, which in turn is dependent on the conceptual hydrogeology and ground model of the system. An active Pollutant Linkage enables known or potential contamination sources to be linked with a specific environmental receptor via a plausible transport pathway.

2.1.4 The pollutant linkages defined for the installation are therefore dependent on the nature of potential release scenarios associated with each RHS and the nature of any pollution prevention measures or mitigation measures implemented on the site (e.g. through facility design / engineering, nature of on-site containment, emergency response measures, routine inspection / maintenance protocols etc.).

2.2 Site Condition Report Summary

1.0 Site details	
Name of the applicant	Meggitt Aerospace Limited
Activity address	Carbon Brake Facility, Holbrook Lane, Holbrook, Coventry, Warwickshire, CV6 4AA
National grid reference	SP 3303 8233
Site area (ha)	0.6
Document reference and dates for Site Condition Report at permit application and surrender	Application Site Condition Report (ASCR) (RPS, 2006)
Relevant Hazardous Substances	Details of substances stored on site and their pollution potential were provided in Sections 4 and 5 of the ASCR (RPS, 2006).
Document references for site plans including: • Site location plan • Plan showing activities layout • Site drainage plan • Plan showing pollution prevention measures in place (including impermeable surfacing, interceptors and sumps) • Plan showing location of sensitive receptors including protected areas or sensitive habitats or species within 1 km of the site	Site Condition Report (RPS, 2006): • Site Location Plan (Appendix A1) • Site Layout Plans (Dunlop Aerospace Site Ownership & PPC Process Boundaries, Appendix A3) • Site Drainage Plan (Appendix A4) • Sensitive Receptors Plans (Appendix A5)

2.0 Condition of the land at permit issue	
Environmental setting including: • geology • hydrogeology • surface waters (hydrology) • protected areas or sensitive habitats/species within 1 km • topography	Details of the environmental setting at permit issue are provided in Section 3 of the ASCR (RPS, 2006).
Site Reconnaissance, to assess: • damage to existing pollution prevention measures • other potential migration pathways such as drains, service corridors and outfalls • evidence of visual / olfactory contamination including disturbed land, discoloured soil and/or water, distressed vegetation or absence where it might be expected, subsidence and above ground deposits • presence and condition of surface water features on site • ponding of surface water on site • land uses in the vicinity of the site	Any details regarding historical contamination near to the site are provided in Appendix C1 (Envirocheck Report) to the ASCR (RPS, 2006).
Pollution history including: • location, nature and extent of accidents, incidents, or direct discharges that may have affected the soil or groundwater • historical land-uses and associated contaminants	Pollution history details are provided in Section 3.4 of the ASCR (RPS, 2006).
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	Any details regarding historical contamination near to the site are provided in Appendix C1 (Envirocheck Report) to the ASCR (RPS, 2006).
Conceptual site model	A conceptual site model is provided in Section 6 of the ASCR (RPS, 2006).
Baseline soil and groundwater reference data	Details regarding baseline soil and groundwater reference data at the site are provided in Section 6 and Appendix C2 of the ASCR (RPS, 2006).
Supporting information	• Source information identifying environmental setting and pollution incidents • Historical Ordnance Survey plans (where provided) • Site reconnaissance • Historical investigation / assessment / remediation / verification reports (where provided) • Baseline soil and groundwater reference data See original ASCR (2006) and First Phase Reporting of the SPMP (2007) in Appendix A of this report

3.0 Permitted activities	
Permitted activities	Details regarding permitted activities on the site are provided in Section 1.1 of ASCR (RPS, 2006).
Non-permitted activities undertaken	N/A
Document references for: • plan showing activity layout; and • environmental risk assessment.	A site layout and boundary plan for the facility at the time of the original permit application are shown on the following drawing: • Dunlop Aerospace Site Ownership & PPC Process Boundaries (Appendix A3) An environmental risk assessment (ERA) was not included with the original permit application.

3 STAGE 1 - IDENTIFY WHICH HAZARDOUS SUBSTANCES ARE USED, PRODUCED OR RELEASED AT THE INSTALLATION AND PRODUCE A LIST OF THESE SUBSTANCES

3.1.1 Stage 1 of the IED baseline assessment is to identify which hazardous substances are used, produced or released at the installation and to produce a list of these substances.

3.1.2 The IED relates to contamination risk associated with "hazardous substances" used at the facility. Hazardous substances are defined as substances or mixtures defined in Article 3 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on Classification, Labelling and Packaging of substances and mixtures (the "CLP Regulations"). The CLP Regulations replace the Chemicals (Hazard Information and Packaging for Supply) regulations ("CHIP"). Substances hazardous to the environment as defined by the CLP Regulations relate to "Environmental Hazards" which in turn relates to aquatic toxicity, defined as follows (EU, 2013):

- Aquatic Acute 1 – H400: Very toxic to the aquatic life (Risk phrase R50);
- Aquatic Chronic 1 – H410: Very toxic to the aquatic life with long-lasting effects (Risk phrase R50/53);
- Aquatic Chronic 2 – H411: Toxic to the aquatic life with long-lasting effects (Risk phrase R51/53);
- Aquatic Chronic 3 – H412: Harmful to aquatic life with long-lasting effects (Risk phrase R52/53);
- Aquatic Chronic 4 – H413: May cause long lasting harmful effects to aquatic life (Risk phrase R52, R53).

3.1.3 The determination of whether a substance is a hazardous substance is largely determined using the substance safety data sheets. The substance specific safety data sheets can be found in ***Appendix G.***

3.1.4 Details of all materials used and stored at the site are detailed below:

- DMS 693 / DMS 800 - Carbonised polyacrylonitrile fibre, in a pre-formed state or as a straight cloth. The composition is nominally 85.0% carbon. This is the starting material for the production of the discs;
- Liquefied Natural Gas (LNG);

Paints and Coatings:

- CS1800D – Silicone resin based paint;
- CSP7 – Inorganic phosphate solution (acid);
- DMS 859/860 - Antioxidant paint;
- DMS 692 - Antioxidant paint;
- DMS 744/745 - Antioxidant paint;
- DMS 815/819 - Antioxidant paint;

Cooling Water Chemicals:

- 1.5% CMI/MI (Copper Stabilised) – Biocide for industrial water treatment;
- STREAMLINE 202 (Biocide);

- STREAMLINE 224 (Biocide);
- STREAMLINE 228 (Biocide);
- STREAMLINE 250 (Biocide);

Inert Gases for Heat Treatment:

- Nitrogen Gas;
- Argon Gas;

Oils and fuels:

- Liquefied Natural Gas (LNG)
- Hydraulic Oils; and
- Low sulphur diesel

3.1.5 Storage arrangements for these and other materials stored on site are detailed in Table 3-1 below:

Table 3-1 Material Inventory

Substance	Nature	Max Volume Stored (tonnes or m^3)	Annual Usage (tpa or m^3)	Storage Arrangements
OPAN cloth (2)	Oxidised Polyacrylonitrile	100 tonnes	150 tpa	Stored in sealed boxes in DAIPC building
LNG (2)	Liquefied natural gas	8 tonnes (20 m3)	18 tpa	Vertical cryogenic tank
Treated cooling water (2)	Mains water treated with cooling water treatment chemicals	2 x 24 m3	Cooling water is on a continuous loop system and as such there is minimal usage through loss each year.	Stored in towers and pipework on an impermeable surface and bunded area.
Cooling water treatment chemicals(3)	Chemicals used for Legionella control or as biocides for water treatment	Approx. 8.2 m3 (breakdown given below)	Low usage	The chemicals are stored within bunds in a building with impermeable floors and spillage kits. The storage area is bunded with a secondary aco drain & pit.
1.5% CMI/MI (COPPER STABILISED)		0.4 m3 (16 x 25 litre drums)		
STREAMLINE 202 (Biocide)		0.8 m3 (32 x 25 litre drums)		
STREAMLINE 224 (Biocide)		1m3 (40 x 25 litre drums)		
STREAMLINE 228 (Biocide)		1.6 m3 (64 x 25 litre drums) 1 m3 x 4 in IBC		
STREAMLINE 250 (Biocide)		0.4 m3 (16 x 25 litre drums)		
Nitrogen(2)	Liquid nitrogen	30 tonnes	Approx. 423,108 m3	Above ground steel storage tank, with fill point in bunded area
Argon(1)	Liquid Argon	30 tonnes	Approx. 423,108 m3	Above ground steel storage tank, with fill point in bunded area

Substance	Nature	Max Volume Stored (tonnes or m^3)	Annual Usage (tpa or m^3)	Storage Arrangements
Hydraulic Oils(2)	Oils for plant and machinery on site	2 m3 Stored in 1 m3 IBC	10 m3	Stored in bunded tank - no changes on storage position/place. Pumped out electrically.
Diesel(2)	Low sulphur diesel	2.68 m3	0.5 m3	Above ground steel storage tank
Antioxidant (1) Spray Coatings (CS1800D/ CSP7/DMS 859,860,692,744,745,815 & 819)	Spray Coating	~500 litres	~2,000 litres	Containers within dedicated store within coating room.

(1) This material was added to the permit as part of the 2021 variation application.

(2) Storage and usage of this will not change because of the 2021 variation.

(3) Storage and usage of this will increase because of the 2021 variation.

3.1.6 A review of the safety data sheets included as ***Appendix G*** has identified that the following substances are designated hazardous substances or potentially contain hazardous substances are shown below:

Table 3.2 Hazardous Materials Inventory

Substance	Ingredients	Physical State	Water Solubility	Toxicity	Mobility in Soil	Persistence	Hazards Identification
CS1800D – Silicone resin-based paint	• A proprietary mix of metals, metal carbides, borides, silicides and oxides • Xylene • Toluene • Dimethyl, diphenyl, methyl, phenyl silicone resin • Benzene	Grey liquid slurry	Negligible	Not classified as toxic to aquatic life	No data included in SDS.	No data included in SDS.	Flammable Hazardous in case of eye contact (irritant), skin contact (irritant) or inhalation (irritant). Harmful if swallowed.
CSP7 – Inorganic phosphate solution (acid)	• Proprietary inorganic phosphate • Phosphoric acid • Acetic acid • Aluminium nitrate • Water	Translucent liquid	Soluble	This material is expected to be toxic to aquatic life.	No data included in SDS.	When released into water, acetic acid is expected to readily biodegrade and is expected to have a half-life between 1 and 10 days. When released into the soil, acetic acid is expected to readily biodegrade and is not expected to significantly bioaccumulate. The proprietary inorganic phosphate and phosphoric acid may leach into groundwater. Its acidity may be readily reduced by natural water hardness minerals. The phosphate, however, may persist indefinitely.	Poison. May be fatal if swallowed. Extremely hazardous in case of eye contact (irritant). Very hazardous in case of skin contact (irritant, permeator) or inhalation (irritant)
DMS 859/860 - Antioxidant paint	• Phosphoric acid • Octamethylcyclotetrasiloxane • Aluminium hydroxide • Silicon Hexaboride • Boron • Silicon dioxide amorphous • Water	Translucent liquid	Aqueous solution	This material is expected to be toxic to aquatic life.	The proprietary inorganic phosphate and phosphoric acid may leach into groundwater. Its acidity may be readily reduced by natural water hardness minerals.	When released into water, phosphoric acid is expected to readily biodegrade and is expected to have a half-life between 1 and 10 days. When released into the soil, phosphoric acid is expected to readily biodegrade and is not expected to significantly bioaccumulate.	Poison. May be fatal if swallowed. Extremely hazardous in case of eye contact (irritant). Very hazardous in case of skin contact (irritant, permeator) or inhalation (irritant)
DMS 692 - Antioxidant paint	• Boron powder • Phenolic Resin (phenol formaldehyde resin with hexamethylenetetramine) • Di-boron trioxide	Brown powder	No data included in SDS.	It is unlikely that the material will cause ecological damage, but the following need to be considered: Phenolic resins are only slightly toxic to aquatic species. Since boron is practically insoluble in water, it is separated in almost any filtration and sedimentation process. Di-boron trioxide hydrolyses to boric acid, which is toxic for aquatic organisms.	No data included in SDS.	No data included in SDS.	Harmful in contact with skin and if swallowed. Material may cause irritation to eyes. Material may cause irritation to skin. Material may cause sensitisation by inhalation and skin contact. Repeated or prolonged contact may lead to dermatitis.
DMS 744/745 - Antioxidant paint	• Boron powder • Proprietary inorganic phosphate containing: - • Acetic acid • Ammonium nitrate • Water	Brown Liquid/Suspension	Soluble	Acetic acid is expected to be slightly toxic to aquatic life.	No data included in SDS.	When released into water, acetic acid is expected to readily biodegrade and is expected to have a half-life between 1 and 10 days. When released into the soil, acetic acid is expected to readily biodegrade and is not expected to significantly bioaccumulate. The proprietary inorganic phosphate may leach into groundwater. Its acidity may be readily reduced by natural water hardness minerals. The phosphate, however, may persist indefinitely.	Poison – may be fatal if swallowed May cause severe burns If inhaled will cause difficulty in breathing
DMS 815/819 - Antioxidant paint	• Phosphoric acid • Acetic acid • Aluminium nitrate • Boron nitride powder • Silicic acid amorphous • Water	Translucent liquid.	Aqueous solution	This material is expected to be toxic to aquatic life. Acetic acid is expected to be slightly toxic to aquatic life.	No data included in SDS.	When released into water, acetic acid is expected to readily biodegrade and is expected to have a half-life between 1 and 10 days. When released into the soil, acetic acid is expected to readily biodegrade and is not expected to significantly bioaccumulate. The proprietary inorganic phosphate and	Poison. May be fatal if swallowed. Extremely hazardous in case of eye contact (irritant). Very hazardous in case of skin contact (irritant, permeator) or inhalation (irritant)

Substance	Ingredients	Physical State	Water Solubility	Toxicity	Mobility in Soil	Persistence	Hazards Identification
						phosphoric acid may leach into groundwater. Its acidity may be readily reduced by natural water hardness minerals. The phosphate, however, may persist indefinitely.	
1.5% CMI/MI (Copper Stabilised) (Biocide)	• 5-Chloro-2-methyl-2H-isothiazol-3-one • 2-Methyl-2H-isothiazol-3-O • Copper-(II)-nitrate-2,5-hydrate	Pale Green Liquid	Miscible in all proportions	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	No data available	Biodegradable. No bioaccumulation potential.	**H290** May be corrosive to metals. **H314** Causes severe skin burns and eye damage. **H317** May cause an allergic skin reaction **H410** Very toxic to aquatic life with long lasting effects
STREAMLINE 202 (Non-oxidising biocide)	Methyl-2H or Methyl-4 (3:1)	Light (or pale). Blue green liquid	Completely soluble in water	Harmful to aquatic life with long lasting effects	No data available	The bioconcentration potential of the substance is low	**H314** Causes severe skin burns and eye damage. **H317** May cause an allergic skin reaction **H412** Harmful to aquatic life with long lasting effects
STREAMLINE 228 (Biocide)	• Sodium hypochlorite • Sodium hydroxide	Yellowish, green liquid	Soluble in water	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	Product is mobile in water environment	Bioaccumulation is not expected	**H314** - Causes severe skin burns and eye damage. **H400** - Very toxic to aquatic life.
STREAMLINE 250 (Biocide)	• Sodium hydroxide • 1-Hydroxyethylidene-1, 1-diphosphonic acid • Potassium silicate • Tetra potassium pyrophosphate • Trisodium nitrilotriacetate	Colourless to off-white liquid	Soluble in water	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.	The product is soluble in water.	No evidence of bioaccumulation.	**H315** - Causes skin irritation. **H319** - Causes serious eye irritation.
Low sulphur diesel	Diesel	Clear straw-coloured liquid	Negligible	Toxic to aquatic organisms, with the potential to cause long term adverse effects in the aquatic environment.	Adsorption is the most predominant physical process on release to soil. Adsorbed hydrocarbons will slowly degrade in both water and soil	High potential to bioaccumulate.	**H226** Flammable liquid and vapour. **H304** May be fatal if swallowed and enters airways. **H315** Causes skin irritation. **H332** Harmful in contact with skin or if inhaled. **H351** Suspected of causing cancer. **H373** May cause damage to organs through prolonged or repeated exposure **H411** Toxic to aquatic life with long lasting effects

4 STAGE 2 – IDENTIFYING THE RELEVANT HAZARDOUS SUBSTANCES'

4.1.1 Stage 1 identified a number of hazardous substances that are stored and used on site as part of site operations. Stage 2 requires a review of the listed substances to determine which are relevant hazardous substances (RHS). Each of the substances identified as hazardous within Stage 1 are reviewed in below, considering their chemical and physical properties and how they are stored and used on site, to determine the potential pollution risk of each hazardous substance.

4.1.2 RHS in relation to IED are defined as:

those substances or mixtures defined within Article 3 of Regulations (EC) No1272/2008, which, as a result of their hazardousness, mobility, persistence and biodegradability (as well as other characteristics), are capable of contaminating soil or groundwater and are used, produced and/or released by the installation.

4.1.3 Based on the properties of the chemicals to be used (toxicity, water solubility and persistence), the following substances could have the potential to cause contamination of soil and groundwater should they be released.

- CSP7 – Inorganic phosphate solution (acid)
- 1.5% CMI/MI (Copper Stabilised) (Biocide)
- STREAMLINE 202 (Non-oxidising biocide)
- STREAMLINE 228 (Biocide)
- STREAMLINE 250 (Biocide)
- DMS 859/860 - Antioxidant paint
- DMS 744/745 - Antioxidant paint
- DMS 815/819 - Antioxidant paint
- Low sulphur diesel

4.1.4 CS1800D – Silicone resin-based paint is not considered to have the potential to cause contamination as it is not classified as toxic to aquatic life.

4.1.5 DMS 692 - Antioxidant paint is not considered to have the potential to cause contamination as it is a solid and therefore not mobile and also unlikely to cause ecological damage.

4.1.6 All other hazardous materials are not considered to have the potential to cause contamination of soil and groundwater.

4.1.7 Each hazardous substance identified above is discussed in Stage 3 as to whether it is considered an RHS based on the site usage and storage arrangements.

5 STAGE 3 – ASSESSMENT OF THE SITE-SPECIFIC POLLUTION POSSIBILITY

5.1 Site-Specific Pollution Possibility

5.1.1 Stage 3 of the IED baseline assessment is to assess the site-specific pollution possibility.

5.1.2 The evaluation of the possibility of contamination occurring in relation to RHS has been termed an assessment of "site-specific pollution potential". A qualitative, desk based, approach has been used to determine site-specific pollution potential. This approach involves the following steps:

- Summary of all potentially hazardous substances used, produced and/or emitted at the proposed facility (Substance Inventory) and the associated processes, storage, use and handling thereof;
- Determination of which substances constitute RHSs as defined by IED;
- Identification of possible release scenarios and associated mitigation measures incorporated into design and/or operational measures (e.g. through EMS) developed for the facility;
- Consideration of CSM to determine whether a plausible pollutant linkage exists that could connect the contamination source to soil or groundwater receptors; and
- Assessment of site-specific pollution potential using a qualitative risk matrix approach.

5.1.3 The site-specific pollution potential is dependent on the CSM developed for the facility using the concept of pollutant (Source-Pathway-Receptor) linkages, which in turn is dependent on the conceptual hydrogeology and ground model of the system. An active pollutant linkage enables known or potential contamination sources to be linked with a specific environmental receptor via a plausible transport pathway.

5.1.4 The pollutant linkages defined for the installation are therefore dependent on the nature of potential release scenarios associated with each RHS and the nature of any pollution prevention measures or mitigation measures implemented on the site (e.g. through facility design / engineering, nature of on-site containment, emergency response measures, routine inspection / maintenance protocols etc.).

5.2 Risk Matrix for Determining Site-Specific Pollution Potential

5.2.1 Following identification of the RHSs, a risk matrix approach has been developed that considers the likelihood of an accidental release occurring and the likelihood of the soil or groundwater receptor being affected.

Likelihood of Accidental Release / Emission Occurring

5.2.2 By consideration of the processes that each RHS is used in (in terms of storage / handling / use) and the measures implemented at the installation to minimise the potential of a release to occur (during routine use or by accidental emission), the likelihood of a release that could potentially affect a receptor is assessed as follows:

- *Highly Likely*: A process involving the RHS that is not controlled and the RHS could be readily be lost to ground / air / water without mitigation. Nature of handling / storage of the RHS and absence of mitigation measures makes the potential for an accidental emission / release probable;

- *Likely*: The process involving the RHS or the manner of RHS handling / storage is likely to result in a loss to ground, air or water. However, the activities involving the RHS include mitigation measures and/or are undertaken in an engineered / designed facility. The condition of equipment and infrastructure (e.g. storage tanks) is poor, cannot be verified or is poorly maintained. There are no control measures and/or associated staff training to mitigate an accidental release.
- *Unlikely*: Owing to the nature of the process and/or characteristics of the RHS, release scenarios are considered improbable. The process does not involve the RHS being exposed or used in a high-risk manner (e.g. storage of small quantities in bunded or sealed areas) and there are measures to prevent release including in design (e.g. secondary / tertiary containment, sealed drainage, impermeable membranes). The quantities used are small and manageable. Site records demonstrate the absence of any accidental releases occurring. The condition of equipment and infrastructure (e.g. storage tanks) is good and well maintained. There are robust control measures and/or associated staff training to mitigate accidental release; and
- *Very Unlikely*: As for "unlikely" but the probability of release is considered to be lower.

Likelihood of Receptor being Affected

5.2.3 For a named receptor (i.e. soil or groundwater), the likelihood of an accidental release affecting the receptor is determined. The receptor likelihood classes used in this qualitative assessment are as follows:

- *Highly Likely*: A direct, active pollutant linkage exists. A large quantity of the RHS is used in a mobile form relevant to the receptor. There is an absence of mitigation measures to control the release or emergency response should accidental emission occur. There is an absence of any other attenuation measures that may mitigate the release before the receptor is affected.
- *Likely*: An active pollutant linkage exists. The quantity of used product or manner of its use may render pollution prevention measures ineffective. The condition or implementation of pollution prevention control measures is poor or cannot be verified. There are historical incidences of accidental releases that affect the receptor.
- *Unlikely*: A possible pollutant linkage exists but is either complex / indirect or has characteristics likely to mitigate any releases. The quantity of material released is likely to be small or of a form unlikely to reach the receptor. It requires a secondary process to be present before the receptor can be affected (e.g. solid going into solution);
- *Very Unlikely*: Although a theoretical pathway to a receptor can be envisaged it is considered extremely unlikely to be active, although cannot be discounted entirely.

5.2.4 These two key elements of the risk assessment are combined using the risk matrix presented in Table 5.1 below:

Table 5.1: Risk Matrix for Determining Site-Specific Pollution Potential

		Likelihood of Receptor Being Affected by Release			
		Highly Likely	Likely	Unlikely	Very Unlikely
Likelihood of Release Occurring	Highly Likely	Very High	High	High	Medium
	Likely	High	High	Medium	Low
	Unlikely	High	Moderate	Low	Very Low
	Very Unlikely	Moderate	Low	Very Low	Very Low

5.2.5 Where no plausible linkages have been identified that can connect a contaminant source with a named receptor, a risk classification of "Very Low" is applied.

5.2.6 The receptors to be considered are:

- Near surface soils principally in landscaped areas that are not covered by permanent hardstanding (Soil – Landscaped);
- Soils that form the unsaturated zone principally in areas covered by permanent hardstanding and/or structures at the installation (Soil – Subsurface);
- Productive Bedrock Aquifer.

5.2.7 The risk matrix approach does not consider the magnitude or severity of any effect that may occur should the release scenario and associated pollutant linkage be realised. It is assumed that the process for the identification of RHS should provide an adequate assessment of whether the quantities of the substance used at the installation have the potential to result in a measurable impact on the receptors in question.

5.3 Site Specific Pollution Possibility

5.3.1 Table 5.2 considers the pollution risk of those hazardous substances identified that could have the potential to cause contamination of soil and groundwater should they be released.

Table 5-2 Chemical Inventory and Assessment of Actual Pollution Risk

Substance	Nature	Approx. volume or weight per annum (8,322 hours)	Amount stored on site and management/control measures	Actual Pollution Risk
CSP7 – Inorganic phosphate solution (acid)	A proprietary mix of metals, metal carbides, borides, silicides and oxides Xylene Toluene Dimethyl, diphenyl, methyl, phenyl silicone resin Benzene	~11 litres	0.4 m^3 (16 x 25 litre drums) The chemicals are stored within bunds in a building with impermeable floors and spillage kits. The storage area is bunded with a secondary aco drain & pit.	Very Low
1.5% CMI/MI (COPPER STABILISED)	A mixture of: 5-chloro-2-methyl-2H-isothiazol-3-one [EC No 247-500-7] and 2-methyl-2H-isothiazol-3-o; Copper-(II)-nitrate-2,5-hydrate	~11 litres	0.4 m^3 (16 x 25 litre drums) The chemicals are stored within bunds in a building with impermeable floors and spillage kits. The storage area is bunded with a secondary aco drain & pit.	Very Low
STREAMLINE 202 (Biocide)	methyl-2H or methyl-4 (3:1) mixture of EC No 220-239-6	~11 litres	0.8 m^3 (32 x 25 litre drums) The chemicals are stored within bunds in a building with impermeable floors and spillage kits. The storage area is bunded with a secondary aco drain & pit.	Very Low
STREAMLINE 228 (Biocide)	Sodium hypochlorite solution (Cl active) 15% [EC No 231-668-3]; Sodium hydroxide <1% [EC No 215-185-5]	~3,650 litres	1.6 m^3 (64 x 25 litre drums); 1 m^3 x 4 in IBC The chemicals are stored within bunds in a building with impermeable floors and spillage kits. The storage area is bunded with a secondary aco drain & pit.	Very Low
STREAMLINE 250 (Biocide)	1-hydroxy eythylidene-1, 1-diphosphonic acid; potassium silicate [EC No 215-199-1]; sodium hydroxide [EC No 215-185-5]; tetra potassium pyrophosphate [EC No 230-785-7]; trisodium nitrilotriacetate [EC No 225-768-6]	~365 litres	0.4 m^3(16 x 25 litre drums) The chemicals are stored within bunds in a building with impermeable floors and spillage kits. The storage area is bunded with a secondary aco drain & pit.	Very Low
Antioxidant Spray Coatings - DMS 859/860/744/745/815/818	Powder Coating	~2,000 litres	Containers within dedicated store within coating room.	Very Low

Substance	Nature	Approx. volume or weight per annum (8,322 hours)	Amount stored on site and management/control measures	Actual Pollution Risk
Low Sulphur Diesel	Diesel	~2,680 litres (2.68 m^3 tank)	Diesel stored in a double skinned tank within a building on impermeable surface. Pipework and fill point not located within a bund.	Low

5.4 Cooling Water Chemicals (CSP7 / 1.5% CMI/MI / STREAMLINE 202, 208 & 250)

5.4.1 Cooling water treatment chemicals are stored and used in small quantities. The cooling water chemicals are stored within bunds in a building with impermeable floors and spillage kits. The storage area is bunded with a secondary aco drain & pit. Dosage will take place on the cooling tower pads which are on an impermeable surface and within a bunded area. Cooling water chemicals will be dosed when required but generally this will be infrequent and therefore movements of cooling water will be minimal to reduce risk of spillages etc. The cooling system for the new heat treatment plant detailed in this variation will be a closed loop system and therefore this reduces the need for top up of chemicals. All cooling water are disposed via the trade effluent discharge and there is no linkage to the surface water system. Spill kits are located at strategic points around the site to ensure minor spills can be effectively managed. In the event of a spillage, any spilt material will be cleaned up immediately and disposed of appropriately. Given the volumes of the materials likely to be stored and used on site the potential risk to soil or groundwater is low. All storage areas will be provided with spillage collection facilities, including spill kits, and will be located on an impermeable surface with a sealed drainage system. Staff are trained in the use of chemicals and in spillage procedures.

5.4.2 The potential risk to soil or groundwater is low.

5.5 Antioxidant Paints - DMS 744/745/815/819/859/860 & CS1800D – Silicone resin-based paint

5.5.1 Antioxidant spray coatings are all stored in dedicated areas on impermeable surfaces with sealed drainage within the spray coating area of the building. All usage and dosing will take place within the spray coating area of the building which is located on an impermeable surface and subject to extraction during usage.

5.5.2 The potential risk to soil or groundwater is low.

5.6 Low Sulphur Diesel

5.6.1 Diesel has the potential to cause contamination of groundwater and soil, therefore is considered an RHS, however, the impacts of diesel are not considered in this SCR as the quantities stored and used will not change and therefore the assessment and baseline data detailed in the ASCR (2006), included as **Appendix A,** is considered still relevant.

5.6.2 There is no change to the conclusion that the potential risk to soil or groundwater is low as the diesel storage tank is located within a building.

5.6.3 To prevent pollution to land and groundwater, site surfacing and drainage will be visually inspected on a weekly basis. Drainage will be thoroughly inspected by an external contractor every 6 months to ensure that there are no internal blockages. Any areas of surfacing showing wear will be monitored and repaired as soon as reasonably practicable.

5.6.4 Given the above, none of the materials used, stored or produced at the MAL site, which are new materials or materials for which quantities will have changed as a result of the permit variation, are considered RHS for which baseline data is required, however, the rest of the stages required for the IED baseline have been completed below to give further information to inform this site condition report.

6 STAGE 4 – PROVIDE A SITE HISTORY

6.1.1 The purpose of Stage 4 is to determine which of the RHS identified in Stage 3 have the potential to be present on site in the soil and groundwater already as a result of activities undertaken at the site to date and to determine whether they are coincident with potential future emission points.

6.1.2 This section should consider both the history of the site prior to development of the current facility and the operational history of the current facility.

6.2 General Site History

6.2.1 The site is currently used for aerospace braking systems manufacture and has been used for various vehicle manufacturing operations since the 1930s. Prior to 1914, the site was undeveloped countryside.

6.2.2 The following account of the history of the site is based upon information concerning the wider MAL site contained in the SIR in ***Appendix C*** (Merebrook, 2012), and which is summarised in the most recent SIR (WYG, 2018).

6.2.3 The reports detail historical land uses of the MAL site from the late 19th Century until the present day. The site was undeveloped until the early 20th Century, when it became part of a wider industrial development. The site was formerly part of the Dunlop works (wheel and rim manufacture) and a motor works (Standard Swallow and then Jaguar), later utilised for an aircraft wheel manufacture. Parts of the site were used for munitions manufacturing during WW1. After WW1, various works occupied the site including engineering, motor car, motor panel, felt works and a foundry. The Drake's Yard area of the extension area was previously a foundry, known as Drake's Foundry.

6.3 Previous Ground Investigation

6.3.1 A site investigation was carried out by WYG in February 2018, to assess the sub-surface chemical and geo-technical ground conditions at the site using in-situ and laboratory testing.

6.3.2 The scope of the fieldwork programme included:

- 29 No. window sample boreholes to a maximum depth of 5.0 mbgl or refusal with in-situ standard penetration tests (SPTs);
- Installation of 12 No. window sample boreholes with gas and groundwater monitoring standpipes;
- 10 No. rotary open boreholes to a maximum depth of 15.0 mbgl with in-situ SPTs;
- Installation of all rotary boreholes with gas and groundwater monitoring standpipes;
- 6 No. return visits over a 3 month period for gas and groundwater depth monitoring;
- 2 No. return visits for groundwater quality monitoring;
- Geotechnical and contamination testing of selected made ground / soil samples from the borehole arisings;
- Contamination testing on groundwater samples;
- Provision of a factual and interpretative report.

6.3.3 Due to the presence of industrial buildings, the extent of investigations was restricted.

6.3.4 The report concluded the following:

- The ground conditions generally comprised hardstanding overlying granular made ground overlying natural clayey sand / sandy clay, which is underlain by coarse grained siltstone / fine grained sandstone.
- Groundwater was encountered in all rotary boreholes during the ground investigation at depths between 1.5 and 6.0 mbgl. Further groundwater monitoring recorded standing depths between 0.42 and 14.37 mbgl.
- Results for water soluble sulphate indicate protection of concrete from sulphate attack may be required. The Design Sulphate class was assessed as DS-2, ACEC Class AC-2.
- Sporadic presence of asbestos was identified in made ground, predominantly at trace levels. No requirements for asbestos controls during excavations within the proposed development areas were indicated.
- Sporadic presence of potentially plant-toxic metals was identified, unlikely to represent a constraint assuming that clean soil cover will be provided in gardens.
- The volatile organic compound (VOC) trichloroethene (TCE) was identified, both within residential and industrial areas. Concentrations in soils at three locations (WS2, WS3, WS36), within residential development zones D and E, may require remedial action. TCE impacted groundwater should also be assessed as a human health risk contamination source.
- Petroleum hydrocarbons, predominantly lubricating oil range, were also sporadic at low to moderate concentration. A significant part of industrial zone 2 in the east was impacted by light hydrocarbons (petrol range), requiring further assessment.

6.4 Potential Historic Contaminants

6.4.1 As mentioned previously, ground investigation works have been undertaken prior to this report. The following reports have previously been produced:

- RPS Group, ‘First Phase Reporting of the Site Protection and Monitoring Programme for Dunlop Aerospace Braking Systems, Holbrook Lane, Coventry’, reference: ‘HLI 2690/001R’, December 2007.
- Merebrook Consulting, ‘Geo-Environmental Assessment. Stadco Meggitt Site. Clowes Developments and Meggitt Aircraft Braking Systems’, reference: ‘GEA-17054-12-6’, 2012.
- WYG Environment, ‘Meggitt Aerospace, Coventry – Geo-Environmental Site Investigation Factual and Interpretative Report’, reference: ‘A107448’, June 2018

6.4.2 The first report, which was used as the baseline conditions for the original permit application concluded the following:

- Recorded concentrations of solvents and pesticides were below the detection limit for all soil samples.
- Concentrations of lead, zinc, copper and benzo(a)pyrene were recorded in excess of the commercial / industrial acceptance criteria. These samples were subjected to further statistical analysis in accordance with CLR7.
- Both the maximum value and US_{95} mean value for lead were in excess of the appropriate screening level for SS3. This was determined to be a localised area of contamination and the location is not in or near the extension area.
- Zinc and copper concentrations (phytotoxic) exceeded the generic assessment criteria (GAC) at all sampled locations.

- Although the maximum concentration of benzo(a)pyrene exceeded the GAC, the US_{95} mean value was below the GAC, indicating that the majority of the population was below the screening level.
- The vast majority of hydrocarbons, solvents and pesticide concentrations in the two groundwater samples were below the detection limits. Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) were marginally above the conservative EC drinking water standard in both samples.
- The elevated concentrations of lead, benzo(a)pyrene, zinc and copper are likely to be the result of an isolated constituent in the soil at that location, rather than being attributable to the constituents of the cooling liquid. The concentrations of PAHs were marginally above the EC Drinking Water Standard, but overall the results were not significant and there was no evidence that activities at the site have impaired groundwater quality.
- No biocides or other water treatment chemicals were detected.

6.4.3 The results above indicated that there were no elevated concentrations of any RHSs identified.

6.4.4 The second report concluded that within the MAL site, evidence of contamination was restricted to:

- Asbestos: restricted to made ground in the central section of the site, exploratory locations MWS122, MWS126 and MWS127 (chrysotile and amosite, bundles of unbound asbestos fibres). No evidence of asbestos-containing materials was identified in exploratory logs. These exploratory locations were not in the proposed extension area.
- Metals: very localised instances of elevated cadmium (27 mg/kg maximum) and copper (at plant toxicity levels only, 1,700 mg/kg maximum).
- Petroleum hydrocarbons: slightly elevated at MTP102 (2,300 mg/kg C10-C40, predominantly C21-C40 lubricating oil range). This trial pit was not located in the extension area.

6.4.5 The 2018 report conclusions are detailed in section 6.3.

6.5 Pollution History

Pollution incidents

6.5.1 Details of pollution incidents throughout the history of the site were not available from EA data at the time of permit variation application. The previous site investigation reports (WYG, 2018; Merebrook Consulting, 2012) did not include details regarding pollution incidents. The Envirocheck report appended to the application SCR (RPS, 2006) included one entry for a pollution incident to controlled waters. This was a Category 2 incident on 11th December 1996 involving chemicals – solvents released to a watercourse in the Severn Catchment: Sowe area. The cause of the incident was overfilling during delivery. As 24 years has passed since the incident, it can be concluded that any environmental effects from this are no longer present in the area.

6.5.2 CAR forms for the site during the time it has been operated by MAL were requested from the EA and are included in ***Appendix E*** to this document. Emergency releases of gas to the atmosphere were reported in 2014, and EA inspection concluded that appropriate measures were taken to prevent the emission prior to it being detected and action was taken quickly to rectify the problem once noticed, and so no compliance breach was scored against the gas release. One minor non-compliance was recorded in 2016 due to an emissions limit exceedance; a subsequent emissions monitoring retest reported a result well below the ELV and no action was specified. The operator has confirmed that there have been no significant pollution incidents at the site during the time of operation since the permit was issued and no known incidents on any of the additional areas to be included in the permitted boundary as part of this variation.

6.6 Operational History

6.6.1 A permitted facility has been operated at the site since 2006. The permitted site was originally operated by Dunlop Aerospace Braking Systems with the original permit being issued on 7th June 2007.

6.6.2 Since the permit was issued in 2007, there have been no changes to the operations and the site continues to manufacture aerospace braking systems.

6.6.3 The overall area of the has reduced in recent years with a large proportion of the site being sold off for development in 2018 and a large part of the site operations moving to the new Ansty Park facility in Coventry.

7 STAGE 5 – IDENTIFY THE SITE'S ENVIRONMENTAL SETTING

7.1 Site Location

7.1.1 RPS understands that the MAL site currently comprises two main areas:

- The Operational Area: the area currently permitted for site operations; and,
- The Extension Area: the proposed area of extension of operations (comprising the A3 and B3 buildings).

7.1.2 Both areas are located at MAL's Carbon Brake Facility, Holbrook Lane, Holbrook, Coventry, West Midlands, CV6 4AA. The operational area is approximately 0.6 ha, which will be increased by 0.665 ha with the addition of the extension area. The MAL site also comprises areas outside of the permit boundary which are used for other parts of its process. These areas are not considered in this SCR, unless as part of the whole MAL site.

7.1.3 The MAL site is located to the north of Swallow Road and West of Holbrook Lane. The extension area is located on the southern edge of the site, with land for development bordering the south.

7.2 Site Reconnaissance (February 2018)

7.2.1 A site walkover survey was undertaken on 2nd February 2018 by WYG, which covered the whole MAL site. The main things reported from this walkover were the access to, topography of and surfacing of the MAL site. Further findings of the site walkover survey are detailed in the site investigation report in ***Appendix D*** (WYG, 2018).

7.2.2 The Merebrook Consulting site investigation report (2012) found no evidence of visible contamination in the site walkover or during ground investigation works. The walkover identified the following buildings on the relevant parts of the MAL site:

- Operational Area – Buildings X3 and C3, comprising MAL production buildings;
- Extension Area – Building A3 and B3, production and office buildings. Car parking identified to the front of building A3.

7.3 Surrounding area and sensitive receptors

7.3.1 The MAL site lies in a predominantly industrial and residential area, approximately 4 km north of Coventry City Centre. There is a recreational park and residential housing to the north, industrial and commercial units to the east, industrial land to the south and new build residential areas to the west of the MAL site. The Extension Area is bordered to the south by the Operational Area and further MAL site, to the west by the further MAL site and to the north and east by a recreational park. Drawing JER8395-PER-001_D_200225_PermitBoundary sets out these areas of the MAL site.

7.3.2 The land immediately south of Swallow Road was previously occupied by parts of the MAL works. The industrial premises in this area have recently been demolished and remedial works undertaken. Ongoing hydrocarbons / chlorinated solvent remediation, by monitored natural attenuation, is described in the Remediation Strategy for this area prepared by Ramboll Environ (Ramboll Environ, 2017). Localised mitigation of soil contamination hotspots was also undertaken.

7.3.3 Other industrial premises are located to the south of the wider MAL landholding.

7.3.4 The nearest residential properties to the current operational area are located approximately 100 m to the south of the site. The closest residential properties to the proposed extension area are

located approximately 50 m to the south. There are residential properties closer to the DAIPC building on its western edge; these are located approximately 15 m from the west border of the MAL site.

7.4 Site Drainage

7.4.1 Rainwater runoff is collected to culvert off site.

7.4.2 There are three-point source emissions to sewer, comprising: boiler blowdown; cooling water discharge; and overflow from cooling water discharge. The public water sewer into which the effluent may be discharged is the foul water sewer situated in Holbrook Lane and under the authority of Severn Trent Water.

7.4.3 The newly permitted areas are already connected to the site drainage system and as such, there shall be no changes to the site drainage as a result of the permit variation.

7.5 Environmental Setting

7.5.1 The following information has been taken from the British Geological Survey Geology of Britain viewer and EA Groundwater maps and reflects the condition of the overall MAL site (comprising both the operational area and Extension Area) at the time of the permit variation application in 2021. Where possible, distances relative to the Extension Area have been given. If these were not available (for example, when tools use the post code), it has been stated where the distance is taken from, i.e. the MAL site or the post code.

Geology and Topography

7.5.2 Based on British Geological Survey (BGS) 1:50,000 scale survey data for the site location in Coventry, the bedrock at the extension site is Keresley Member – Argillaceous Rocks and Sandstone and Conglomerate, Interbedded. The extension area shows the same geology as the rest of the MAL site.

7.5.3 The superficial deposits displayed on the geological maps studied are Thrussington Member - Diamicton.

Site Investigation 2018

7.5.4 The main geological units identified during the intrusive site investigation across the MAL Site are summarised in the following sections.

7.5.5 The geological sequence encountered at the MAL site generally corresponds to the published geological records and the anticipated ground conditions.

7.5.6 The site investigation report and data are provided in ***Appendix B***.

Hardstanding

7.5.7 The 2018 site investigation encountered hardstanding within 37 no. locations from ground level to a maximum depth of 0.2 mbgl. It typically comprised dark grey to black hard asphalt underlain by grey to light grey concrete with 10 – 20 mm reinforcing bar.

Made Ground

7.5.8 The 2018 site investigation reported BGS records of boreholes located within the site boundary which indicate made ground to depths of between 0.8 and 3.8 mbgl underlain by hard sandy clay.

Fine red sand becoming weakly cemented sandstone was encountered at depths between 7.4 and 9.3 mbgl in one borehole.

7.5.9 The SIR encountered made ground in all exploratory locations except two of these, where concrete hardstanding overlay natural ground. It was encountered from a minimum of ground level to a maximum depth of 2 mbgl, although the typical range was from 0.1 – 1.2 mbgl. The made ground was of variable composition, predominantly clay, sand or gravel, with common brick, concrete, ash and clinker, asphalt, slate and quartzite. Rare metal, wood, coal and plastic were also present.

Thrussington Member

7.5.10 The site is underlain by superficial deposits comprising the Thrussington Member. The BGS Lexicon describes it as Diamicton, brown to reddish-brown with stones and matrix derived primarily from Upper Carboniferous and Triassic rocks; subordinate sand, gravel and stoneless clay and silt. Red pebbly clay and silty clay with rock fragments. The thickness can be up to 20 m, but is typically 1 – 7 m. Its parent unit is Wolston Formation, which is part of the Albion Glacigenic Group.

7.5.11 Cohesive superficial geology was encountered in the majority of exploratory locations, but occasionally absent, in the 2018 site investigation.

7.5.12 It was noted to typically comprise stiff red to orange slightly sandy slightly gravelly clay where the gravel is sub-rounded to rounded fine to coarse flint and quartzite. Cohesive superficial strata were present at between 0.4 and 6 mbgl, sporadically identified above or below granular superficial material.

7.5.13 Granular superficial geology encountered in the 2018 site investigation typically comprised red slightly gravelly slightly clayey fine to medium sand where gravel is sub-rounded to rounded quartzite and flint. Granular superficial strata were most commonly report in the central and eastern areas. Depths varied between 0.5 and 4.8 mbgl.

Keresley Member

7.5.14 The BGS 1:50,000 scale survey data indicates the Keresley Member is covered by the Thrussington Member and it is described in the Lexicon as a Redbed sequence; mudstone dominated in lower part but becoming increasingly arenaceous towards top. Thin Spirorbis limestone beds at some levels. Impersistent conglomerates in upper part. The thickness ranges from 197 – 306 m and its parent unit is the Salop Formation, a part of the Warwickshire Group.

7.5.15 Weak red mudstone and sandstone was encountered in the 2018 site investigation, underlying the superficial geology in all rotary boreholes and locally at the base of some of the window sample boreholes. Deeper rotary boreholes identified an alternating sequence of mudstone and sandstone bands, of thickness between 1 and 9 m (mudstone), and from 2.3 to >6.8 m (sandstone). Mudstone was encountered at a minimum depth of 2.1 mbgl and sandstone at 1.95 mbgl.

Geological Sequence

7.5.16 The general geological sequence identified during the ground investigation works across the MAL Site is summarised in **Table 7-1**.

Table 7-1 Geological Sequence of the Site

Unit	Description	Thickness (m)	Basal Depth (mbGL)
Made Ground – Concrete Surface Hardstand	Hard Asphalt Hardstand (occasionally reinforced)	0 – 0.2	0 – 0.2
Made Ground	Variable composition, predominantly clay, sand or gravel, with common brick, concrete, ash and clinker, asphalt, slate and quartzite. Rare metal, wood, coal and plastic were also present.	0 – 2	0 – 2
Superficial: Thrussington Member	Cohesive: stiff red to orange slightly sandy slightly gravelly clay where the gravel is sub-rounded to rounded fine to coarse flint and quartzite Granular: red slightly gravelly slightly clayey fine to medium sand where gravel is sub-rounded to rounded quartzite and flint.	-	Cohesive: 0.4 – 6 Granular: 0.5 – 4.8
Bedrock: Keresley Member	Weak red mudstone and sandstone in an alternating sequence of bands	Mudstone: 1 – 9 Sandstone: 2.3 – >6.8	Mudstone: 2.1 - 15 Sandstone: 1.95 - 15

Surrounding Geology

7.5.17 The geological maps indicate areas of slightly differing bedrock geology to the west and north of the site, comprising Keresley Member – Sandstone. Further east, past Holbrook Way and the A444 to the east is bedrock geology comprising Whitacre Member – Sandstone.

Topography

7.5.18 The site is in a predominantly level area at around 105 – 115 m elevation. The surrounding topography rises to the west until it reaches approximately 180 m at Corley. The topography stays relatively level to the north, but to the south and east, the topography decreases towards the river valley.

Hydrogeology

7.5.19 The Keresley Member bedrock is designated on Magic Map as a principal aquifer, described by the EA as layers of rock or drift deposits that have high intergranular and/or fracture permeability – meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

7.5.20 The Keresley Member is part of the Warwickshire Group, which is characterised by the BGS as a moderately productive aquifer. It is a regional, cyclic multi-layered aquifer with moderate to large yields from sandstones, up to 100 L/s from shafts. Mine water quality poor but elsewhere reasonable.

7.5.21 The superficial Thrussington Member is designated on Magic Map as secondary (undifferentiated) aquifer. In most cases, this means that the layer has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Source Protection Zone

7.5.22 The northern and western parts of the MAL site are situated within a Source Protection Zone 3 (Total Catchment). This is defined as the area around a source within which all groundwater

recharge is presumed to be discharged at the source. In this case, the protected source is approximately 1.1 km to the north of the western side of the site. The rest of the site is not situated within a source protection zone and therefore it is not considered the underlying groundwater is a sensitive receptor.

Hydrology

7.5.23 The surface water bodies within the area of this site are the following:

- River Sowe (~3km to the east)
- Coventry and Ashby Canals (~2km to the east)

7.5.24 The River Sowe near the MAL site is within the Avon Urban Rivers and Lakes operational catchment, which includes 21 water bodies.

7.5.25 The area of the River Sowe closest to the site ("Sowe - conf Breach Bk to conf Withy Bk" on the WWF UK Rivers Map), also called Hall Brook, has an overall WFD water body classification of "poor", with "poor" ecological and "good" chemical status. The reasons for not achieving good status are given as: phosphate (sewage discharge and urbanisation); macrophytes and phytobenthos combined (sewage discharge and urbanisation); invertebrates (groundwater abstraction, urbanisation and livestock); and hydrological regime (groundwater abstraction). Hall Brook is located approximately 600 m north of the extension area.

Blythe Canals

7.5.26 The Coventry and Ashby Canals near the MAL site are within the Blythe Canals operational catchment. The Coventry Canal is the closest open water body to the site and is located approximately 1.8 km to the south east of the extension area.

7.5.27 The Coventry and Ashby Canals have an overall WFD water body classification of "good", with "good" ecological status and chemical status.

Flood Risk Zone

7.5.28 The MAL site is classified by the EA as being within a designated Flood Risk Zone 1. The EA indicative floodplain map shows that the MAL site is located in an area with 'low probability of flooding'.

Groundwater

7.5.29 During the intrusive investigation in 2018 groundwater was encountered in all rotary boreholes at depths between 1.5 and 6 mbgl and in some window samples at depths between 0.42 and 3.12 mbgl. These are summarised in the site investigation report in ***Appendix D***.

Environmental Data

Water Abstractions

7.5.30 Records of water abstractions are no longer provided on the EA maps, and are not available with the Open Government License, therefore access to these was not plausible at the time of writing.

Discharge Consents

7.5.31 Data obtained from the EA Public Register at the time of writing, records 8 discharge consents to water and groundwater within a 2 km radius of the site post code, although there are no discharge consent within 1 km of the MAL site. The 8 within 2 km are outlined in Table ***7-1*** below.

Table 7-1 Summary of Discharge Consents within 2 km of CV6 4AA

Licence Holder	Reference	Approx. Distance (m) from Post Code
Celanses Acetate Ltd	MI/S/11/25069/T/001	1500
Acordis Foleshill Road Limited	MI/S/11/20437/T/001	1700
Acordis Foleshill Road Limited	MI/S/11/25227/T/001	1700
Severn Trent Water Limited	MI/S/11/12216/O/001	1800
Severn Trent Water Limited	MI/S/11/12178/O/001	1900
Severn Trent Water Limited	MI/S/11/25724/T/001	1900
The Coal Authority	MI/S/11/10902/T/001	1900
Webster Hemming & Sons Limited	MI/S/11/20146/T/001	2000

Landfill Sites

7.5.32 Information from the Groundsure.io map at the time of writing showed no authorised landfills within 1 km of the site.

7.5.33 Information from the Groundsure.io and Queen Mary University maps at the time of writing showed 1 historic landfill within 1 km of the Drakes Yard site. This is outlined in Table 7-2.

Table 7-2 Summary of Historic Landfills

Licence Holder	Reference	License Dates	Approx. Distance (m) from Site
Fairclough Civil Engineering Limited	EAHLD27747	License issued: 11/09/1989 License surrendered: 30/04/1994	880

7.5.34 The presence of this landfill site is not considered to pose a risk to the MAL site due to the distance between the landfill site and the MAL site.

Waste Treatment or Disposal Sites

7.5.35 There are no records of EA licensed waste operations sites within 1 km of the MAL site. There are 6 waste operations within 2 km, details of which are provided in Table 7-3.

Table 7-3 Summary of Waste Operations Sites within 2 km

Licence Holder	Licence Number	Site Category	Approx. Distance (m) from Post Code
Tom White Waste Ltd	HP3193LV/A001	S0803 No 3: 75kte HCI Waste transfer station + treatment	1600
Tom White Waste Ltd	KP3698CX/A001	A11 : Household, Commercial & Industrial Waste transfer station	1700
Mr Rodney Hugo & Mr David Hugo	EP3398LL/A001	S0820 No 20: 75kte Vehicle Depollution Facility	1700
Singh Mr Dyal	QP3795CK/A001	A20 : Metal Recycling Site (mixed MRS's)	1700

Licence Holder	Licence Number	Site Category	Approx. Distance (m) from Post Code
Tom White Waste Limited	AB3906CT/A001	S0803 No 3: 75kte HCI Waste transfer station + treatment	1700
Jackson Dunn Ltd	QP3195CD/V002	A20: Metal Recycling Site (mixed MRS's)	2000

Installations

7.5.36 There are two permitted installations within 1 km of the MAL site, one of which is the MAL site itself. There is one other installation within 3 km of the site, details of which are provided in Table 7-4.

Table 7-4 Summary of Installation Sites within 3 km of CV6 4AA

Licence Holder	Licence Number	Process	Approx. Distance (m)from Post Code
Meggitt Aerospace Ltd	BN7109IH	Gasification, liquefaction and refining; any pyrolysis heat treatment etc of coal carbonaceous material etc (unless coal drying/making charcoal), distillation and other processes Carbon; producing carbon etc by incineration/graphitisation Activities involving the liquefaction, gasification with a view to making charcoal Associated process	0
Speciality Fibres and Materials	PP3838LA	Organic chemicals; plastic materials eg polymers	1000
Mil-ver Metal Company Ltd	BL4478IN	Non-ferrous metals; melting with capacity >4t/d lead/cadmium or 20t/d others Non-ferrous metals; melting with capacity => 5t Non-ferrous metals; melting capacity >4t/d lead/cadmium or 20t/d others and for alloys a vessel with a design holding capacity of 5 tonnes or more.	1700

7.5.37 It was considered that the listed installations are unlikely to have a future impact on the ground conditions at the site due to the closest being part of the site operations and the distance of the other installations.

Statutory Designated Sites

7.5.38 The extension area (and wider MAL site) is in a Nitrate Vulnerable Zone (NVZ), designated for surface water (River Avon to confluence with River Severn – S590).

7.5.39 There are no designated sites within 2 km of the extension area (and further MAL site)

Coal Authority Reports

7.5.40 A postcode search using the Coal Authority website, indicated that, from the information currently available to the Coal Authority, a coal mining search report is recommended for this property. A Coal Authority Mining Report was appended to the Site Investigation Report (2012) in ***Appendix C***. The report states that the property is in the likely zone of influence from workings in one seam of coal at 640 m to 730 m depth, and last worked in 1980. Any associated ground movement should have ceased by now.

COMAH

7.5.41 A postcode search using the Health & Safety Executive (HSE) COMAH 2015 Public Information Search indicated that, at the time of writing, there are no COMAH sites recorded within 4.8 km of the post code.

Radon

7.5.42 According to the National Radiological Protection Board's Radon Atlases of England, Wales and Scotland at the time of writing, the extension area (and MAL site) lies within the lowest band of radon potential, meaning less than 1% of homes are above the Action Level.

Registered Radioactive Substances

7.5.43 There is currently no information available from the EA for registered active radioactive substance users near to the site.

8 STAGE 6 – SITE CHARACTERISATION

8.1 Introduction

8.1.1 Stage 6 of the IED baseline assessment is to characterise the site. The following sections provide a summary of the potential contamination sources, pathways and receptors identified at the MAL site, based on the reports identified in Section 7.2.

8.2 Potential Contamination Sources

8.2.1 The site has the potential for contamination of soils and groundwater associated with an extended period of industrial use since the 1920s. Potential contaminants are typical of those associated with engineering / manufacturing, including metals; petroleum hydrocarbons (fuel, lubricants); chlorinated hydrocarbons (degreasing solvents, paints and coatings) and asbestos (building materials, friction materials, insulation).

8.2.2 The ground investigations identified heavy metals and benzo(a)pyrene contamination linked to historic site usage. The elevated concentrations of lead, benzo(a)pyrene, zinc and copper are likely to be the result of an isolated constituent in the soil at that location, rather than being attributable to the constituents of the cooling liquid. No biocides or other water treatment chemicals were detected.

8.3 Identified Receptors

8.3.1 The following key receptors that may be at risk from contamination in soils and groundwater beneath the installation were identified as:

- Controlled Waters
  - Groundwater within the Keresley Member bedrock (principal aquifer)
- Surface Water:
  - River Sowe (~3km to the east) and Coventry and Ashby Canals (~2km to the east)

8.3.2 The following potential contamination pathways were identified at the installation, particularly in areas that are not paved or covered by hardstanding:

- Controlled Waters
  - Potential migration of dissolved phase soil contamination into groundwater;
  - Potential migration of dissolved phase contamination from groundwater underlying the site to local surface water courses (River Sowe and Coventry and Ashby Canals)

8.3.3 The risk assessment is based on a future industrial use of the Site and presented in Table 8.1.

Table 8.1: Conceptual Site Model – Controlled Water Receptor

Source	Pathway	Receptor	Risk	Notes
CONTROLLED WATER RECEPTORS				
Chemical contamination in Made Ground as consequence of current / historical site activities	Leaching of soil contamination and vertical migration	Groundwater	Low	The installation is not located within a Source Protection Zone1 and there are no known groundwater abstractions within the vicinity of the installation. The risk to controlled water is therefore deemed to be low.

9 STAGE 7 – SITE INVESTIGATION

9.1.1 Stage 7 of the IED baseline assessment is to carry out a site investigation to obtain additional information where only part of the site can be characterised or there is insufficient information on which to formulate a baseline report.

9.1.2 The baseline for the original permit application is included as ***Appendix A.*** This includes data gathered in site investigation in 2006.

9.1.3 The most recent ground investigations were carried out by WYG in February 2018, to assess the sub-surface chemical and geo-technical ground conditions at the site using in-situ and laboratory testing. This report is included as ***Appendix D.***

9.1.4 No recent ground investigations have been undertaken to inform the permit variation therefore the details and conclusions of the 2018 investigation are used to establish the condition of the extension area. Details of the 2018 investigation are detailed in section 6.3.

9.2 Conceptual Model

9.2.1 The site investigation undertaken by WYG provided a Preliminary Conceptual Site Model (CSM) and preliminary risk assessment for the wider MAL site, as shown in Table 9-1 below.

9.2.2 The CSM and preliminary risk assessment in Table 9-1 below have been developed to qualitatively assess potential contaminant sources, receptors and potential pollutant linkages identified at the MAL site. The risk level relevant to each linkage is stated in the context of potential risk to future site users based on a proposed plan of mixed residential and industrial development, and the retained Meggitt Carbon Facility area, as well as groundwater and plant receptors.

Table 9-1 Conceptual site model and preliminary risk assessment

Potential Source	Potential Pollutant	Potential Receptor	Potential Pathway to Receptor	Associated Hazard (Severity)	Likelihood of Occurrence	Risk
Contaminants in made ground	Contaminants may be present in made ground due to historical sources, or import / use of contaminated materials as required for fill / engineering purposes. No specific current sources are evident.					
	Asbestos	Future residential occupiers	Inhalation	Severe	Low	Moderate
		Future industrial / commercial occupiers	Inhalation	Severe	Low	Moderate
	TCE	Future residential occupiers	Inhalation, ingestion, skin contact	Medium	Likely (though localised)	Moderate
	Lead	Future residential occupiers	Inhalation, ingestion, skin contact	Medium	Low	Moderate/Low

Potential Source	Potential Pollutant	Potential Receptor	Potential Pathway to Receptor	Associated Hazard (Severity)	Likelihood of Occurrence	Risk
	Petroleum hydrocarbons, chlorinated hydrocarbons	Groundwater	Leaching / migration through soils	Medium	Likely (some impact on groundwater within site demonstrated)	Moderate
	Copper, zinc	Garden / landscape planting	Root contact	Minor	Low (impact predominantly within industrial zones)	Negligible

10 STAGE 8 – PRODUCE A BASELINE REPORT

10.1 Introduction

10.1.1 Stage 8 of the IED baseline assessment is to summarise all of the information collected in stages 1 to 7 to produce a report which identifies the state of the soil and groundwater contamination by relevant hazardous substances.

10.1.2 As previously highlighted, baseline data for the main site has already been gathered and was reported in the application site condition report included as ***Appendix A*** and the 2018 site condition report update included as ***Appendix B***.

10.2 Condition of the extension area

10.2.1 The outcome of the assessment of RHS for the extension area has confirmed that there are no new RHS used, stored or produced that will be present in these areas and which need baseline data gathering due to site specific pollution potential. However, soil and groundwater data are available from previous ground investigations in this area. The following section summarises the laboratory chemical analysis undertaken on soil and groundwater samples collected by WYG Environment in 2018 (WYG, 2018) (***Appendix D*** of this report).

10.2.2 The analytical dataset presented in this section defines the general baseline soil and groundwater quality (principally Made Ground) and the general baseline groundwater quality across the MAL installation.

10.2.3 No internal investigations have been carried out in the A3 and B3 buildings which are being included in the permitted area as part of the permit variation application. Ground investigations have been carried out in external areas of the site, the closest boreholes to the newly added areas in the permit boundary were WS22, WS28, WS31 and R5.

10.2.4 The following results from the “Retained Meggitt Carbon Plant Area” in the WYG site investigation (2018, Appendix D) (which includes the proposed extension area) were reported.

10.3 Baseline Soil Quality

10.3.1 Laboratory analysis has identified the following baseline concentrations of contaminants in the proposed extension area:

Heavy metals

10.3.2 Made ground was characterised by sporadic slightly elevated metals concentrations (copper, zinc and lead). Copper concentrations of 79.9, 586, 10.8, 97.2 and 34.5 mg/kg were found in WS10, WS19, WS20 and WS32 respectively. The concentrations of zinc found in these samples were 240, 451, 15.3 and 154 mg/kg. Lead concentrations were identified to be 78.3 mg/kg in WS10, 78.8 mg/kg in WS19, 5.52 mg/kg in WS20 and 190 mg/kg in WS32.

10.3.3 Low levels of arsenic, cadmium, chromium, mercury, nickel and selenium were encountered within the soil in the proposed extension area, with most of the results lying below or marginally above the laboratory detection limit.

10.3.4 Maximum concentrations of 16.1, 28.1, 3.29 and 20.7 mg/kg of arsenic were identified in the respective relevant samples. Cadmium concentrations of 0.772, 0.195, 0.356 and 1.31 mg/kg respectively were also identified in these samples. The concentrations of chromium encountered in the soil samples from boreholes WS10, WS19, WS20 and WS32 were 4.86, 38, 3.64 and 13.2

mg/kg respectively. Nickel concentrations were 41.6, 96.8, 8 and 71.2 mg/kg in the respective samples.

10.3.5 Concentrations of selenium and mercury were below the laboratory detection limit in these samples, except in WS32, where it was just over the detection limit at 2.04 mg/kg. Concentrations of hexavalent chromium were also below the laboratory limit in all the relevant samples.

Water soluble sulphate

10.3.6 Concentrations of water-soluble sulphate as SO_4 (2:1 extract) identified in WS10, WS19, WS20 and WS32 were 0.004, 0.0791, 0.0652 and 0.0722 g/l respectively.

Total Petroleum Hydrocarbons

10.3.7 Localised contamination by petroleum hydrocarbons (maximum 5,060 mg/kg >C8-C40 at WS22, 0.2 m) was identified. Maximum concentrations of 134, 98.5 and 164, and 2,310 mg/kg >C8-C40 (0.2 m) were identified in WS10, WS19, WS20 and WS32 respectively.

Trichloroethene (TCE)

10.3.8 Chlorinated hydrocarbons, most significantly trichloroethene (TCE), were widespread in soil at concentrations exceeding residential human health criteria.

10.3.9 Localised contamination by TCE (maximum 4.11 mg/kg at WS20, 0.2 m) was identified at WS20. Only the TCE maximum result exceeded the industrial human health criterion.

10.3.10 Chlorinated hydrocarbons, most commonly TCE, were detected in several groundwater samples. The TCE concentration exceeded the DWS criterion in two instances, both by a substantial margin, and vinyl chloride concentration exceeded the DWS criterion in one instance.

10.3.11 The trichloroethene DWS screening criterion (10µg/L) was typically exceeded in groundwater sampled from two boreholes (WS21 – Round 1, 146 µg/L; WS22 –Round 2, 175µg/L; WS21 and WS22 – Round 3, 33.6 and 219µg/L).

Polycyclic Aromatic Hydrocarbons (PAHs)

10.3.12 WS22 (0.2 m) exceeded the criterion for a number of PAH compounds, likely to be associated with the reported presence of asphalt in the made ground matrix at this location. The benzo(a)pyrene content of this sample, 124 mg/kg, indicates that the material would be classified as hazardous waste for disposal, anticipating that the PAH content relates to coal tar-based asphalt in the made ground. This sample was not in the extension area, but similar, though less elevated, PAH results related to sample WS32 (0.4 m) which is in the extension area and also contained asphalt.

10.3.13 The benzo(a)pyrene concentrations identified in WS10, WS19, WS20 and WS32 were 151, 61.9, 102 and 32,500 µg/kg respectively.

Asbestos

10.3.14 Made ground was characterised by sporadic positive asbestos results (laboratory-identified ACM debris and loose fibres in soil), at WS19, 21, 22 and 28. WS19 and 21 are not in the proposed extension area. Made ground at WS19 contained low levels of asbestos (0.0388%).

10.3.15 Materials visually identified as suspect asbestos containing materials were rare, encountered only at a single location within the retained Meggitt area, WS28, 0.9m.

10.4 Baseline Groundwater Quality

10.4.1 Groundwater was encountered during the ground investigation in all rotary boreholes at depths between 1.5 and 6.0mbgl.

- WS22 – 1.4 to 1.56 mbgl;
- WS28 - No details included in report;
- WS31 - No details included in report; and
- R5 – 1.42 mbgl

10.4.2 Laboratory analysis of groundwater underlying the site has identified the following exceedances:

- The sulphate screening criterion (250 mg/L) was exceeded at WS20 in Round 2 (473 mg/L);
- The benzo(a)pyrene DWS screening criterion (0.01 µg/L) was exceeded in all but two instances;
- The PAH (sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene) DWS screening criterion (0.1 µg/L) was exceeded in all but four instances;
- The laboratory detection limit (1 µg/L) for vinyl chloride was higher than the DWS screening criterion (0.5 µg/L), which means the number of exceedances is unknown.

10.5 Baseline Gas Assessment

10.5.1 No data for any borehole identified above was available at the time of the writing of this report.

11 OPERATIONAL SITE CONDITION REPORT

11.1 Operational Phase

11.1.1 This SCR, prepared in accordance with the EA Horizontal Guidance Note H5, contains information on the condition of the site during the operational phase of the facility. The extension area history prior to 2018 has been reviewed as part of this SCR where known and commented on within this report. The permitted activities, site details and condition of the land for buildings A3 and B3 at the time of the permit variation are detailed in sections 4, 5 and 6 of this report.

11.2 Site Condition Report Summary

4.0 Changes to the activity	
Have there been any changes to the activity boundary?	Yes – as part of the permit variation additional land is to be included, these changes are shown in Drawing JER8395-PER-001_D_200225_PermitBoundary. The additional land comprises raw materials storage areas and the area on which the new cooling towers will be built. Further detail is provided in *section 1.3.11.*
Have there been any changes to the permitted activities?	As part of the permit variation, in addition to the extended installation boundary noted above, the following amendments to the permitted techniques are proposed: • Install four electrically powered high temperature furnaces; • install an electrically powered controlled atmosphere elevator furnace; • install two spray booths for the antioxidant coating; • move the dust control extraction units to another area of the site; • install additional dust control exaction units to the machining area of the site; and • install an argon tank for storing gas to be used with the new furnaces;
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?	There are no additional dangerous substances to be included to those already detailed in the original permit application and subsequent permit variations. Details of the relevant hazardous substances (RHS) which are relevant to this variation are provided in *Section 4* of this SCR. An environmental risk assessment has been carried out to assess the risks associated with the changes covered by the permit variation. This is included as Appendix C to the main application supporting information.
Checklist of supporting information	Plan showing any changes to the boundary: • JER8395-PER-001_D_200225_PermitBoundary Plan showing extension area layout: • WE3260 PPC drawing 2 Environmental Risk Assessment (RPS, 2021)

5.0 Measures taken to protect land	
Details of the measures taken to protect land are provided in *Section 5.5* of this SCR.	
Checklist of supporting information	Records of maintenance, repair and replacement of pollution prevention measures

6.0 Pollution incidents that may have had an impact on land, and their remediation	
See *section 6* of this SCR	
Checklist of supporting information	

7.0 Soil gas and water quality monitoring (where undertaken)

See section 6.4 of this SCR

Checklist of supporting information	• Appendix C – Geo-Environmental Assessment (Merebrook Consulting, 2012) • Appendix D – Site Investigation Report (WYG, 2018)

12 SURRENDER SITE CONDITION REPORT

12.1.1 At permit surrender, the following sections of the SCR template (EPR H5) will be completed and submitted to the EA as part of the permit surrender application. Information that has been gathered over the lifetime of the Permit will be used to identify whether the land is in a satisfactory condition. If necessary, surrender reference data will be collected and remediation will be undertaken if required.

8.0 Decommissioning and removal of pollution risk	
Describe how the site was decommissioned. Demonstrate that all sources of pollution risk have been removed. Describe whether the decommissioning had any impact on the land. Outline how you investigated and remedied this.	
Checklist of supporting information	• Site closure plan • List of potential sources of pollution risk • Investigation and remediation reports (where relevant)

9.0 Reference data and remediation (where relevant)	
Say whether you had to collect land and/or groundwater data. Or say that you didn't need to because the information from sections 3, 4, 5 and 6 of the Surrender Site Condition Report shows that the land has not deteriorated. If you did collect land and/or groundwater reference data, summarise what this entailed, and what your data found. Say whether the data shows that the condition of the land has deteriorated, or whether the land at the site is in a "satisfactory state". If it isn't, summarise what you did to remedy this. Confirm that the land is now in a "satisfactory state" at surrender.	
Checklist of supporting information	• Land and/or groundwater data collected at application (if collected) • Land and/or groundwater data collected at surrender (where needed) • Assessment of satisfactory state • Remediation and verification reports (where undertaken)

10.0 Statement of site condition
Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that: • the permitted activities have stopped • decommissioning is complete, and the pollution risk has been removed • the land is in a satisfactory condition.

13 CONCLUSIONS

13.1.1 RPS has undertaken an assessment of the site condition of the proposed extension area, located adjacent to the Operational Area, at Meggitt Aircraft Braking Systems, Holbrook Lane, Coventry, in support of the application to vary permit BN7109IH. The primary purpose of this report is to provide information to the EA in relation to the planned variation in operations and to provide them with a consolidated framework against which the potential future contamination issues will be assessed.

13.1.2 The published geology of the area and ground investigations at the site have indicated that the site is underlain by Made Ground, Thrussington Member underlain by bedrock of Keresley Member. Thrussington Member is classified as secondary (undifferentiated) aquifer and Keresley Member as a principal aquifer. Groundwater was identified underneath the proposed extension area during the 2018 site investigation.

13.1.3 Historical site uses have identified potential historical contamination sources, namely the previous industrial uses of the site such as for munitions and wheel manufacturing.

13.1.4 The substances associated with the materials received, stored and processed at the site with the potential for land and water contamination during site operation as a result of the 2021 variation are the cooling water treatment chemicals and antioxidant spray coating. The low usage of these chemicals and the storage arrangements in place would mean contamination of land or groundwater is very unlikely and therefore these were not considered RHS for the site.

13.1.5 Baseline data for the extension area has not been identified as necessary due to no new RHS being included as part of the 2021 permit variation application, however, data on the condition of the land included in the permit boundary extension area is presented in this site condition report update.

13.1.6 Baseline data from site conditions reports dated 2006 (Appendix A) and 2018 (Appendix B) remain relevant for the site as a whole.

REFERENCES

1. RPS (2006). Application Site Report in support of PPC Permit Application, June 2006.
2. RPS (2007), 'First Phase Reporting of the Site Protection and Monitoring Programme for Dunlop Aerospace Braking Systems, Holbrook Lane, Coventry', reference: 'HLI 2690/001R', December 2007.
3. WYG (2018). Meggitt Aerospace, Coventry: Geo-Environmental Site Investigation Factual and Interpretative Report, reference: 'A107448', June 2018
4. Merebrook Consulting, 2012. Geo-Environmnetal Assessment. Stadco Meggitt Site. Clowes Developments and Meggitt Aircraft Braking Systems. GEA-17054-12-6
5. RPS (2018). Environmental Risk Assessment, reference: 'JER1637', September 2018.
6. Ramboll Environ, February 2017. Meggitt Aircraft Braking Systems, Coventry. Remediation Strategy. Ref. UK15-23312_RS. For Meggitt plc.
7. Environment Agency (2018). Public Registers: Available online: https://environment.data.gov.uk/public-register/water-discharges/registration?easting=439134&northing=112579&name-search=&number-search=&local-authority=&address-search=&__postcode=SO15+0HH&dist=1
8. Environment Agency (2017). Environmental Pollution Incidents. Available to download: https://data.gov.uk/dataset/environmental-pollution-incidents
9. HSE (2018). COMAH Establishments 2015 Public Information Search. Available online: https://notifications.hse.gov.uk/COMAH2015/Results.aspx
10. British Geological Survey (2018). Geology of Britain Viewer. Available online: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
11. Environment Agency (2018). Catchment Data Explorer. Available online: http://environment.data.gov.uk/catchment-planning/WaterBody/GB520704202800
12. Public Health England (2018). UK Maps of Radon. Available online: http://www.ukradon.org/information/ukmaps
13. The Coal Authority (2018). Coal Authority Online Search Service: Address Search. Available online: https://www.groundstability.com/public/web/log-order?execution=e1s2
14. Natural England (2018). Magic Map Search. Available online: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx
15. RPS (2018). 'Site Condition and Baseline Report', November 2018

APPENDICES

Appendix A

Application SCR & SPMP

Appendix B

Site Condition Report – December 2018

Appendix C

Site Investigation Report 2012

Appendix D

Site Investigation Report 2018

Appendix E

CAR Forms

Appendix F

Site Plans

Appendix G

SDS

Appendix H

Envirocheck Report