Royston Environmental Permit Variation Application

Site Condition & Baseline Report Addendum - 3CR Annex

Johnson Matthey PLC

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Basis of Report

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1.0 Introduction

SLR Consulting Limited (SLR) has been instructed by Johnson Matthey PLC (JM) to prepare an application for a variation to the Environmental Permit (EP) (Ref: EPR/BT7086IJ) (the Permit) for their Royston site located at Orchard Road, Royston, Hertfordshire, SG8 5HE (the site).

The Royston site operates under a multi-activity installation environmental permit. The site is currently permitted to operate a variety of diverse and complex activities mainly involving the refining of precious metals, development of speciality chemicals and subsequent processing into a diverse range of products. The existing operations include auto catalyst and process catalyst manufacture, precious metal refining and fabrication, chemical production and engine/auto catalyst test facilities.

The location of the site is illustrated in Drawing 001. The site layout; site boundary and proposed EP boundary and emission points are presented on Drawing 002.

The variation application is to authorise a number of developments at the site and to regularise previous changes agreed in writing with the Environment Agency (EA). The changes are summarised below:

1	3CR	Installation of a new Third Century Refinery (3CR) to replace the existing Platinum Group Metals Refinery (PMGR)
2	HomCat	Expansion of the existing homogeneous catalyst (HomCat).
3	Apollo	Addition of an iridium-based product to the platinum-based catalyst coated membrane process (currently under determination as part of Variation 16).
4	Waste Codes	Addition of EWC codes for five waste metals, previously agreed in writing with the EA.

The 3CR process will be served by an annex which is outside of the existing EP installation boundary. As such, JM wish to extend the EP installation boundary to incorporate the annex and the surrounding area (refer to Drawing 002). All other activities that are proposed for variation 17 are located within the EP boundary. This report provides an addendum to the existing Site Condition & Baseline Report for the site documented in a Phase 1a and Phase 2 Baseline Site Report by Enviros Consulting Limited, June 2003.

Following pre-application advice from the EA it is confirmed that the 3CR process will be regulated as listed activities under Schedule 1 of the Environmental Permitting (England & Wales) Regulations 2016 (as amended) as follows:

1	3CR	It is considered that the new 3CR would be regulated in the same way as the Platinum Group Metals process (PGMR), namely: *Schedule 1 Section 4.2 Inorganic Chemicals Part A(1)(a) Producing inorganic chemicals such as - (iv) salts (for example ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate, cupric acetate, ammonium phosphomolybdate).*

1.1 Context and Objectives of the Site Condition Report

This report provides an addendum to the existing Site Condition Report (SCR) to incorporate the additional land associated with the proposed 3CR Annex. It aims to record and describe the condition of the land prior to the commencement of any operations within the proposed extension to the permit boundary and has been prepared in accordance with the EA's Site Condition Report H5 guidance with regard to the requirements of a baseline report to meet the requirements of Article 22 (2) of Industrial Emissions Directive (IED).

This SCR addendum for the 3CR Annex will provide a point of reference and baseline environmental data so that when the EP is surrendered it can be demonstrated that there has been no deterioration in the condition of the land as a result of the Installation operations and ensure that the condition of the land is in a 'satisfactory state' on EP surrender. The report should be read in conjunction with the existing site report for the wider Royston site.

This SCR also includes an assessment of potential risk from relevant hazardous substances (RHS). Where an environmental permitted activity produces, uses or releases RHS (as detailed in Article 3(128) of the IED), a risk assessment is required in accordance with Article 22(2).

Sections 1 to 3 of the EA's SCR template[1] (have been completed within this document and comprise the following aspects:

- Site details;
- Condition of the land at permit issue;
- Geology;
- Hydrology;
- Hydrogeology;
- Pollution history;
- Evidence of historic contamination; and
- Permitted activities.

Sections 4 to 7 of the SCR template will be maintained during the life of the EP and Sections 8 to 10 will be completed and submitted in support of the application to surrender the EP.

[1] EA Environmental Permitting Site Condition Report Guidance https://www.gov.uk/gov7ernment/publications/environmental-permitting-h5-site-condition-report accessed January 2024.

1.1.1 Sources

The following sources have been utilised in the preparation of this SCR:

- British Geological Survey[2].
- EA. Flood map for planning[3]
- EA. Long Term Flood Risk Assessment.[4]
- ECHA: European Chemicals Agency Substance Information[5].
- Landmark Envirocheck Report (Appendix A)[6].
- Multi Agency Geographical Information for the Countryside[7] (MAGIC) map.
- Socotec (2023)[8] Ground Investigation Report (Appendix B).
- Groundwater Quality Data (WSP 2023), included in Appendix C.
- Water Framework Directive Environmental Agency Confirmed Hazardous Substances List[9].

1.1.2 Site Details

Applicant	Company Name
Address	Johnson Matthey Plc
National Grid Reference (3CR Annex)	TL 34750 41317
Site Area (3CR Annex)	Approximately 2657m^2
Document Ref for Site Condition Report	Site Condition Report – 410.064951.00001_SCR dated September 2024 (this report).
Figure References	• Drawing 001 - Site Location. • Drawing 002 - Site Layout, EP boundary and Emission Points. • Drawing 003 - Site Setting Plan – Local Receptors. • Drawing 004 - Site Setting Plan – Cultural and Natural Heritage. • Drawing 005 - Proposed Site Layout – 3CR Annex

[2] British Geological Survey, available at http://www.bgs.ac.uk, accessed on 05 September 2024.

[3] Flood map for planning, available at https://flood-map-for-planning.service.gov.uk/, accessed on 09 September 2024.

[4] Long Term Flood Risk Assessment. Accessed at: Your long term flood risk assessment - Check your long term flood risk - GOV.UK (check-long-term-flood-risk.service.gov.uk) accessed on 11 September 2024.

[5] ECHA: European Chemicals Agency Substance Information. Accessed at: Homepage - ECHA (europa.eu). Accessed on 10 September 2024.

[6] Envirocheck. Landmark information group. Reference 357437802_1_1 dated 05 September 2024.

[7] Multi-Agency Geographical Information for the Countryside Map, available at www.magic.defra.gov.uk, accessed in 09 September 2024.

[8] Socotec (2023). Project 3CR Royston. Ground Investigation Report (Factual Account of Fieldwork, Monitoring, and Laboratory Testing and Geo-Environmental Testing. Report No E3027-23/1 version 2. Issued October 2023

9 Water Framework Directive Environmental Agency Confirmed Hazardous Substances List. Accessed at '2018 01 31 Confirmed hazardous substances list_0.pdf (wfduk.org)'.

1.1.3 Site Location

The 3CR Annex is centred on National Grid Reference TL 34750 41317 and located in the north-western part of Royston, between the town centre and the A505 Royston bypass. The site lies within the Orchard Road Industrial Estate. A number of residential, commercial and agricultural receptors are located in close proximity to the site. In addition, two SSSIs and several other conservation sites lie within 2km of the site boundary.

Nearest surface water receptor is a ditch located approximately 130m north of the permit boundary.

A site location map is provided in Drawing 001.

1.1.4 Proposed on-Site Land Use

The additional area to be incorporated into the permit boundary currently comprises a JM staff car park. This will be replaced with the following proposed infrastructure for the new 3CR Annex:

- 3CR Annex building;
- 2 emergency generators; and
- 2 chillers.

Refer to Drawing 005 for the proposed site layout. Topography in the current car park area is generally flat.

1.1.5 Current Surrounding Land Use.

A summary of the immediate surrounding land use is provided in Table 1-1.

Table 1-1 Surrounding Land Uses

Boundary	Description
North	JM Royston site, with the HomCat process located approximately 30m north. A transport network (including the A505), commercial premises beyond which lies a ditch, a solar farm and agricultural land are located to the north of the wider JM site boundary.
East	JM Royston site with administration offices located 25m East. Commercial premises, residential properties and recreational facilities lie beyond the wider JM site boundary.
South	Local transport network, industrial and commercial premises, a railway line, beyond which lies residential premises, an educational facility and a recreational area.
West	JM Royston site, with the ‘Protech’ building located approximately 5m west. Industrial and commercial premises, local transport network (A505) and agricultural land lie beyond the wider JM site boundary.

The surrounding land uses and receptors within 500m are identified on Drawing 003 Environmental Site Setting Plan. Cultural and Natural Heritage receptors and European designated sites within 2km are identified on Drawing 004 Cultural and Natural Heritage Receptors.

1.1.6 Sensitive Land Uses

There are no designated ecological habitats on the area of the site. The closest designated ecological habitats to the site are as follows:

- Therfield Heath (SSSI) lies approximately 665m southwest; and

- Holland Hall (Melbourn) Railway Cutting lies approximately 1415m east of the permit boundary.

1.2 Environmental Setting

1.2.1 Geology

1.2.1.1 Geology

British Geological Survey (BGS) geological mapping[10] indicates that the bedrock geology underlying the Site comprises the Cretaceous Holywell Nodular Chalk Formation (White Chalk Subgroup), which dips in a south-easterly direction. The White Chalk is underlain by the Grey Chalk Subgroup, which in turn overlies the Gault (Clay) Formation.

No superficial deposits are indicated in the locality.

Socotec[11] undertook an intrusive investigation in the 3CR Annex area in July 2023 (refer Appendix B). Table 1-2 below outlines the geology encountered.

Table 1-2 Typical Geology Encountered

Strata	Typical Depth (m bgl*)	Typical Thickness (m)
Macadam	0	0.05 - 0.1
Made Ground - Fill	0.5 - 0.1	0.1 - 0.5
Holywell Nodular Chalk (Structureless)	0.2 - 0.6	0.95 - 2
Holywell Nodular Chalk (Structured)	1.55 - 2.2	4.35 - 5.08
Zig Zag Chalk Formation (Structured)	6.55 - 6.95	3.05 - 13.55 (base not encountered)
*- bgl - below ground level		

1.2.1.2 Hydrogeology

Aquifers

The site is not underlain by a superficial aquifer.

Multi Agency Geographical Information for the Countryside (MAGIC)[12] Map identifies the Chalk beneath the site is a Principal Aquifer which is defined as:

> *"layers of rock or drift deposits that have high intergranular and/or fracture permeability, meaning they usually provide high level of water storage and transmission. 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 aquifers."*

The BGS Hydrogeological Map for Cambridge and Maidenhead (1976) shows groundwater levels in the Chalk beneath the Site at approximately c.32m AOD (21m below ground level (bgl)), although levels vary seasonally.

[10] British Geological Survey, Available at www.bgs.ac.uk, accessed on 05 September 2024.

[11] Socotec 2023. Project 3CR, Royston, Ground Investigation Report. Preliminary Report, reference E3027-23 dated July 2023.

[12] Multi Agency Geographical Information for the Countryside Map (MAGIC), available at https://magic.defra.gov.uk/MagicMap.aspx, accessed in September 2022

Regional groundwater flow in the Chalk is towards the north-northeast and is believed to discharge to tributaries of the River Cam via a spring line that rises approximately 1.5 to 2.0 km to the northeast of the Site.

Groundwater source protection zones

The entire Site is within Source Protection Zone 3 (SPZ 3) of a public water supply borehole operated by Affinity Water located approximately c.770 m south/southeast, and hydraulically upgradient of the site. SPZ 3 represents the total catchment area for the protected groundwater source.

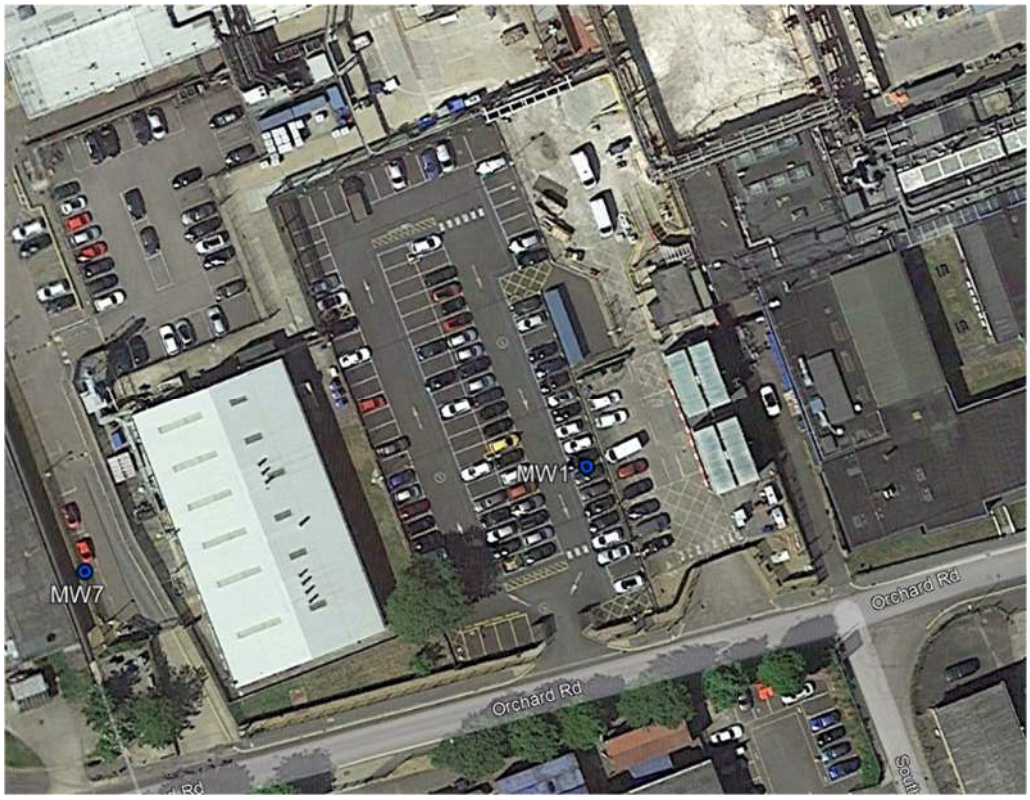
The SPZ 2 (Outer Protection Zone) is located approximately 180m to the south of the site, and the SPZ 1 (Inner Protection Zone) is approximately 210m south of the site.

Abstractions from the Chalk may impact groundwater levels at the site.

Groundwater Occurrence

Monitoring well MW1 (Figure 1) is located within the footprint of the 3CR Annex and has been actively monitored semi-annually since 2007 together with a further six on-site monitoring wells across the remainder of the site.

Figure 1 MW1 Monitoring Well Location



Groundwater levels in the chalk typically vary seasonally by c.2m, but the highest and lowest levels recorded levels were 20.29mbgl (34.61mAOD) and 27.83mbgl (27.08mAOD) in BH1 with an average of 24.28mbgl (30.85mAOD). A hydrograph presenting the variation in groundwater levels since 2007, and a piezometric surface/groundwater flow plan (June 2024) are included in Appendix C.

Groundwater Quality

Appendix C also contains two graphs depicting (1) selected metal and (2) chlorinated solvent compounds recorded in the data set for the same period.

Metal concentrations for arsenic, boron, chromium, nickel, selenium, vanadium, and zinc are presented on the respective graph.

Arsenic, nickel, selenium and vanadium concentrations are low and stable across the 17-year monitoring period. There are minor but notable 'spikes' of boron, chromium and zinc, but the most recent data set for BH1 recorded very low concentrations of all metals in general.

Groundwater from BH1 has historically recorded Trichloroethene (TCE), Tetrachloroethene (PCE), 1,1,1-Trichloroethane (TCA) in the past. Detections are 'spikey' rather than persistent with PCE being the most common organic compound. These primary solvents degrade under reducing conditions and the compound cis-1,2 Dichloroethene (1,2 DCE) is a degradation compound originating from TCE and PCE.

Only 1,2 DCE has been recorded in BH1 groundwater since 2021, and at relatively minor concentrations of 15 to 20ug/l.

A review of Google Earth historical aerial photographs indicates that the 3CR site area has been reserved for car parking so the source of chlorinated solvents in BH1 is unknown. Given that 3CR is hydraulically up-gradient of the site, the possibility of an offsite source cannot be ruled out.

1.2.2 Hydrology

Surface Water Features

The closest surface water feature is a stream to the east approximately 200m east of the site, which appears to be a short surface section of an otherwise culverted stream. A drainage ditch of the A505 is also located approximately 340m northwest of the site.

Surface Water Abstractions

No surface water abstractions identified within 500m.

1.2.3 Flood Risk

The Flood Map for Planning reveals that the site lies within Flood Zone 1 and has a low probability of flooding from rivers.

The EA Long Term Flood Risk service states that the site has a 'low' probability of surface water flooding each year.

1.3 Pollution History

1.3.1 Pollution Incidents

Table 1-3 below summarises information taken from the Envirocheck Report (410.064951.00001_ERA) for statutory pollution history information within 1000m of the additional Annex area.

Table 1-3 Pollution Incidents Nearby

Statutory Information	Approximate Distance from Site	Description
Pollution Incident to Controlled Waters	565m northeast	In January 1994, a miscellaneous pollutant caused a category 3 minor incident to a freshwater stream/river.

Statutory Information	Approximate Distance from Site	Description
	568m northeast	In October 1993, an unknown pollutant caused a category 2 significant incident to a freshwater stream/river in the River Hee Catchment.

1.3.2 Potentially Polluting Activities – Outside the Annex Area

Table 1-4 below summarises information taken from the Envirocheck Report for potentially polluting activities undertaken in the vicinity of the Annex area.

Table 1-4 Potentially Polluting Land Uses Offsite

Statutory Information	Approximate Distance from Annex area	Description
Active Discharge Consents	942m east	Active discharge consent for public sewage and storm sewage overflow - operated by Anglian Water Services Limited
Local Authority Pollution Prevention Control	84m northwest	Windmill Car and Commercials Ltd, relating to PG1/Waste oil burners, less than 0.4MW net rated thermal input. Permit reference: EPA/01493/11
	123m southeast	Cemex, relating to PG3/1Blending, packing, loading and use of bulk cement. Permit reference: EPA/00860/P3 issued December 2018
	144m southeast	Conquerer Industries Ltd, relating to PG6/31 Powder coating processes (including sherardising). Permit reference: EPA/00712/03/P3 issued April 1994
	733m northeast	Murketts, relating to PG1/14 Petrol filling station Permit reference: EPA/10956.05/P2 issued March 1999.
	805m northeast	Tesco Stores Ltd, relating to PG1/14 Petrol filling station. Permit reference: EPA/10937/05/P3 issued February 1999.
	839m east	Collins Motor Engineers, relating to PG1/1Waste oil burners, less than 0.4MW net rated thermal input. Permit reference: EPA/24287/07
Integrated Pollution Prevention Control	73m east	Johnson Matthey PLC, relating to: • Directly associated activity (included) • Disposal of >50 T/D non-hazardous waste (>100 T/D if only AD) involving physico-chemical treatment • Inorganic chemicals; using antimony etc (unless otherwise prescribed)(unless glazing etc) • Organic chemicals; organometallic compounds e.g. lead alkyls

Statutory Information	Approximate Distance from Annex area	Description
		• Inorganic chemicals; salts ego ammonium chloride • Coating, printing and textiles, using solvents greater than 5T/12 months The original IPC permit reference: Bt7086lj The new IPPC permit reference: AP3905BH issued March 2021.
	83m east	Johnson Matthey PLC, relating to: • Organic chemicals; organometallic compounds e.g. lead alkyls • Coating, printing and textiles, using solvents greater than 5T/12 months • Disposal of >50 T/D non-hazardous waste (>100 T/D if only AD) involving physico-chemical treatment • Inorganic chemicals; salts e.g. ammonium chloride • Inorganic chemicals; using antimony etc (unless otherwise prescribed)(unless glazing etc) The original IPC permit reference: Bt7086lj The new IPPC permit reference: NP3131RA issued September 2016.
	122m southeast	Urban Reserve (Assetco) Limited, relating to New Medium Combustion Plant before 20th December 2018 – 25A(A) & 12(1A)(A) IPPC permit reference: XP3402SH effective April 2021.

1.3.3 Historical Land-Uses and Associated Contaminants

1.3.3.1 Historical Land Use in the Annex area

A review of historical maps has been undertaken to prepare the land use history.

- The annex area comprised open fields from approximately 1886 to at least 1960.
- From 1971 to at least 1993, the northern half of the annex area was covered by a building, associated with the wider historical Johnson Matthey site and the southern portion of the site comprised hardstanding.
- The Annex area has been in its current layout as a car park since at least 1999.

1.3.3.2 Historical Land Use outside the Annex area

A review of historical maps has been undertaken to prepare the land use history.

- The Annex area was surrounded by open fields in 1886 with the Hitchen and Cambridgeshire railway located approximately 230m south and Royston train station approximately 580m southeast.
- Chalk pits were recorded approximately 680m southeast and 360m north of the Annex area in 1903 and 1925 respectively.

- By 1925, Orchard Road is bounding the Annex area to the south and an artificial manure factory is located approximately 210m southeast. This manure factory appears to have extended by 1950, located approximately 65 m south and 45m west of the site respectively.
- By the early 1970s, the areas to the south and east of the Annex area are occupied by commercial / industrial development, including a chemical works adjacent to the east of the annex area (understood to be the historical Johnson Matthey site) and a pre cast cement factory located directly south beyond orchard Road. Twenty-six features within 250m in 1971 were labelled as tanks. The closest of these tanks to site included tanks located approximately 80m southwest, 135m east; and 160 m north. Seventeen of the tanks were in the petroleum oil depot located approximately 120m southwest. An electrical substation was also located 40m west at this time.
- By the late 1970s the petroleum oil depot was converted into a grain storage depot, with grain silos replacing the previous tanks.
- By the late 1990s, the land to the west and north of the annex area had also been converted into commercial industrial use.
- The land surrounding the annex area has predominantly been used for commercial / industrial use similar for the past 25 years, with the rest of the Johnson Matthey site to the east and north of the annex area.

1.3.4 Any Visual / Olfactory Evidence of Existing Contamination

Socotec (2023) reported that 'neither olfactory nor visual evidence of hydrocarbon contamination was recorded in any of the exploratory holes' during the 2023 intrusive investigation.

1.3.5 Evidence of Damage to Pollution Prevention Measures

The 3CR Annex will include new infrastructure. Bunds, hardstanding, tanks, indoor drains will be brand new and designed specifically for the 3CR Annex.

The 3CR Annex will be incorporated into the site's existing planned preventative maintenance programme and relevant pollution prevention management measures / procedures will be updated to include the 3CR Annex.

1.4 Evidence of Historic Contamination

Appendix C presents the groundwater monitoring data for monitoring well MW01 which shows recorded concentrations of metals and chlorine solvents within groundwater that appears to fluctuate.

1.5 Potential for Contamination from Proposed Activities

The European Commission Guidance concerning baseline reports under *Article 22(2) of Directive 2010/75/EU on industrial emissions 2014/C 136/03*[13], outlines that a number of key tasks should be undertaken to both determine whether a baseline report needs to be produced for a particular situation and in order to produce the baseline report itself. Eight stages have been identified in this process, covering the following main elements:

- Stages 1-3: to decide whether a baseline report is required;
- Stages 4-7: to determine how a baseline report has to be prepared;

[13] Communication from the Commission — European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (europa.eu)

- Stage 8: to determine the content of the report

Where during stages 1-3 it is demonstrated on the basis of the available information that a baseline report is not required, the IED state the '*there is no need to progress to the later stages*'. However, a record of this decision should be provided to the competent authority.

1.5.1 Stages 1-3

- Stage 1: Identify which hazardous substances are used, produced or released at the installation and produce a list of these hazardous substances.
- Stage 2: Identify which of the hazardous substances from Stage 1 are 'relevant hazardous substances' (RHSs). Discard those hazardous substances that are incapable of contaminating soil or groundwater. Justify and record the decisions taken to exclude certain hazardous substances.

  Relevant hazardous substances' *are those substances or mixtures defined within Article 3 of Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation) 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.*
- Stage 3: For each relevant hazardous substance brought forward from Stage 2, identify the actual possibility for soil or groundwater contamination at the site of the installation, including the probability of releases and their consequences, and taking particular account of:
  - the quantities of each hazardous substance or groups of similar hazardous substances concerned;
  - how and where hazardous substances are stored, used and to be transported around the installation;
  - where they pose a risk to be released; and
  - in the case of existing installations also the measures that have been adopted to ensure that it is impossible in practice that contamination of soil or groundwater takes place.

1.5.2 Stages 4-7

Stages 4 to 6 involves the collation of site-specific data to outline the site history and environmental setting to outline the sensitivity of the site to potential risk from accidental releases of RHS.

Stage 7 outlines the requirement to collect intrusive soil and groundwater data to characterise the land at the start of permitted activities and set the 'baseline' land quality data.

1.5.3 Stage 8

Stage out outlines the requirement for a baseline report in line with Article 22(2) of the IED.

1.5.4 IED Baseline Assessment for the Site

Set out below in Table 1-5 are details of how JM will meet the baseline data requirements for the Annex area.

Table 1-5 Industrial Emissions Directive Baseline Data Requirements

Stage	Activity	Objective	How The Requirements Have Been Met
1	Identify which hazardous substances are used, produced or released at the installation.	Determine whether hazardous substances are used, produced or released in view of deciding whether a baseline report is required. If yes: produce a list of all potential hazardous substances.	Most chemicals at 3CR will be sited at the designated location within the new Annex building. However, there is potential that some chemicals will be stored outdoors in IBCs on bunded pallets. JM are not able to clarify which chemicals will be stored outdoors at the time of writing. As such, it has been conservatively assumed that all chemicals listed in the raw materials list have the potential to be stored outdoors (refer Appendix D). The wider JM site is an Upper Tier COMAH (Control of Major Accident Hazards) site. The COMAH safety report will be updated to include storage of chemicals at the 3CR Annex and JM will ensure that segregation of chemicals will occur as appropriate. Two integrally bunded diesel emergency generators will also be located outdoors in the 3CR Annex area. Refer to Drawing 05 for the proposed building layout for the 3CR Annex. Where hazardous substances are stored internally on hard standing at the site and the risk of pollution of soil and groundwater because of accidental release is negligible. A list of hazardous substances used or produced onsite with the potential to be stored outdoors during the lifetime of the permit and therefore could result in contamination of soil and groundwater are presented below. This is based on the raw materials list presented in Appendix D. The potential for relevant hazardous substances derived from historical sources is also considered as part of this assessment. **As a result of the operation of the proposed activity:** • Total petroleum hydrocarbons (TPH) • Acids / alkalis. • Chlorine. **As a result of historical land use:** Potential hazardous substances from the wider historical Johnson Matthey site: • TPH.

Stage	Activity	Objective	How The Requirements Have Been Met
			• Volatile organic compounds (VOC) - including chlorinated solvents. • Semi volatile organic compounds (SVOCs). • Polycyclic aromatic hydrocarbons (PAH). • Metals. • Acidic/alkaline soil. Potential hazardous substances from the former petroleum depot, pre-cast cement factory, electrical substation and historical tanks: • TPH. • Polychlorinated biphenyls (PCBs). • Metals. General Made Ground and potential local infilling of local chalk quarries near to the site means the presence of the following cannot be discounted: • Metals. • TPH. • Gases (including CO_2, H_2S, CH_4, CO) • Asbestos • Acidic/alkaline soil.
2	Identify which of the hazardous substances from Stage 1 which, according to the evaluation by a suitably qualified and experienced person, and because of their hazardous potential (toxicity, mobility, persistence and biodegradability, as well as other characteristics), are capable of contaminating soil or groundwater.	To restrict further consideration to only the relevant hazardous substances (RHS) that are capable of contaminating soil or groundwater in view of deciding on the need to prepare and submit a baseline report.	A review of the raw materials present at the site that are an RHS substance are presented in Appendix D. The following RHS stored in quantities above 205 litres have been identified: *Back Up Generators (1,000L belly tanks):* • Diesel *Potential Outdoor Storage of Raw Materials on Bunded IBCs[14].* • Methyl Isobutyl Ketone. • Sodium sulphide. • Hydrochloric acid.

[14] This is a conservative assessment; JM have not yet decided upon which raw materials will be stored outdoors.

Stage	Activity	Objective	How The Requirements Have Been Met
	Discard those hazardous substances that are incapable of contaminating soil or groundwater. Justify and record the decisions taken to exclude certain hazardous substances.		• Oxalic Acid. • Sulphuric acid. • Chlorine. • Tributyl phosphate. The following have been conservatively assumed to be RHS in the absence of data to assess: • Complexing agent / extractant. • PGM liquors. • Selective metal participant. All the substances detailed above would be capable of contaminating soil and groundwater if there were no mitigation measures in place at the Installation. However, mitigation measures for the existing site will also be adopted within the 3CR Annex and will continue to ensure that no contamination occurs because of the proposed activities to be undertaken at the site. Mitigation practices will include external areas being covered in hardstanding; chemicals stored outdoors to be within bunds and spill kits will be stored in the vicinity of chemical storage areas. On site chemical handling and management procedure will be updated to incorporate procedures at the 3CR Annex. Appendix E presents the containment assessment for the 3CR Annex which outlines the RHS used on site and what controls are used to minimise these risks. The whole site is an upper tier COMAH (Control of Major Accident Hazards) site so the 3CR Annex will be incorporated into the wider JM COMAH management procedures. Please refer to the following for further mitigation measures utilised onsite: • Environmental Risk Assessment. • Best Available Techniques and Operating Techniques. The Facility will be managed by technically competent personnel in accordance with site procedures and the Environmental Management System (EMS). This will ensure good practice on site and minimise environmental risk throughout the operation.

Stage	Activity	Objective	How The Requirements Have Been Met
3	Identify the possibility for soil or groundwater contamination at the site for each relevant hazardous substance brought forward from Stage 2 of the installation, including the probability and the consequences of releases, including - the quantities of each hazardous substance concerned; - how and where they are stored; - how they are to be transported around the installation; - how they are used - where they are emitted - measures that have been and, for new installations, will be adopted to protect soil and groundwater at the installation.	To identify which of the hazardous substances from Stage 2 represent a potential pollution risk at the site based on the likelihood of emissions of such substances occurring. **These are the 'relevant' hazardous substances for which information must be included in the baseline report.** Note: Where it is found that there is **no possibility of soil and groundwater contamination, then a baseline report does not need to be prepared or submitted** (due to the quantities of the hazardous substances used, produced or released). However, in these cases it is expected that a record of such a decision, including the reasons for the decision, will be made and held by the competent authority.	As detailed in Stage 2, existing mitigation measures at the site will be extended to the 3CR Annex to protect the groundwater, surface water and soil within the proposed extension to the installation permit boundary from contamination from the proposed site activities. The RHS stored onsite were identified in the containment assessment (refer Appendix E). The assessment presents the containment and pollution prevention measures used to prevent loss of potential pollutants to the soil and groundwater underlying the site. The assessment identifies those materials / activities where the pollution prevention measures are considered suitable and sufficient, and hence where there is no credible risk of pollution occurring. Where applicable, it also identifies those materials / activities where a credible risk of pollution occurring exists, and hence the presence of such pollution risk should be used to inform the scope of any intrusive site investigation required to collate baseline data on the site condition. The containment assessment (Appendix E) has concluded that there is no credible risk of potential pollution impacting on soil and groundwater as a result of the activities proposed to be regulated under the EP. Despite no credible risk for pollution from the proposed activities, JM has collected soil and groundwater baseline data (refer Stage 7 below).
4	Provide site history	Identify potential sources which may have resulted in the relevant hazardous substances identified in Stage 3 being already present on the site of the installation.	Please refer to Section 1.3 of this SCR for details of past land use and historic pollution incidents.
5	Identify the site's environmental setting	Determine where hazardous substances may go if emitted and where to look for them. Also identify the environmental media and receptors that are potentially	Refer to Sections 1.1 and 1.2 of this SCR for details of the site's surroundings and details of present environmental settings. Refer to the ERA included with this EP application.

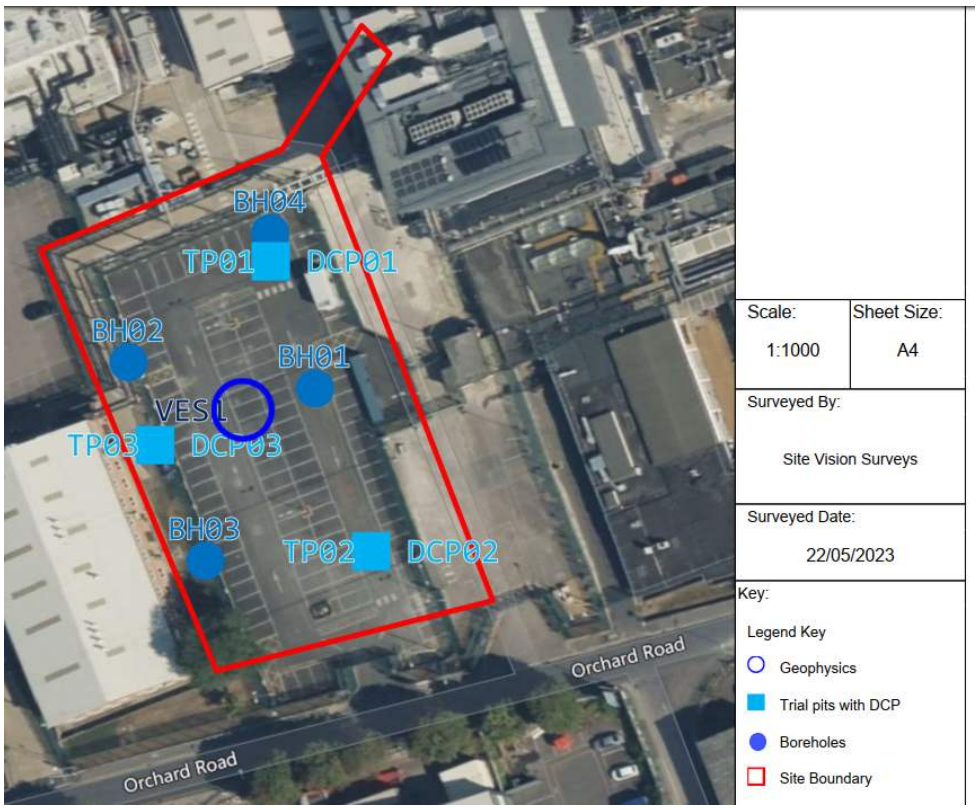
Stage	Activity	Objective	How The Requirements Have Been Met
		at risk and where there are other activities in the area which release the same hazardous substances and may cause them to migrate onto the site.	
6	Use the results of Stages (3) to (5) to describe the site, in particular, demonstrating the location, type, extent and quantity of historic pollution and potential future emissions noting the strata and groundwater bodies likely to be affected by those emissions – making links between sources of emissions, the pathways by which pollution may move and the receptors likely to be affected.	Identify the location, nature and extent of existing pollution on the site and determine which strata and groundwater bodies might be affected by such pollution. Compare with potential future emissions to see if areas are coincident.	The containment assessment (Appendix E) indicates that there is no credible risk of potential pollution impacting on soil and groundwater resulting from activities proposed and management practices in place. However, there are potential historical sources of pollution located: Within the annex area: • Potential for Made Ground located below the site. Outside the annex area: • Historical JM chemical works. • Petroleum oil depot. • Electricity substation. • Pre-cast cement works. There is no credible risk from pollution from the proposed activities within the Annex area, however, JM have undertaken baseline soil (Socotec, 2024) and semi-annual groundwater monitoring since 2007. This data establishes baseline soil and ground conditions at the start of the EP and will potentially avoid more stringent clean up criteria being applied by the regulator at permit surrender.
7	If there is sufficient information to quantify the state of soil and groundwater pollution by relevant hazardous substances on the basis of Stages (1) to (6) then go directly to Stage 8. If insufficient data exists, then intrusive investigation of the	Collect additional data as is necessary to allow a quantified assessment of soil and groundwater pollution by relevant hazardous substances.	There is no credible risk from ongoing pollution incidents from the proposed onsite activities due to the combination of existing containment and environmental management procedures currently in place. That said, JM undertake regular groundwater monitoring, both on the 3CR Annex (BH1) and down gradient of the 3CR Annex.

Stage	Activity	Objective	How The Requirements Have Been Met
	site will be required in order to gather such information.		
8	Produce a baseline report for the installation that quantifies the state of soil and groundwater pollution by relevant hazardous substances	Provide a baseline report in line with the IED.	The Socotec (2023) Ground Investigation Report (Factual Account of Fieldwork, Monitoring, and Laboratory Testing and Geo-Environmental Testing Report (No E3027-23/1 version 2. Issued October 2023) is presented in Appendix B. Groundwater monitoring data from MW01 is presented in Appendix C. The potential contamination as a result of the operation of the proposed activity (should no mitigation measures be in place) is: • Total petroleum hydrocarbons. • Acids / alkalis. • Chlorine. Groundwater has been sampled for TPH, pH and chloride (surrogate for chlorine) from MW01 from 2007 until 2023. Soil data from the Socotec 2023 report also includes TPH, pH and chloride. These soil and groundwater datasets are considered representative of baseline conditions for the 3CR Annex area.

1.6 Baseline Soil and Groundwater Reference Data

Socotec (2023) completed a ground investigation in the 3CR Annex area to assess ground conditions to support the redevelopment plans. The fieldwork was carried out between 24 May and 27 July 2023. Four boreholes were installed (BH01 – BH04) to depths ranging between 10m and 20m below ground level bgl). Three trial pits (TP01- TP03) were also excavated. Appendix B presents the Socotec (2023) report and the soil data that will form the baseline ground condition for the site.

Figure 2 Investigation locations (Socotec 2023)



It is proposed that groundwater data collected for MW01 (refer Appendix C) be utilised as baseline groundwater data. Refer to Figure 1 for the location of MW01.

The site currently undertakes groundwater monitoring every six months from MW01.

2.0 Permitted Activities

2.1 Existing Activities to be Permitted

The Third Century Refinery (3CR) has been proposed to replace the existing Platinum Group Metals Refinery (PMGR). It will be located in two newly constructed interconnected buildings. The process building for 3CR will be located within the existing installation boundary. The 3CR Annex will be constructed on a former car park, currently outside of the installation boundary (refer Drawing 002).

The process will result in emissions of Cl_2, VOC and HCl abated by two new packed tower wet scrubbing systems and released via two new emission points to air. No new chemicals will be introduced. Some effluent will be tankered off site for treatment and some treated in the existing site effluent treatment plant.

The existing refinery will not be decommissioned until the new facility is commissioned and operational; therefore, a new listed activity will need to be added to the permit. Removal of the PGMR listed activity from the permit following future decommissioning is not included within the scope of this variation.

Chemical storage will take place within the 3CR Annex building, and also outside the Annex in the external yard area in IBC storage containers placed on bunded pallets. Two emergency generators with 1,000L belly tanks will also be located outdoors at the 3CR Annex.

2.1.1 Installation Activities

The 3CR process will be permitted under Schedule 1, Part A1 of the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended), under EPR/BT7086IJ, as follows:

3CR	The new 3CR would be regulated in the same way as the PGMR, namely: *Schedule 1 Section 4.2 Inorganic Chemicals Part A(1)(a) Producing inorganic chemicals such as - (iv) salts (for example ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate, cupric acetate, ammonium phosphomolybdate).*

2.1.2 Directly Associated Activities

The following directly associated activities (DAAs) to the primary activity are undertaken at the site:

- The operation of storage and handling facilities for all raw materials, wastes and products; and
- Operation of site utilities including quality assurance, effluent treatment, site drainage, refrigeration, air compression, cooling, heating and fire protection systems.

2.2 Non-permitted Activities

There are no non-permitted activities taking place at the site.

2.3 Environmental Monitoring and Compliance

Monitoring of point source and fugitive emissions throughout the lifetime of the site will be undertaken in line with the conditions outlined within the EP.

Reporting of emissions will be undertaken in line with the conditions outlined in the EP.

2.4 Operation of the Installation and Management System

The 3CR Annex will be managed by technically competent personnel in accordance with the site-wide procedures and the Environmental Management System (EMS). This will ensure good practice on site and minimise environmental risk throughout operation of the permitted activities.

2.5 Environmental Risk Assessment

As required by EA guidance, an ERA has been undertaken and is included as part of the EP application.

The ERA is an assessment of the risks to the environment and to human health that may be associated with the proposed operations at the site. The ERA reviews a 2km radius from the Site's EP boundary for potentially sensitive receptors of ecological importance along with features such as sites of cultural and natural heritage. A radius of 500m from the site's EP boundary has been adopted for all other potentially sensitive receptors (for example, residential, commercial, industrial, agricultural, and surface water receptors).

2.6 Site Condition Report (SCR) Updates

JM will maintain this addendum to the site wide SCR over the lifetime of the site to detail potential or recorded change to the condition of the site.

3.0 Conclusion

There is no credible risk from ongoing pollution incidents from the proposed onsite activities due to the combination of proposed containment and environmental management procedures to be installed. However, JM undertook soil sampling as part of the geotechnical investigation for the 3CR Annex in 2023. It is proposed that soil data from the Socotec (2023) report forms the soil baseline ground condition dataset and that existing groundwater data from MW01 forms the groundwater baseline ground condition dataset.

Establishing baseline soil and ground conditions at the start of the EP will avoid potentially more stringent clean up criteria being applied by the regulator at site surrender.

Appendix A Envirocheck

Royston Environmental Permit Variation Application

Site Condition & Baseline Report Addendum - 3CR Annex

Johnson Matthey PLC

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Appendix B Socotec 2023 Ground Investigation Report

Royston Environmental Permit Variation Application

Site Condition & Baseline Report Addendum - 3CR Annex

Johnson Matthey PLC

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Appendix C Groundwater Hydrograph, Flow Direction & Monitoring Data for MW01

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Appendix D Relevant Hazardous Substances Assessment

Royston Environmental Permit Variation Application

Site Condition & Baseline Report Addendum - 3CR Annex

Johnson Matthey PLC

SLR Project No.: 416.065394.00001

19 February 2025

D.1 Relevant Hazardous Substances Assessment

This appendix is included as a separate document titled Site Condition Report Confidentiality Sections Table it is covered under Trade Secrets (Enforcement, etc.) Regulations 2018.

Table D-1 Relevant Hazardous Substances Assessment

Raw Material	Typical Usage per Annum	Environmental Risk Phrases	Relevant Hazardous Substance?
Diesel	Confidential	ECHA Database H411 – Aquatic Chronic 2 Carc. 2, H351 – Suspected of causing cancer <state route of exposure if it is conclusively proven that no other routs of exposure cause the hazard.	Yes
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database. EA Confirmed Hazardous Substance List Not listed. Petroleum oil (surrogate chemical) is listed as hazardous substance.	No – low volume of chemical stored
Ammonia	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database. EA Confirmed Hazardous Substance List Not listed	No
Ammonium Chloride	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database. EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database. EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database.	No

Raw Material	Typical Usage per Annum	Environmental Risk Phrases	Relevant Hazardous Substance?
		EA Confirmed Hazardous Substance List Not listed	
Chlorine	Confidential	ECHA Database Aquatic Acute 1 H400 EA Confirmed Hazardous Substance List Listed as non-hazardous pollutant	Yes
Confidential	Confidential	MSDS not available for review. Conservatively assumed that this is an RHS.	In the absence of data assumed to be an RHS.
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database. EA Confirmed Hazardous Substance List Not listed	No
Ferrous Chloride	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database. EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database. EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	No Low quantities of the acid stored onsite.
Hydrochloric Acid 36%	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	Yes (acid)
Hydrogen Peroxide	Confidential	ECHA Database	No

Raw Material	Typical Usage per Annum	Environmental Risk Phrases	Relevant Hazardous Substance?
		No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	
Nitric Acid 70% W/V	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	No Low quantities of the acid stored onsite.
Nitrogen	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database Carcinogen H351 EA Confirmed Hazardous Substance List Not listed	Yes
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	Yes - acid
PGM Liquors	Confidential	MSDS not available for review. Conservatively assumed that this is an RHS.	In the absence of data assumed to be an RHS.
Selective Metal Precipitant	Confidential	MSDS not available for review. Conservatively assumed that this is an RHS.	In the absence of data assumed to be an RHS.
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List	No

Raw Material	Typical Usage per Annum	Environmental Risk Phrases	Relevant Hazardous Substance?
		Not listed	
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Listed as non hazardous pollutant	No
Sodium Hydroxide Solution 18% W/V	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	No
Confidential	Confidential	ECHA Database Aquatic Acute 1 H400 EA Confirmed Hazardous Substance List Not listed	Yes
Sulphuric Acid	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Not listed	Yes - acid
Confidential	Confidential	ECHA Database Carcinogen 2 – H351	Yes

Raw Material	Typical Usage per Annum	Environmental Risk Phrases	Relevant Hazardous Substance?
		EA Confirmed Hazardous Substance List Not listed	
Confidential	Confidential	ECHA Database No aquatic risk phrases or reproduction risk phrases listed on ECHA database EA Confirmed Hazardous Substance List Listed as non hazardous pollutant	No

Appendix E Containment Assessment

Royston Environmental Permit Variation Application

Site Condition & Baseline Report Addendum - 3CR Annex

Johnson Matthey PLC

SLR Project No.: 416.065394.00001

19 February 2025

E.1 Containment Assessment

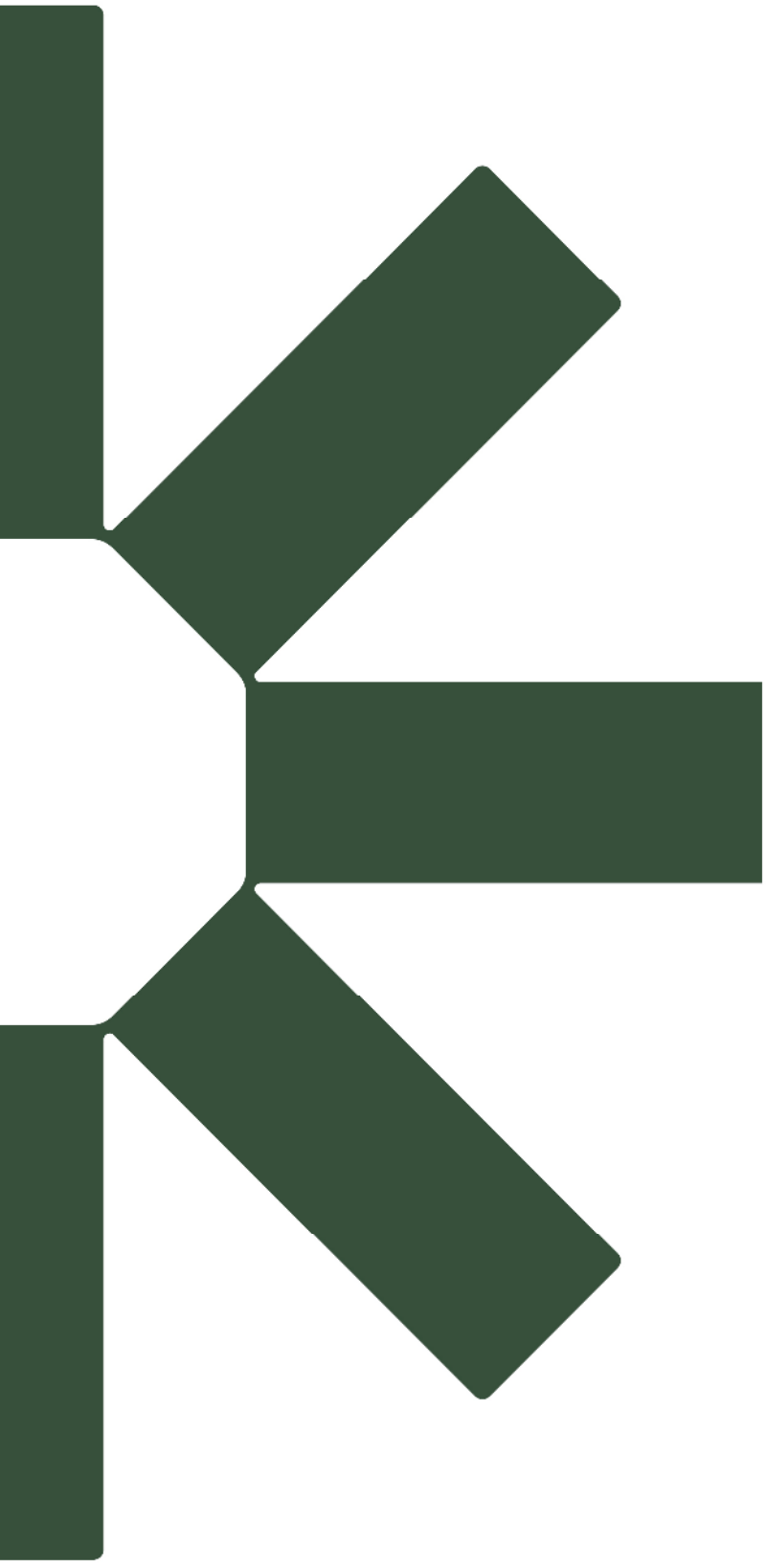
This appendix is included as a separate document titled Site Condition Report Confidentiality Sections it is covered under Trade Secrets (Enforcement, etc.) Regulations 2018.

Table E1 Containment Assessment for RHS

Chemical	Container Type	Volume of Container (litre)	Internal or External Storage	Primary Containment	Secondary Containment	Tertiary Containment	Management Procedures	Carried forward from Stage 3 for Further Assessment?
Emergency Generators								
Oil, Diesel	2 x emergency generator belly tank	1,000	External	Integrally bunded tank	Integrally bunded tank	Impermeable hardstanding. Local surface water drains flow to a sump that is discharged to a sealed drainage system with connection to the onsite effluent treatment plant.	The delivery of diesel at the 3CR Annex will be incorporated into the existing onsite procedure for offloading raw materials. A spill kit will be maintained in the vicinity of the emergency generators.	No, sufficient storage and management procedures in place.
Outdoor Yard Area[15]								
Chlorine	Denios IBC[16]	1,250	External	IBC	Bunded pallet	Impermeable concrete surfacing that drains to a sealed drainage system with connection to the onsite effluent treatment plant.	The delivery of raw materials at the 3CR Annex will be incorporated into the existing onsite procedure for offloading raw materials. Spill kits will be maintained in the vicinity of outdoor chemical storage.	No, sufficient storage and management procedures in place.
Hydrochloric acid	Denios IBC	1,250	External	IBC	Bunded pallet			

[15] The raw materials that will be stored outdoors in IBC containers has not yet been confirmed. As such, a conservative assessment has been undertaken to assume that all the relevant hazardous substances identified will be stored outdoors.

[16] IBC - Intermediate Bulk Containers



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