Site Condition Report (Variation) BAE Systems (Operations) Limited, Samlesbury, Balderstone, Lancashire, BB27LF, UK (Permit Ref. BV0414IV)

On behalf of:
BAE Systems (Operations) Limited

Project Reference:
023-1932

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Abbreviations

ASR	Application Site Report
BGS	British Geological Survey
EA	Environment Agency
EAME	Earth & Marine Environmental Consultants Ltd
EPR	Environmental Permit
MAPP	Major Accident Prevention Policy
NGR	National Grid Reference
SCR	Site Condition Report
SPZ	Source Protection Zone
WFD	Water Framework Directive

References

Environment Agency. (2009). *The Surface Treatment of Metals and Plastics by Electrolytic and Chemical Processes (EPR 2.07).*

Environment Agency. (2013). *Guidance for Applicants, Environmental Permitting Regulations, Site Condition Report - Guidance and Templates.* EA. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/298106/LIT_8001_38258e.pdf

1 Introduction

1.1 Background

This document has been prepared by BAE Systems (Operations) Limited ("BAE Systems") and its environmental consultant Earth and Marine Environmental Limited ("EAME") in support of a Part A1 Environmental Permit variation as required under Regulation 20 of the *Environmental Permitting (England and Wales) Regulations 2016* (as amended).

The status log for the permit is outlined in **Table *1-1***.

Table 1-1: *BAE Systems Samlesbury permit log*

Description	Date	Comments
Application EPR/BV0414IV/A001	29/07/04	Application duly made
Additional information received	14/10/04	-
Permit EPR/BV0414IV determined	16/12/04	Permit issued to BAE Systems (Operations) Limited.
Variation application EPR/BV0414IV/V002 (Variation and consolidation)	17/03/17	Duly Made To replace the PFD line with other changes to the CTF, addition of CHP, and to update permit to modern conditions.
Schedule 5 Notice for further information sent 18/05/17, follow-up email sent 06/06/17	01/06/17	Received Non-technical summary, changes to permitted activities, and monitoring standard for stackemissions.
	16/06/17	Confirmation of ETP maximum daily capacity.
	03/07/17	H1 emission to sewer assessment andconfirmation of whether effluent is hazardous.
Variation determined EPR/BV0414IV/V002 (Billing Ref. HP3431DM)	01/08/17	Varied and consolidated permit issued in modern condition format.

This document has been prepared in-line with the current Environment Agency (EA) Guidance (Environment Agency, 2013). This includes provision of revised Sections 1 to 3 as outlined in the Site Condition Report (SCR) Template.

It is important to note that the original Integrated Pollution Prevention and Control (IPPC) application was submitted in Q3 2004 (determined Q4-2004) at which time an Application Site Report (ASR) was submitted (including intrusive ground condition information). It is important to note that this SCR does not replicate previously provided information.

The remainder of this document outlines the requirements requested by the EA to progress the permit variation application.

1.2 Proposed Variation

The current environmental permit is split between two areas on-site *i.e.* Central Treatment Facility (CTF) and 1-Shed. The variation application (as it relates to each of the areas) is outlined below.

1.2.1 Central Treatments Facility

The proposed changes to the CTF permitted installation are outlined below.

New (replacement) anodise process line with the virtual elimination of Chromium VI. Installation of a new (replacement) metal anodising process line located wholly within the Central Treatment Facility (CTF). The project will involve the use of pre-existing equipment (i.e. a previously installed (but not used) scrubber unit) located on the southern side of the CTF.

The switch from the historic use of Chromic acid (used within the current anodise process line) to a newer anodise process (Thin Film Sulphuric Acid Anodising) will virtually eliminate the use of Cr (VI) compounds within the anodise process with the overall aim of total removal (upon certification/ approval). A BAT abatement system to be used. This was previously installed during the earlier Penetrant Flaw Detection (PFD) permit variation. It has taken longer than expected to get the new non-Chromic acid anodise process approved for military aircraft applications.

Removal of all decommissioned equipment associated with the current permitted Chromic acid anodising process line. Post-commissioning/productionisation acceptance, the removal of the current permitted chromic acid metal anodising process line located wholly within the CTF building.

This includes the removal of the two existing external scrubber units (AE1 and AE2) located on the western side of the CTF building. To ensure all potentially hazardous materials are removed. As this is located within the CTF building (permitted area) BAE Systems is not applying to surrender the area occupied by the current anodise process line.

Update environmental permit to remove all references to the 'Clean and Pickle line' following decommissioning of the process line during 2022.

This includes the removal of air emission points AE3 and AE4 and all associated equipment. The clean and pickle line and emission points AE3 and AE4 have been fully removed. All equipment has been removed and the EA is aware of the process change (following a site inspection on 27/120/22 Ref. BV0414IV/0439888).

Revised tanker/chemical delivery area on the western side of the CTF building. Process Improvement (in-line with BAT)

The external arrangements for the delivery and handling of chemicals (via tanker) were subject to improvement and re-engineering in-line with BAT requirements. These were discussed with the EA during a site inspection in 2021 (Ref. 09/03/21, BV0414IV/0388068). BAE Systems recognises that this change needs to be included within the permit (as a directly associated activity).

Modifications and expansion of the current effluent treatment plant (ETP) located within the CTF. This will be used (in part) for the treatment of rinse waters from the new (replacement) metal anodising process line located within the CTF building. Increased storage and treatment capacity.

An extension of the existing ETP in-light of the anodise process line update. The changes will include:

- Installation of a mezzanine within the building
- Modification of the existing external concrete bund (BAT compliant)
- Replacement of 7 above ground storage tanks (ASTs) with 7 new ASTs

These changes are to reflect the volume change in rinse water due to the new anodise line, the increased demand for Deionised Water (DI) water and the ability to improve rinse water recycling.

There is no change in chemistry or discharge characteristics from the permit emission point TE1 and hence no changes to composition released via the final sewer point TE3.

Revised permit boundary surrounding CTF

A minor permit boundary change to update permit boundary at CTF to include new chemical delivery area, surrounding service road and ETP extension.

1.2.2 1-Shed

The proposed changes to the 1-Shed permitted installation are outlined below.

Update permit to remove reference to organic solvent degreasing using Neu-Tri E (Trichloroethylene). Replacement solvent is now Perchloroethylene.

Minor change in single material (listed in Table S3.1). Emission Limit Value (ELV) within permit remains valid. Less than a tonne of solvent is still used within the process. The process equipment still meets BAT.

1.2.3 Permit Boundary

An extension to the current permit boundary is required to incorporate the proposed changes outlined in this variation.

The installation of the new tanker/chemical handling bay located on the western side of the CTF building will require the permit boundary to be extended. BAE Systems is requesting for the boundary to be extended up to and including the new security key entry gate located adjacent to the existing chemical store (which is already part of the permitted installation). Given delivery vehicles use the surrounding service road (*i.e.* to access the tanker delivery bay, the ETP and the scrubbers at the southern end of the CTF building) BAE Systems would also like to include that area within the permit boundary.

No extension or changes to the current 1-Shed permitted area are required.

A standalone plan is provided in **Annex A** suitable for inclusion within the revised environmental permit.

2 Site Details

The site details are outlined within *Table 2-1*.

Table 2-1: *Site details*

Required Information	
Name of Applicant	BAE Systems (Operations) Limited
Activity Address	Samlesbury, Balderstone, Lancashire, BB27LF, UK
National Grid Reference (NGR)	Grid Reference (6 figure) CTF (SD 63639 31162) 1-Shed (SD 62104 31437)
Document reference and dates for Site Condition Report at permit application and surrender	**Application** BAE Systems (2004). IPPC Application Site Report for Surface Treatment at CTF and No.1 Shed, Samlesbury, Blackburn, UK, Project No. A329-00-R1-A DRAFT, Issued July 2004. **Variation(s)** **PFD Process Line Variation** – EAME (2016). Site Condition Report (Variation), BAE SYSTEMS (Operations) Limited, Samlesbury Aerodrome, Balderstone, Lancashire, BB2 7LF, UK. Permit No. BV0414IV, Project Ref. 016-1477, Revision REV01, Date: October 2016. **Anodise Process Line Variation (this application)** – EAME (2023). Site Condition Report (Variation), BAE Systems (Operations) Limited, Samlesbury Aerodrome, Balderstone, Lancashire, BB2 7LF, UK. Permit No. BV0414IV, Project Ref. 016-1477, Revision REV00, Date: June 2023. **Surrender** Not applicable
Document references for site plans (including location and boundaries)	Annex A: Site Plans

3 Condition of Land at Permit Issue

3.1 Environmental Setting

There have been no significant changes in the environmental setting since the previous SCR submission in 2016 *i.e.* the previous report remains valid.

3.2 Pollution History

3.2.1 Pollution incidents that may have affected land

There have been several incidents, leaks and/or spills associated with the installation since the last SCR was submitted that have been notified to the EA (**Table *3-1***).

Table 3-1: *Environmental incidents (since October 2016)*

Date	Area	Issue	Action(s) taken
29/03/17	CTF	**Escape of waste fluorescent dye from tanker** Wastewater containing fluorescent dye was being transferred to an external tanker from an internal bund following an earlier issue where a temporary water pipe connection had come loose, leading to water filling the bunds below the PFD and Anodise line. As this wastewater was being transferred to the tanker, the solution began to foam up within the tanker barrel causing some of the contents to escape out of a vent pipe. Spill control equipment was deployed to prevent entry into local drain gully and subsequent clean-up of spillage undertaken. **NO LOSS TO UNSURFACED GROUND**	Approx 25 litres dye bypassed ball valve on tanker and escaped via tanker exhaust port. Future loading of dye to be undertaken through bottom valve on tanker to minimise aeration. Drain covers deployed and spill control equipment used to contain and clean-up spillage (on hardstanding). Roadway cleaned and drain gullies emptied as a precaution. Notified to the EA. No further action required.

Date	Area	Issue	Action(s) taken
25/08/19	CTF	**CTF Clean and Pickle Line Scrubber Fire** Fire within acidic scrubber leading to release of 2,000 litres of scrubber effluent into the secondary containment. It was then found that the secondary containment was damaged leading to the loss of 2,000 litres to ground. **RELEASE TO UNSURFACED GROUND**	Fire possibly started due to fan/motor failure on scrubber unit. Structured bund survey scheme developed and implemented for all external bunds. Sampling of downstream monitoring borehole to check for impacts. No evidence of impact detected. Notified to the EA. No further action required. **NO IMPACT DETECTED**
05/03/20	CTF	**Chromic acid contaminated steam leak** Chromic acid contaminated steam condensate leaked and entered ground at rear of CTF building. The release was found to be collecting within an excavation associated with the new chemical delivery area. The cohesive nature of the near surface soils appears to have prevented rapid migration of the liquid a waste contractor was able to recover approximately 2000 litres of liquid from a trench dug in the affected area. **RELEASE TO UNSURFACED GROUND**	Controlled waters risk assessment undertaken including installation and sampling from four new monitoring wells. Many recommendations have been taken forward into how BAE and EMCOR interact with each other during pre-planned maintenance operations. Notified to the EA. No further action required. **NO IMPACT DETECTED**

Date	Area	Issue	Action(s) taken
26/08/20	CTF	**External Effluent Plant bund overflow** On investigation, it was identified that Tank T1009 was indicating full and Tank T1008 was indicating 2/3 full. The effluent yard area was checked, and it was identified that external bund was full of chromated rinse waters from the chemical treatment lines and was overflowing the bund perimeter and onto the access road. Effluent plant closed and water within the bund pumped from the bund area into a tanker (14,860 litres). Samples taken and analysed for PH and contaminants. **NO LOSS TO UNSURFACED GROUND**	The fitting of a level bund alarm within the external effluent plant bund area to identify that liquid was present. This should prevent the bund from being breached. A stand-alone sounder and warning/ flashing light located in a prominent location within the building area. This should prevent the bund from being breached. Procedure completed to define the response to be adopted in the event of the activation of the effluent plant level bund alarm within CTF. Improved training programme on effluent plant operation for specific roles within CTF implemented. Notified to the EA. No further action required. **NO IMPACT DETECTED**
04/03/21	CTF	**Noise complaint** BAE completed a basic assessment and have possibly identified the fans in the new scrubber system serving the CTF building as being a potential source.	An investigation into complaints of a noise affecting residences on Branch Road, Mellor Brook, found a strong tonal source emitted from the stack of the PFD scrubber unit. Remedial works have subsequently been carried out on the fan to reduce the problem tone (*i.e.* the fitting an insert inside the fan to remove the offending tone). Measurements have been taken to validate the remediation works. Notified to the EA. No further action required.

3.2.2 Historical land-uses and associated contaminants

The historical land-uses and associated contaminants were previously outlined within the 2004 ASR. No additional information is available.

3.2.3 Any visual/olfactory evidence of existing contamination

Information provided by BAE Systems demonstrates that there is no visual and/or olfactory evidence of contamination in the area surrounding the CTF building or 1-Shed.

3.2.4 Evidence of damage to pollution prevention measures

All pollution prevention measures (*i.e.* primary, secondary and tertiary containment systems) have been designed and constructed to meet current BAT standards as defined within the EA Technical Guidance Note for the Surface Treatment of Metals and Plastics by Electrolytic and Chemical Processes (S2.07) (Environment Agency, 2009).

3.2.5 Evidence of historic contamination, for example historical site investigation, assessment, remediation and verification reports (where available)

The evidence of historic contamination was previously outlined within the 2004 ASR.

Localised groundwater monitoring was undertaken because of the CTF Clean and Pickle Line Scrubber Fire (2019) and additional soil and groundwater information was collected because of the Chromic acid contaminated steam leak (2020). This information has been submitted to the EA.

3.2.6 Baseline soil and groundwater reference data

The baseline soil and groundwater conditions were defined within the 2004 ASR. Periodic groundwater monitoring of the on-site boreholes has been undertaken. No significant issues or trends have been identified.

4 Permitted Installation

4.1 Permitted activities

The stationary technical units (STUs) and associated technical connections are outlined in **Table *4-1***.

Table 4-1: *Stationary Technical Units and Technical Connections (post-variation)*

STUs	Technical Connections
Central Treatment Facility (CTF) Penetrant Flaw Detect (PFD) line (S2.3) Anodise line (S2.3) Effluent treatment plant (S5.4)	Paint spraying Heat treatment Paint, chemical and waste storage areas CHP, boiler room and compressors Tanker delivery area
No. 1 Shed (Fabrications) Chemical milling (Chemi-etch) line (S4.2)	Heat treatment Vapour degreasing (< 1 tonne per annum) Scribing/profiling (laser and water jet) Mechanical preparation (grit blasting) Effluent treatment plant Chemical and waste storage Maskant application
Note: The Clean and Pickle Line (A-line) STU has been removed from CTF. The Chrome anodising and Alocrom line STU will be removed from CTF (*i.e.* subject to decommissioning).	

4.2 Non-permitted activities undertaken

The non-permitted activities undertaken at the site include machining, carbon fibre-based activities, paint spraying (under a Part B permit), assembly, office and administration activities.

4.3 Other requirements

Plans showing activity layout have been provided previously although an updated overall site plan is provided to update Schedule 5 of the environmental permit (**Annex A**). The revised layouts are provided in the main installation report.

An environmental risk assessment (ERA) was provided within the original 2004 IPPC application. This has been subject to update and review as part of the site's environmental management system processes.

5 Changes to the Activity

5.1 Boundary changes

The existing permit boundaries are outlined within **Figure *5-1*** and **Figure *5-2***.

Figure 5-1: *CTF permitted areas (in green)*

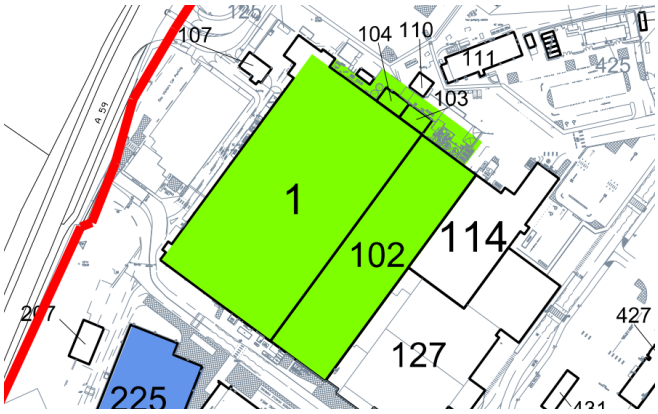

Figure 5-2: *1-Shed permitted areas (in green)*

No changes to the 1-Shed permit boundary are required.

The changes to the permit boundary in relation to the CTF are outlined in **Figure *5-3***. A standalone plan is provided in **Annex A** suitable for inclusion within the revised environmental permit.

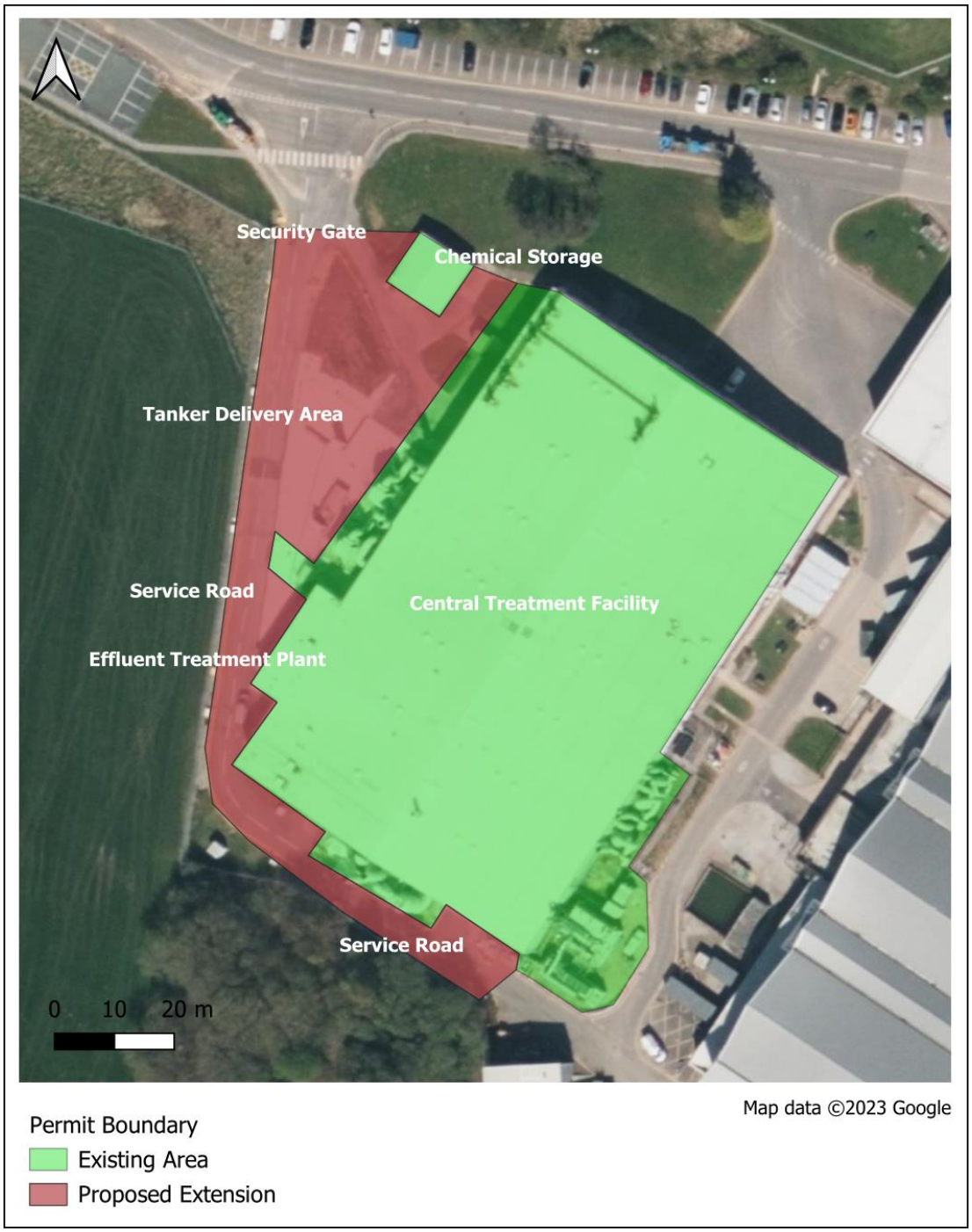

Figure 5-3: *CTF permit boundary (current and proposed)*

5.2 Changes to permitted activities

The permitted installation has been subject to the changes/variations outlined in ***Table 1-1***. The potential for land impacts has not significantly changed from that stated in the original IPPC application in 2004.

5.3 Dangerous substances

No additional dangerous substances have been utilised within the permitted installation beyond that originally reported within the IPPC application. The main material changes associated with this variation are:

- removal of Chromic acid from the new replacement anodise process line; and
- change of organic solvent used for degreasing in 1-Shed (Trichloroethylene to Perchloroethylene).

The site operates as a top tier Control of Major Accident Hazard (COMAH) installation as defined by the *Control of Major Accident Hazards (Amendment) Regulations 2015*. As a result, the current COMAH major accident prevention policy (MAPP), Safety Report, emergency plan and management systems will be subject to revision.

Annex A: Figures