Environmental Permit Application: Surface Water Pollution Risk Assessment

StandardAero, Gosport

Client: Vector Aerospace International Ltd

Reference: 8101-1Cr2

Date: 15th May 2025

Report Issue

Report Title: Surface Water Risk Assessment - StandardAero, Gosport

Report Reference: 8101-1C

Field	Report Version			
	1	2	3	4
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Date of Issue	6th February 2025	15th May 2025		
Comments	-	Updated monitoring results		

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Executive Summary

Redmore Environmental Ltd was commissioned by Vector Aerospace International Ltd to undertake a Surface Water Pollution Risk Assessment in support of an Environmental Permit Variation Application for StandardAero, Gosport.

The facility has the potential to cause surface water impacts as a result of pollutants released within their effluent discharge during normal operation. A Surface Water Pollution Risk Assessment was therefore required in order to assess potential risks to the environment.

An assessment using a standard screening tool was undertaken in order to predict pollution levels as a result of the facility. The findings indicated that the operation of the plant is not predicted to result in significant risks to the environment.

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1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by Vector Aerospace International Ltd to undertake a Surface Water Pollution Risk Assessment in support of an Environmental Permit Variation Application for StandardAero, Gosport.

1.1.2 The facility has the potential to cause surface water impacts as a result of pollutants released within their effluent discharge during normal operation. A Surface Water Risk Assessment was therefore required in order to assess potential risks to the environment.

1.2 Site Location and Context

1.2.1 The StandardAero facility is located off Fareham Road, Gosport, at approximate National Grid Reference (NGR): 458885, 104040.

1.2.2 The facility specialises in the repair and refurbishment of aircraft engine components. The site includes a cleaning plant comprising a number of acid, alkali and solvent degreasing and cleaning operations. Components are mounted on cradles and manually dipped into the appropriate cleaning vat. Where components need to be dipped into multiple vats, the cradles are rinsed in intermediate water baths in order to minimise cross-contamination of cleaning solutions.

1.2.3 Contaminated rinse water from the cleaning processes is treated in a dedicated Effluent Treatment Plant (ETP). This is designed to treat the maximum quantity of water that is recycled back to the process, with the concentrate being either discharged to the municipal sewer or, in the case of cadmium bearing solutions, transported for off-site treatment and disposal. Pollutants within the water discharged from the ETP have the potential to cause impacts at sensitive receptors. A Surface Water Risk Assessment was therefore required in order to assess potential risks to the environment.

2.0 METHODOLOGY

2.1 Introduction

2.1.1 The facility has the potential to cause increases in water pollution levels as a result of emissions released within the effluent discharge during normal operation. Impacts have therefore been assessed in accordance with Environment Agency (EA) guidance 'Surface water pollution risk assessment for your environmental permit'[1] and associated H1 Assessment Tool. The methodology and inputs are summarised in the following Sections.

2.2 H1 Assessment Tool

2.2.1 The H1 Assessment Tool is a Microsoft Access based methodology produced to support the EA risk assessment process. The database allows the user to calculate the contribution of defined emission sources to water pollution concentrations based on various input values. These can then be compared with the relevant Environmental Quality Standard (EQSs) to determine the acceptability of the facility in terms of water pollution.

2.3 Emission Sources

2.3.1 A single potential emissions source was identified based on information provided by the Applicant. This is summarised in Table 1.

Table 1 Emission Source

Source		Description of Operation
W1	ETP to sewer	Continuous operation

2.3.2 The effluent from the facility will be treated at Peel Common Water Treatment Works. Southern Water have confirmed that the final discharge location will be at NGR: 458100, 97700, which is located in the Solent Estuary.

[1] https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit.

2.4 Assessment Inputs

2.4.1 Inputs used within the assessment were provided by the applicant and are summarised in Table 2.

Table 2 H1 Assessment Inputs

Parameter	Unit	Value
Effluent Flow Rate	m^3/s	0.0018
Discharge Location	NGR	458100, 97700
Discharge Depth	m	15

2.4.2 Water monitoring at the ETP outlet was undertaken by Analytical Construction Services in April 2025. A total of 12 individual samples were undertaken. A summary of the results is provided in Table 3.

Table 3 Monitored data

Pollutant	Effluent Concentration (µg/l)	
	Average of 12 Samples	Maximum of 12 Samples
Chloride	971,908	6,270,000
Fluoride	161	704
Cyanide	2.47	7.59
Silver	0.60	0.6
Cadmium	0.25	0.25
Cobalt	1.56	2.09
Copper	0.59	1.11
Iron	26.75	168
Manganese	106.20	172.77
Nickel	4.3	10.0
Lead	0.3	0.6
Zinc	1.1	2.1

Pollutant	Effluent Concentration (µg/l)	
	Average of 12 Samples	Maximum of 12 Samples
Chromium (III)	1.2	2.2
Chromium (VI)	2.28	5.3
Phenol	2.86	12.4

Note: Below Limit of Detection.

2.5 Background Concentrations

2.5.1 Background pollutant concentrations at the Solent Estuary were not available. As such, levels were assumed to be 50% of the EQS in accordance with EA guidance[2] for all pollutants.

2.6 Environmental Quality Standards

2.6.1 Table 4 presents the EQSs for pollutants considered within this assessment. These were obtained from the link to current EQSs for estuaries and coastal waters provided in EA guidance 'Surface water pollution risk assessment for your environmental permit'[3].

Table 4 Environmental Quality Standards

Pollutant	EQS Annual Average	EQS Maximum Allowable Concentration
Chloride	-(a)	-(a)
Fluoride	5,000	15,000
Cyanide	1	5
Silver	0.5	1
Cadmium	0.2	-(a)
Cobalt	3	100
Copper	3.76	-(a)
Iron	1,000	-(a)

2 https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit.

3 https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit.

Pollutant	EQS Annual Average	EQS Maximum Allowable Concentration
Manganese	-(a)	-(a)
Nickel	8.6	34
Lead	1.3	14
Zinc	6.8	-(a)
Chromium (III)	-(a)	-(a)
Chromium (VI)	0.2	-(a)
Phenol	7.7	36

Note: (a) No EQS stated within the guidance.

3.0 ASSESSMENT

3.1 Introduction

3.1.1 The assessment was undertaken in accordance with the 'Screening test: Estuaries and coastal water' section of the EA Surface Water guidance[4]. This comprises five tests to assess whether potential impacts can be screened. The results are provided in the following Section.

3.2 Test 1

3.2.1 Test 1 is to assess whether the level of pollutant in the discharge is more than the EQS limits. If a pollutant is above the EQS then the assessment should progress to Test 2. Comparison of the water monitoring results to the EQSs indicated all pollutants could be screened out with the exception of cadmium, chromium (VI), cyanide and silver. As such these pollutants were progressed to Test 2.

3.3 Test 2

3.3.1 Test 2 involves the requirement to check if the effluent is discharged to the low water channel (if the water does not flow across the estuary bed at any stage of the tide) in the upper parts of an estuary where the water is mainly fresh. The discharge location is in the lower part of the estuary and therefore the assessment was progressed to Test 3.

3.4 Test 3

3.4.1 Test 3 involves the requirement to check whether the effluent is discharged to a location with restricted dilution or dispersion. Examples are enclosed bays (such as Lulworth Cove in Dorset), docks and ports. In these locations there is limited exchange of water between the point of discharge and offshore waters.

[4] https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit#screening-tests-estuaries-and-coastal-waters.

3.4.2 Review of the final discharge location indicated that it is situated over 1km from shore and not in an enclosed bay or harbour. Dilution and dispersion is therefore not anticipated to be restricted. The assessment was therefore progressed to Test 4.

3.5 Test 4

3.5.1 Test 4 requires a review of the depth and location of final discharge. Modelling is required if:

- The discharge location is less than 50m offshore from where the sea bed is at chart datum; or,
- The sea bed at the discharge location is less than 1m below chart datum.

3.5.2 Review of the discharge location indicated that it is situated over 1km from shore at a depth of approximately 15m. As such, the above criteria do not apply to the discharge site and the assessment was progressed to Test 5.

3.6 Test 5

3.6.1 Test 5 requires a comparison of the effective volume flux of the discharge to the allowable limits. If the effective volume flux is more than the allowable effective volume flux for the discharge location there is a requirement to carry out modelling. If it is less, no further Tests are required and the effluent is not considered a risk to the environment.

3.6.2 For Test 5, the H1 Access tool was utilised. This indicated that the effective volume flux for all pollutants was below the allowable effective volume flux. The H1 Access tool indicated that all pollutants therefore 'passed' Test 5 and water modelling was not required.

4.0 CONCLUSION

4.1.1 Redmore Environmental Ltd was commissioned by Vector Aerospace International Ltd to undertake a Surface Water Pollution Risk Assessment in support of an Environmental Permit Variation Application for StandardAero, Gosport.

4.1.2 The facility has the potential to cause surface water impacts as a result of pollutants released within their effluent discharge during normal operation. A Surface Water Pollution Risk Assessment was therefore required in order to assess potential risks to the environment.

4.1.3 An assessment using a standard screening tool was undertaken in order to predict pollution levels as a result of the facility. The findings indicated that the operation of the plant is not predicted to result in significant risks to the environment.

5.0 ABBREVIATIONS

EA	Environment Agency
EQS	Environmental Quality Standard
ETP	Effluent Treatment Plant
NGR	National Grid Reference