



**Surface Water  
Pollution Risk  
Assessment Report**

**Prepared for:**

Hard Anodising Surface  
Treatments Limited

Firs Estate

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## EnviroSolution Ltd Document Verification

|                     |  |                       |   |
|---------------------|--|-----------------------|---|
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# 1 Introduction

## 1.1 Instruction

EnviroSolution Ltd were commissioned by Hard Anodising Surface Treatments Ltd to undertake a surface water pollution risk assessment for their Installation at Firs Industrial Estate, Kidderminster.

## 1.2 Background

Hard Anodising are applying an environmental permit and therefore a surface water pollution risk assessment for their Installation is required to inform this application.

Based on the nature of the processes undertaken at the site and the surrounding land use, risks associated with odour, noise and vibration are negligible. Therefore, this environmental risk assessment focuses on wastewater emissions from the Installation. A risk assessment for emissions to atmosphere from the Installation has also been completed and this is presented in a separate report (i.e. CL1003)

The assessment has been undertaken using the following Environment Agency guidance:

- Surface water pollution risk assessment for your environmental permit

This report presents the findings of the assessment.

### V2 update

The Version 2 update of the *Surface Water Pollution Risk Assessment Report* presents several amendments and enhancements informed by additional monitoring data and recalculated assessment parameters. A summary of the key updates is provided below.

- Updated Monitoring Data - This revision integrates recent effluent water test results from 2025 and 2026
- Updated STRF-Adjusted Concentrations - Tables 6a and 6b have been revised to include recalculated concentrations
- Updated Comparison Against EQS and TEC Limits - Tables 7a and 7b have been updated
- Revised Screening Assessment - The data is used to update the screening process under the Environment Agency's assessment framework.

## 2 Site Setting

### 2.1 Site Location

The Installation is located at Firs Industrial Estate in Kidderminster and is accessed via Rickets Close. The National Grid Reference for the installation is SO 81985 73508. The location is shown on **Figure 1**.

The installation has a total site area of about 2 acres. Hard Anodising Surface Treatments Ltd operates from two substantial brick fabricated buildings known as Factory 1 and Factory 2, which are partitioned by Oldington Lane.

**Figure 1 - Installation Location & Boundary Plan (not to scale)**



## 2.2 Site Receptor Survey

As part of the air emissions risk assessment, it is necessary to screen the local area surrounding the site for ecological receptors. The following conservation areas are relevant within 10km of the site:

- Sites of Special Scientific Interest

The details of conservation areas were identified through a site receptor survey on Magic Mapping tool (<https://magic.defra.gov.uk/MagicMap.aspx>) that is managed by Natural England. A summary of the outcome is displayed in **Table 1**.

**Table 1: Sites of Special Scientific Interest within a 10km Radius**

| Within 10km of site                          |                  |  |
|--|------------------|--|
| Receptor Type                                | Approx. Location | Description  |
| Site of Special Scientific Interest (SSSIs): | 0.21km E         | <p><b>River Stour Flood Plain SSSI</b><br/> <b>Area: 17.64ha</b><br/> <b>Ref: 1002312</b></p> <p>River Stour Flood Plain is important for palaeohydrological studies of the River Severn, providing both morphological and sedimentary evidence relating to the development of the river during the late Devensian.</p>  |
|  | 1.2km NW         | <p><b>Devil's Spittleful SSSI</b><br/> <b>Area: 99.27ha</b><br/> <b>Ref: 1002444</b></p> <p>Description and Reasons for Notification: This site lies to the southwest of Kidderminster on extensive deposits of Bunter Sandstone. The thin acidic soils derived from these rocks support one of the largest remnants of lowland heathland in Worcestershire.</p>   |
|  | 8.9km E          | <p><b>Feckenham Forest SSSI</b><br/> <b>Area: 229.65ha</b><br/> <b>Ref: 1006643</b></p> <p>Description and Reasons for Notification: Feckenham Forest is situated between Bromsgrove and Kidderminster in north-east Worcestershire and contains the largest remnants of the Royal Hunting Forest of Feckenham which covered this part of Worcestershire in the Middle Ages. The site is considered nationally important as an example of oak-dominated ancient woodland over predominantly acidic soils in which both native oak species are present. In addition, the site includes a number of small unimproved meadows. The site has a diverse breeding bird community and is also of importance for invertebrates</p> |
|  | 5.3km W          | <p><b>Bliss Gate Pastures SSSI</b><br/> <b>Area: 1.96ha</b><br/> <b>Ref: 1006884</b></p> <p>Bliss Gate Pastures are situated in north Worcestershire, to the south of the Wyre Forest in an area of dispersed smallholding</p>   |

| Within 10km of site |                  |   |
|---------------------|------------------|---|
| Receptor Type       | Approx. Location | Description   |
|                     |                  | settlements. The two pastures are steeply sloping and west facing, overlying the Upper Carboniferous Coal Measures which give rise to neutral to acidic soils.  |
|                     | 8.3km N          | <p><b>Kinver Edge SSSI</b><br/> <b>Area: 124.20ha</b><br/> <b>Ref: 1002238</b></p> <p>The site lies on a ridge of soft red Permian sandstone which is crowned by an Iron Age hill fort. The acidic soils derived from the sandstone support heathland communities on the dip slope and acidic oak-birch woodland on the scarp slope. The Kinver heathland is one of a series on similar soils extending from Cannock Chase in Staffordshire to Hartlebury Common in Worcestershire. The invertebrate fauna includes a number of species of Lepidoptera which are restricted in their national distribution. The site is also important for its exposures of Permian sandstone.</p>  |
|                     |                  | <p><b>Hurcott Pasture SSSI</b><br/> <b>Area: 4.69ha</b><br/> <b>Ref: 1006642</b></p> <p>Hurcott Pasture is situated in north Worcestershire, on the eastern edge of the town of Kidderminster. The pasture lies on sloping ground overlying the Bunter Sandstones of the Triassic Period, which give rise to nutrient-poor free-draining soils. The special interest lies in the size of the site and in the particular character and diversity of the semi-natural grassland sward which has been maintained by grazing, and is of a type which is nationally scarce and declining through agricultural improvement, development and neglect.</p>  |
|                     |                  | <p><b>Eymore Railway Cutting SSSI</b><br/> <b>Area: 0.21 ha</b><br/> <b>Ref: 1002351</b></p> <p>The only available exposure of the fossiliferous Eymore Farm Marine Band. Its diverse fauna indicates that it is a correlative of the Mansfield Marine Band, which is taken as the index horizon for the Westphalian B – Westphalian C boundary. It is the only marine band to be found in the Wyre Forest Coalfield, suggesting that it was formed by the most extensive marine incursion to occur in Britain during the Westphalian Epoch. Furthermore, its position relative to the base of the Etruria Formation in this area provides an important guide as to the onset of red-bed deposition here. The site is thus of considerable importance for understanding the palaeogeographical development of Britain during the Middle Carboniferous</p> |
|                     |                  | <p><b>Stourvale Marsh SSSI</b><br/> <b>Area: 9.27ha</b><br/> <b>Ref: 1002541</b></p>  |

| Within 10km of site |                  |  |
|---------------------|------------------|--|
| Receptor Type       | Approx. Location | Description  |
|                     |                  | The marsh lies in the flood plain of the river Stour. The soils, derived from alluvium, are base rich and organic and because of impeded drainage remain wet for most of the year.   |
|                     |                  | <p><b>Shrawley Wood SSSI</b><br/> <b>Area: 102.27ha</b><br/> <b>Ref: 1002238</b></p> <p>Shrawley Wood lies on the western bank of the River Severn between Worcester and Stourport. The site overlies Keuper sandstone from which the soils are derived. They are slightly acidic on the plateau but become more neutral to alkaline on the slopes and valley bottom.</p>  |
|                     |                  | <p><b>Brown's Close Meadow SSSI</b><br/> <b>Area: 2.67ha</b><br/> <b>Ref: 1006788</b></p> <p>Brown's Close Meadow is located in north Worcestershire, on the western edge of the town of Bewdley. The meadow slopes gently to the north, overlying the Old Hill Marl of Upper Carboniferous Coal Measures which give rise to neutral soils. The special interest of this site lies in the diversity of the semi-natural grassland sward which has been maintained under traditional management by hay cutting and light grazing.</p>   |
|                     |                  | <p><b>Wilden Marsh and Meadows SSSI</b><br/> <b>Area: 40.50ha</b><br/> <b>Ref: 1002547</b></p> <p>Wilden Marsh lies in the floodplain of the River Stour between Kidderminster and Stourport-on-Severn. It is the richest and most diverse wetland habitat in Worcestershire, and includes examples of fen, damp meadow, marshy grassland and carr.</p>  |
|                     |                  | <p><b>Areley Wood SSSI</b><br/> <b>Area: 64.43ha</b><br/> <b>Ref: 1006963</b></p> <p>Areley Wood is a large ancient semi-natural woodland, with substantial parts under coppice management. The woodland is situated in an area of concentrated biodiversity interest within the Midland Plateau Natural Area and is the largest example of damp alder-oak wood present. It is also of special interest for the assemblage of breeding bird species. The steep valley along the Gladder Brook is base-rich and provides variety to the woodland stand types and to the floristic interest.</p> |
|                     |                  | <p><b>Hartlebury Common and Hilditch Coppice SSSI</b><br/> <b>Area: 90.31ha</b><br/> <b>Ref: 1002489</b></p> <p>Hartlebury Common has been selected as one of the most important areas of dry dwarf shrub heathland surviving in the West Midlands. It lies on wind-blown sand covering two river terraces of the River Severn overlying Bunter and Keuper Sandstone, at Stourport upon-Severn.</p>  |
|                     |                  | <p><b>Hurcott and Podmore Pools SSSI</b></p>   |

| Within 10km of site |                  |   |
|---------------------|------------------|---|
| Receptor Type       | Approx. Location | Description   |
|                     |                  | <p><b>Area: 21.65ha</b><br/> <b>Ref: 1002243</b><br/>                     Hurcott and Podmore Pools are situated in the valley of the Spennals Brook near Kidderminster. The site consists of two pools with adjoining woodland and has been selected as an important wetland complex, containing the largest area of wet valley alder carr in the County</p>   |
|                     |                  | <p><b>Showground Meadow, Callow Hill SSSI</b><br/> <b>Area: 0.79ha</b><br/> <b>Ref: 1006790</b><br/>                     Showground Meadow, Callow Hill is situated in north Worcestershire, within a dispersed area of smallholding settlements to the south of the Wyre Forest. The site overlies the Upper Carboniferous Coal Measures which give rise to neutral to acidic soils. The meadow forms the northern slope of a larger field unit which is used for various recreational activities.</p>   |
|                     |                  | <p><b>Puxton Marshes SSSI</b><br/> <b>Area: 12.99ha</b><br/> <b>Ref: 1002131</b><br/>                     Puxton Marshes lie on alluvial soils in the valley of the River Stour near Wolverley in North Worcestershire. The site comprises a large area of unimproved marshy grassland with associated damp woodland and open water. It is one of the largest and most important areas of marshland remaining in the county and is a remnant of more extensive marshland once present in the Stour Valley.</p>  |
|                     |                  | <p><b>Buckeridge Meadow SSSI</b><br/> <b>Area: 2.64ha</b><br/> <b>Ref: 1006794</b><br/>                     Buckeridge Meadow is situated in north Worcestershire, one kilometre to the south of the dispersed village of Far Forest, Rock. The meadow lies on gently sloping ground overlying the Upper Carboniferous Coal Measures, which give rise to either neutral or slightly acidic soils. The special interest of this site lies in the diversity of the semi-natural grassland sward which has been maintained under traditional management by hay cutting and light grazing, and is of a type which is nationally scarce and declining.</p> |
|                     |                  | <p><b>Ranters Bank Pastures SSSI</b><br/> <b>Area: 2.11ha</b><br/> <b>Ref: 1006793</b><br/>                     Ranters Bank is a traditionally managed smallholding located in north Worcestershire, within the dispersed Worcestershire village of Far Forest, Rock. The pastures slope to the west towards the Lem Brook, which forms the county boundary with Shropshire. The site overlies the Upper Carboniferous Coal Measures, which give rise to neutral to acidic soils. The special</p>  |

| Within 10km of site |                  |  |
|---------------------|------------------|--|
| Receptor Type       | Approx. Location | Description  |
|                     |                  | interest of this site lies in the diversity of the semi-natural grassland sward which has been maintained under traditional management by light grazing.   |
|                     |                  | <b>Wyre Forest SSSI</b><br><b>Area: 1751.28ha</b><br><b>Ref: 1046164</b>   |
|                     |                  | <b>The Wilderness &amp; Vermin Valley SSSI</b><br><b>Area: 4.52ha</b><br><b>Ref: 1002088</b><br>The site consists of two remnants of ancient woodland lying in the valley of the Crompton Brook to the west of Kinver. The site overlies grey clays, shales and sandstones of the Upper Coal Measures (Carboniferous). These have given rise to coarse, loamy soils prone to seasonal waterlogging. The variable drainage and presence of base rich springs have had a marked influence on the composition of the woodland. The site is an example of ash <i>Fraxinus excelsior</i> wood with hazel <i>Corylus avellana</i> understorey in association with one of the finest stands of ash and field maple <i>Acer campestre</i> in the county. |

### 2.3 Source Emission Locations

There are currently no direct wastewater emissions to groundwater or surface water bodies from the Installation.

There are two Effluent Treatment Plants (ETPs) present on site, one at each factory. Waste process water is sent to the ETPs and treated and tested prior to discharge to the main public sewer which is located on Oldington Lane. There are two wastewater emission points; these are shown on **Figure 3**. The site has a trade effluent consent from Severn Trent Water to allow release of treated process water into the main public sewer.

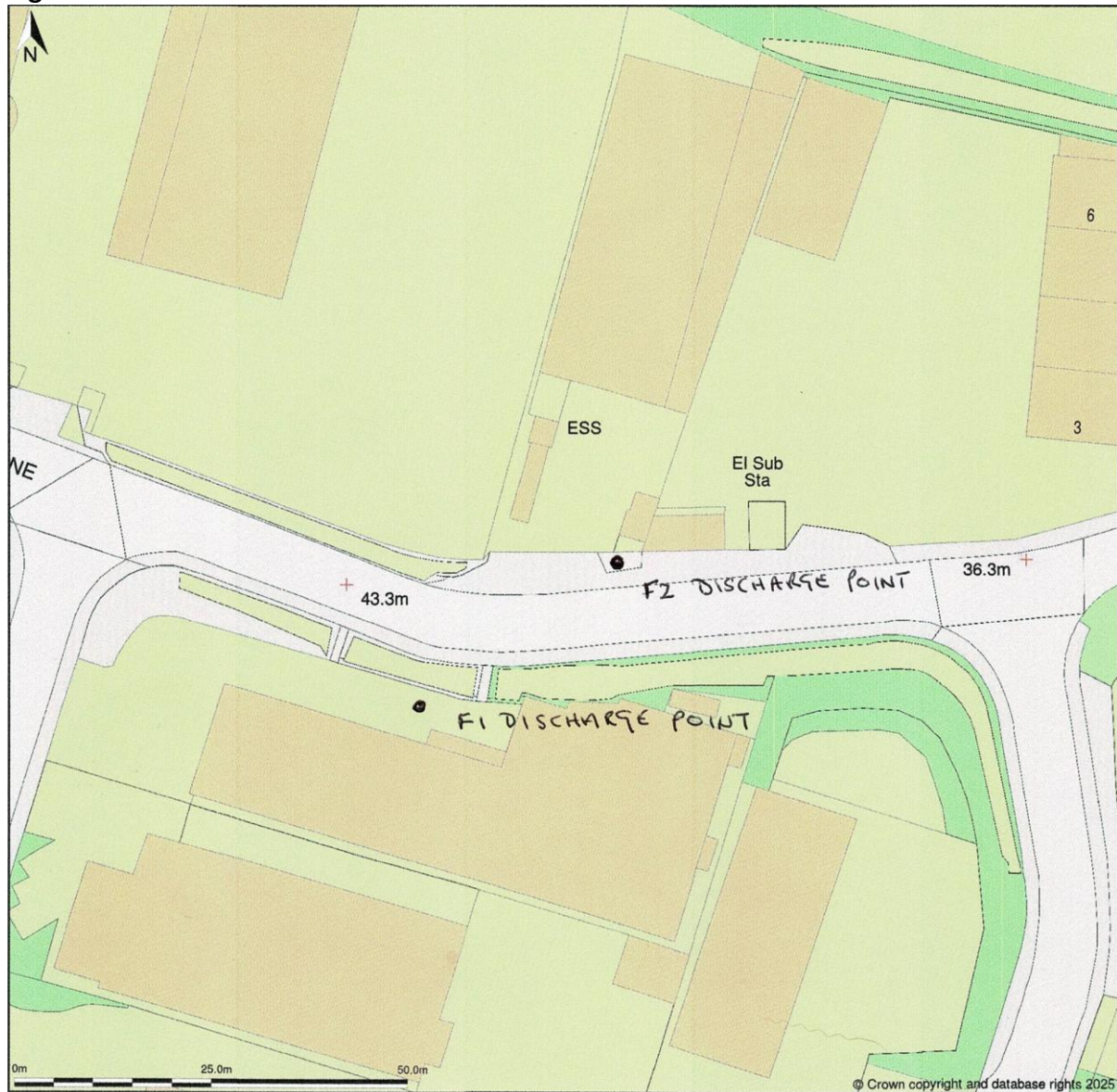
The wastewater treatment works site that receives the wastewater (domestic and trade effluent) from the installation is Kidderminster (Oldington) WwTW. Stourport Road, Kidderminster, Worcestershire. DY11 7QL.

The receiving watercourse for the final effluent from the above treatment works site is the River Stour.

Wastewater emissions data has been based on the site trade effluent consented substances contained in consent reference: 8115 – 01 and 8115 - 02.

The River Stour has a normal daily-flow values (1–2 m<sup>3</sup>/s) and a daily-mean flow around 1.8 m<sup>3</sup>/s (i.e., 1800 l/s).

Figure 3 – Wastewater Emission Locations



#### 2.4 Background Data

Background data for the River Stour has been procured from [environment.data.gov.uk](http://environment.data.gov.uk).

### 3 Environmental Risk Assessment

#### 3.1 Site Emissions Profile

Water emissions are based on the Trade Effluent consented limits for certain substances. The monitoring data from testing carried out by Severn Trent and the operator between 2023 and 2026 (provided by the operator) has been used for the assessment. Owing to the size of discharge compared to WWTW and receiving Rive Stour only key determinants were considered.

#### 3.2 Tests of Significance

In accordance with Environmental Agency guidance: *Surface water pollution risk assessment for your environmental permit*, updated 9 April 2025. There are a number of stages to the assessment as set out below.

##### 1. Identify the pollutants released from your plant

Wastewater emissions data has been based on the site Trade Effluent Consent. The pollutants identified are:

- Chromium
- Copper
- Lead
- Nickel
- Zinc

##### 2. Gather data on your pollutants before screening them

- i. **Table 4** and **Table 5** are based on 17 months' worth of monitoring data from the Installation.

**Table 4: Factory 1 (F1) Effluent Monitoring Data**

| Determinants | Units | Concentration |       |       |
|--------------|-------|---------------|-------|-------|
|              |       | Average       | Max   | Min   |
| Chromium     | mg/l  | 0.262823529   | 0.52  | 64    |
| Copper       | mg/l  | 0.189282353   | 0.97  | 27.8  |
| Lead         | mg/l  | 0.006994706   | 0.023 | 0.001 |
| Nickel       | mg/l  | 0.126082353   | 0.778 | 0.1   |
| Zinc         | mg/l  | 0.422629412   | 5.8   | 0.4   |

**Table 5: Factory 2 (F2) Effluent Monitoring Data**

| Determinants | Units | Concentration |      |          |
|--------------|-------|---------------|------|----------|
|              |       | Average       | Max  | Min      |
| Chromium     | mg/l  | 0.086317647   | 0.2  | 0.0073   |
| Copper       | mg/l  | 0.039682353   | 0.12 | 0.0024   |
| Lead         | mg/l  | 0.002942824   | 0.02 | 0.000001 |
| Nickel       | mg/l  | 0.041711765   | 0.25 | 0.0001   |
| Zinc         | mg/l  | 0.086958824   | 0.5  | 0.0003   |

- ii. Calculate the concentration of pollutant in the discharge when discharging to sewer - Sewage treatment works will remove a proportion of the pollutant in the discharge before it's discharged to a freshwater. This must be taken into account when calculating the concentration of the hazardous chemical or element which you will discharge to the river or coastal water through the sewer. The amount of each pollutant which will be removed by a sewerage works is known as the sewage treatment reduction factor. These factors have been calculated for each individual pollutant, see **Table 6** below.

**Table 6a: Concentration of Pollutants with Sewage Treatment Reduction Factor (Factory 1)**

| Determinants | Units | STRF (proportion remaining) for water filter | STRF (proportion remaining) in activated sludge plant | Average Conc. | Max Conc. |
|--------------|-------|--|---|---------------|-----------|
| Chromium     | mg/l  | 0.52   | 0.16  | 0.021866918   | 0.043264  |
| Copper       | mg/l  | 0.21   | 0.21  | 0.008347352   | 0.042777  |
| Lead         | mg/l  | 0.17   | 0.17  | 0.000202147   | 0.000665  |
| Nickel       | mg/l  | 0.76   | 0.76  | 0.072825167   | 0.449373  |
| Zinc         | mg/l  | 0.33   | 0.33  | 0.046024343   | 0.63162   |

**Table 6b: Concentration of Pollutants with Sewage Treatment Reduction Factor (Factory 2)**

| Determinants | Units | STRF (proportion remaining) for water filter | STRF (proportion remaining) in activated sludge plant | Average Conc. | Max Conc. |
|--------------|-------|--|---|---------------|-----------|
| Chromium     | mg/l  | 0.52   | 0.16  | 0.007181628   | 0.01664   |
| Copper       | mg/l  | 0.21   | 0.21  | 0.001749992   | 0.005292  |
| Lead         | mg/l  | 0.17   | 0.17  | 8.50476E-05   | 0.000578  |
| Nickel       | mg/l  | 0.76   | 0.76  | 0.024092715   | 0.1444    |
| Zinc         | mg/l  | 0.33   | 0.33  | 0.009469816   | 0.05445   |

- iii. Compare the measurements of pollutants from your discharge to the following:
- Environmental Quality Standards (EQS) Maximum Allowable Concentrations (MAC) – to evaluate the short-term environmental impacts.
  - Environmental Quality Standards (EQS) Annual Average (AA) – to evaluate the long-term environmental impacts.
  - Trade Effluent Consent (TEC)

This is presented in **Table 7a** and **Table 7b**. Exceedances of the assessment criteria are show in bold type.

**Table 7a: Comparison of Pollutant Concentrations to EQS MAC, EQS AA and TCE (Factory 1)**

| Determinants | Units | Annual Average Environmental Quality Standard (EQS AA) | Maximum Allowable Concentration Environmental Quality Standard (EQS MAC) | Trade Effluent Consent | Average Conc.   | Max Conc.       |
|--------------|-------|--|--|------------------------|-----------------|-----------------|
| Chromium     | ug/l  | 3.4  | N/A  | 2000                   | <b>21.86692</b> | 43.264          |
| Copper       | ug/l  | 1  | N/A  | 1000                   | <b>8.347352</b> | 42.777          |
| Lead         | ug/l  | 1.2  | 14   | 1000                   | 0.202147        | 0.6647          |
| Nickel       | ug/l  | 4<br>(bioavailable)                                    | 34   | 2000                   | <b>72.82517</b> | <b>449.3728</b> |
| Zinc         | ug/l  | 10.9<br>(bioavailable)                                 | N/A  | 2000                   | <b>46.02434</b> | 631.62          |

**Table 7b: Comparison of Pollutant Concentrations to EQS MAC, EQS AA and TCE (Factory 2)**

| Determinants | Units | Annual Average Environmental Quality Standard (EQS AA) | Maximum Allowable Concentration Environmental Quality Standard (EQS MAC) | Trade Effluent Consent | Average Conc.   | Max Conc.    |
|--------------|-------|--|--|------------------------|-----------------|--------------|
| Chromium     | ug/l  | 3.4  | N/A  | 2000                   | <b>7.181628</b> | 16.64        |
| Copper       | ug/l  | 1  | N/A  | 1000                   | <b>1.749992</b> | 5.292        |
| Lead         | ug/l  | 1.2  | 14   | 1000                   | 0.085048        | 0.578        |
| Nickel       | ug/l  | 4<br>(bioavailable)                                    | 34   | 2000                   | <b>24.09272</b> | <b>144.4</b> |
| Zinc         | ug/l  | 10.9<br>(bioavailable)                                 | N/A  | 2000                   | <b>9.469816</b> | 54.45        |

**3. Carry out screening tests on the data from the pollutants**

*Test 1*

*Check whether the concentration of the chemical and element in the discharge is more than 10% of the environmental quality standard (EQS).*

*If it's less than 10% you do not need to collect the data for the next 3 tests – you do not need to do anything more as your hazardous chemicals and elements are not a risk to the environment. If it's more than 10%, carry out test 2.*

**Table 8a: Comparison of EQS for Freshwater, TEC limits with Current Emissions (Factory 1)**

| Determinants | Units | Annual Average Environmental quality standard (EQS AA) | Maximum Allowable Concentration Environmental Quality Standard (EQS MAC) | Trade Effluent Consent | 10% of AA EQS | 10% OF MAC EQS | Average Conc.   | Max Conc.       |
|--------------|-------|--|--|------------------------|---------------|----------------|-----------------|-----------------|
| Chromium     | ug/l  | 3.4  | N/A  | 2000                   | 0.34          | N/A            | <b>21.86692</b> | 43.264          |
| Copper       | ug/l  | 1  | N/A  | 1000                   | 0.1           | N/A            | <b>8.347352</b> | 42.777          |
| Lead         | ug/l  | 1.2  | 14   | 1000                   | 0.12          | 1.4            | <b>0.202147</b> | 0.6647          |
| Nickel       | ug/l  | 4<br>(bioavailable)                                    | 34   | 2000                   | 0.4           | 3.4            | <b>72.82517</b> | <b>449.3728</b> |
| Zinc         | ug/l  | 10.9<br>(bioavailable)                                 | N/A  | 2000                   | 1.09          | N/A            | <b>46.02434</b> | 631.62          |

**Table 8b: Comparison of EQS for Freshwater, TEC limits with Current Emissions (Factory 2)**

| Determinants | Units | Annual Average Environmental Quality Standard | Maximum Allowable Concentration Environmental Quality Standard | Trade Effluent Consent | 10% of AA EQS | 10% OF MAC EQS | Average Conc.   | Max Conc.    |
|--------------|-------|---|--|------------------------|---------------|----------------|-----------------|--------------|
| Chromium     | ug/l  | 3.4   | N/A  | 2000                   | 0.34          | N/A            | <b>7.181628</b> | 16.64        |
| Copper       | ug/l  | 1   | N/A  | 1000                   | 0.1           | N/A            | <b>1.749992</b> | 5.292        |
| Lead         | ug/l  | 1.2   | 14   | 1000                   | 0.12          | 1.4            | 0.085048        | 0.578        |
| Nickel       | ug/l  | 4<br>(bioavailable)                           | 34   | 2000                   | 0.4           | 3.4            | <b>24.09272</b> | <b>144.4</b> |
| Zinc         | ug/l  | 10.9<br>(bioavailable)                        | N/A  | 2000                   | 1.09          | N/A            | <b>9.469816</b> | 54.45        |

It is noted in the tables above, concentrations of Chromium, Copper, Lead, Nickle and Zinc allowed to be discharged from the Factory 1 are higher than 10% of the published EQS.

For Factory 2, concentration of Chromium. Copper, Nickle and Zinc allowed to be discharged are higher than 10% of the published EQS. Therefore, test 2 needs to be carried out.

**Test 2**

*This test introduces the dilution available in the receiving water. You will need the river flow data and daily discharge volume for this test.*

*Check whether the process contribution (PC) of your chemical and element is more than 4% of the EQS. PC is the concentration of a discharged chemical and element in the water after it's been diluted.*

Steps to work out the PC:

- 1) Multiply the effluent flow rate (EFR) by the release concentration (RC) of the pollutant in the effluent:

Based on information provided by the client the EFR is calculated to be 0.6 l/s. by multiplying the ERF by the RC (Table 7) following concentration is derived.

Factory1 –

| Determinants | Average (ug/l) | Max (ug/l) |
|--------------|----------------|------------|
| Chromium     | 13.12015       | 25.9584    |
| Copper       | 5.008411       | 25.6662    |
| Lead         | 0.121288       | 0.39882    |
| Nickel       | 43.6951        | 269.62368  |
| Zinc         | 27.61461       | 378.972    |

Factory 2 -

| Determinants | Average (ug/l) | Max (ug/l) |
|--------------|----------------|------------|
| Chromium     | 4.308977       | 9.984      |
| Copper       | 1.049995       | 3.1752     |
| Lead         | 0.051029       | 0.3468     |
| Nickel       | 14.45563       | 86.64      |
| Zinc         | 5.68189        | 32.67      |

- 2) Add your value for the EFR to the river flow rate (RFR):
  - Based on information from [environment.data.gov.uk](http://environment.data.gov.uk), the RFR for River Stour is considered to be 1800 l/s.
  - Adding EFR and RFR – 1800.6 l/s
- 3) Divide the result of step 1 by the result of step 2.

Factory 1 –

| Determinants | PC (Average) | PC (Max) |
|--------------|--------------|----------|
| Chromium     | 0.007286544  | 0.014411 |
| Copper       | 0.002781523  | 0.014249 |
| Lead         | 6.74E-05     | 0.000221 |
| Nickel       | 0.024266967  | 0.149683 |
| Zinc         | 0.015336336  | 0.210388 |

Factory 2 –

| Determinants | PC (Average) | PC (Max) |
|--------------|--------------|----------|
| Chromium     | 0.002393078  | 0.005545 |
| Copper       | 0.000583136  | 0.001763 |
| Lead         | 2.83398E-05  | 0.000193 |
| Nickel       | 0.008028229  | 0.048117 |
| Zinc         | 0.003155553  | 0.018144 |

The next step is to check if value of PC is 4% or less than EQS, please see Table 9 below.

**Table 9a: Comparison of EQS for Freshwater, TEC limits with Process Contribution (PC) (Factory 1)**

| Determinants | Units | Annual Average Environmental Quality Standard | Maximum Allowable Concentration Environmental Quality Standard | Trade Effluent Consent | 4% of AA EQS | 4% OF MAC EQS | PC (Average) | PC (Max) |
|--------------|-------|---|--|------------------------|--------------|---------------|--------------|----------|
| Chromium     | ug/l  | 3.4   | N/A  | 2000                   | 0.136        | N/A           | 0.007286544  | 0.014411 |
| Copper       | ug/l  | 1   | N/A  | 1000                   | 0.04         | N/A           | 0.002781523  | 0.014249 |
| Lead         | ug/l  | 1.2   | 14   | 1000                   | 0.048        | 0.56          | 6.74E-05     | 0.000221 |
| Nickel       | ug/l  | 4<br>(bioavailable)                           | 34   | 2000                   | 0.16         | 1.36          | 0.024266967  | 0.149683 |
| Zinc         | ug/l  | 10.9<br>(bioavailable)                        | N/A  | 2000                   | 0.436        | N/A           | 0.015336336  | 0.210388 |

**Table 9b: Comparison of EQS for Freshwater, TEC limits with Process Contribution (PC) (Factory 2)**

| Determinants | Units | Annual average environmental quality standard | Maximum allowable concentration environmental quality standard | Trade Effluent Consent | 4% of AA EQS | 4% OF MAC EQS | PC (Average) | PC (Max) |
|--------------|-------|---|--|------------------------|--------------|---------------|--------------|----------|
| Chromium     | ug/l  | 3.4   | N/A  | 2000                   | 0.136        | N/A           | 0.002393078  | 0.005545 |
| Copper       | ug/l  | 1   | N/A  | 1000                   | 0.04         | N/A           | 0.000583136  | 0.001763 |
| Lead         | ug/l  | 1.2   | 14   | 1000                   | 0.048        | 0.56          | 2.83398E-05  | 0.000193 |
| Nickel       | ug/l  | 4<br>(bioavailable)                           | 34   | 2000                   | 0.16         | 1.36          | 0.008028229  | 0.048117 |
| Zinc         | ug/l  | 10.9<br>(bioavailable)                        | N/A  | 2000                   | 0.436        | N/A           | 0.003155553  | 0.018144 |

As shown in **Table 9a** and Table 9b, the Process Contribution average and Process

Contribution maximum for both Factory 1 and Factory 2 are less than 4% of the freshwater EQS. Therefore, no further tests are required as after considering dilution, concentration of effluent release is not a risk to the environment.

## 4 Results and Discussion

The assessment verifies that the Installation has no direct emissions to surface water or groundwater. Wastewater generated at the site is treated through dedicated ETPs at both Factory 1 and Factory 2, with final discharge routed to the public sewer network under a valid trade effluent consent. This ensures that all process effluent is subject to controlled treatment and regulated removal.

Incorporation of updated monitoring data and recalculated STRF-adjusted concentrations shows that certain metals exceed 10% of the applicable EQS values during preliminary screening. However, as noted in **Table 9**, when dilution within the receiving watercourse is applied, the resulting Process Contribution values fall **well below the 4% EQS threshold** for all determinants. This demonstrates that, following treatment and further removal at the wastewater treatment works, the contribution of site-derived pollutants to the River Stour is minimal.

The updated assessment reaffirms that the Installation's treated effluent does not pose a risk to the aquatic environment. The treatment and discharge arrangements remain suitable, and no further assessment is required under the Environment Agency's methodology.

## 5 Conclusion

The surface water pollution risk assessment has demonstrated that the installation's operations do not pose a significant risk to the aquatic environment. Wastewater generated from both Factory 1 and Factory 2 is fully treated onsite through dedicated Effluent Treatment Plants before being discharged to the public sewer network, with no direct release to surface water or groundwater receptors.

Comparison of monitored effluent quality against applicable Environmental Quality Standards (EQS), Maximum Allowable Concentrations (MAC), and trade effluent consent limits indicated that initial concentrations exceeded 10% thresholds for several metals, necessitating further assessment. However, once dilution within the receiving watercourse (River Stour) was incorporated, the calculated process contributions for all assessed pollutants—Chromium, Copper, Lead, Nickel and Zinc—were shown to be less than 4% of their relevant EQS values. This confirms that, after appropriate treatment and natural dilution, the resulting environmental loading does not represent a significant hazard.

Based on the results of the multi-stage assessment, including effluent characterisation, treatment performance, reduction factors, river flow data, and dilution modelling, the study concludes that **emissions to water from the installation are not significant** and no further detailed assessment is required.